Title
Raising the Dead: The Bioarchaeology of the Saite and Roman Period Wall of the Crow Cemetery in Giza

Author
Kaiser, Jessica Elisabet

Publication Date
2018

Peer reviewed|Thesis/dissertation

Raising the Dead:

The Bioarchaeology of the Saite and Roman Period Wall of the Crow Cemetery in Giza

by

Jessica Elisabet Kaiser

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

in

Near Eastern Studies

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Professor Carol A. Redmount, Chair

Professor Tim D. White

Professor Rita Lucarelli

Summer 2018

ABSTRACT

Raising the Dead:

The Bioarchaeology of the Saite and Roman Period Wall of the Crow Cemetery in Giza

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This dissertation examines the extent to which sociopolitical changes from the Saite to Roman periods of Egyptian history affected the lives of a non-elite population from the Memphite region in Lower Egypt. This examination is accomplished through a multidimensional bioarchaeological approach that considers evidence of skeletal stress in remains from the Wall of the Crow Cemetery in Giza, in combination with archaeological and historical data.

Written sources suggest that while Memphite region was relatively stable and prosperous during the Saite period, the early to mid-Roman period was instead characterized by increasing oppression and segregation of the native Egyptian population. To investigate whether or not this supposedly harsh treatment of the general population by the Romans is supported by skeletal evidence, frequencies of non-specific skeletal stress markers were compared between the Saite and Roman period cemetery populations from the Wall of the Crow Cemetery at Giza.

In addition, historical data suggest that women were more marginalized during the Roman period than during the earlier Saite period. To examine whether sex-based health disparities increased through time as a result of this marginalization, frequencies of skeletal stress markers were also compared between the sexes, within and between the two periods.

Changes in mortuary treatment amongst the elite were quite drastic from the Saite to the Roman period. The Wall of the Crow material, however, suggests that the adaptations to evolving funerary beliefs amongst the non-elite were more subtle. By paying close attention to the mortuary context of the burials in conjunction with skeletal data, the present study examines the ways in which a likely non-literate population internalized the developments in funerary liturgy effected by the literate elite, and how and whether these adaptations were age- or sex-specific.

Finally, a large portion of this research project was devoted to the creation of a standardized database that allowed for the integration of skeletal and contextual data. The development of the database is outlined in the methodology chapter of this dissertation, and a central aim of the present research is to make the database template available to other researchers.

The dissertation is organized as follows: Part I provides the background to the study, and is divided in four chapters. Chapter Two outlines the historical and political background of the Saite and Roman periods in Egypt, as well as the social impact of political change and the fluctuating fortunes of the country on the general population. Chapter Three summarizes the theoretical perspectives at the basis of mortuary archaeology and bioarchaeology, and provides a review of recent work on Egyptian material. The specific aspects of skeletal stress and mortuary analysis utilized for the present study, as well as difficulties with interpretation, are outlined in Chapter Four.

Part II of the dissertation places the Wall of the Crow human remains and associated artifacts in their cultural context. Chapter Five describes mortuary practices in Saite and Roman Egypt, while Chapter Six considers the landscape of Giza in a religious and mortuary context. Part III presents the data. Chapter Seven sets out the research questions and hypotheses underpinning the study, Chapter Eight describes the site and the archaeological materials, and Chapter Nine provides the methods used in the analysis. Chapter Ten presents the results of the skeletal and mortuary analysis, while Chapter Eleven pays special attention to the non-adults in the material. Finally, Part IV contains the interpretation of the findings in two chapters: Chapter Twelve provides the discussion, and the final conclusions are presented in Chapter Thirteen.

ACKNOWLEDGEMENTS

While writing is a decidedly solitary endeavor, the successful completion of a doctorate degree comes at the end of a process that requires the guidance and support of many.

First and foremost, I am grateful to my committee members for guiding me through this dissertation: to my committee chair, Professor Carol Redmount, for her unwavering support and encouragement throughout my graduate career, as well as for her invaluable help with turning my scattered ideas into a coherent whole which at the end more or less resembled a dissertation. To Professor Tim White, for his extensive but always accurate critique, which greatly improved the quality of this study, and to Professor Rita Lucarelli, for her helpful input regarding Egyptian religious beliefs. I am also indebted to the late Professor Candy Keller, whose sharp wit and dry sense of humor helped guide me as I entered graduate school. She is sorely missed. My heartfelt thanks also to Dr. Shorena Kurtsikidze and Dr. Deanna Kiser-Go for their moral support and help with all things administrative. You are rockstars!

Second, I would like to thank Ancient Egypt Research Associates (AERA), particularly its director, Dr. Mark Lehner, for allowing me to use the skeletal material from the Wall of the Crow cemetery for this study. In addition, I am grateful to my amazing AERA osteology team, for their hard work and dedication during the excavation of the cemetery: Dr. Johnny Karlsson, Afaf Wahba, Dr. Zeinab Hashesh, Ahmed Gabr, Tove Björk, Kirsti Pedersen, Dr. Scott Haddow, Ayman Damarany, Gabriella Venturi, Petter Nyberg and Tom Westlin. A special thank you to Johnny Karlsson, who in addition to being a great osteologist is also an incredibly talented illustrator, for his work on the burial items in Appendix III, as well as the coffin illustrations in Appendix II. I also owe a special debt of gratitude to the unparalleled Rais Mohamed Elsoughir, not only for teaching me how to wield a trowel like a boss, but also for welcoming me as part of his family, and making me laugh so often over the years. يا بووي!!!

To my cohort at the department: Dr. Lissette Jimenez, Dr. Elizabeth Minor and Dr. Barbara Richter - thank you for your support and encouragement. You made our windowless office in the basement feel like home!

I am indebted to Diann Kaiser, who welcomed me as part of the family when I moved to California, and without whose support I would not have been able to enter graduate school. To Dr. Kevin Kaiser, not only for taking part in my first two seasons at Giza and taking many of the photos for this dissertation, but also for putting up with endless talk about dead bodies over the years, and for taking care of cat, house and eventually offspring, while I was off digging up bones. To said offspring, Niles Kaiser, whose very existence - while greatly impeding my ability to pull off all-night writing sessions - gave me the strength to push through and finish. I also wish to thank my fabulous room-mate, Jennifer Ellis, for sharing her home with me, and for being such a great cheerleader as I was nearing the finish line.

Finally, I am eternally grateful to my parents, Annica Holst and Jerk Fehling, for their love, encouragement, and unwavering support. To my father, for always encouraging me to follow my passion, however exotic it may have seemed. To my mother, not only for proof-reading the many drafts of this dissertation, and for helping with images, lists and editing, but also for igniting my interest in the past at an early age, and for aiding and abetting my obsession with the dead and all things Egypt throughout my childhood. You made me who I am today.

For my loved ones
and
in memory of Cathleen Keller

RAISING THE DEAD:
THE BIOARCHAEOLOGY OF THE SAITE AND ROMAN PERIOD WALL OF THE CROW CEMETERY IN GIZA

CONTENTS:

LIST OF TABLES

LIST OF FIGURES[i]

[i] Unless otherwise stated, photos are taken by the author

PART I: BACKGROUND

Chapter 1: Introduction

1.1. Egyptology and the Preoccupation with the Elite

When Napoleon and his savants "rediscovered" Ancient Egypt at the end of the Eighteenth century, it was the grandeur of the abandoned monuments and the artistic abilities of the ancient Egyptians that caught the attention of the world. The apparent preoccupation of the Egyptians with the hereafter, and the vast riches they accumulated, were also sources of endless fascination. Following the deciphering of the ancient Egyptian script in the early Nineteenth century, Egyptology became a highly specialized discipline, concentrating mainly on philology. The nature of the written sources, which were overwhelmingly elite and government-related -- religious texts, elite autobiographies, royal annals, treaties and diplomatic correspondence -- further contributed to the writing of a history from the vantage-point of the elite.

Even texts of a more private nature, such as legal records and letters, would mainly have been written by the small minority that were literate, rendering the voices of the majority of the population silent in the historical record. There existed also among early Egyptologists a general disdainfulness towards the non-elite. James Henry Breasted, for example, wrote in his History of Egypt (1909) that the cramped living conditions of the lower class did not "incline toward moral living," resulting in "wide-spread and gross immorality" (86).

The overrepresentation of elites in the Egyptian historical and archaeological record has also been exacerbated by the uneven preservation of mortuary data, stemming from the well-preserved necropoleis in the desert, over that of settlements, which are often obscured by modern occupation. And so, Egyptian archaeology has remained, to a great extent, a handmaiden to history, from its earliest beginnings up until very recently, mainly concerned with providing additional texts and grand monuments for the elucidation of Egypt's illustrious past (Trigger et al. 1983:xii)

This distorted view of Egyptian society, combined with the richness of the archaeological and textual remains of the privileged, has created an illusion of familiarity. The numerous examples of life histories of known individuals, preserved in autobiographies, letters and administrative records, give the impression of intimate knowledge of the Egyptian people of the past. The many exhibitions and books on "Daily Life in Ancient Egypt" illustrate the day-to-day activities of the Egyptian population with artifacts and texts, while at the same time neglecting to mention that the items chosen for display or publication most likely belonged to those of the upper echelons of society. The everyday lives of the vast majority, those who left little or no traces in the archaeological record, remain very poorly known. It is for these nameless and faceless masses that the present study speaks.

1.2 Egyptology and the Preoccupation with the 'Illustrious Past'

In addition to the preoccupation with the upper rungs of society, Egyptology has also traditionally concentrated on the history of Egypt during the height of the country's glory. The

Late Period (664-332 BCE)[2] is often seen as a period of decline, as illustrated by book titles such as "The Twilight of Ancient Egypt" (Mysliwiec 2000), and indeed in some cases by the actual term for the period, like the French "La Basse Époque." Furthermore, following the end of the Late Period, when hieroglyphs and hieratic were gradually supplanted by Demotic and later Greek, the Graeco-Roman period (332 BCE-394 CE) is often viewed as the purview of Classicists rather than Egyptologists. Not infrequently, this period is seen by Egyptologists as the last desperate gasps of a once-great culture, which finally became eclipsed by the Roman Empire. The so-called Saite "Renaissance" (664-525 BCE) is viewed as merely an imitation of ancient glory, which fell short of the original. As a result, the later periods of Egyptian history have suffered not only the neglect of historians, but also the disregard of archaeology; quite often, Late Period and Graeco-Roman remains were hastily removed and only superficially treated in site-reports, in order to get to the "real" Egyptian history deeper in the stratigraphy. This is especially true for Giza, with its very visible Old Kingdom (2686-2160 BCE) remains. Late Period through Roman remains are ubiquitous to the area, but have been practically ignored by scholars. Emile Baraize, for example, during his excavations between 1925-1936, simply removed the abundant Roman additions to the Sphinx enclosure with no apparent attempt at recording them (Lehner 1991:40 ff).

The disregard for the later periods of Egyptian history frequently resulted in distinct periods being lumped together as just "late" or "post-pharaonic." Again, an example from Giza is telling. After clearing several meters of stratigraphic deposits during his excavations at the Isis temple at Giza, George Reisner referred to the excavated material, covering a period of some 750 years, as "the usual Saiti-Roman rubbish" (Zivie-Coche 1991: 188), and disposed of it without further documentation.

To be fair, the general dearth of archaeological material preserved to us from the Late Period and beyond is also the result of the geographical shift of focus to the Delta and Mediterranean coast in later periods. Not only is the humid climate in the delta detrimental to the preservation of ancient remains, but the high water table also means that archaeological teams in the area must often use specialized and costly equipment, limiting the scope of excavations there. In addition, the continued farming of the fertile Delta plains has meant an ongoing expansion of modern occupation, often obscuring important archaeological sites. The Graeco-Roman city of Alexandria, which has been continuously occupied since the reign of Alexander the Great, was partly submerged by earthquakes and is continuing a losing battle against rising sea-levels. Finally, the tumultuous history of Lower Egypt during the 1st millennium BCE meant that the region was often the stage of battle, during which cities were sacked and burnt, and valuables carried off (Mysliwiec 2000:xiv-xv).

In recent years, scholars have begun to see the later periods of Egyptian history as what they were: dynamic periods of vitality, consolidation, and innovation. Rather than dismissing the Saite kings' defensive foreign policy and increased reliance on hired mercenaries from abroad as the capitulation to the inevitable eclipse of Egypt by new and coming superpowers from western Asia, many scholars now view them as innovative approaches to survival, or even thrift, in the face of a new and multicultural world. Rather than characterizing the Romanization of Egypt as

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[2] Dates in the present study follow the chronology in Shaw 2000.

the final death knell to a once-great culture, scholars have begun to view the hybridization of cultures in the Greek and Roman periods as testament to the resilience of Egyptian tradition, even in the face of sustained influences from abroad.

In addition, recent archaeological work in Egypt, as well as a renewed interest in previously unpublished philological material, has allowed closer attention to be paid to the characteristics of each distinct era of the period, rather than the lumping together of centuries worth of material as simply "late" or "post-pharaonic." Indeed, it is not until recently that the term "Graeco-Roman" has begun to be supplanted with the more precise "Ptolemaic" versus "Roman" Egypt. This division is more accurate, based on what we know of the quite extensive differences in government and treatment of the population by the state in the two eras. Few modern scholars would deny that the character of Egyptian society changed substantively from the Ptolemaic to Roman times, and that it was profoundly different in the Late and Roman periods. However, both the Late and the Roman periods were vibrant and intriguing eras in their own right.

1.3 The Wall of The Crow Cemetery

The people who buried their dead in the Wall of the Crow cemetery were not members of the elite, nor did they live during any of the periods that have traditionally been the focus of Egyptological research. The cemetery material considered in the present study falls into two distinct phases: an earlier period from the end of the Third Intermediate Period/Twenty-Fifth Dynasty through the Saite Period (c. 730-525 BCE), and a later period during the early to mid-Roman period, c. 1st-2nd century CE. However, the aim of this research is not just to fill in a "gap" in our current knowledge of the less fortunate in Egyptian society. Rather, the Wall of the Crow cemetery material is seen as a topic worthy of study in its own right, for the information it could contribute to our understanding of Egyptian society in its entirety.

As modest as the Wall of the Crow burials were, it is important to make the distinction between "non-elite" and "poor" or "destitute." Far fewer burials have been unearthed in Egypt than what would be necessary to accommodate the entire population. In addition, many of the cemeteries in Egypt show demographic profiles that could not possibly correspond to reality, particularly in terms of the underrepresentation of children. Thus, it seems likely that the very poorest and the very youngest in the Egyptian population were sometimes disposed of in ways that have left no traces in the archaeological record (Baines and Lacovara 2002).

In contrast, the dead in the shadow of the Wall of the Crow, including numerous children, all received formal burials, however humble. In many cases, they were accompanied by grave goods manufactured especially for funerary purposes, such as coffins. Several of the bodies also showed evidence of at least cursory mummification. These items or mortuary treatments would not have been free, and show that the dead or those who buried them had access to some measure of disposable income that could be applied toward the journey to the afterlife. The very meagerness of the burials is revealing in itself; it tells us which aspects of the many requirements for a successful afterlife enumerated in more elite sources were absolutely necessary when limited buying power had boiled funerary provisions down to the essentials (Baker 2012).

Despite the relatively rich historical and archaeological material available for both the Saite and Roman periods of Egyptian history, our understanding of everyday life for the average person is still very limited. As outlined above, this is to a large extent due to not only the nature of the sources preserved to us, but also the nature of the sources most sought after by modern historians. By and large, the voices of the segment of the population to which the Wall of the Crow population most likely belonged have stayed silent in the archaeological record. This is somewhat paradoxical, considering that the non-elite would have made up the vast majority of the population during both the Saite and the Roman periods.

Although the Wall of the Crow population did not leave much behind in terms of written sources, save for the crude inscriptions on their coffins, they left us something even more informative: they left us their bones. Skeletal remains as a source of information on health, living conditions and social organization have traditionally been underutilized in Egyptian archaeology, but this is slowly beginning to change. This study aims to contribute to the current understanding of life and death among the non-elite in Saite and Roman Egypt through a bioarchaeological analysis of the burials from the Wall of the Crow cemetery.

Exactly which communities the Wall of the Crow cemetery served is unclear. A small village, ***wḥyt Rꜣ-sṯꜣw,*** better known by its Greek name Bousiris, is known from textual evidence to have existed as early as the Eighteenth Dynasty at the base of the Giza plateau in the approximate location of the modern village of Naslet Batran (Zivie-Coche 1976: 218-219, 295). A decree by its inhabitants, found in the area of the Sphinx temenos and dating to the reign of the emperor Tiberius (14-37 CE), tells us that it was inhabited well into the Roman period (Zivie-Coche 2002:100). However, considering the large number of burials on the plateau, it is unlikely that Bousiris was the only community served by the necropolis. Certainly, it is possible that the increased popularity of the Giza plateau as a burial place in the Saite period drew people from afar to make it their final resting place. Some of the elite tomb owners on the plateau were definitely not local: a son of King Amasis (LG 83; Porter and Moss 1974:296), and the Chief of Police -- presumably in Memphis -- Thary, for example.

Nevertheless, Egyptians were as a rule reluctant travelers, in life as in death. The famous Middle Kingdom tale of Sinuhe, for example, written in the early second millennium BCE (Parkinson 1997:21), tells us that there were few things more disagreeable to an Egyptian than being buried far from the place where one was born. Granted, the tale was written over a thousand years before the Saite period; however, the demotic wisdom text known as p.Insinger, written in the 1st-2nd century CE, but possibly authored during the Ptolemaic period (Agut-Labordère 2013a), shows that nothing much had changed in that respect in later periods:

> *The godly [man] who is far from his town,*
> *his worth is not better known than that of another*
> *He who dies far from his town is buried only out of pity*
> *The wise man who is unknown is one who is scorned by the fools*
> *The town of the fool is hostile to him because of his wandering about*[3]
>
> *Trans. Lichtheim (1980:207)*

[3] From "The teaching not to abandon the place where you can live,", the Twenty-Second Instruction, lines 6-9.

Other texts, such as "The Myth of the Sun's Eye" also emphasize the importance of being buried close to one's birthplace in particular (pLeiden I 384, 14-21; Cenival 1988:12). Perhaps this is not so surprising, considering the importance of a continued funerary cult to a successful afterlife. Ideally, this continued cult would be maintained in perpetuity by surviving relatives, though in reality, it may not have lasted more than one or two generations. However, in its place served the many necropolis festivals during which the tombs of the ancestors would be visited, in order to strengthen the bond between communities and their dead. The grave itself, then, was a focal point of both identity and affiliation (Assmann 1988).

Thus, it is probably safe to assume that the cemetery mainly served the general vicinity of Giza, and that the Wall of the Crow cemetery population represents communities that occupied the Memphite region during the Saite and Roman periods, respectively. As outlined in the following chapter, these communities both existed during periods of significant socio-political change in Egypt. However, while the Saite period was fairly prosperous and placed great emphasis on the city of Memphis, Roman rule was more oppressive. In Memphis in particular, the influence of the temples, so important during the Saite period, was greatly curtailed, and the city had lost its position as administrative capital of the country. Thus, this study examines the possibility that the Roman conquest had particularly detrimental effects on the non-elite population in the Memphite region.

1.4 Research Goals

The present study was undertaken to investigate the extent to which sociopolitical changes from the Saite to Roman periods of Egyptian history affected the lives of a non-elite population from the Memphite region in Lower Egypt. This is accomplished through a multidimensional bioarchaeological approach that considers evidence of skeletal stress in combination with archaeological and historical data.

Written sources suggest that whereas the Memphite region was relatively stable and prosperous during the Saite period, the early to mid-Roman period was instead characterized by increasing oppression and segregation of the native Egyptian population. To investigate whether or not this supposedly harsh treatment of the general population by the Romans is supported by skeletal evidence, frequencies of non-specific skeletal stress markers were compared between the Saite and Roman period cemetery populations from the Wall of the Crow Cemetery at Giza.

In addition, historical data suggest that women were more marginalized during the Roman period than during the earlier Saite period. To examine whether sex-based health disparities increased through time as a result of this marginalization, frequencies of skeletal stress markers were also compared between the sexes, within and between the two periods.

The changes in mortuary treatment amongst the elite were quite drastic from the Saite to the Roman period. The Wall of the Crow material, however, suggests that the adaptations to evolving funerary beliefs amongst the non-elite were more subtle. By paying close attention to the mortuary context of the burials in conjunction with skeletal data, the present study examines the ways in which a likely non-literate population internalized the developments in funerary liturgy effected by the literate elite, and whether these adaptations were age- or sex-specific.

Finally, a large portion of this research project was devoted to the creation of a standardized database that allowed for the integration of skeletal and contextual data. The development of the database is outlined in the methodology chapter of this dissertation, and a central aim of the present research is to make the database template available to other researchers.

1.5 Outline of Dissertation

The remaining chapters of this dissertation are organized as follows: Part I provides the background to the study and is divided into four chapters, including the present introduction. Chapter Two outlines the historical and political background of the Saite and Roman periods in Egypt, as well as the social impact of political change and the fluctuating fortunes of the country on the general population. Chapter Three summarizes the theoretical perspectives at the basis of mortuary archaeology and bioarchaeology and provides a review of recent work on Egyptian material. The specific aspects of skeletal stress and mortuary analysis utilized for the present study, as well as difficulties with interpretation, are laid out in Chapter Four.

Part II of the dissertation places the Wall of the Crow material in its cultural context. Chapter Five describes mortuary practices in Saite and Roman Egypt, while Chapter Six considers the landscape of Giza in a religious and mortuary context. Part III presents the data. Chapter Seven sets out the research questions and hypotheses underpinning the study, Chapter Eight describes the site and the archaeological materials, and Chapter Nine provides the methods used in the analysis. Chapter Ten presents the results of the skeletal and mortuary analysis, while Chapter Eleven can be seen as somewhat of an excursus, paying special attention to the non-adults in the material. Finally, Part IV contains the interpretation of the findings in two chapters: Chapter Twelve provides the discussion, and the conclusions are presented in Chapter Thirteen.

Chapter Two: Sociopolitical Change in Saite and Roman Egypt

2.1 The Third Intermediate Period and the Nubian Kings

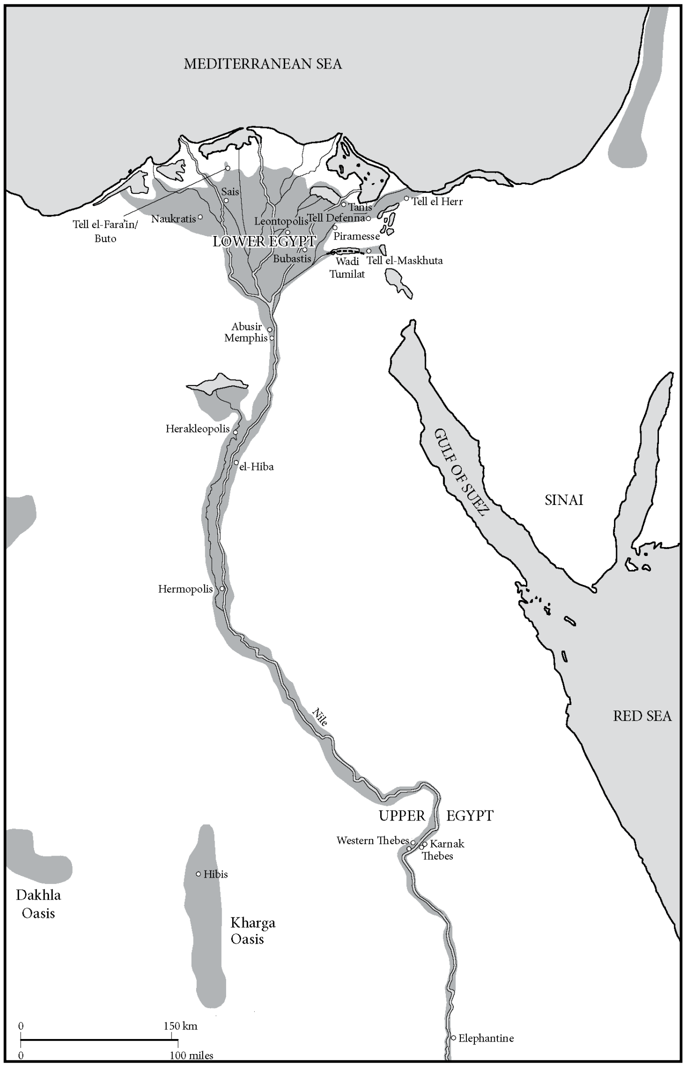

Figure 2.1: Map of Egypt in the Late Period, Adapted from Bard 2005, Map 9.1

The earliest pottery associated with the Wall of the Crow burials dates from the late 8th century BCE. This period was one of political fragmentation in Egypt: no longer the "Two Lands," the country was divided into several smaller princedoms, particularly in the northern part of the country of which the Memphite region was a part. In addition, Egypt was sandwiched between two superpowers, both wanting to take control of the whole country and its ample natural resources: Kush in the south, and Assyria in the north-east (Mysliwiec 2000:56). For the inhabitants of the Memphite region, the late 8th century would have corresponded to the rule of Tefnakht, prince of Sais, who was in control of the West Delta from Itj-Tawy and Memphis to the Mediterranean (Kitchen 2009:363).

Tefnakht was not the lone ruler of Lower Egypt, however. Already in the Twenty-First Dynasty, the country had been effectively divided between the Tanite kings of the Delta who controlled Lower Egypt, and the High Priests of Amun in Thebes, who controlled Upper Egypt as far as El Hibeh. The tradition continued under the Libyan kings of the Twenty-Second Dynasty, who installed family members to the high posts in Thebes (Taylor 2000). This kept Egypt under northern control at first, though the hereditary nature of the priesthood of Amun -- which had been dismantled by the early kings of the Twenty-Second Dynasty -- was eventually reestablished with the accession of Harsiese as High Priest of Thebes in 870 BCE, once again creating dual power bases in the north and south (Kitchen 2009:313-320).

By the early eight century BCE, a whole series of local dynasties flourished in the Delta. Further, the *Chronicles of Prince Osorkon,* a text preserved on the Bubastide portal in Karnak, tells of a decades-long period of unrest in Upper Egypt, with rival factions -- those loyal to the northern kings, and those supporting an independent Thebes -- vying for authority (Naunton 2010). The constant infighting led to further fragmentation, and opened southern Egypt to Nubian dominance. By the mid-eight century BCE, the Nubian king Piye (747-716 BCE), based in Napata, extended his control as far north as Thebes (Kitchen 2009:359). Kushite dominion over Thebes probably dated to the reign of Piye's father Kashta, who installed his daughter as the heiress to the office of "God's Wife of Amun" already during the reign of Osorkon III in Thebes (Naunton 2010). In addition, local princes of Hermopolis and Heracleopolis were loyal to the Nubian crown (Kitchen 2009:363-364).

In 728 BCE, Tefnakht used the political fragmentation to his advantage and began a campaign to expand his control southward. Having secured the submission of Nimlot of Hermopolis, he turned his attention further south. In the north, only Heracleopolis, under the Piye loyalist Pef-tjau-awy-bast, held steadfast. Piye responded by sending troops, but managed merely to stall Tefnakht and not to defeat him; Heracleopolis was still under siege, and Nimlot remained loyal to the northern prince. Displeased, Piye headed his forces in person and sailed north to defeat Nimlot and liberate Heracleopolis. He continued towards Memphis, easily defeating numerous smaller chiefs on his way. Memphite resistance proved stubborn, however, and though Piye was eventually victorious, he left considerable bloodshed in his wake (Kitchen 2009:363-364).

Following his military success in Memphis, Piye returned to Napata, where he set up a victory stele detailing the recapturing of Egypt. Curiously, rather than establishing a power base in Egypt proper to solidify his control, it seems he did not set foot in Memphis again (Taylor 2000). Thus, it was not long before Tefnakht once more established control of the northern parts of the country. He proclaimed himself king of the area from Memphis to the Mediterranean with full royal titulary but was careful not to evoke the ire of the Nubian ruler again. He was succeeded by Bakenref of Sais (c. 720-715 BCE), who is usually styled as the founder (and only king) of the Twenty-Fourth Dynasty (Kitchen 2009:370-371). Of Bakenref, very little is known. It is possible that he, like his predecessor, attempted territorial expansion. For whatever reason, he appears to have angered the Nubians. According to Manetho, he was taken captive by Shabaqo and set on fire (Waddell 1940:166–9). Whether or not Manetho was correct in the details of Bakenref's dramatic demise, Shabaqo was subsequently recognized as the sole ruler of Egypt, and the country was united once again (Naunton 2010). However, perhaps because of the geographical distance between Napata and the north, local northern chiefs still retained a measure of control with the administration, something that would come back to haunt the Kushites towards the end of the dynasty (Taylor 2000).

Under the Nubian kings, Egypt enjoyed relative stability until the 670's BCE (Naunton 2010). Already highly acculturated by the long Egyptian rule of Nubia, Kushites showed great respect for Egyptian traditions, particularly in the religious realm. Though they continued to be buried in Napata, and to some extent introduced their own interpretation of the iconography of kingship, they also inaugurated an era of archaism, drawing inspiration from the glorious Egyptian past. To wit, they are often described as being "more Egyptian than the Egyptians" themselves (Mysliwiec 2000:85-90). Though they paid particular attention to Thebes and Memphis, the Nubian kings embarked on an ambitious building programme across the country (Mysliwiec 2000-90). They also to some extent reaffirmed Egyptian power in western Asia against the growing influence of the Assyrians and supported foreign trade, which expanded enormously (Morkot 2005).

With the decline of the Empire after the New Kingdom, Egypt had during the Third Intermediate Period lost much of its control in the Levant and Asia. Though the Kushite rulers re-established an Egyptian presence in the region, the many years of Egyptian absence had allowed the Assyrians to grow too strong to subdue. Rather, the Kushites opposed the dominant Assyrian forces with intermittent support for insurgencies led by local chiefs and governors of the region, with varying success. This policy eventually led the Assyrians to see Egypt as a troublemaker in need of redress, and in 673 and again 671 BCE, the Assyrians under Esarhaddon led campaigns to push the current Egyptian king Taharqa further south to create a buffer zone. Though the first invasion was defeated, the second was a success; Taharqa was wounded, his son, wife and brother captured, and Memphis was sacked. Following Taharqa's defeat, the Assyrians installed their own loyal vassals in the Egyptian administration and effected a yearly tribute from the country (Taylor 2000, Naunton 2010). Esarhaddon's unexpected death allowed Taharqa a brief return to power, but he was quickly vanquished again by Esarhaddon's successor Assurbanipal, marking the end of the Nubian command of northern Egypt in 667 BCE (Mysliwiec 2000). However, many of the supposedly loyal delta chiefs found Assurbanipal's rule less agreeable than that of his predecessors from the south, and plotted with Taharqa to regain control of the north as soon as Assurbanipal had returned to Nineveh. The latter uncovered the plot, however, and executed the would-be revolutionaries (Kitchen 2009:392-393). Only one of the princes, Necho I of Sais, had declined to support the Kushites. Although he at first resisted Assurbanipal as well, and was captured and taken to Nineveh, the two eventually reached an agreement and Necho I was reinstalled as ruler of Sais and governor of Memphis by Assurbanipal (Taylor 2000).

Following the death of Taharqa in Napata in 664 BCE, his successor Tantamani once again tried to establish control over Egypt. Initially, he was successful and gained ground as far north as the Delta, where he defeated and killed Necho I, prompting Necho's son Psammetichus to go into exile. Though Tantamani's victory at first caused the delta chiefs to defer to him, Assurbanipal would have none of it. Again, he sent his armies to Egypt and penetrated as far south as Thebes, which he thoroughly sacked in 663 BCE, forcing Tantamani to flee to Napata, from where he never returned. With that, the Nubian presence in Egypt finally came to an end. Though Theban officials continued to date their monuments by the regnal year of the Nubian king until 656 BCE, the Thebaid was effectively under the control of the Theban governor Montuemhat and to some extent Taharqa's sister Shepenwepet II in the guise of God's Wife of Amun, and remained more or less independent (Kitchen 2009:394-395).

In the north, Assurbanipal restored Psammetichus (I) to power in return for his loyalty. The latter proved to be short-lived, however. After leaving Egypt and returning to Nineveh, Assurbanipal found himself increasingly pressed by the emerging powers of Babylon and Elam, as well as with unrest in his own country (Perdu 2010). Psammetichus saw his opportunity and managed to unite the northern princes under his sole rule. To his aid came moreover the Lydian king Gyges, who was likely also instrumental in Psammetichus' well-documented practice of employing foreign mercenaries; mainly Carians and Ionians, but also Jews, Phoenicians and possibly Shasu Bedouin (Lloyd 2000a). With this military power behind him, Psammetichus finally succeeded in throwing off the Assyrian yoke. Thus strengthened, he installed his daughter Nitocris as the successor to Shepenwepet II in the office of God's Wife of Amun in 656 BCE, finally gaining the recognition of the Thebaid as the sole ruler of Egypt (Kitchen 2009-404). The country was once again united.

2.2 The Saite Renaissance

Finally presiding over a united country for the first time in over two centuries, Psammetichus I (664-610 BCE) nevertheless faced several problems both at home and abroad. First and foremost, the established and emerging powers in Asia remained a constant threat, as did the Kushites in the south, who despite being exiled from Egypt proper still retained a strong power base in Nubia. To the west, the borders had to be protected from the re-emergence of the Libyan chiefs who failed to conform to Saite rule and had been expelled from Egypt proper, but who remained not too far away. Internally, the king had to re-establish confidence in traditional kingship ideology, which had been severely eroded by the long-standing fragmentation of the country prior to reunification. To retain the loyalty of the people and prevent further splintering, Psammetichus I had to return to the ancient ideals, which held the king responsible for upholding ma'at, divine order, through his role as the gods' representative on earth (Lloyd 2000a).

To accomplish his goals, Psammetichus I employed several different tactics. To legitimize his kingship, he embarked on a massive building program, embracing the archaism inaugurated by the Kushites. Scarcely a temple in Egypt is devoid of any references to the Saite kings. Psammetichus himself initiated projects at the temples of Tell el-Balamun, Busiris, Hermopolis-Baqlia, Tanis, Pharbaithos, Daphnae-Tell Defenna, Heliopolis, Memphis, Wanina-Athribis, Koptos, Thebes, Esna, Elkab, and Edfu (Perdu 2003). In addition, he paid particular attention to the important cult of the Apis bull in Memphis, not only officiating at cultic functions but also adding to the Apis funerary enclosure (Perdu 2010).

To keep the control of the country in his grasp, he reorganized the administration, tying local governors more tightly to the central government, and replacing them when he saw fit, to avoid the emergence of local hereditary fiefdoms. Militarily, he increased Egypt's military might by massive recruitment of foreign troops. Originally perhaps intended as mere backup forces during the fight for Saite suzerainty, the mercenaries were encouraged by the king to remain in Egypt after reunification, settling down in dedicated military camps and becoming incorporated into the elite forces of the Egyptian standing army (Perdu 2010).

The foreign policy of Psammetichus was less than aggressive and generally focused on keeping Egyptian borders secure. To the west, he campaigned against Libya, to prevent the return of the exiled Libyan princes to Egypt. To the east, he gained a buffer zone in the southern Levant and entered into an alliance with his former overlords in Assyria against the emerging power of Babylonia (Mysliwiec 2000:117). To the south, he paid close attention to the border with Nubia,and reinforced the military bases at Elephantine (Perdu 2010). He also established other fortified military camps on the Pelusiac branch of the Nile (Hesham Hussein 2015).

The reigns of the next two kings, Necho II (610–595 BCE) and Psammetichus II (595–589 BCE) continued in much the same vein as that of their their predecessor, though their foreign policies were more aggressive. Not only did they become more involved with maritime expansions in the Mediterranean and the Red Sea, both military and commercial, but they were both very active in Asia, most likely in response to the threat of growing Babylonian power in the area. Though these activities surely expanded Egyptian influence in the Levant and resulted in some military success, they ultimately failed to contain the advances of the Babylonians, and never succeeded in establishing a permanent presence in the buffer zone of Syria-Palestine (Perdu 2010, Agut-Labordère 2013c). Psammetichus II also conducted a successful campaign into Nubia and ventured as far as the Fourth Cataract, backed by both foreign and Egyptian troops (Perdu 2010).

The early years of Psammetichus II's son and successor Apries were fairly calm, and the internal situation of the country remained stable until the end of his reign. Like his predecessors, he was a prolific builder and spent considerable resources on maintaining temples all over the country. Additionally, his sister Ankhnesneferibre succeeded Nitocris as God's Wife of Amun in Thebes, thereby cementing the hold of the Saites over the Thebaid (Perdu 2010). Internationally, however, his foreign policy was less successful. Like his father before him, Apries supported the revolt of Zedekiah of Judea against Babylon, but whereas his father never got directly involved in the conflict, Apries reversed this policy (Smoláriková 2008:39-40). When the Babylonian ruler Nebukhadnezzar II decided to invade Judea to put an end to the unrest and laid siege to Jerusalem in 589 BCE, Apries sent troops to assist Zedekiah. His forces were defeated, however, and Jerusalem fell to Nebukhadnezzar II in 586 BCE (Perdu 2010). Nebukhadnezzar II was less than pleased with Apries' involvement in his affairs, and some sources suggest that he mounted a punitive mission to Egypt following Apries' foray to Jerusalem (Lloyd 2000a).

The defeat of the Egyptian forces in the Levant also weakened Apries' standing at home. After his unsuccessful campaigns to the Levant, the foreign troops stationed at Elephantine revolted and threatened to leave for Nubia. The uprising was quelled by the general Nesuhor, who was still loyal to the king, but most likely left a lasting impression (Smoláriková 2008:40).

Subsequently, the expansion of the Egyptian navy proved to be a definite advantage for Apries. While the Egyptian king had been ineffective in stemming the Babylonian onslaught on land, he launched several successful missions to Tyre and Sidon to defend Egyptian interests in the Mediterranean, and at the same time limit the reach of Nebukhadnezzar II (Lloyd 2000a). His confidence thus restored, Apries later made the fatal decision to support the Libyan king in his attempt to end the expansion of Cyrene, which threatened both Libyan suzerainty and Egyptian commercial interests. Not wanting to send his Greek soldiers to fight other Hellenes, or perhaps still smarting from the disloyalty of his foreign troops at Elephantine, he dispatched only Egyptian forces to Libya, with disastrous results (Perdu 2010). The Egyptians were thoroughly defeated and returned full of resentment against their king, who they suspected had knowingly sent them to certain ruin (Mysliwiec 2000:123). Ultimately they revolted against him, and Apries was forced to send his general Amasis after them to try and quell the rebellion. This proved another fatal decision on the part of Apries, as Amasis promptly defected to the troops, declaring himself king in 570 BCE (Perdu 2010).

Though Amasis was immediately recognized as the ruler of the delta, Apries still held control over other parts of the country, and the coup plunged the country into civil war (Mysliwiec 2000:124). However, being limited to the use of his foreign legions against Amasis' control of the Egyptian troops, Apries was outnumbered, and when the two forces met at

Momemphis (modern Kom el-Hisn) later that same year, Apries was defeated (Grimal 1992:362). Curiously, he took refuge with his former rival Nebukhadnezzar II. Three years later, the Babylonian king, accompanied by Apries, launched an attack on Egypt to reinstall the former Saite king on the throne, most likely as a Babylonian vassal. The invasion was repelled by Amasis before it even penetrated the delta, however, and Apries was killed during the confrontation. Amasis retrieved the body, and buried Apries with dignity in Sais, further cementing his position on the throne of Egypt (Perdu 2010).

Amasis' continued reign was equally successful, and he is often said to be the last great Egyptian ruler (Lloyd 1983). Certainly, he was both a skilled military commander and a shrewd politician, but he was also aided in part by repeated strokes of luck. Most importantly, his reign coincided with Babylonian decline after the death of Nebukhadnezzar II, while pre-dating the full strength of the Persian empire (Perdu 2010). Nevertheless, Amasis recognized the looming threat, and formed an alliance with his former enemies the Babylonians, along with the Lydians and the Spartans. The two former states proved no challenge to Cyrus the Great, however, who destroyed Lydia in 546 BCE, followed by the conquest of the city of Babylon in 538 BCE, leaving Amasis without allies in the Near East (Lloyd 2000a). Undaunted, he continued to nurture his close diplomatic relationships with the Greek world, which had been initiated early in his reign, not insignificantly through his marriage to the Cyrenian princess Ladyke (Perdu 2010). Amasis bestowed generous gifts on Greek temples, maintained good relations with Hellenic rulers, and managed through his connections in the greater Mediterranean to keep the Persians at bay. In addition, his friendly relations with the Greek world gave him access to their maritime knowledge, while at the same time pleasing his foreign troops of Greek descent back in Egypt (Ray 2006).

On the home front, Amasis walked a thin line between placating the Egyptians that brought him to power, while at the same time retaining the loyalty of his mercenary troops. A good example of his political acumen is the way he dealt with the growing Greek population in the western Delta. Already a trading post from the time of Psammetichus I, Naucratis was under Amasis assigned exclusive trading rights with the Aegean world. This move pleased both Greeks and Egyptians: the Greeks welcomed the profitable trade monopoly, while the natives saw the change in Naucratis' status as an attempt at curtailing the influx of Greek settlers (Ray 2006).

The maintenance of a Mediterranean fleet and a large standing professional army was naturally expensive and prompted Amasis to initiate wide-spread financial reforms. The Saite fleet was to some extent self-funding since it facilitated trade, which in turn generated customs revenue for the crown. An administration devoted specifically to the management of customs revenue existed from the beginning of Saite rule, but was decisively strengthened and developed under Amasis. In addition, he expanded the taxation of the temples, and may even have instituted the first known income tax for individuals, although the latter remains unclear. He also profoundly changed the way the economy was managed, by installing a central accounting office headed by a top-level administrator tasked with organizing agricultural production and maintaining control over the central economy. The continued "streamlining" of the administration is also apparent in the abandonment of abnormal hieratic in favor of Demotic in the Thebaid (Agut-Labordère 2013c).

In all, the reign of Amasis was a prosperous and peaceful time for Egypt. By embracing commerce and financial reform, along with a strong army and fleet, Amasis was able not only to maintain the integrity of Egypt's borders but also to increase the country's financial might. Royal building projects from his reign are attested in temples all over the country: in the north at Buto, Sais, Kom el-Ahmar, Mendes, Athribis, Tanis, Imet-Tell Faraun, and Memphis, and in the south at Abydos, Elephantine, and Philae, as well as in the Bahariya Oasis. In the end, however, Egypt proved no match for the growing power of the Persians. Nevertheless, perhaps in a final stroke of luck, Amasis was not alive to witness the Persian victory. He died in 526 BCE, leaving the throne to his young and by all accounts inexperienced son Psammetichus III. The last Saite king did not last more than a mere six months. Despite putting up a brave fight, meeting Cambyses in battle at Pelousion, the young king was vastly outnumbered and was captured and eventually executed. With him, the Saite period comes to an end, and Egypt was no longer independent (Perdu 2010).

2.3 Life in the Third Intermediate and Saite Period

If the period covered by the pottery in the first phase of the Wall of the Crow graves corresponds to the use of the cemetery from the late 8th century BCE through the Saite period, there is no denying that the population burying their dead in the shadow of the wall would have lived in an age of insecurity for Egypt. For the first seventy or so years (c. 730-656 BCE), this instability stemmed from the political fragmentation of the country. However, it is unclear to what extent the non-elite population of the Memphite region -- most likely the area from which the Wall of the Crow cemetery population was drawn -- would have been affected by the political situation in the country as a whole.

For most of the period in question, Memphis was governed by the local rulers from Sais. Even when Shabaqo dispatched Bakenrenef in 715, he merely installed a Nubian governor in Sais (Kitchen 2009:379). Thus, Shabaqo appears to have been content with ruling the northern parts of the country as more of an overlord than as a traditional king, leaving the administration mainly to the established local rulers (O'Connor 1983, Kitchen 2009:387). If anything, Nubian attention to Memphis as a royal city would have been beneficial to the region, reversing the decline effected by the move of the royal capital elsewhere during the late New Kingdom and Third Intermediate Period (O'Connor 1983). Nevertheless, even before the unification of the country under Psammetichus I, the immediate administration of the Memphite region would have fallen under the rulers of Sais, who in general appear to have bestowed a fair amount of stability on their northern kingdom. That being said, the sacking of Memphis by Piankhy in 728 BCE (Kitchen 2009:364), and again by Esarhaddon in 671 BCE (Kitchen 2009:392), would most likely have been felt by the local population. The general insecurity of the period can also be seen in the proliferation of fortified towns across the country, as well as the increased urbanization, driven in part by the movement from outlying villages to the relative security within town and temple walls (O'Connor 1983).

With the reunification of the country under Psammetichus I, internal fragmentation became an issue of the past. However, despite the centralized government and the Saite kings' secure grasp on the administration, Egypt was still under threat from abroad. Fortresses continued to be built or were maintained, both along the Libyan border and in the eastern delta, particularly along the Pelusiac branch of the Nile, and in Nubia. Even the palace of Apries was located inside a fortified military camp in Memphis (Smoláriková 2008:45-57).

Since the Saite kings generally managed to keep the foreign threat at bay, the main impact of the increased militarization of Egypt on the general population was probably the influx of foreigners. Although past Egyptian kings had also employed foreign mercenaries, never had the army been as dependent on foreign legions as under the Saites (Kienitz 1953:11-12). In addition to the Ionian and Carian mercenaries made available to Psammetichus by Gyges of Lydia -- many of whom had stayed on in the Egyptian standing army -- he also recruited Phoenician, Jewish, Arab and additional eastern Greek troops, and this development continued under subsequent Saite kings (Perdu 2003).

Beyond the military sphere, the merchants and artisans that followed the Greek troops in particular significantly contributed to the flourishing of the Saite economy (Vittmann 2003:209-212). Military camps with large numbers of foreigners were located throughout Egypt. Surely these military installations would have made an impact on the general population, not only as reminders of the foreign threat to Egypt, but also as nodes of interaction between Egyptians and the many foreign troops in the Saite government employ. Further, many of the foreign soldiers chose to remain in Egypt after retirement, mixing with the local population, and becoming increasingly acculturated (Masson 1978).

The settlement of foreign merchants and traders in Egypt was actively encouraged by the crown, as seen above in the case of Naucratis. The maintenance of such a large standing army, necessitated by the constant threat from abroad, was costly, and the expanded trade meant both direct income for the crown through the development of a mercantile fleet, as well as increased income through border taxes. The customs revenue was also maximized through financial reform, including a new and improved central customs authority. It has also been suggested that Amasis pioneered the personal income tax, though the evidence is somewhat unclear. If this type of tax was indeed implemented, it would have required an unprecedented amount of organization and may explain the rapid spread of demotic to the rest of the country from the north (Agut-Labordère 2013c).

As in earlier periods, temples remained important economic institutions in Egyptian society. Increasingly in the Saite period, however, they also became important centers for private enterprise. In part, this development may have been a result of the somewhat defensive foreign policies of the Saite kings which meant fewer prisoners of war. In more imperial periods, this group had been the primary basis of institutionalized agricultural work, a task that was now much more dependent on free farmers (Moreno Garcia 2008). For whatever reason, rights to land controlled by the temple domain appear to have increasingly transferred to private control. A great many contracts concerned with the leasing of temple lands survive from the Saite period, many of them between priests as lessors, treating the land as private property, and tenant farmers (Katary 2012b). Most likely, the priests received rights to the cultivation of temple lands as part of their remuneration. This enterprise would have benefitted the temple coffers, and by extension the crown, as well. Since only the parts of the temple domain given over to private holding were subject to *shemu* (harvest) tax, the practice allowed fields to be taxed that due to the lack of agricultural workers would otherwise have lain fallow (Agut-Labordère 2013c).

Another sector of private enterprise that arose in the Saite period was based in the necropoleis. It consisted of a guild of so-called choachytes -- *w3ḥ-mw*, or water-pourers in Egyptian -- who essentially functioned as funerary service providers (Vleeming 1995). For a fee, the choachytes would see to the proper burial of a mummy in one of the tombs they owned and operated, and take care of the funerary rites involved in the continued cult of the deceased (Donker Van Heel 2012:2-3). To some extent, it appears that the choachytes were indirectly involved in the leasing of land from the temple: a common way of paying for their services was to donate land to the temple on condition of the plot being made available for lease by the coachyte in question. Presumably, this was done to prevent the choachytes from ceasing services after the death of the customer (Agut-Labordère 2013c). Whatever the case may be, the many contracts preserved from the period show that many of the choachytes, at least in Thebes, were veritable entrepreneurs. Many of them translated the land made available to them into profitable business ventures as middlemen, while at the same time working in the shadow of the temple as funerary priests (Eyre 2004). Further, the business ventures were not restricted only to men -- several of the choachytes represented in the archives, both as funerary service providers and land lessors, were women (Donker Van Heel 2014).

Though the most complete Saite archives of these ancient entrepreneurs derive from the domain of Amun in Thebes, there is no reason to doubt that a similar development of private enterprise did not develop in the Memphite region. Considering the large land grants made to the temple of Ptah in Memphis and the Apis bull in Saqqara by the Saite kings, it is entirely possible that the northern choachytes were involved in the leasing of temple lands as well. Certainly, there were choachytes in both Giza and Saqqara. The most extensive northern choachyte archive derives from Ptolemaic Memphis (Thompson 1988). However, a stela dated to the reign of Psammetichus I, essentially a contract for coachyte services rendered in stone, was found by Mariette in Saqqara, suggesting that the guild was active in the Memphite region already during the Saite period (Donker Van Heel 2012:28). In addition, three demotic stelae were found by Petrie in the South Field at Giza in conjunction with his excavations of the Saite burials there, presumably dating from the same period. Petrie interpreted them as "marks for the districts of the cemetery where certain firms of undertakers had the right of burying." Interestingly, one of the stelae specifies the area as belonging to the "choachytes of the house of Osiris, lord of Rosetau," (Petrie 1907:29), perhaps suggesting that some of the choachytes would have been based in the village of Rosetau, which was associated with the temple.

2.4 The Roman Conquest

The Roman period of use of the Wall of the Crow cemetery, 1st-2nd century CE, roughly corresponds to the last half of the reign of Augustus (Octavian) (30 BCE- 14 CE) through the reign of Septimius Severus (192-211 CE). It is likely that at least some of the individuals buried in the cemetery even experienced Augustus' conquest of the country in 30 BCE. However, past the initial adaptation to Roman rule, the individual emperor in power was less important in terms of the situation in Egypt, since the policies implemented by Augustus remained more or less unchanged until the reign of Caracalla in the 3rd century CE (Capponi 2010).

In his *Res Gestae,* the propagandistic text detailing his accomplishments that Augustus left to the Senate upon his death, the annexation of Egypt is passed over in a single sentence: “'I have added Egypt to the ruling area of the Roman people”[4] (Herklotz 2012). Despite his seemingly laconic attitude, however, the reforms Augustus implemented had far-reaching consequences for Egypt. After their defeat at Actium in 31 BCE, Augustus’ rival Mark Antony and Queen Cleopatra, by then his wife, committed suicide to avoid being used in Roman propaganda. Augustus subsequently made his first, and possibly last,[5] appearance in Egypt in 30 BCE, where he addressed the people in Alexandria to mark the beginning of the new era (Capponi 2010). Initially, he portrayed himself as a benevolent conqueror, one that heralded a new era of peace, the *Pax Romana*. He inaugurated a cult to himself in Alexandria and visited the tomb of Alexander in Memphis. However, his visit to Memphis was also a harbinger of difficult times to come for the Egyptians. The young High-Priest of Memphis mysteriously died -- most likely at the hands of the Romans -- in conjunction with Augustus’ arrival in Egypt, and the emperor refused to make offerings to the Apis bull, famously stating that he was “accustomed to worshipping gods, not beasts” (Thompson 1990, Markovič 2015). Thus, the veneer of Roman benevolence wore off fairly quickly, giving way to a rather hostile and suspicious attitude toward Egypt (Peacock 2000).

Most importantly, Augustus was keenly aware not only of the importance of Egypt’s agricultural riches but also of its volatile nature. To be fair, the latter characterization of the Egyptian population probably had less to do with their anarchic tendencies than it did with the Egyptian reaction to the increased taxation and annexation of temple land by the Ptolemies, who had presided over an increasingly weakened empire plagued by internal strife, corruption and rampant inflation for centuries before the Roman conquest. Indeed, the later Ptolemaic rulers, including the illustrious Cleopatra, all owed their crown to Roman intervention, and Egypt had long been a protectorate of Rome (Lloyd 2000b). In particular, since the reign of Ptolemy IV in the 3rd century BCE, the city of Rome had become so reliant on Egyptian grain to feed its citizens that interruptions in its regular delivery could seal the fate of emperors (Peacock 2000).

Because of this long interdependence, Egypt was occupied by Roman forces already under Cleopatra. Since the reign of Ptolemy XI, who had been reinstated on the throne by the Romans after having been ousted from the country by an angry Alexandrian mob, the country had a Roman finance minister, installed by the Republic (Lewis 1983:12-13). Numerous Roman names are also attested in Egyptian documents well before 30 BC, many of them belonging to wealthy individuals. Recognizing that the presence of influential Romans could pose a serious threat to his authority, particularly as he had no intention of governing Egypt from within, Augustus took several unusual steps in setting up the Roman administration of the country. First, he limited access to Egypt by requiring senators and prominent equestrians to seek his permission before entering the country. Second, he made general travel both to and from the country contingent on carrying a passport (Capponi 2010). Finally, he broke with the tradition that only a roman of senatorial rank would be allowed to govern a Roman province by instead creating the title *Praefectus Alexandreae et Aegypti* (Prefect of Alexandria and Egypt), for the

[4] “*Aegyptum imperio populi Romani adieci*”, Loeb Classical Library 152, p 390-391

[5] It is possible Augustus visited Egypt again in 22 BCE, but the historical evidence is ambiguous.

eques[6] C. Cornelius Gallus, who reported directly to the emperor himself (Minas-Nerpel and Pfeiffer 2010).

Despite the sometimes drastic changes in government, Augustus kept many of the Ptolemaic titles for government officials, and Greek remained the administrative language of the country (Capponi 2010). The nome system was retained, each of the thirty nomes governed by a *stragegos*, or governor, who in turn reported to one of three, and later four, regional administrators -- the *epistrategoi* -- seated in Alexandria and answerable to the prefect, who essentially replaced the king in function (Jördens 2012a). Unlike in previous periods, however, the governors had no military power, and for the first two centuries or so of Roman rule, their ability to self-govern was essentially non-existent (Lewis 1983:16-17). In addition, appointment sto the higher offices were made not by the prefect, but by the emperor himself, and the duration of service was generally relatively short, between one to three years, most likely to prevent the development of local power-bases that could threaten the central administration (Jördens 2012a).

To secure the Roman takeover of the country, Augustus and later emperors relied on the army. Initially, at least three legions were garrisoned in Egypt: at Nikopolis near Alexandria, at Babylon in the vicinity of modern Cairo, and (most likely) in the Thebaid (Alston 1995:28). By 23 CE, only two legions remained (Haensch 2012). In addition, a large number of auxiliary forces were stationed throughout the country. Outside of providing security for the Roman state, the troops stationed in Egypt were also used in military campaigns outside Egypt, such as the Parthian war under Trajan. Like in pharaonic times, the troops were also engaged in mineral extraction in the eastern and western deserts, and a string of military forts along trade routes to the Red Sea suggest they provided much-needed security for the caravan trade as well (Peacock 2000). Many of the soldiers in the auxiliary units were Greek-Egyptian and remained in Egypt after concluded military service, when they received Roman citizenship. However, during their twenty-five proscribed years of service, they were not allowed to marry, though the state turned a blind eye to unofficial unions. The state did, however, jealously guard the access to Roman citizenship. Children fathered prior to their term of duty were considered illegitimate, could not inherit, and did not receive Roman citizenship. Not until the third century did these rules change, to allow Roman veterans to extend their citizenship to children born to them during their time of service (Alston 1995:136-142, Haensch 2012).

Because of their suspicious attitude to the Egyptian populace, the Romans instituted what can essentially be described as a segregation policy. The opportunity for upward mobility for native Egyptians and other foreign groups already present in the country (who were all lumped together under the indiscriminate label of "Egyptians") was severely limited (Lewis 1983:19). The Greek upper class were the only ones that could potentially obtain Roman citizenship, and then only by obtaining Alexandrian citizenship first, both contingent on the permission of the Roman emperor. Only the Greeks were allowed to participate in the administration, and native Egyptians were excluded from all but the very lowest division of the army (Capponi 2010). The

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[6] The *senatores* were the richest class in Roman society, their wealth mainly originating from agricultural landholding. In the time of Augustus, *senatores* were no longer required to be patricians, or nobility, but could come from a plebeian background, like the emperor himself. Membership in the equestrian class, (*equites*, sometimes called "knights,") was also measured by wealth, but the *equites* ranked below the senatorial class on the status scale (Garnsey and Saller 1987:112 ff)

greatest privileges were enjoyed by the citizens of the Greek poleis: Alexandria on the Mediterranean coast, Naukratis in the western Delta and Ptolemaios in southern Egypt, just north of Thebes. Under the reign of Hadrian (117-138 CE), a fourth such city, Antinoopolis, was founded in Middle Egypt, to celebrate the memory of his young lover Antinous, who drowned in the Nile at that spot (Lewis 1983:25). Citizens of these cities were for example completely excluded from the Roman poll-tax, leveraged on the Egyptian population (Jördens 2012b).

Outside of the Greek cities, a somewhat elevated status was also enjoyed by the *metropoleis*, or nome capitals, and particularly by their gymnasial class. While under the Ptolemies the gymnasium was a Greek social institution, a center of education and learning, the Romans made no such distinction. Regardless of ethnic background or level of education, those living outside of the Roman-designated Greek cities were considered Egyptians, period (Bagnall 1988). Nevertheless, because the Romans needed the help of the local upper classes to administer the nomes, they extended certain privileges to this urban elite. However, while the gymnasium under the Ptolemies had been a possible point of entry to the Greek community by ethnic Egyptians through Greek education and intermarriage, the Romans severely restricted access to both gymnasial and metropolite membership. Whereas the metropolite group initially was composed of both ethnic Greeks and Hellenized Egyptians, the Romans in the late 1st century CE limited admission to only those who could prove that both their father and grandfather were members (Vandorpe 2012). Likewise, admittance to the gymnasial class was only possible for children of previous members on both the mother's and the father's side (Van Minnen 2002), whose grandfather and great-grandfather were also members (Bussi 2008).

In addition to the urban elite, the priestly class also retained certain privileges. Most importantly, the priests had access to temple lands and also received limited tax-relief. However, the hereditary nature of the priesthood was abolished, and the Romans closely monitored access to priestly offices. The priestly and the urban elite formed networks (Hickey 2009), and membership in the two groups eventually became rather fluid, with several priestly families becoming subsumed also in the urban elite (Vandorpe 2012).

For the vast majority of the Egyptian population, however, Roman rule meant a significant reduction in status and life quality. For one thing, the Romans saw Egypt as a source of income, a view reflected in the changes in agriculture, where cash-crops like vineyards and olives were introduced, and in the significant increase in taxation of both individuals, lands and services (Milner 1992:159-160). The tax that likely had the most impact on the population was that of the poll-tax, *laographia*, which was levied on every male of the Egyptian population over the age of fourteen (Evans 1957). However, it was not so much the increase in official tax burden that changed, but the efficiency with which it was collected by the Romans, in contrast to the somewhat lax implementation by the weak Ptolemaic government in ages past (Lewis 1983:160). As the basis of the poll-tax, a national census was undertaken every 14 years (Bagnall and Frier 1994), while a cadastre, a register of land tenure, was meticulously kept for the purposes of revenue collection (Wallace 1938:6). In addition, the Ptolemaic system of corvée labor was maintained, reliant on the lower classes of the Egyptian populace (Manning 2003:49). The increase in taxation and compulsory labor often proved too much for the local population, who frequently fled their homes to avoid taxation -- despite heavy penalties -- or went on strike. In a few instances, even the emperors themselves reacted to the efficiency of the Roman tax collectors; Tiberius, for example, famously cautioned his prefect that he wanted his 'sheep' to be "shorn, not skinned alive!" (Capponi 2010).

Roman social and moral laws were also imposed on the Egyptian population, exacerbating the already significant fiscal and social barriers between the status groups. Augustus initiated the use of the *Gnomon* of the *Idios Logos*, essentially a handbook of Roman Egyptian law which details how Egypt should be governed, which persisted through at least the second century. Many of the surviving clauses regulate marriage, inheritance, and status; a number of the rules also pertain to the Egyptian population. For example: "Freedwomen of astoi[7] are not allowed to make wills, just as astai are not," "Marriage between Romans and Egyptians is [not] allowed," and "The children of a Roman man or woman who marries by ignorance an Egyptian, follow the lower status" (Rowlandson 1998-177).

These restrictions of the rights of the non-Roman population naturally led to resentment among the Egyptians, beginning already under the first prefect of Egypt, C. Cornelius Gallus, who had to suppress a number of revolts in the Thebaid (Herklotz 2012). The Egyptian population in general, and the Alexandrians in particular, developed a reputation among the Romans of being unstable, and the prefect Avillius Flaccus went as far as prohibiting Alexandrians from owning weapons (Capponi 2010). In Alexandria especially, religious conflicts between the Greeks and the Jews caused further conflict. A violent revolt by the Jews against Greeks and Egyptians, as well as the Roman government, broke out in 115 CE and lasted for nearly three years (Lewis 1983:30-31). Papyri preserved from the period tell of damages to fields and villages, shortage of food and labor, and a decline in trade, often in the voices of women, since the men were mainly away fighting (Capponi 2010).

By the time of the emperor Hadrian (117-138 CE), Egypt, as well as the Roman empire as a whole, had entered a period of grave crisis. Hadrian was thus forced to devote a significant part of his reign to travel across the empire, Egypt included, to quell the unrest (Capponi 2010). Under Hadrian's son, Antoninus Pius (138-161 CE), a further insurrection occurred in response to the oppressive taxation imposed by the Romans. It lasted more than a year, cost the Roman prefect in Alexandria his life, and even threatened the food supply of Rome (Lewis 1983:205). Even then, the Egyptian unrest was not over. Between 172-173 CE, another major revolt, known as the Bucolic war, broke out in the Delta, under the leadership of the Egyptian priest Isidorus. Though the Egyptians were eventually defeated by Avidius Cassius, the son of a previous prefect of Egypt, the war devastated the Egyptian economy and ushered in a period of economic decline. Cassius himself took advantage of the weakened grip of the Romans on Egypt when he in 175 CE allowed his troops to proclaim him emperor. On the arrival of the rightful emperor, Marcus Aurelius (161-180 CE), Cassius was deposed and killed, and peace was restored.

After a period of uncertainty in the Roman Empire proper -- including what became known as the 'Year of the Five Emperors' -- the victorious pretender to the throne, Septimius Severus (193-211 CE) personally visited Egypt in 202 CE, perhaps to ensure the stability of the region. His visit resulted in the creation, by imperial decree, of city councils in Alexandria -- whose citizens, unlike those of other Greek cities in Egypt, had been denied their own council for fear of their rebellious nature since the reign of Augustus -- as well as in the nome capitals

[7] *Astoi*: male citizens of one of the Greek cities. *Astai*: female citizens.

(Bowman 2005). Septimius Severus was also the first emperor to allow Egyptians admission to the Senate of Rome, at long last reversing one of the most segregationist tactics of Augustus. However, the last obstacle to Egyptian social mobility within the Roman Empire was not removed until the beginning of the 3rd century CE, when Severus' son, Caracalla, finally issued an edict extending Roman citizenship to all male adults of the Roman Empire in 212 CE.

2.5 Life under the Romans

With the Roman conquest, Egyptians became third-class citizens in their own country. As part of this hierarchic division, the Romans also put in place more or less apartheid policies, designed to limit the social mobility of native Egyptians. The segregationist policies also impacted the settlement patterns of Roman Egypt. Whereas it had been quite common for Greek immigrants to settle in the countryside during the Ptolemaic period, bringing with them Greek customs and institutions like the gymnasia, the Roman concentration of privileges in the *poleis* and *metropoleis* created a singularly urban elite, required to reside in the city (Vandorpe 2012).

Whereas under the Ptolemies ethnically Egyptian women, and by extension their future children of both sexes, could become part of the Hellenized classes by marriage, such intermarriages were actively discouraged by the Romans, who tightened the rules of entry to both the metropolite and gymnasial classes. Roman citizens, if choosing to marry Egyptian women, were not allowed to pass on their citizenship to their children, though there were sometimes allowances made for those who did so "by ignorance," illustrating how fluid the divisions between Greek and native Egyptians were in Roman Egypt (Vandorpe and Waebens 2010).

Though mainly aimed at preserving the "purity" of the Greek status, the Roman marriage bans had far-reaching social consequences for the Hellenized Egyptians (Capponi 2010). Most importantly, they caused a significant upswing in endogamy among the upper Egyptian (hellenized) classes, often to the extent of incest. Based on census records, it has been estimated that a full twenty percent of marriages among ethnically Greek Egyptians in the first two centuries CE were between brothers and sisters. Though brother-sister marriages did occur in earlier periods, most prominently in the royal families, it was nowhere near as common as in the early Roman period (Shaw 1992, Strong 2005). To what extent the Wall of the Crow cemetery population was affected by these developments is unclear; based on their humble graves and entirely Egyptian mortuary practices, they were probably not part of the Hellenized classes. Most likely, they cemetery population would have been drawn from Bousiris and other villages in the vicinity of the Giza Plateau; perhaps even from Memphis, some 18 km away, a city known for its multicultural population in earlier periods (Thompson 1988:82-85). The importance of the city of Memphis was significantly diminished compared to the pharaonic period, however. It had lost its position as the administrative capital of Egypt already under the Ptolemies, and under the Romans, the decline of the temples, particularly that of Ptah, further contributed to its diminished status. Nevertheless, it remained the second largest city in the country, and its busy port most likely brought in a stream of revenue for its inhabitants. Moreover, the animal cults, particularly that of the Apis bull, retained a large popular following, despite the Roman disdain for the worship of "beasts."

The Roman period brought significant changes to the economic system of Egypt. While many of the economic reforms had precedents under the Ptolemies, the Ptolemaic rulers governed a country in which they lived, while the Roman emperors saw the country as an asset to be exploited. Roman interference had some positive effects; trade was greatly expanded, for example, with several new ports established on the Red Sea coast, importing mainly luxury goods from India, such as pepper, silk, and pearls. However, this mainly benefited the Alexandrian elite, with the general population seeing very little of the proceeds (Capponi 2010).

The Romans also continued the confiscation of temple land begun by Cleopatra, which they either developed as imperial estates with high-yield cash-crops or farmed out to elites with ties to the emperor for life. Land previously belonging to the Ptolemaic crown was turned into "public" (state-owned) land, and at the same time private land-ownership significantly increased. Initially, the possibility of leasing state land contributed to a relatively equal distribution of land in the countryside. However, over time land ownership became increasingly stratified (Kehoe 2010).

Although slavery had become more common in Egypt throughout the Graeco-Roman period, it was mostly limited to the domestic sphere, and agriculture was, for the most part, carried out by free farmers, whose living conditions were often even more substandard than those of the slaves (Capponi 2010). Villages were communally liable for taxes on farmed land and were also responsible for providing corvée labor for public works such as the maintenance of irrigation canals and dykes. Thus, the Roman state actively discouraged population shifts and required the peasant class to remain in their place of origin. In lean years, farmers often abandoned their villages to evade these obligations, something that was actively opposed by the state, occasionally by force. In 215 CE, for example, the emperor Caracalla famously expelled all native Egyptians from Alexandria to make them return to their villages to perform their civic duties (Kehoe 2010).

In addition to the psychological impact of discrimination on the native population, the Roman period, particularly the 2nd century CE, was also a period of internal instability for Egypt. The country was ravaged by war during the Jewish revolt between 115-118 CE (which was preceded by longtime unrest in Alexandria), a second uprising in 152 CE over the oppressive taxation implemented by the Romans, and finally by the Bucolic war between 172-175 CE. Written sources suggest that the repeated insurrections had far-reaching consequences for the economy of the country, sometimes for several years after the conflicts (Capponi 2010).

We have already seen the limitations imposed on the social mobility of Egyptian women and their offspring through the Augustan marriage laws. However, Roman rule also meant severe restrictions on the legal rights of both Egyptian and Greek women. In pharaonic Egypt, women enjoyed rights virtually unparalleled in the ancient world. They were eligible to inherit property, could conduct business, and marry the man of their choice while simultaneously retaining the rights to their own property. In contrast, Greek women under the Ptolemies had -- officially -- hardly any legal independence, and were dependent on a guardian or *kyrios* to attend to any legal matters. Nevertheless, the Ptolemies respected and retained the Egyptian legal system alongside the Greek system, and recognized demotic Egyptian contracts as valid and legal. Not only did this preserve the legal independence of native Egyptian women, but it also opened up some exciting opportunities for Greek immigrants. Both men and women had a choice between Greek or Egyptian contracts, meaning that Greek women, too, were able to conduct business without the supervision of a guardian (Vandorpe and Waebens 2010). Thus, it is quite common to find women using two different names in official records, one Egyptian and one Greek, depending on the occasion (Vandorpe 2002).

After the Roman conquest, however, Greek became the official language of the administration, and thus demotic contracts were soon no longer recognized. Thus, Greek as well as Egyptian women were confined to contracts under Greek law, which required the assistance of a guardian, and put an end to their legal independence. This policy was less stringent for Roman women, who only needed a guardian's assistance in a limited number of cases concerning real estate and slaves. In addition, they could centirely escape the requirement provided they had borne at least three children, under the *ius triberum liberorum.* Nevertheless, the Roman law applied only to Roman citizens and did not make much of an impact on the lives of Egyptian women prior to the expansion of Roman citizenship by Caracalla in 212 AD (Vandorpe 2012).

Uniquely to Roman Egypt, documentary evidence of the composition of the population is preserved, in the form of the census returns. To date, some 850 records are known, drawn mostly from the urban population but also to some extent from smaller villages (Bagnall and Frier 2006). According to the census, life expectancy at birth was exceedingly low, in the low to mid-twenties for women, and the mid to late twenties for men, with extremely high child mortality (Scheidel 2012). Women married early, around the age of 12 or 13, while men generally waited until their twenties. Due to the high infant mortality, women bore many children, only a fraction of whom survived (Bagnall and Frier 1994:112-116).

It has been suggested that the environment of Egypt was particularly detrimental to the health of its population and that Egyptians were more unhealthy than other Roman subjects. The country was densely populated, with a hot climate subject to inundation and standing water, and a hotbed for both epidemics and endemic disease (Scheidel 2010). Comparative modern data suggest that the observed peak in deaths in spring during the Roman period may support this conclusion, since a similar pattern, due to various infectious diseases, was recorded for 16th to 19th century deaths along the Nile (Scheidel 2001:110). Of course, these conditions would have been true for earlier periods as well, and not limited to Roman rule. However, only from the Roman period, from the reign of Marcus Aurelius (161-180 CE), to be exact, do we have reliable documentation of a major disease outbreak -- the Antonine Plague. This epidemic, probably smallpox, had devastating effects on Egypt. Entire villages were depopulated, and as much as ten percent of the population may have perished. Following the plague, many of the urban centers continued to decrease in size for an extended period (van Minnen 2000).

To conclude, the image that emerges of life in Roman Egypt, at least for the native Egyptian population, from which the Wall of the Crow cemetery population most likely was drawn, is discouraging. The native Egyptians were discriminated against because of their ethnic background, heavily taxed, and with very limited opportunity for social advancement. Egyptian women had lost most of their legal and financial independence, and were prohibited from marrying "up." Moreover, for much of the period, the country as a whole was troubled by internal strife, and the Memphite area was in a state of decline. Finally, the Roman census returns paint a picture of a population under stress. Mortality, particularly for infants and children, was high, life expectancy low, and the peak of mortality in the spring suggests a high susceptibility to infectious disease. To cap it all off, the end of the period under consideration saw the effects of the Antonine plague, which may have reduced the population of Egypt by as much as ten percent. In short, life under Roman rule was hard.

Chapter 3: Mortuary Analysis and Bioarchaeology

3.1 Mortuary Archaeology

Common to all living organisms is the inevitability of death. Particularly in past societies, which lacked access to modern medicine, death must have been a constant presence, carrying with it the potential for intense emotional impact on the survivors. To mitigate the effects of death on those left behind and maintain societal stability, most human populations developed rituals surrounding the transition from life to death that carry meaning and expression (Huntington and Metcalf 1999; 23-24). Thus, it is not surprising that funerary assemblages and other material remains of past mortuary practice are some of the most commonly observed features of the archaeological record, particularly in Egypt. As such, the excavation, analysis and interpretation of mortuary sites have been a significant component of archaeological research since the earliest days of the discipline.

The roots of modern mortuary archaeology can be sought in the ideas of the two French sociologists Robert Hertz and Arnold Van Gennep, whose ethnographic surveys of non-western cultures were central to the development of universal theories about religion, cosmology and social structure (cf. Bartel 1982, Carr 1995, Parker Pearson 1999). Hertz' Death and the Right Hand (1960; originally published in French 1907) emphasized the necessity of studying mortuary practices within the context of social categories such as age, sex, and status, and proposed correlations between mortuary practice and economic activity, social status, and kinship (Hertz 1960 [1907]). Hertz attempted to demonstrate that mortuary rituals were directly affected by a society's particular social organization as well as by its ideology or worldview.

Arnold Van Gennep's The Rites of Passage (1960; originally published in French 1908) continued in the vein of Hertz' work by proposing three types of rites that characterize ceremonies marking life transitions such as birth, marriage, and death. Passages from one life stage to another, he argued, usually involve a process characterized by rites of separation (preliminal stage), rites of liminality, and rites of reintegration (postliminal stage) (Van Gennep 1960 (1908): 21). Preliminal mortuary rites such as the preparation of the body serve to separate the deceased from the world of the living and prepare it for the transition to the world of the dead. The liminal stage of mortuary ritual is taken up with the actual disposal of the deceased. Finally, postliminal rites comprise the terminal phase of mortuary ritual in which links between the deceased and the living are entirely severed. Such rites celebrate both the incorporation of the deceased into the sphere of the dead and the reconstitution of the social order among surviving members of society.

Nevertheless, because the works of Hertz and Van Gennep were published in French, they had limited impact on English speaking anthropologists, who took a decidedly more cautious approach to the analysis of mortuary remains (Rakita and Buikstra 2005). In particular, they were influenced by Alfred Kroeber, who in a seminal cross-cultural study on disposal of the dead concluded that burial rites "in their relative isolation or detachment from the remainder of culture, their rather high degree of entry into consciousness, and their tendency to strong emotional toning, social practices of disposing of the dead are of a kind with fashions of dress, luxury, and etiquette" (1927: 314). Thus, with a few exceptions (e.g., Bendann 1930, Gluckman 1937, Wilson 1939). Publications on the social aspects of funerary ritual remained scarce in the first half of the twentieth century, culminating in Ucko's (1969) influential paper on the limited utility of ethnographic analogies in mortuary analysis (Rakita and Buikstra 2005). However, in 1960, English translations of both Hertz' and Van Gennep's papers were published, and their ideas finally found traction outside of France. A large number of ethnographic studies (e.g., Elkin 1961, Forde 1962, Goody 1962, Miles 1965, Bloch 1971) were published in the 1960s and 1970s that drew on their work, both explicitly and implicitly (Rakita and Buikstra 2005).

3.1.1 Processualism: The New Archaeology

Herz' and Van Gennep's generalizations of mortuary behavior meshed well with the aims of the emerging Processual or New Archaeology of the 1970's. Proponents of the processual approach recognized early on that archaeological mortuary data provided some of the best opportunities to examine past social organization, and mortuary analysis became an essential element in middle range theory, the attempt to formulate general statements about past societies by linking the archaeological record to human behavior through the use of ethnographic analogy. Reacting to the inherently pessimistic view of the limits of archaeological inference current in the 1950s and beyond (cf. Hawkes 1954), the disciples of the New Archaeology instead adopted a positivist perspective, arguing that rigorous scientific methods, when applied to the material record, would permit access to all aspects of culture (Chapman and Randsborg 1981).

In mortuary archaeology, the two most influential works of this period were Arthur Saxe's dissertation "Social Dimensions of Mortuary Practice" (1970, unpublished) and Lewis Binford's article "Mortuary Practices: Their Study and Their Potential," which appeared in the SAA Memoir "Approaches to the Social Dimensions of Mortuary Practices" edited by James A. Brown (1971). Both were concerned with forming cross-cultural generalizations about socio-economic organization among past societies based on large sets of ethnographic data. Saxe's dissertation utilized formal analysis as well as role theory (e.g. social identity and social persona, cf. Goodenough 1965) to formulate eight cross-cultural hypotheses which he then tested statistically against ethnographic data from three societies: the Kapauku Papuans of New Guinea, the Ashanti of West Africa, and the Bontoc Ingorot of the Philippines (Chapman and Randsborg 1981, Rakita and Buikstra 2005). The most influential of these, Hypothesis 8, held that the introduction of cemeteries is a result of the efforts of corporate social groups to use descent from ancestors to legitimize the rights to and establish control over restricted resources (Saxe 1970: 119). In other words, Saxe posited that where land was scarce, formal burial grounds would emerge as a means to claim rights to local resources, while societies with fewer restrictions on space would dispose of their dead in a less formal manner.

Like Saxe, Binford (1971) utilized role theory to analyze a large set of ethnographic data, this time from the Human Relations Area Files (HRAF). To examine social complexity, Binford investigated seven commonly recognized dimensions of the social persona: age, sex, social position, social affiliation, and location and manner of death. He concluded that the number of social dimensions that were recognized and subsequently represented through funerary practices increased with complexity; the more complex a society, the more complex its mortuary programme. He also devoted a large section of his paper to a critique of the diffusionism of the culture-history approach, particularly Kroeber's (1927) view of the instability of mortuary behavior. Contra Kroeber, Binford argued that mortuary behavior and social organization were mutually dependent, as proven by ethnographic cases that "consistently link formal differentiation in mortuary rites to status differences and to differences in the group affiliation of the deceased" (1971:14).

Numerous other scholars drew heavily on the works of both Saxe and Binford, to the point that their processual perspective became known as the "Saxe-Binford program" to a generation of archaeologists (Brown 1995). One of the earliest adopters was James A. Brown, who used Saxe's formal analysis technique for his study of the dimensions of status at the Mississippian Spiro site, published in the same SAA memoir (which Brown also edited) as Binford's seminal article. Brown concluded that there was a definite correlation between the finest and most precious grave goods and individuals of high rank in the Spiro community (1971: 101).

The ideas of Binford and Brown were generalized and expanded upon in several subsequent studies to support the assumption that costly grave goods indicated individuals of high status (cf. Peebles 1974, Randsborg 1974, 1975, Shennan 1975). In the same vein, Tainter (1975a, b, 1978), formulated the term energy expenditure, arguing that the key element in identifying ranking and status in prehistoric societies is variation in the level of energy spent on various aspects of burial, such as preparation and disposal of the body and burial facility. However, Tainter (1978) also argued that quantity and quality of actual grave goods were less sensitive markers of social rank than more symbolic aspects of ritual. Despite this important distinction, however, the Saxe-Binford program has often been compounded with Tainter's expenditure scheme in what has become known as the effort-expenditure approach (cf. Brown 1981).

Saxe's conclusions were also expanded upon by Lynn Goldstein (1976, 1980, 1981), who restated his Hypothesis 8 in a more nuanced way. She found that while societies that claimed land- or resource rights through ancestral descent would regularly reaffirm those rights through ritual, a permanent and exclusive burial ground is but one mode of such ritualization. However, when such a burial ground exists, it most likely reflects affirmation of land- and resource rights through lineal descent (Goldstein 1981).

The Saxe-Binford approach -- as well as Goldstein's refinements of the former and Tainter's expenditure model -- was enormously influential, especially in Americanist archaeology, and several other publications in the following two decades (e.g., Chapman and Randsborg 1981, O'Shea 1984, Morris 1991, Beck 1995, Carr 1995, Kamp 1998) focused on the evolution, appraisal, and revitalization of the processual perspective (Rakita and Buikstra 2005). Some of these studies were particularly successful in advocating a positivist stance. Carr's (1995) thorough comparison of thirty-one non-state societies, for example, supported much of Tainter's original findings, adding that grave good quality (though likely not quantity) is also correlated with status (Carr 1995:178-180). Chapman's (1995) contribution to the edited volume "Regional Approaches to Mortuary Analysis" (Beck 1995) continued to emphasize the importance of spatial analysis of mortuary data in the reconstruction of past social organization. Such types of studies continue to form an essential part of archaeological research today and still represent the dominant methodological framework in Americanist archaeology for analyzing archaeological mortuary data (Rakita and Buikstra 2005).

3.1.2 Post-Processualism

Unlike processualism, post-processualism is not a single uniform paradigm. Rather, it is a variety of theoretical approaches, held together by the emphasis on subjectivity of archaeological interpretations. As a movement, it developed in the wake of processualism, mainly as a critique. However, while post-processual studies are similar in their criticism of the positivist approach, they represent a multiplicity of theoretical perspectives that consider the roles of gender, agency, and emotion in the formation of the mortuary domain.

In particular, post-processualists argue that the processual approach ignores ideology, and underestimates the role of context and cultural transformation in the interpretation of material culture, as well as the role of individual action, or agency, in the formation of the archaeological record (Hodder and Hutson 2004:1-4). According to post-processualists, society is a communicative medium, rather than an 'extrasomatic means of adaptation' (Shanks 2007).
More importantly, from the post-processual point of view, archaeology is inherently subjective and political, and any interpretation presented as scientifically "objective" ignores the socio-cultural biases and the political context of the interpreter (Leone et al. 1987, Shanks and Tilley 1987).

In terms of mortuary archaeology, the post-processualist stance argues against overly simplistic interpretations of mortuary behavior, pointing out that there is often significant variation in funerary rites within any given society, and that mortuary ritual is often used to manipulate the existing social relationships between members of society (Rakita and Buikstra 2005). Rather than merely a reflection of vertical or horizontal status, mortuary rites can also be influenced by a host of other factors, such as manner or cause of death, religious beliefs or seasonality (Shay 1985, Carr 1995).

Another essential component of post-processualist thought is theory of 'practice,' taken from the work of French post-structuralist Pierre Bordieu (1977). According to this view, societal roles are not pre-defined, but fluid and open to manipulation in various ways and for various reasons (Parker Pearson 1999:32-33). When applied to mortuary contexts, the post-structuralist approach, then, holds that funerary rites do not simply provide opportunities to reinforce the existing social order, but instead they are political, contested events where status is actively negotiated between living members of society (Parker Pearson 1999: 84-85).

Perhaps the most significant contribution of post-processual thought to mainstream archaeology is the recognition of "alternative histories" of marginalized groups. In particular, this theme within post-processual archaeology emphasizes multivocality and the empowerment of previously underrepresented groups and their claims to archaeological heritage. Arguably, the interest in alternative perspectives on the past started with feminist archaeology as a critique of androcentric assumptions in the construction of archaeological narratives and archaeological practice (Conkey and Spector 1984), and evolved to include not only a search for women in the archaeological record, but also the incorporation of feminist perspectives on gender and the role of women in past societies (Wylie 1996, 1997).

The recognition of gender as a cultural rather than biological construct has also opened up alternative ways of looking at the formation of selfhood in past societies that recognize the multivocality of gendered identities. Some studies have used contextual information to suggest the existence of third or other genders (Hollimon 1997, Weglian 2001), while others have challenged heteronormative assumptions about sexuality through queer theory (Voss 2000).

A natural continuation of gender archaeology has been the exploration of other components of social identity, such as age, ethnicity, self-representation, and disability. What many of these approaches to identity have in common is that they view the body as an additional aspect of material culture open to manipulation (Sofaer 2006). Social identity, it is argued, is largely performative, in that it is shaped not only by biological constraints, but also by 'acts of performance' such as manner of speech and movement, bodily modifications, behavior, or choice of dress or other material symbols (Butler 1993, Joyce 2007). Thus, performativity is in itself considered an agent of socialization, recognizable in the archaeological record through its relation to material objects. Performances do not occur in a vacuum, nor are they isolated events; identities are continually constructed through human interaction, and both choice and agency are required to acquire and maintain them (Diaz-Andreu et al. 2005:2-3).

The main impact of post-processual ideas on mainstream archaeology is probably the realization that no single model or paradigm can fully explain the past. Material culture is not merely the passive reflection of social practices, but an active component in its formation (Shanks and Tilley 1988:79).

3.2 Bioarchaeology

The term 'bioarchaeology' was first coined by Clark to describe zooarchaeological research (Clark 1972, 1973). While Clark himself defined the term as an "archaeology concerned first and foremost with life" (1973:464), his hypotheses pertained more to foraging strategies, environmental change, seasonality and residential patterns, as evidenced by mainly faunal, but also plant remains. Moreover, though he aimed to encourage inter-disciplinary study of prehistoric environments, the focus was on integration of specialist data in the archaeological narrative, rather than a collaboration between specialists and field archaeologists from the initial planning of a project through publication. His approach had a lasting impact in the UK, however, where faunal analysis is still included under the bioarchaeological umbrella, along with archaeobotany and human osteoarchaeology.

In contrast, the term 'bioarchaeology' has in North America taken on a slightly different meaning, after it was redefined by Jane Buikstra to refer specifically to the study of *human* remains from archaeological contexts. While other prominent scholars dismiss this reframing, and prefer the term "human osteology" for the study of human remains whether from archaeological or other settings (e.g., White et al. 2012: 1, 513), it is probably safe to say that the designation has today become the most common definition of the study of human remains from archaeological contexts. In her paper, "Biocultural Dimensions of Archeological Study: A Regional Perspective," Buikstra (1977) called for not so much a new field of study for the lone osteologist, but a comprehensive and multidisciplinary research program in which all participating scholars should be involved in both research design and execution. Influenced by the North American four-field approach as well as the ecological and population-based studies of the processual or "new" archaeology (Binford 1962), Buikstra outlined an approach that emphasized well-framed and problem-oriented research questions that combined methods, theory, and data from both biological anthropology and archaeology (Buikstra and Beck 2006, Knüsel 2010).

In the foreword to her recent edited volume, Buikstra lists the five main areas of bioarchaeological inquiry to include burial programs and social organization; daily activities and division of labor; paleodemography, including estimates of population size and density; population movement and genetic relationships; and diet and disease (Buikstra and Beck 2006: xviii). Her original definition went even further, and incorporated archaeological survey and ethnographic data collection as well (Buikstra 1977).

Increasingly, Buikstra, and those who subscribe to her definition of the field, have emphasized social theory and post-processual approaches in combination with osteological data, incorporating such themes as identity formation (Buikstra and Scott 2009), gender fluidity (Hollimon 1997), feminist perspectives (Geller 2008), liminality as expressed through mortuary behavior (Buikstra and Nystrom 2003, Buikstra et al. 2003) embodiment and materiality (Boyd 2002, Sofaer 2006, Robb 2007) and osteobiographical narratives (Robb 2002, Boutin 2011). In addition, recent years have also seen the publication of several volumes incorporating social theory and addressing social issues as evidenced by bioarchaeological remains (e.g. Gowland and Knüsel 2006, Stojanowski 2010, Agarwal and Glencross 2011, Baadsgard et al. 2011, Martin et al. 2012, Stodder and Palkovich 2012, Wrobel 2014, Tilley 2015).

Of slightly different emphasis is the research approach espoused by Clark Spencer Larsen. Larsen, whose 1997 book "Bioarchaeology: Interpreting Behavior from the Human Skeleton" (reprinted in a second edition 2015) is the closest thing to a textbook in the field, is arguably the scholar who besides Buikstra has had the most impact on the definition of bioarchaeology in North America. Like that of Buikstra, Larsen's bioarchaeology covers skeletal biology, paleopathology, dental anthropology, skeletal growth and development and isotopic and aDNA analyses, and both approaches are strongly interdisciplinary and employ similar methods of osteological analysis. However, where Buikstra's approach emphasizes the integration of archaeological data and theory with skeletal analysis, Larsen's focus is more science and laboratory oriented (Larsen 2002, 2006, 2015 and c.f. Buikstra 2006). He regards as essential to the development of the field in recent years "its comparative approach and its grounding in the scientific method and its approach to discovery and problem solving" (2015:xi). Like Buikstra, Larsen underscores the importance of context in bioarchaeological inquiry and recommends the "on-site presence" of a skeletal specialist during fieldwork for supervisory purposes (Larsen 2006:359). Nevertheless, his approach concentrates on hypothesis testing more than the establishment of an equal partnership between skeletal specialists and general archaeologists in the development of research design and the interpretation of contextual data.

Further, though Larsen's approach frequently draws on methods from other disciplines, it is distinctly processual, and sometimes dismissive of more recent trends in anthropological theory (Buikstra 2006). For example, though he acknowledges in passing that gender is a social construct, he continues that same sentence by asserting that "the jump from [biological] sex identification to social identity and behavioral inference is not a big one" (2002:145) -- a statement that would surely ruffle the feathers of most anthropological archaeologists. Followers of Larsen's approach often center their research questions around assessments of the biological adaptation of human populations, particularly in terms of health and diet (e.g. Cohen and Armelagos 1984, Goodman et al. 1992, Larsen and Milner 1994b, Steckel and Rose 2002, Cardoso 2007, Cohen and Crane-Kramer 2007, Brickley and Ives 2008, Saunders 2008).

There are more similarities than differences between the two approaches. Both grew out of the "New Physical Anthropology" advocated by Washburn (1951) during the height of the equally "New" archaeology (Binford 1962, 1971), both are strongly interdisciplinary and concerned with the contextual analysis of human remains. Thus, Buikstra's and Larsen's definitions can perhaps be seen as opposite ends of a spectrum that includes a multitude of perspectives (Knüsel 2010, Rakita 2014).

Recent years have seen significant growth in the numbers of practitioners, and thus by extension in the number of publications related to bioarchaeology. Since the publication of Larsen's 1997 book, for example, the number of peer-reviewed articles have increased almost seven-fold (Rakita 2014). Perhaps reflecting the maturation of the field, scholars have in the decades since the publication of the critiques by Bocquet-Appel and Masset (1982) and Wood et al. (1992) increasingly addressed concerns with the representativeness of samples as well as with interpretative issues.[8] Technological advances have also contributed to the proliferation of interdisciplinary research, covering topics such as isotopic reconstruction of diet and migration patterns (e.g. Cox et al. 2001, Dupras and Schwarz 2001a, Evans et al. 2006, Dupras and Tocheri 2007, Katzenberg 2012, Beaumont et al. 2013), aDNA, including pathogen aDNA (e.g. Brown 2000, Kolman and Tuross 2000, Spigelman et al. 2003, Zink and Nerlich 2007, Nerlich et al. 2008, Spigelman et al. 2012, Adachi et al. 2018, Nieves−Colón et al. 2018) and non-invasive imaging techniques (e.g. Cesarani et al. 2005, Allam et al. 2010, Wanek et al. 2012).

Though some scholars have seen the increased reliance on technological advances as encouraging a "recursion to an earlier descriptive past" (Armelagos and Gerven 2003:53) rather than promoting new perspectives, other reviews of the state of the discipline have been more optimistic, identifying a positive shift in theoretical thinking (Buikstra et al. 2003a, Hens and Godde 2008). As mentioned above, a review of the literature from the last decade indeed reveals a significant number of publications engaging with social theory.

However, it is important to remember that the "biological" in biological anthropology necessitates a data-driven approach; osteological analysis not anchored in raw data will never result in anything but pure speculation. Nevertheless, situated at the nexus between biology and culture, the human body is a unique archaeological resource. Though a purely "theoretical osteoarchaeology" may be a non-starter for most practitioners (but not all; see for example Sofaer 2006), the increased awareness among bioarchaeologists of post-processual approaches as well as of their own inherent socio-cultural biases has resulted in a shift in terms of the types of questions asked. Ethical considerations have become more prominent (e.g.,Walker and Larsen 2004, Lambert 2012), as has the inclusion of perspectives from multiple stakeholders (e.g., Blakey 2001, Hegmon 2003, Ousley et al. 2005). Contemporary bioarchaeology is also more commonly used to address social issues, such as violence and domestic abuse (Wheeler et al. 2013, Martin and Harrod 2015), care of the infirm (Tilley 2015) identity formation (Stodder and Palkovich 2012, Zakrzewski 2015) and the nature of childhood in the past (Perry 2006, Lewis 2007, Wheeler et al. 2011, Torres-Rouff and Pestle 2012). When grounded in the scientific analysis of skeletal material, then, the bioarchaeology of today has the potential to significantly improve our understanding of social processes and life in the past.

3.3 Mortuary Archaeology and Bioarchaeology in Egypt

Promising Beginnings

The archaeological record in Egypt is, by both accident and design, primarily a mortuary one. By accident, because continued occupation of the fertile flood plain have obscured many earlier settlements; and by design, because of the Egyptian belief system, which identified the western desert with death. According to Egyptian mythology, the desert was the location where the sun

[8] For an extended discussion of potential bias in age assessment, see section 9.2.5. For discussion of the osteological paradox, see section 4.1.11.

died every night. This view of the floodplain as the domain of the living and the desert fringes as the realm of the dead likely had practical origins as well, since agricultural land was a very limited resource. Whatever the reason, the location of the majority of cemeteries and tomb complexes in the arid desert, separated from the settlements on the flood plain, has resulted in far better preservation of mortuary contexts than domestic ones.

Accordingly, many of the early archaeological explorations of Egypt focused on funerary material. Arguably the first to employ scientific excavation methods was W. M. F. Petrie. Beginning in 1881, Petrie worked in Egypt for over 60 years, and excavated more sites than any other archaeologist. He was also a prolific author, and published detailed accounts of his work more or less annually Among the more significant sites he excavated were Amarna, Kahun, Naqada, Coptos, Naukratis, Memphis and Saqqara (Petrie 1885, 1890, 1894, Petrie and Quibell 1896, 1900-1901, Petrie et al. 1902-1904, 1907, Petrie et al. 1913, Petrie et al. 1923).[9]

Based on his excavations at Naqada, Petrie developed a chronology of early Egypt through sequence dating, using pottery and nondescript artifacts of types that had traditionally been ignored by other archaeologists in favor of more impressive ones. With some modifications (Kaiser 1957, Hendrickx 1996), Petrie's system remains in use today. Yet, the human remains uncovered during the excavations (Petrie excavated more than 2000 graves at Naqada, for example) scarcely get more than a few passing comments in his publications. Petrie was not indifferent to the use of human remains in research, but used them mainly as a means by which to prop up his own theories of the so-called "Dynastic Race," which he believed consisted of invaders from Mesopotamia who had invaded Egypt and inaugurated the sophisticated culture of dynastic Egypt. He was a proponent of eugenics, and sent a large number of skulls and some postcranial bones from his excavations to his colleagues at University College London, eugenics proponents Francis Galton and Karl Pearson, where they remain today (Sheppard 2010). Yet, in terms of mortuary archaeology, his approach was strictly a culture historical one.

One of Petrie's students, however, Guy Brunton, was among the first to use funerary data to address questions of social organization through his work at Qau (1927-1930), followed closely thereafter by George Reisner, working at Naga ed-Dêr (Reisner 1932). Both sites were multi-period, and both Brunton and Reisner used the burial data to argue for increasingly complex social organization. They also paid somewhat more attention to the human remains, even though their motives may have been questionable. Egyptology at this time still had strong racial undertones, and Reisner specifically stated in his communications with his donors that he was interested in the bones for purposes of determining race (Reisner 1905, cited in Kroenke 2010:14).

Both Brunton and Reisner hired anatomists; Douglas Derry (1874-1961) analyzed (but did not publish) the bones from Qau (Brunton 1923:1), and Grafton Elliot Smith (1871-1937) the remains from Naga ed-Deir (partially published in Lythgoe 1965). Both were medical doctors; Smith was the chair of the newly formed Department of Anatomy at the Cairo School of Medicine between 1900-1909, with Derry initially an Assistant Professor at the same institution, and later (in 1919) Smith's successor as the Chair (Baker and Judd 2012). At the time, the

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[9] For a complete list of publications related to human remains from Egypt, please refer to the exhaustive bibliographies by Rose (1996) and Sabbahy (2012). Only selected references are provided here.

analysis of human remains in Egypt was generally carried out by medical professionals (Aufderheide 2003:10).

Unlike their forebears, however, Smith and Derry, along with their contemporaries Frederic Wood Jones (1879-1954) and Marc Armand Ruffer (1859-1917) actually ventured to Egypt, with Smith, Jones and Derry even carrying out their own fieldwork as anatomists for the first Archaeological Survey of Nubia and elsewhere (Baker and Judd 2012).

Smith was the first of the three to excavate burials when he was enlisted by Reisner to work on the human remains from Naga ed-Dêr in 1902. He subsequently followed Reisner to Giza, where he worked in 1905-1906 prior to joining the Archaeological Survey of Nubia in 1907. However, already this early he was preoccupied with supporting his diffusionist ideas -- which would later in his career overshadow his work with human remains -- and left most of the paleopathological analyses to Jones so that he could concentrate on anthropometrics. Nevertheless, he did author the early reports on the Nubian work (1908a, 1909), as well as articles on fracture treatment (1908c) and the etiology of rickets (1908b), and the first comprehensive catalogue on the royal mummies in the Cairo Museum (1912). Most importantly, his familiarity with taphonomy, gained through years of actual fieldwork, allowed him to debunk several inaccurate conclusions by earlier scholars; he showed that lesions attributed to syphilis by Fouquet (1897) and Lortet (1908) were actually caused by beetle larvae, and refuted Petrie's (1896) allegations of cannibalism at Naqada (Smith 1907a, b). Jones accompanied Smith to Nubia in 1907 to assist with the archaeological fieldwork there, and published detailed contextual information on the Nubian burials in several articles in the British Medical Journal (1908a, 1908b), as well as in the Nubian survey monograph series (with Smith), in a volume dedicated specifically to the human remains (Smith and Jones 1910). His report on trauma from the Nubia expedition in particular (1910) was groundbreaking, as it contained not only contextual information but also relied on ethnographic analogies and modern comparative samples to explain the observed trauma patterns (Jones concluded that much of the trauma in the sample was due to male-on-female domestic abuse).

Derry is perhaps best known for his autopsy of Tutankhamen, the final report of which was published posthumously (1972). However, he spent a large part of his early career actually excavating the human remains he analyzed. Derry first joined Smith in the field at Giza to assist with the field documentation of Reisner's excavation projects there. Subsequently, he published several articles based on analyses and dissections of many additional samples of Egyptian human remains (1906a, 1906b, 1907, 1912). Notable is also his examination of a group of male skeletons discovered by Winlock in Deir el Bahari in 1923. Based not only on the high level of trauma in the sample, both healed and perimortem, but also on evidence for scavenging by animals, mortuary treatment that suggested hasty burial, the absence of females, weapons found with the bodies and other contextual information, Derry concluded that the tomb belonged to a group of soldiers who had perished on the battle-field (Winlock 1928).

Although Ruffer, a Professor of Bacteriology at the Cairo Medical School, conducted most of his work within the confines of his laboratory rather than in the field, he was a pioneer in paleopathology. He developed a histological method for rehydrating mummified tissue still in use today, and was the first to identify schistosomiasis in an Egyptian mummy. His collected papers were published posthumously in 1921 as "Studies in the Palaeopathology of Egypt," and had an immense impact of the field of paleopathology (Sandison 1967).

The work of these four anatomists laid the basis for the development of population-based studies and contextual analysis of human remains in Egypt. Though a large portion of their work centered on determining racial affinities and biodistance, as was common at the time, they pioneered a broader, synthetic approach to human remains. All four published comparative studies of disease loads through time that also paid attention to contextual data and ethnographical analogies (Baker and Judd 2012).

Mortuary Archaeology in Egypt

Considering the promising beginnings of contextual studies of cemetery data, it is surprising that so few studies addressed the social implications of mortuary behavior until the last two decades of the 20th century, and then with little attention paid to the actual bodies, aside from the inclusion of assessment of age and sex in the analyses. With the exception of Brunton's (1948) report on Matmar, comprehensive mortuary studies on Egyptian material was conspicuously absent until the 1980's, when the development of processual archaeology inspired several large-scale studies on the rise of dynastic civilization in the Nile Valley (e.g. Atzler 1981, Debono and Mortensen 1988, 1990, Engles 1990, Bard 1994). Many of these studies were strongly influenced by the processualist school of thought, often employing large-scale statistical analyses of grave good inventories, and/or spatial relationships between burials within cemeteries in order to detect traces of emerging social inequality and stratification. Examples include Anderson's (1989, 1993) study of Badarian social inequality, Bard's (1987, 1988, 1989) analyses of Nagada-period cemeteries, Savage's (1997) spatial analysis of the large predynastic cemetery at Naga-ed-Der, Griswold's (1992) study of social inequality at Armant, and Ellis' (1992) study of protodynastic burials at Kafr Tarkhan.

Perhaps because of the importance placed on issues surrounding state formation in anthropological archaeology, the vast majority of large cemetery studies in the 1980's and 1990's dealt with the earlier periods of Egyptian history, for which no contemporary literary sources exist. In addition, tradition in Egyptology holds that historic periods are better left to specialists (i.e., Egyptologists), who have been largely unconcerned with anthropological theory (Guksch 2005, Richards 2005:69). There are a few exceptions to this rule, however; for example Kanawati's (1977) energy-expenditure analysis of Old Kingdom tomb construction, and O'Connor's (1974) study of First Intermediate period demographic patterns. Further, Richards (1992, 2005) used processualist methodologies to study social differentiation in Middle Kingdom cemeteries, while Wada (2007) conducted an energy-expenditure analysis of New Kingdom provincial tombs.

If processual approaches to Egyptian mortuary material are meager, fewer still are the studies that employ an interpretative or post-processual framework to the analysis of mortuary data. From the predynastic period, Hassan and Smith's (2002) study of gendered patterns in grave good distribution at the cemeteries of Naqada, Matmar and Moustagedda is one example, along with the work of Stevenson on performativity, identity and the aesthetics of burial at the cemetery of El Gerzeh (2007, 2008, 2013). In terms of the dynastic period, Meskell's work on the material from Deir el Medina (1994, 1998, 1999a, b, 2000, 2001) stands relatively alone, along with a dissertation on a small sample of Third Intermediate Period elite female burials from Medinet Habu (Li 2010). In addition, some recent publications have applied an interpretative methodology to specific classes of funerary artifacts (Pinch 2002, Cooney 2007, 2010, Näser 2013). Montserrat and Meskell also collaborated on a study of the religious landscape and mortuary assemblages from Greco-Roman Deir el Medina (1997), though most scholarly works on Roman or Greco-Roman period funerary assemblages that address post-processual themes such as identity formation or gender take an art-historical perspective (e.g., Riggs 2002, 2005, Jimenez 2014).

The problem with many of the studies of dynastic and later period data, however, is that they tend to focus on the burials of the elites, thus limiting their usefulness to researchers interested in the full spectrum of Egyptian society. The traditional scholarly preoccupation with elites has long plagued Egyptology, especially during the infancy of the discipline, when cemetery excavations focused mainly on high-ranking burials while disposing of less impressive remains. Other factors such as preservation and spatial variation in elite and non-elite burial areas continue to play a role in the differential recovery of ancient Egyptian mortuary data.

Bioarchaeology in Egypt

Although mortuary archaeology has long been a focus of Egyptian archaeology, actual skeletal remains have historically had a very marginal role, often being disposed of without, or after only cursory study. Even in the later large-scale cemetery studies listed above, human skeletal data were very rarely integrated beyond age and sex assessments. When the human remains were thoroughly studied, the results of the analysis were often relegated to an appendix, or presented as a separate chapter of a monograph, without any attempt at integrating the findings with other contextual information -- an approach that continues until present day (e.g. Strouhal and Bareš 1993, Bentley 1999, Dunand et al. 2005b, Kaczmarek 2008).[10]

The dearth of osteological analyses is somewhat surprising, considering the role of Egyptian skeletal material in the development of the sub-discipline of paleopathology (Armelagos and Mills 1993). However, just like the medically trained men of the early days of Egyptian archaeology contributed to the development of contextual studies of human remains, they also laid the foundation for the bifurcation of the discipline into Egyptological and bioanthropological specialties. Very rarely do the researchers who analyze the human remains from Egyptian archaeological sites have any training in Egyptology,[11] thus precluding the direct use of textual sources and other Egyptological resources. Furthermore, the varying backgrounds

[10] Exceptions exist; notable are for example the reports on the predynastic cemetery at Adaima, which include discussions on evidence for human sacrifice (Crubézy and Midant-Reynes 2005), the bioarchaeology of childhood (Crubézy et al. 2008), and evidence for gender division in labor (Crubézy et al. 2002).

[11] There are some exceptions to this rule; see for example Podzorski's work on the burials from Naga ed-Dêr (1990; 1993), Kozieradzka-Ogunmakin's studies of burials from Saqqara (2013), and Austin's (2014) recent dissertation on health at Deir el Medina. And, of course, the present study.

of bioarchaeological researchers in Egypt (biology, osteology, and medicine for example) have created a lack of a common starting point for bioarchaeological research, and it is difficult to get a complete overview of available data. In addition, full integration of bioarchaeological and Egyptological data is somewhat problematic, since scholars with a background in biology or anthropology are often to some extent isolated from the existing network of Egyptologists and archaeologists.

This separation between Egyptological and bioarchaeological research goals is reflected in the ample body of literature on the paleopathology of the ancient Egyptians, which remains largely descriptive, and rarely considers any wider social implications of functional impairment or compromised health (e.g. Hagedorn et al. 2001, Ciranni et al. 2005, Zink and Nerlich 2007; for an exhaustive bibliography see Rose (1996) and Sabbahy (2012), Kozieradzka-Ogunmakin 2011, Kumar and Tubbs 2011, Metcalfe et al. 2014, Prates et al. 2015, Stark et al. 2015).

Another inheritance from the racially motivated population approaches of early Egyptological work is the preoccupation with the biological affinity of the ancient Egyptians, which continues in a modified form until the present day, albeit with more nuanced research goals. While early studies of cranial morphology sought to explain the rise of Egyptian civilization with immigration of a more ‘civilized’ population from Western Asia (e.g. Smith 1915, Morant 1925, Derry 1956), more recent studies generally view the pharaonic state as an indigenous development (see for example Berry and Berry 1972, Keita 1990, 1992, Brace et al. 1993, Zakrzewski 2007). Similar results have been obtained through dental trait analyses, which also suggest that the Egyptian population remained fairly genetically stable from prehistory through the dynastic period and beyond, with only limited genetic contribution from regions outside the Nile Valley (e.g., Greene 1972, Irish 2006, Schillaci et al. 2009). Again, the literature is highly specialized, and refers very sparingly to any archaeological data, further exemplifying the division between bioanthropology and Egyptology/archaeology.

A call for better integration of biological and archaeological data was put out in 1990, through the international colloquium “Biological Anthropology and the Study of Ancient Egypt,” which was held at the British Museum and co-sponsored by the Bioanthropology Foundation (now Institute for Bioarchaeology). The event resulted in an edited volume (Davies and Walker 1993) containing the majority of papers presented at the meeting, including an overview of the contributions of Egyptology to paleopathology (Armelagos and Mills 1993), a synthesis of dental anthropology in the Nile Valley (Rose et al. 1993), a biocultural correlation of skeletal remains and funerary artifacts from Naga ed-Dêr (Podzorski 1993), a call for more rigorous methods of paleopathological diagnosis (Buikstra et al. 1993a) and a proposal for future directions of Egyptian bioarchaeology (Rösing 1993). The volume also included contributions from zooarchaeology and paleobotany, histology and DNA analysis.

As part of the general theme of encouraging better communication between researchers from different disciplines working in Egypt, the British Museum colloquium also identified an urgent need for a comprehensive bibliography, drawing together the disparate sources related to human remains research in Egypt. This need was met by the compilation of the bibliography on the bioarchaeology of Ancient Egypt and Nubia (Rose 1996), which grew out of the colloquium and was subsequently published in the British Museum Occasional Papers series.

A further attempt at contextualizing bioarchaeological research in Egypt was the contribution by Baker to the 1997 volume "Egyptology and Anthropology: A Developing Dialogue," edited by Lustig. Baker highlights the improved understanding of living conditions and behavior made possible by the integration of bioarchaeological data in the analysis of a non-elite population at Abydos and stresses the importance of incorporating biological anthropology into archaeological research design.[12]

Laudable as the efforts of Davies, Walker and Baker may be, they did not herald a noticeable upsurge in biocultural approaches to Egyptian archaeological datasets in the following years, in terms of integration of biological and archaeological data, or in terms of cross-disciplinary collaborations. In particular, publications dealing with the study of mummified remains and/or paleopathology continue to the present day to be largely descriptive, though this is by no means a development unique to Egyptian bioarchaeology (Armelagos and Gerven 2003).

To that end, the call for increased collaboration was renewed in 2010, in the form of the "Conference on Human Remains in Ancient Egypt (CHRAE)," co-sponsored by the American Research Center in Egypt, the American University in Cairo, and the Institute for Bioarchaeology (formerly the Bioanthropology Foundation) and co-organized by the author with Salima Ikram and Roxie Walker. In addition to encouraging dialogue between bioanthropologists, archaeologists and Egyptologists, the aims of the conference were to include Egyptian researchers, who may have limited opportunities to present their work at international conferences in Europe and North America, and the conference was therefore held in Cairo. Themes that emerged from the conference were the importance of a standardized methodology to facilitate comparative analyses, a call for improved curation of excavated skeletal material, and the need to move the results from skeletal analyses from the appendices toward integration in the publication of cemetery studies.

However, due to the events culminating in the first Egyptian revolution in 2011, the impact of the conference was limited. For that reason, a second conference, "Bioarchaeology of Ancient Egypt (BAE)," was held in 2013, sponsored by the same institutions, and also supported by a generous grant from the Wenner-Gren Foundation. In addition to human remains, the BAE conference also included sessions on zooarchaeological and paleobotanical remains. Topics covered in the more than 75 podium and poster presentation ranged from reports on ongoing excavations, paleopathological case studies, presentation of recent analytical techniques (histology, laser-induced breakdown spectroscopy, stable isotope analysis and aDNA extraction and analysis), reconstruction of food production and diet from faunal and botanical remains, evidence for human sacrifice, textual, iconographic and skeletal evidence for the treatment and execution of prisoners, and the functional impact of dwarfism. Again, many of the papers emphasized the need for greater dialogue and integration of archaeological, Egyptological and biological data.

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[12] In her chapter, Baker also provides an excellent overview of the development of bioarchaeology in Sudanese Nubia, which has had a different, and more inclusive trajectory than Egyptian bioarchaeology, possibly due to the limited textual sources from the region, and, by extension, the resulting limited reach of Egyptology. See also Larsen (1997:157-158) for a brief overview of bioarchaeology in Nubia.

Several of the papers presented at the conference were collected in an edited volume: "Egyptian Bioarchaeology: Humans, Animals and the Environment," published early this year (Ikram et al. 2015). This volume, though still containing several largely descriptive reports on ongoing fieldwork, does inspire some cautious optimism in terms of the current state of Egyptian bioarchaeology. A fair number of the contributions take a truly contextual approach to bioarchaeological research: Wahba utilizes both historical, archaeological and textual data to aid in the identification of the skeletal remains found in the recently discovered queen's pyramid in the Teti cemetery in Saqqara, Dabbs and colleagues consider evidence from the nearby settlement as well as the impact of the landscape on health and nutrition in their analysis of the non-elite burials at Amarna, Zakrzewski discusses how bioarchaeology can aid in synthesizing multiple aspects of identity that are both socially and biologically constituted, and Dupras and colleagues draw together textual, iconographic, historical and skeletal lines of evidence to investigate birthing in Roman period Dakhleh Oasis.

The Dakhleh Oasis Project also stands out as a shining example of successful biocultural and interdisciplinary research. This is partly because the mission retains a permission for isotopic study of the human remains -- granted several decades ago, before such permissions became nearly impossible to obtain -- but also because its bioarchaeologists are involved with the research design of the project all the way from planning through publication. Bioarchaeological publications resulting from ongoing research at Dakhleh have included contextual and interdisciplinary investigations of ancient diet (Dupras 1999), infant weaning and feeding practices (Dupras et al. 2001, Dupras and Tocheri 2007), migration (Dupras and Schwarz 2001a), biodistance based on dental traits (Haddow 2012), seasonality of fertility and health (Williams 2008), childhood (Wheeler 2009, Wheeler et al. 2011), child abuse (Wheeler et al. 2013) and childhood nutritional stress (Fairgrieve and Molto 2000, Wheeler 2012b).

Outside of the Dakhleh Oasis, pickings are considerably slimmer. Though there is no shortage of descriptive paleopathological analyses (e.g., Dequeker et al. 1997, Mulhern 2005, Kozma 2008, Dupras et al. 2010a, 2010b), biocultural approaches are rarer. They do exist, however, and include the application of modern techniques such as stable isotope analysis to address questions of diet (Iacumin et al. 1996) and migration (Buzon and Simonetti 2013), and genetic analyses to examine population composition and movement (Lucotte and Mercier 2003b, Keita and Boyce 2005). Other studies take a biocultural approach to the investigation of ancient health using skeletal (Buzon 2006, Duhig 2009) or dental (Lovell and Whyte 1999, Starling and Stock 2007) stress markers, investigate the effects on human growth of the development and intensification of agriculture (Zakrzewski 2003), and utilize dental and cranial non-metric traits to examine endogamy in the Egyptian predynastic (Prowse and Lovell 1996).

In addition to the journal publications cited above, another promising development is the growing number of dissertations using a bioarchaeological approach to address aspects of health (Duhig 2000, Kumar 2009), diet (Greene 2006), activity patterns (Zabecki 2009), paleodemography (Batey 2012), state formation (Buzon 2004) and healthcare (Austin 2014). These are in addition to the theses on the material from Dakhleh discussed above (i.e., Dupras 1999, Williams 2008, Wheeler 2009, Haddow 2012). Clearly, the bioarchaeological approach is gaining momentum in Egypt. The present study, then, is in good company, joining those of other emerging scholars interested in contextualizing the rich skeletal evidence from ancient Egypt through analyses integrating biological, archaeological, historical, iconographical and textual evidence from Egypt's long and diverse history.

Chapter 4: Bioarchaeology and Mortuary Analysis at Giza

4.1 Stress, Disease and Populations

To refer to a paleopathological study of a skeletal assemblage as an investigation of the health of an ancient population can be misleading (Waldron 2009: 20). The vast majority of diseases – even the terminal ones – attack soft tissues only, and leave no marks on the skeleton at all (Waldron 2009: 1, White et al. 2012: 432). In addition, similar skeletal lesions may have very different etiology, and it is often difficult to determine an exact cause for bone abnormalities (White et al. 2012: 432). For these reasons, the present study concentrated on skeletal markers that suggest episodes of generalized physiological stress, defined as "measurable physiological disruption[s] or perturbation[s] that [have] consequence[s] for individuals and populations" (Goodman and Martin 2002: 12) and not the specific diagnosis of the underlying causes. Indeed, for some research questions involving the general quality of life of an ancient population, it is not the exact causes of individual infirmities that are of greatest importance, but rather the level of systemic stress in the population as a whole over time.

To assess the general stress of the Wall of the Crow skeletal sample, six non-specific stress markers (linear enamel hypoplasia, cribra orbitalia, porotic hyperostosis, degenerative joint disease, skeletal trauma and general infections) were scored closely following the criteria developed for the Global History of Health Project (GHHP) by Richard Steckel and colleagues (2002, 2006). In addition, the prevalence of periosteal new bone formation was calculated but treated separately. Each stress marker is discussed in more detail below, while the specific scoring procedures are outlined in Chapter Nine.

4.1.1 Linear Enamel Hypoplasia

Enamel hypoplasias are defects in dental enamel caused by disruptions during amelogenesis. They are generally believed to most commonly be the result of episodic nonspecific metabolic and nutritional insults (Goodman et al. 1987, White et al. 2012: 455-456). Hypoplastic lesions can appear as pits, grooves or areas of missing enamel (plane defects) (Hillson 2005: 169-170). As the chronology of pit and plane defects is difficult to determine without histological examination (Hillson 2005: 174), only linear enamel hypoplasias were considered for the present study.

Linear enamel hypoplasias are particularly important in archaeological materials, as they provide a record of stress episodes during childhood, when the teeth were formed, which is permanently preserved, when not worn away, as linear defects in the adult dentition. By matching the location of the hypoplastic lines on the teeth with the tooth crown formation timetable (Ubelaker 1999: Figure 62), it is possible to estimate the developmental age at which the stress episode occurred. When deciduous teeth are taken into account, periods of systemic stress can be identified prenatally to approximately 7 years of age (Goodman and Martin 2002).

Studies of linear enamel hypoplasia prevalence in modern populations suggest that defects are more common among children from disadvantaged groups, particularly those under high nutritional stress (Goodman et al. 1987, Goodman et al. 1991, Zhou and Corruccini 1998).

However, since hypoplastic lines in the enamel represent periods of stress in an individual who *survived* and resumed normal enamel formation, general conclusions about the health of a population based on these defects are problematic. Linear enamel hypoplasias generally take time to form, and are likely the result of disturbances that last between several weeks to a few months (Rose et al. 1985). It is possible, then, that weaker individuals would have died before defects had time to form, and that the adult individuals in a skeletal population that exhibit hypoplasias actually represent a healthier subset of the population; those that during childhood could withstand prolonged episodes of nutritional or metabolic stress without succumbing (Wood et al. 1992; and see below under 3.1.11 for further discussion).

If individuals with enamel defects indeed represent the more resilient members of the population, it stands to reason that a skeletal sample with a high prevalence of enamel defects among adults should also be characterized by high childhood mortality (i.e., non-survivors) due to elevated stress (King et al. 2005). Unfortunately, determining childhood mortality levels from skeletal samples is also a problematic undertaking, since any inferences drawn directly from the number of subadults in the sample assumes a stationary population (Wood et al. 1992). In a non-stationary population, the percentage of subadults is more likely to be informative of fertility levels than mortality (Sattenspiel and Harpending 1983, Paine and Harpending 1996, McCaa 1998).

However, a growing body of research suggests that elevated stress levels during infancy and childhood may have long term consequences for both health and mortality (Barker and Osmond 1986, Goodman 1996, Humphrey and King 2000, Cameron and Demerath 2002, Armelagos et al. 2009). Indeed, several studies have found that adult individuals with enamel hypoplasia, when pooled, have a significantly lower mean age of death than adults without defects (Rose et al. 1978, Goodman and Armelagos 1988, Duray 1996, Goodman 1996, Palubeckaite et al. 2002). Other studies have compared linear enamel hypoplasia prevalence between different age categories and found higher rates of enamel defects in subadults than adults (Rudney 1983, Simpson et al. 1990, Šlaus 2000), or in younger adults compared to older individuals (Stodder 1997), suggesting that linear enamel hypoplasia is indeed indicative of poor health, at least in these populations. To that end, prevalence of linear hypoplasia in the Giza sample was compared not only between males and females and adults and subadults from the two phases, but also between narrower age groups. In addition, mean ages were calculated and compared for adults with and without enamel defects. (Power and Manor 1995)

Poor childhood nutrition and environmental stress are often cited as a determinants for shorter adult stature (Kuh and Wadsworth 1989, Power and Manor 1995, Alderman et al. 2006, Deaton 2008), and have also been linked to growth deficits during childhood (Pinhasi et al. , Vercellotti et al. 2014). However, the relationship between adult stature and stress is complicated by several factors. Improvement in nutrition and environmental factors in later childhood can mitigate earlier growth disruptions through catch-up growth (Larsen 2015:24). In addition, final adult height in populations with high childhood mortality may show the reverse relationship due to survivor bias (Friedman 1982, Bozzoli et al. 2009, Gørgens et al. 2012), because mortality was higher in stunted individuals that experienced higher levels of stress in early childhood, thus selecting for tall individuals to survive into adulthood (see section 4.1.9 for discussion).

Since linear enamel hypoplasia serves as a permanent record of childhood stress in adult dentitions, the defects can be used to identify adults who survived episodes of childhood stress. To examine whether or not these episodes affected final adult stature, either by selecting for taller individuals or by negatively affecting adult attained height, the average stature of individuals with and without linear enamel hypoplasia was compared.

4.1.2 Porotic Hyperostosis

The term porotic hyperostosis was introduced by Angel (1966) to describe the cranial porosities, expansion of diploë and thinning of cortical layers often manifest on the cranial vault bones, mainly the parietals, in skeletal materials (Ortner 2003: 371-372). Porotic hyperostosis has traditionally been attributed to iron deficiency anemia (El-Najjar et al. 1975, 1976, Lallo et al. 1977, Von Endt and Ortner 1982, Grauer 1993, Salvadei et al. 2001), but a recent study by Walker and colleagues (2009; but see Oxenham and Cavill [2010] for a response) suggests that hemolytic anemias may be more likely as causal agents of the condition, and that the lesions are a result of increased red blood cell (RBC) production causing marrow hypertrophy. In contrast to iron deficiency anemia, in which insufficient iron levels prevent the production of red blood cells, hemolytic anemia instead occurs when the cells perish before their normal lifespan of approximately 120 days is over (Andruschko 2007: 110-112). Hemolytic anemias may be inherited and/or genetic (sickle-cell anemia or thalassemia are two examples). More commonly, they result from nutritional deficiencies, such as a lack of Vitamin B12 and folate (Antony 1995, Waldron 2009, Walker et al. 2009). Other causes of the condition are chronic diarrhea due to bacterial infection (Walker 1986) and parasitic infestations (Bathurst 2005). Because the vast majority of anemias are acquired, presence of the condition in skeletal remains may suggest poor and unsanitary living conditions, as well as inadequate nutrition in a population.

4.1.3 Cribra Orbitalia

Much like porotic hyperostosis, cribra orbitalia presents as pitting and porosity caused by marrow hypertrophy. As the name suggests, the lesions are located in the orbital roof (Waldron 2009:137). As in the case of porotic hyperostosis, cribra orbitalia has traditionally been linked to iron deficiency anemia (Angel 1966, Stuart-Macadam 1985, 1987a, b, 1992, Grauer 1993, Fairgrieve and Molto 2000), which again is problematic, because this condition does not cause sufficient reduction in the life-span of the red blood cells for marrow hypertrophy to occur (Waldron 2009: 137). Another common interpretation of the condition in juvenile skeletons is as a marker of weaning stress (Fairgrieve and Molto 2000). However, recent studies (Wapler et al. 2004, Walker et al. 2009) have shown that cribra orbitalia may have more to do with inflammations in the orbital bone or malnutrition and vitamin deficiencies (particularly of vitamin C) than with anemic responses. Hence, it may be best to view the condition as a general stress indicator rather than a specific nutritional deficiency.

4.1.4 Osteoarthritis/Degenerative Joint Disease (Synovial Joints)

Joint disease is by far the most common form of pathological lesion encountered in archaeological skeletal material. The condition is usually divided into proliferative and erosive joint diseases, with osteoarthritis belonging in the former, non-inflammatory group, and inflammatory conditions such as rheumatoid arthritis, gout, and ankylosing spondylitis belonging in the latter (Waldron 2012). Generally, this division distinguishes between conditions resulting in abnormal bone formation (proliferative lesions) and bone destruction (erosive lesions) (Ortner 2003: 561). There is also a form of erosive osteoarthritis which bridges the gap between the two groups (Waldron 2012), but it is very uncommon (Ortner 2003: 561), as is the whole group of erosive arthropathies, which are unlikely to affect more than 2%, perhaps less, of the population (Waldron 2012). Thus, the vast majority of joint disease in an archaeological material is likely to be proliferative.

Clinically, osteoarthritis affects the synovial (freely movable) joints only, and the amphiarthroses of the intravertebral joints should be evaluated separately (Jurmain 1999: 12). Symptoms of synovial osteoarthritis typically include osteophytic growth, pitting, and new bone formation on the joint surface; changes in joint shape; and eburnation (Waldron 2012).

Many studies have drawn inferences between osteoarthritis and functional stress in the lifestyles of past populations (Tainter 1980, Goodman et al. 1984, Walker and Hollimon 1989, Robb 1994, Goodman and Martin 2002, Cohen and Crane-Kramer 2007, Larsen et al. 2009), and some have gone so far as to suggest links between patterns observed in the distribution of osteoarthritis and specific activities (Larsen et al. 1995, Hershkovitz et al. 1996). This approach assumes that the predominant causal factor of osteoarthritis is workload and mechanical stress. However, a host of other factors, both intrinsic and extrinsic, are instrumental in the development of osteoarthritis. In addition to mechanical load, these include genetic predisposition, obesity, age, sex, and even diet and ethnic origin (Jurmain 1999: 50-67, Waldron 2012). Accordingly, recent studies, particularly those carried out on modern populations, have shown that there is no clear-cut link between arthritic changes and specific behaviors (Jurmain 1999). This is not to say that occupation or general activity has absolutely nothing to do with osteoarthritis, as movement of the joints is a fundamental ingredient in its development. Indeed, several studies have shown that individuals in certain occupations have a higher prevalence of arthritic changes; farmers in the hip, mill workers in the hands, miners in the spine and knee, and ballet dancers, not surprisingly, in the foot and knee (Waldron 2007: 118-119).

Nevertheless, because of the multifactorial nature of the disease, there is no one-to-one relationship between osteoarthritis and behavior – not all ballet dancers develop arthritis of the feet, and not all individuals with arthritis of the hip are farmers (Waldron 2007: 124). In addition, comparisons between skeletal populations are made difficult by the oftentimes widely differing methods of scoring the condition. Even so, differences between distinct groups -- be it separated by time, inferred status, or type of environment -- that were evaluated based on the same methodology can still be valuable as indicators of variation in activity patterns, as long as the discussion stays general and any specific conclusions are clearly distinguished as speculation (Goodman and Martin 2002, Ortner 2003: 550, Waldron 2007, 2012).

4.1.5 Invertebral Disc Disease and Schmorl's Nodes

Invertebral Joints

Invertebral disc disease manifests as pitting on the invertebral surfaces and osteophytic lipping around the vertebral margins (Waldron 2009: 43). Often several vertebrae are affected, and the condition can occur in any segment of the spine, though most commonly in the lumbar region, followed by the cervical vertebrae (Jurmain 1999:117-118, Ortner 2003: 549). Modern autopsy-based studies have shown that the condition often starts in the third decade of life, and is virtually universal by the sixth decade (Goodman and Martin 2002).

Invertebral disc disease is common in archaeological materials, and is usually thought to reflect the general biomechanical stress of erect posture, rather than any specific activity (Merbs 1983, Kilgore et al. 1997). However, several studies have, with varying results, investigated the relationship between invertebrate disc disease and activity patterns (Stewart 1947, Edynak 1976, Angel 1979, Merbs 1983, Bridges 1991, 1994, Knüsel et al. 1997). As with synovial joints, the correlation of specific physical stressors with rates of invertebrate disc disease remains problematic (Stirland 1991, Jurmain 1999, Jurmain et al. 2012). However, significant variation in prevalence rates between or within samples (e.g., men/women or elite/non-elite) may still suggest general differences in lifestyle (Jurmain et al. 2012), and unusual patterns of manifestation may give insight to general activities within a population. For example, a few studies have suggested that carrying heavy loads on the head might be a possible explanation for unusually high occurrences of invertebrate disc disease in the cervical spine (Bridges 1994, Lovell 1994).

Schmorl's nodes

Schmorl's nodes can be recognized as depressions on the intervertebral surfaces caused by a herniated disk. They most commonly occur in the lumbar and lower thoracic spine. (Aufderheide and Rodriguez-Martin 1998: 96, Waldron 2009: 45) Studies have shown that living individuals that exert above average stress on the spine, such as elite athletes, are more prone to the condition (Swärd 1992), and autopsy studies of individuals who died in accidents suggest that acute Schmorl's nodes can also be the result of trauma, commonly in conjunction with other acute spinal injuries (Fahey et al. 1998). Though some authors caution that the etiology of Schmorl's nodes is unclear and may even be idiopathic (Roberts and Manchester 1995), others have reported consistent patterns of high frequencies of the lesion among populations engaged in heavy work loads (Pfeiffer and Williamson 1991, Rankin-Hill 1997, Phillips 2003).

4.1.6 Trauma

Several different definitions of trauma exist in paleopathological literature, but for the purposes of this study, trauma is understood as the "injury to living tissue that is caused by a force or mechanism extrinsic to the body," following Lovell (1997:139). There are four major causes for traumatic injuries to the skeleton: interpersonal violence, accidents, pathological conditions (including medical treatments such as trephination and amputation), and prolonged mechanical stress or so-called stress fractures (Bennike 2008).

Whether intentional or unintentional, traumatic injuries can provide valuable clues about the interactions between individuals and populations and their environment, both physical and cultural (Lovell 2008). Evidence of medical interventions and longtime survival after debilitating injuries can provide information about societal attitudes towards the infirm (Dupras et al. 2010; Grauer and Roberts 1996), while high levels of interpersonal violence in a population may suggest periods of conflict and unrest (Jurmain 1991; Liston and Baker 1996). In a similar vein, marked differences in the number of accidental injuries between different societal or temporal groups can point to variation in lifestyle between the sexes, different age groups, or over time (Judd 2004; Judd and Roberts 1999). For the purposes of this study, two types of traumatic injuries, dislocations and fractures, were recorded.

Dislocations

Dislocations, or luxations, occur when there is complete, prolonged, osteological manifested loss of normal contact between the various components of a bony joint. In cases where some contact is retained, the term subluxation is often used, although this type of injury is very difficult to recognize in archaeological material. The shoulder and hip are the most commonly involved joints of the body (Ortner 2003:159). Both types of dislocations are most commonly the result of traumatic injury, and involve extensive damage to the joint capsule and ligaments in addition to the bone. Hence, evidence of soft tissue injury can sometimes be seen as ossification of ligaments and tendon attachments (myositis ossificans traumatica) (Jurmain 1991:159; Lovell 2008:345). However, dislocations can only be recognized in skeletal material if the injury occurred some time before death, and was serious enough to result in bone modification (Lovell 2008:345; Ortner 2003:159-160).

Fractures

A fracture can be broadly defined as a partial or complete disruption in the continuity of a bone (Lovell 2008). This heading thus covers not only accidental trauma, but also medical interventions such as amputations and injuries from sharp-force trauma (Ortner 2003:120). Fractures that break the skin are often referred to as compound fractures, whereas the term simple fracture refers to a closed injury that did not break the skin surface (Lovell 2008).

Most fractures are the result of either direct or indirect trauma. Fractures caused by direct trauma are those in which the fracture occurs at the site of impact, and include penetrating, comminuted, transverse and crush fractures (Lovell 1997). The mechanism of trauma (direct or indirect, and type of force causing the injury) is crucial to the interpretation of the possible cause of the trauma. A fracture caused by the impact of a projectile would be a penetrating fracture, for example, whereas comminuted fractures are multi-fragmentary, and caused by significant force, such as resulting from a severe fall. Transverse fractures are often the result of a direct blow, and crush fractures can occur when a crushing force is applied to one (depression) or both (compression) sides of the bone. Crushing fractures are more common in mainly trabecular bone such as vertebrae. (Lovell 2008; Ortner 2003:120-125).

Fractures caused by indirect trauma are those in which the fracture site is not the same as the point of impact. They include spiral, oblique, torus, greenstick, impacted, burst and avulsion fractures. Spiral fractures are the result of twisting forces being applied to the bone, whereas oblique fractures are often the result of longitudinal angular stress to the bone (Lovell 1997; Lovell 2008). Torus fractures occur when the diaphysis literally buckles from impact or compression. Along with greenstick fractures, this is a type in which the bone bends but does not break all the way through, more common in subadults (Ortner 2003:120-125). Though torus fractures can occasionally occur in adults, longitudinal compression in mature bone will more commonly result in impacted fractures, in which bones break and compress into one another. An impacted fracture can be caused by a fall, and is a common type of fracture of the hip, particularly in older individuals (Schmidt et al. 2005). Burst fractures result from the vertical compression of the spine, whereas an avulsion fracture is an injury to the bone where a part of the bone is detached by the pull from a tendon or ligament (Lovell 1997; Lovell 2008). Comminuted fractures in which the bone at the fracture site forms a T or Y shape are also caused by indirect force (Lovell 2008).

Skull fractures (of the vault and cranial base) are usually the result of direct trauma, and can most commonly be divided in linear, depressed, and penetrating fractures (Lovell 2008). Trauma to the skull from indirect impact is relatively uncommon, but does sometimes occur as the result of falls, or from impact to the chin. Facial fractures are of special interest in archaeological populations because they are so commonly caused by interpersonal violence. Nasal and mid-facial bones fracture more easily than the frontal bone and mandible, but often heal without the need for medical intervention (Lovell 2008).

In all fractures, healing begins immediately after the trauma, but healing times vary depending on bone type, particularly between cancellous and trabecular bone (Lovell 1997). In general, a haematoma forms at the fracture site, which then develops into a fibrous callus. This stage lasts for approximately two to three weeks, after which the fibrous callus starts to calcify. Eventually, the bony callus consolidates into mature lamellar bone, but the time frame for this stage is highly variable depending on bone type, location and type of fracture. After the healing process is complete, bone remodeling of the fracture site continues gradually, over several years (Bennike 2008; Lovell 2008; Waldron 2009:146-147). Possible complications to healing include infection (visible in the bone as periostitis and osteomyelitis), osteoarthritis, nerve damage, malunion with shortening and deformity, or non-union (Lovell 1997; Waldron 2009:143-146).

4.1.7 Periostitis/Periostosis and General Infection

Periosteal lesions, often referred to as periostitis, are one of the most commonly encountered conditions in archaeological skeletal material. When active at the time of death, the condition presents as raised and irregular areas on the cortical bone. When healing has taken place pre-mortem, these areas are instead smooth and remodeled, sometimes surrounded by pitting and irregular areas (Goodman and Martin 2002). Periostitis is most often seen on the tibia, but can occur on any bone (Ortner 2003: 209), and is the result of an inflammatory response of the periosteum, most commonly caused by infection or trauma (White et al. 2012:446). In addition, a number of other diseases and conditions such as tumors, leukemia, scurvy, rickets, infantile cortical hyperostosis, hemorrhage, and even varicose veins, have been shown to cause periosteal lesions (Waldron 2009: 116). Further, periosteal new bone formation is part of the normal growth process in juvenile bones, and is also strongly linked to hormonal regulation of the osteoblasts (Weston 2012). For this reason, some authors advocate using the less specific term periostosis (Bush 1989; Ortner 2008) or periosteal new bone (Ragsdale 1993; Waldron 2009:116) rather than periostitis, to describe the condition without implying it was caused by infection.

Though differential diagnosis of periosteal new bone formation is difficult, many studies incorporate the prevalence of lesions as an indicator of the general stress level of skeletal populations (Bennike et al. 2005; Goodman and Martin 2002; Goodman et al. 1984; Lallo et al. 1978; Lallo and Rose 1979; Powell 1988; 1991; Ribot and Roberts 1996; Steckel et al. 2002; and see Larsen 1997:82-93 for a review) and its incorporation in health indices for ancient populations have become more or less standard. Though periosteal new bone formation is most commonly scored for long bones, data were in the present study collected also for periostosis of bones other than the long bones, and other non-specific infections, such as osteomyelitis, maxillary sinusitis and mastoiditis.

Though a fairly imprecise marker of skeletal stress, bone infection is related to lifestyle and human ecology, in that increased prevalence rates can be linked to population increase and density, poor sanitation, changes in nutrition, and increased contact between different human groups. In particular, an increase in prevalence of bone infections is often found in populations going through adaptive shifts, such as from hunter-gathering to farming, or from rural to urban lifestyles (Armelagos 1990; Lallo and Rose 1979; Lambert 1993; Larsen 1997:85-87; Roberts 2000).

In contrast to this view, Weston (2012, but see Klaus [2014] for a response), suggests in a recent study that not only does the recording of periosteal new bone as a non-specific indicator of infection ignore the multitudinous etiology of the condition and the impact of specific diseases on population health, but also that the assumption that it equals physiological stress is problematic, due to the way glucocorticoids, a form of steroid hormones, react to the body's response to stress. Weston points out that stress stimulates glucocorticoid secretion, which in turn inhibits bone formation. Thus, periosteal new bone formation should decrease with a higher stress load rather than increase, rendering it a poor indicator of general stress.

Other studies (Usher 2000, DeWitte and Wood 2008, Bullock Kreger 2010), suggest that though the etiology of periosteal new bone formation is unclear, periosteal lesions are indeed associated with elevated risks of mortality. These findings support the view that high frequencies of non-specific infection in a population suggest general poor health (Goodman and Martin 2002), and that changes in the frequency of periosteal new bone formation between or within groups can be used to investigate health trends associated with changes in living conditions (Armelagos 1990, Lambert 1993, Larsen 1997). However, a high prevalence of periosteal lesions may not automatically mean increased mortality. While most studies concentrate on lesion severity, it has also been convincingly argued that lesion *activity* in fact has a larger impact on mortality (Wood et al. 1992). Indeed, several researchers have found that individuals with healed periosteal lesions lived as long or longer than those without any lesions, while active lesions were more common in younger individuals in the sample (Grauer 1993, Mays et al. 2002, Novak and Šlaus 2010, DeWitte 2014).

4.1.8 Adult Stature

Though adult stature is, to a large extent, determined by hereditary factors (Hirschhorn et al. 2001, Lettre 2009), maternal environmental factors during pregnancy, disease, environmental stress, inbreeding and adverse living conditions during childhood and adolescence can significantly impact genetic growth potential (Mensforth 1985, Kemkes-Grottenthaler 2005). Several studies have shown an association between heightened frequencies of chronic infections and decrease in stature on a population level (Lovejoy et al. 1990, Lambert 1993, Temple 2007). Short stature in particular is frequently associated with poor nutrition and high disease load during childhood (Bogin 1988, Goodman 1991, Kemkes-Grottenthaler 2005).

Based on this association, long bone growth has frequently been used as a non-specific indicator of general health in the past (Saunders and Hoppa 1993, Steckel 1995, 1999 and others, Steckel and Rose 2002). However, the nature of growth processes and disruptions is complex. In addition to the variety in factors affecting stunting, differences in timing and duration of growth insults may also influence their long-term impact (Allen 1994, Martorell et al. 1994, Ulijaszek 1994). In particular, improved environmental conditions during pre-adulthood may reverse stunting through catch-up growth, though the exact mechanisms of growth recovery are unclear (Golden 1994, Martorell et al. 1994, Gafni and Baron 2000).

Indeed, though some studies have successfully associated short stature with other skeletal stress markers suggesting poor health (Kemkes-Grottenthaler 2005, Cardoso and Gomes 2009), others studies found that populations showing the greatest evidence of stress were taller than those apparently healthy (Vercellotti et al. 2014). This may be a reflection of selective pressures; if short stature is indeed a correlate of poor health, short individuals may be eliminated from the population before reaching adulthood (Martorell 1989, Wood et al. 1992), making inferences concerning health drawn solely from stature problematic.

In theory, however, selective pressures can be identified in a skeletal material. If selective pressure was high, the increase in sub-adult mortality among those of shorter stature should also be higher, resulting in a lower level of variability in individuals that survived to adulthood. Conversely, lower levels of stress in a population would result in a higher degree of variation in the adult population. Therefore, it may be possible to control for selective mortality bias in a material, either by investigating the statistical distribution of stature metrics[13] (Byers 1994), or by comparing not only adult stature between groups but also height-for-age[14] of subadults from the same samples (Vercellotti et al. 2014).

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[13] Positive skewness in the statistical distribution would then reflect selection against small stature in individuals who died as subadults.

[14] Height-for-age in modern populations is usually indexed by computing the standard deviation (SD) or Z-score of a child's measurement in relation to the median height of a reference sample. In an archaeological population, then, low average z-scores of the subadult population coupled with greater average stature would indicate a population under strong selective pressure.

4.1.9 Issues of Interpretation

The Osteological Paradox

The study of health and disease in the past is a prominent aspect of bioarchaeology. The conventional approach generally entails the collection of data on bony reactions or lesions from one or more samples and the comparison of their relative frequencies across time, space, or social dimensions. Most commonly, these studies focus on non-specific markers of stress and disease in combination with demographic profiles, under the assumption that aggregate patterns of stress or disease in a skeletal sample reflects the health in the living population from which it was drawn. By this logic, then, samples with high frequencies of skeletal lesions would be considered "unhealthy," while the opposite would be true for samples with little or no evidence of stress or disease (Larsen 1997).

However, in their seminal paper on the "Osteological Paradox," Wood and colleagues (1992) turned the traditional interpretation of health in the past on its head. They pointed to three fundamental problems that complicate the study of disease and demographic patterns in the past: demographic nonstationarity, selective mortality, and hidden heterogeneity in risks (i.e., frailty).

The first issue was not new at the time of the publication (e.g. Sattenspiel and Harpending 1983, Buikstra et al. 1986, Paine 1989), and has continued to garner attention to the present day. It refers to the assumption that the age- and sex distribution of a cemetery sample reflects the mortality profile of the living population when, in fact, it may have more to do with fertility levels unless the population in question was stationary (i.e., with no changes in fertility, mortality or migration). If the population instead was growing due to increased birth-rates, life expectancy calculated from the age-at-death profile of the sample would be underestimated due to the larger proportion of children and infants, and conversely. Suggestions for dealing with the issue include the use of statistical models to mimic population growth or fertility rates (Wood et al. 2002, e. g. Bocquet-Appel et al. 2008, Kohler and Reese 2014, White 2014), as well as the application of stable isotope analyses (Keenleyside et al. 2011, Knudson et al. 2012, e.g. Beaumont et al. 2013), aDNA (e.g. Li et al. 2011, O'Fallon and Fehren-Schmitz 2011, Raff et al. 2011) and biodistance analyses (Torres-Rouff et al. 2013, e.g. McIlvaine et al. 2014) to address migration.

Selective mortality refers to the fact that a skeletal sample can never represent a cross-section of the living population; it consists of non-survivors. Though this statement may seem glaringly obvious, it introduces biases to skeletal analyses that may be difficult to overcome. Selective mortality acts on individuals at the highest risk of dying at any given age, making these individuals the most likely to enter the skeletal record for each age cohort. Consequently, age-specific samples are highly selective for conditions that increase the risk of death in a given age-group (Wood et al. 1992). Indeed, some researchers have compared paleoepidemiological studies of skeletal samples to the estimation of disease prevalence in a living population using only individuals admitted to the hospital (Boldsen and Milner 2012).

Heterogeneity in risks (or frailty) refers to the variation in individual susceptibility to disease and stress. This variation may be due to genetic causes, environmental, cultural or behavioral factors, or nutritional status, for example (Wood et al. 1992). Though some sources of potential heterogeneity, like sex or social status, may be identified to some extent, many other reasons for the underlying variation in susceptibility to disease can not be directly observed. This *hidden* heterogeneity in risks presents significant challenges to bioarchaeological research in that it can not be controlled for. Further, aggregate patterns of disease in a population may obscure such variability, making it close to impossible to infer individual or subgroup risk of death in past populations (Wood et al. 1992).

Taken together, the issues identified above suggest that direct inferences about population health drawn from skeletal markers are highly problematic. If skeletal markers of stress and disease are indeed measures of ill health, and selective mortality acts on those individuals more prone to disease, then disease prevalence in any skeletal sample should be significantly higher than in the living population from which it was drawn. However, in some cases, the reverse may actually be true. Bony lesions are not immediate responses to skeletal stress or disease, but take time to form. Thus, individuals exhibiting such skeletal markers may in fact have been healthier than those who died before a physiological response had time to manifest (Ortner 1991, Wood et al. 1992).

The above suggestion by Wood and colleagues (following Ortner) has often been interpreted as the authors' complete reversal of the conventional approach (i.e., high prevalence of skeletal lesions equals unhealthy populations) to paleoepidemiology, in which high frequencies of skeletal lesions would indicate a population in fairly good health (Eisenberg 1992, McGrath 1992, Wright and Chew 1998, Welinder 2001, Clark et al. 2014). This is a misinterpretation of their conclusion. Rather, what they were actually proposing was that the possibility that high frequencies of skeletal lesions may indicate a population or group with higher resistance to disease *cannot be excluded,* and that in the absence of external evidence skeletal samples exhibiting little or no signs of stress or disease are *equally likely* to represent healthy as frail populations.

To illustrate possible complications arising from the osteological paradox as explained above, Wood and colleagues (1992) provide a fictitious example of a population with three subgroups, all of which were exposed to the same lesion-inducing pathogen. The first group escapes illness, and thus does not exhibit any skeletal lesions. The second group experiences illness severe enough for skeletal lesions to form, but does not succumb to the condition. The individuals in this group all die later from other causes, but still bear the marks on their bones. Individuals in the third and final group have a lower resistance to the pathogen, and succumb quickly, before any skeletal lesions have formed.

If ranked by general wellness, then, the group that completely avoided illness would be the healthiest, followed by the group that contracted the disease but recovered. The third group, which perished quickly, would be the least healthy. However, from an osteological standpoint, the first and last group, both of which were composed of individuals without skeletal markers of disease, would be indistinguishable. Thus, though they do not dispute that skeletal lesions indicate exposure to disease, Wood and colleagues point out that the absence of such lesions are considerably more difficult to interpret.

To address the issues they raised, Wood and colleagues put forth four main strategies for future research, the first three of which lie outside of the general sphere of bioarchaeology. First, they suggest that research on modern populations investigating the multidimensionality and underlying causes of heterogeneity in frailty would be beneficial. Second, they call for an expansion of demographic theory concerning the relationship between variability in frailty and selective mortality. Third, they suggest that an epidemiological studies of modern populations may contribute to a better understanding of timing and development of skeletal lesions during the disease process, as well as individual susceptibility and variation in lesion development. Fourth and finally, they suggest that continued bioarchaeological research on the interplay between cultural context and frailty and selective mortality could contribute to a more nuanced understanding of patterns of health and disease in the past (1992).

The Wood et al. paper on the osteological paradox has become one of the most influential in the debate on bioarchaeological method. To date, it has been cited 1103 times.[15] It was followed by an initial flurry of reaction papers (Goodman 1993, Jackes 1993, Saunders and Hoppa 1993, e.g. Byers 1994, Cohen 1994, Lukacs 1994), as well as a response paper by two of the original authors (Wood and Milner 1994). Since its publication, the paper has also been the subject of two reviews focusing on advances in the study of ancient health; one roughly at the one-decade mark (Wright and Yoder 2003), and one more recently, summarizing the last two decades (DeWitte and Stojanowski 2015).

In the response papers, some authors agreed with the overall picture presented by Wood and colleagues but argued that the effects of heterogeneity in frailty and selective mortality were negligible (e.g. Saunders and Hoppa 1993), some argued that Wood and colleagues had in fact *understated* the problem of bias in skeletal samples, especially in terms of issues arising from inaccurate age estimation (e.g. Jackes 1993; see also discussion in Chapter Seven), and some took serious issue with the paradox approach as a whole. Goodman (1993) and Cohen (1994) in particular strongly disagreed with the premise of the osteological paradox and argued that it was inconsistent with not only epidemiological theory, but ethnographic analogs as well. Both authors suggested that the paper misrepresented the goals of paleoepidemiological studies, greatly overestimated the impact of the osteological paradox on skeletal samples, and that a multitrait approach coupled with inclusion of contextual data could overcome the effects of selective mortality.

Aside from the assertions of Goodman and Cohen, few of the initial responses included specific suggestions for dealing with the problem. However, Byers (1994) suggested looking at the statistical distribution of metric indicators to identify bias (as mentioned above), and Lukacs (1994) advocated separating conditions that may have contributed to death from those that did not and excluding the former from the analysis, as well as incorporating assessment of severity in the final interpretation. Storey (1997) addressed the possible effects of individual frailty and morbidity by assessing age-specific levels of dental defects, while Wright and Chew (1998) suggested using paleoepidemiological studies of modern populations in a comparative manner.

The first review of methodological advances since the 1992 Wood et al. publication took the form of a broad overview of general trends in the field that have the potential to mitigate the effects of the osteological paradox. In their article, Wright and Yoder (2003) outlined advances in analytical methods of paleodemography, biodistance studies, paleodiet, growth disruption and paleopathology as having the potential to provide a better toolkit for studying biocultural adaptation. They pointed out that close attention paid to archaeological context and the use of

[15] Google Scholar Cross-Ref, accessed Nov 31, 2017

interdisciplinary methods and techniques could go a long way towards revealing causes of heterogeneity in frailty, and that this in itself is a worthy research focus for bioarchaeology. They highlighted multivariate statistical analyses, contribution of DNA studies to both migration, population genetics and pathogen detection, chemical analysis to analyze residential patterns and paleodiet, examinations of morbidity by age group, and demographic modeling techniques as showing promise to fulfill this goal (see Wright and Yoder 2003 and references therein). In particular, they stressed better integration of paleodemographical and paleopathological data, as well as the the importance of using multi-trait approach.

Though the subtitle of the Wright and Yoder review was "Approaches to the Osteological Paradox," the authors only cited two papers that in their view used bioarchaeological data to specifically address the paradox (i.e. Goodman and Armelagos 1988, Storey 1997). Rather, they provided a general overview of advances in the field that could *potentially* help resolve the challenges posed by the original paper by Wood and colleagues, but noted that though the paradox was often cited as a concern by subsequent researchers, it was often incompletely understood or simply ignored, and very rarely engaged with in a meaningful manner.

The same sentiments are echoed in a second, more recent, review of the literature since the publication of the Wood et al. (1992) article. Like their forebears, the authors of this paper, DeWitte and Stojanowski (2015), lament the paucity of research aimed at examining the sources of heterogeneity in frailty in itself, which they view as the most promising avenue of research for addressing the osteological paradox. Through their literature review, they identify three distinctive patterns through which the paradox has been addressed. The first consists of conventional comparative studies that cite Wood and colleagues, but dismiss the osteological paradox as insignificant. The second and largest group of papers considers its impact in their research designs, but still use a traditional, largely comparative and frequency-based perspective. The third and most recent pattern, which also is the approach that give the authors cause for some cautious optimism, is one that specifically addresses the paradox from a paleoepidemiological perspective through statistical modeling of selectivity and frailty.

Specifically, DeWitte and Stojanowski cite advances in genetics, genomics and biogeochemical approaches as presenting the greatest potential for untangling health dynamics of the past. Genomics, for example, can other than being useful for examination of long-term population history also inform on disease at the population level, and the interactions between host and pathogen. Identification of pathogen DNA can move paleopathological diagnoses from being probable to scientifically confirmed. In addition, it can potentially allow for diagnosis in specimens that do not exhibit pathognomic lesions, an advance that would go a long way toward determining whether seemingly healthy skeletons represent those never infected, or those who succumbed to a disease before lesions had time to form (DeWitte and Stojanowski 2015). Diseases that have been diagnosed using pathogen DNA include tuberculosis (Spigelman et al. 2003), Hansen's disease (*Mycobacterium leprae*) (Rafi et al. 1994), influenza (Taubenberger et al. 1997, 2005), hepatitis-B (Klein et al. 2007), Chagas disease (Aufderheide et al. 2004) Leishmania (Zink et al. 2006), the plague (*Yersinia pestis)* (Drancourt et al. 1998), malaria (*Plasmodium falciparum)* (Nerlich et al. 2008), Brucellosis (Mutolo 2006), and Schistosoma (Matheson et al. 2009).

Also emphasized as an area holding promise for resolving the osteological paradox is epigenetics. Epigenetic mechanisms cause heritable changes in gene activity and expression that form without changes to the DNA sequence. These mechanisms contribute to the regulation of gene activity and expression not only during development and differentiation, but also in response to environmental stimuli (Suzuki and Bird 2008, Martens et al. 2011). Research is still in its infancy, but may contribute to a better understanding of environmental causes and heritability of heterogenous frailty in the future (DeWitte and Stojanowski 2015).

Further, DeWitte and Stojanowski cite advances in stable isotope analysis to investigate not only migration (e.g. Kendall et al. 2013) and variation in diet (e.g. Reitsema and Vercellotti 2012), but also levels of the stress hormone cortisol (Webb et al. 2015) as potential avenues for the identification of markers of frailty.

Both review articles stress the importance of leveraging context in the analysis of archaeological samples. However, while Wright and Yoder suggest that the division of a skeletal series into social or kin groups based on mortuary patterning and comparison of lesion frequencies between groups may elucidate health patterns at the population level for any site, DeWitte and Stojanowski are more pessimistic. They instead advocate a refocusing of health research onto noncomplex (i.e., egalitarian) sites and/or those with short chronologies to minimize the effects of heterogeneous frailty (DeWitte and Wood 2008, e.g DeWitte 2009, DeWitte and Hughes-Morey 2012a).

Finally, Wood and colleagues (1992), Wright and Yoder (2003) and DeWitte and Stojanowski (2015) all consider the benefits of using an age-structured approach to evaluate the possible consequences of early childhood stress for morbidity and mortality. Such an approach can address the issue of heterogeneous frailty by comparing those who die in infancy and early childhood -- when they would have presumably been at higher risk of dying -- to those that survived to later childhood, adolescence or adulthood. If a higher frequency of lesions are found in the age groups that should be more vulnerable, this would suggest that the traditional interpretation of lesion distribution (worse health make for worse skeletons) is correct (e.g. Littleton 2011, Perry 2014). Conversely, higher frequencies of lesions in older age groups (those that survived risky periods) would instead support the paradoxical interpretation that more lesions may indicate more robust individuals (e.g. Storey 1997, Bennike et al. 2005). Nevertheless, many studies using this approach have reported contradictory results; either finding no relationship at all between stress markers and skeletal age (Cucina 2011), or concluding that the relationship is dependent on sub-groupings in the sample (Holland 2013). The varied results of studies of sub-adults as non-survivors show that this approach, too, falls short of resolving the osteological paradox. However, by incorporating it in the research design, these recent studies open the door for a more nuanced evaluation of health in the past, one that considers not only context and social factors, but also ethnographic analogs in the interpretation.

The Wall of the Crow Study

As shown by the overview above, there is no denying that the arguments set forth by Wood et al. (1992) highlight a unique set of challenges inherent in the analysis and interpretation of skeletal materials. Further, the recent reviews of approaches to the paradox (Wright and Yoder 2003, DeWitte and Stojanowski 2015) make clear that the issue is far from being resolved. An additional drawback for the Wall of the Crow study is that many of the techniques seen to hold the greatest promise for addressing hidden heterogeneity (e.g., aDNA, stable isotope analysis, epigenetics) are out of reach for the present study, due to the difficulty -- particularly since the revolution -- of obtaining permission for sampling and the transportation of materials both within and outside of Egypt. For that reason, the present study takes a more traditional approach, but allows for several possible interpretations. Most importantly, close attention is paid to the rich contextual information available for the Saite and Roman periods, not only from the burials themselves, but also from historical, textual and archaeological evidence from the two periods in general, and for Giza in particular. Second, the study utilizes multiple indicators of stress, both separately and in conjunction, and examines frequency rates between and across age classes as well as sex for the two periods. Finally, the study concentrates on skeletal indicators that reflect chronic stress, which are generally thought to be less influenced by differential survival (Goodman 1993, Cohen 1994, 1997).

4.2 Components of the Mortuary Analysis

4.2.1 The Ideal Burial and the Dead at Giza

The ancient Egyptians are often accused of being more preoccupied with death than life, based on the mass of data that survive from mortuary contexts in relation to those of daily life. To a certain extent, this view holds merit, since a monumental and lavish tomb, filled with provisions to sustain the soul in the afterlife, was definitely the ideal throughout most of Egyptian history. In many ways, it seems the Egyptians almost looked forward to death, having spent so much of their lives preparing for it. The Egyptians themselves, however, would probably balk at such an interpretation, and contend that it was life, not death, that was of central importance. A common offering formula, inscribed in tombs to solicit prayers and offering from those left behind, begins: "Oh you living upon earth, who love life and hate death......" In addition, several of the so called "Instruction Texts" suggest that the purpose of the tomb was to subvert, not celebrate death. One such text, the Instruction of Hordjedef, states:

` *Make good your dwelling in the graveyard,*
Make worthy your station in the West.
Given that death humbles us,
Given that life exalts us,
The house of death is for life.
Trans. Lichtheim (1975:58)

Assmann (2005), in his seminal work on the Egyptian view of salvation, sees the Egyptian preoccupation with preparing for the afterlife as an attempt to deny, rather than affirm death. The many representations of the dead depict the deceased in his or her prime, youthful and energetic, receiving ample offerings, and engaging in pleasant past-times. Accompanying texts tell only of successful outcomes in the transition to the afterlife, and oftentimes describe the ability of the deceased to return to earth and interact with the living. According to Assmann (2005:17-18) , this imagery served to create a counterworld through symbols, with which to nullify the isolation and despair of death.

In many ways, this view of a continued presence is not much different from the attitudes of many other cultures, ancient and modern. Particular to the Egyptians' attitude to death, however, are the very tangible ways they engaged with it. In the Egyptian mind, the afterlife was not a disembodied experience, but a material realm, requiring planning and provision. In the words of Assmann, the Egyptians were "obliged to keep their hands full building it, conceptually colonizing it, and ritually keeping it in motion" (2005:18).

In that respect, Egyptians stand apart from many other cultures, due to the very material and physical response they had to death. In fact, a happy afterlife was more or less contingent on having the right type of "funeral kit", including the tomb and its decorations, provisions and texts, which magically provided for the deceased in eternity. In addition, treatment of the physical body was also important, ideally restoring the youthful appearance of the deceased, and ensuring the continued preservation of the corpse (Snape 2011:18). Finally, an important aspect of the transition to the afterlife were the rituals surrounding the funeral, as well as the continued attention paid by surviving relatives, or in their absence hired professionals, to the tomb itself (Teeter 2011:146).

A successful transition to the afterlife required the deceased to seek guidance from extensive texts, initially only available to the king, in the form of Pyramid Texts, but later available to at least the upper echelons of society through Coffin Texts and the Book of Coming Forth by Day, popularly known as the Book of the Dead. Many examples of such texts, describing the arduous journey of the deceased to the Netherworld, survive, and have made explicit the vast complexity of Egyptian eschatological beliefs to modern scholars. To what extent the intricacies of Egyptian religious thought was understood by the general population is unclear. Liturgical texts proper would probably have been inaccessible to the majority of the population, since literacy rates were likely low (Baines 1983). This does not preclude that religious ideas were communicated orally. In fact, the composition of several religious texts suggest that performativity was a significant aspect of liturgy, making it accessible to the non-literate as well as to the educated few (Baines 2007:152-155).

In addition, the material aspect of preparing for the afterlife meant that not only would the Egyptians of any level of society have been surrounded by its physical manifestations (monumental tombs, stelae and so on) in daily life, but many would have been directly involved in its manufacture -- the coffin makers, stone cutters, linen weavers, potters and embalmers for example. The way mortuary beliefs permeated the everyday, then, would have ensured that Egyptians of most walks of life would have been aware of the components constituting an ideal tomb and burial.

The ideal funeral kit was of course available only to a select few, and the vast majority of Egyptians had to make do with significantly less. The burials at the Wall of the Crow, for example, are a far cry from the ideal. They all consist of simple graves, dug directly in the sand. There are no superstructures, and the way in which the burials intercut suggest that they were not equipped with even the simplest markers (and none have been found during excavation). Not all of the burials were equipped with coffins, and many had no grave goods at all.

According to the processual model of mortuary analysis, grave goods are often divided in three categories: personal, competitive and essential. Personal items are those that are intimately associated with the deceased during life, such as toiletries, jewelry or personal possessions. Competitive items show status, and may include luxury items, imports, or markers of profession. Essential equipment are those items necessary for a proper burial and successful afterlife, such as burial receptacles, amulets, and food offerings (Binford 1972:414, Shay 1983, Yasur Landau 1992, Baker 2012:27).

Problems with this model abound; in particular, the division does not allow for overlap between categories. Ancient Egyptian jewelry, for example, was often amuletic in function, and the material used for various objects can often make a distinction between personal, necessary and status items difficult. However, the rich textual and iconographic evidence for the ideal funerary kit, compared to the very pared down nature of the Wall of the Crow burial assemblages, suggest that the items included in these graves represent essential objects only. Further underscoring this point is the fact that the Giza burials are fairly homogenous: with the exception of the differential treatment afforded children (see Chapter Eleven for discussion), there are really no burials that stand out in terms of expenditure.

Thus, a traditional quantitative mortuary analysis searching for differences in status among the cemetery population would be very limited in scope for the Wall of the Crow material. This does not mean that an analysis is futile, however; rather, it offers the opportunity to examine to what extent elite funerary practices were emulated by those on the lower rungs of the status scale, and how this changed over time. If we assume that the burial assemblages from the Wall of the Crow cemetery represent the bare minimum funerary kit, utilized by a subset of the population largely ignored by Egyptology (i.e., the non-elite), then the burials have much to tell us about ritual adaptation by those unable to afford an ideal funeral. By concentrating on the *meaning* of the various burial items rather than their value as status symbols, we may be able to tease out attitudes towards death among those limited to essentials. What follows is a general overview of the symbolic aspects of the funerary provisions used in the analysis. The specific methods used for the analysis are outlined in Chapter Nine, while a more detailed description of the material is provided in Chapter Eight and Chapter Eleven.

4.2.2. Back to Basics: The Bare-Bones Burial Kit

The Coffins

In both the Saite and Roman periods, by far the most common funerary object to be included in the grave was a coffin. These were generally made of painted mud, and were without exception very poorly preserved.[16] The majority of the coffins were anthropomorphic[17] in shape, but rectangular or sub-rectangular tapered coffins were also fairly common, particularly during the

[16] This discussion concentrates on the symbolic aspects of the Wall of the Crow burial items. For a detailed description of the coffins and other burial items, see Chapter 8: Materials.

[17] This type of coffin mimics the shape of the human body, with a molded portrait mask and wig, and sometimes arms and hands, on the coffin lid. They are generally referred to as “anthropoid coffins” by Egyptologists.

Figure 4.1:Sub-rectangular tapered coffin with molded mask and extended foot-box. Photo by K. Kaiser

Saite period. However, the extended foot-boxes common in the latter type, together with their molded masks and wigs and painted *wsh*-collars on the chest (Figure 4.1), suggest that both types were intended to emulate the inner mummiform coffins often seen in depictions of the Opening of the Mouth ritual in tombs and funerary papyri (Lapp and Niwiński 2001).

At its most basic, a coffin served to contain and protect the mummy of the deceased. Symbolically, however, it represented the universe, through associations with both the sky-goddess Nut and Osiris, the king of the netherworld. Elite coffins from the Saite period often carried depictions of Nut on the interior of the lid, juxtaposed by a representation of the *Djed*-pillar, symbolizing the realm of Osiris. The mummy, when placed between these two powerful images, essentially took on the role of creator gods like Osiris and Ra, thereby being able to orchestrate its own resurrection (Taylor 2001:238). But the symbolism of the coffin was multilayered. It has been described as the house or eternal dwelling of the deceased (Taylor 2001:216), a representation of the *Duat*, or netherworld, or as the womb of the sky-goddess Nut, with the combination of coffin and body likened to the union of mother and child (Assmann 2005:165-166).

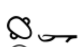
The Egyptian view of death was one of disintegration -- not only of the physical body, but of the spiritual persona as well. In order to reach eternal life, the body needed to be reconstituted, its limbs rejoined (Assmann 2005:23-31), in order to reunite with the spiritual aspects of the deceased, particularly the *ba* and the *ka*, which required a physical form (Taylor 2001:16). These entities, often described as variations on the western concepts of the soul, were to the Egyptians highly complex concepts that are difficult to translate. The *ba* was most often depicted as a human-headed bird, and could leave the body and venture into the netherworld, but also into the realm of the living. To sustain itself, however, the ba needed to periodically reunite with the body, in an ongoing cycle of regeneration (Assmann 2005:93).

The *ka* is perhaps best described as the spiritual alter ego of the deceased. It was created at the birth of a person, and continued its existence throughout the lifetime and in the hereafter. At death, the *ka* became separated from the self, and only through reunion of the *ka* and the self could the deceased achieve immortality (Assmann 2005:95-97). Like the *ba,* the *ka* required sustenance after death, but in the case of the *ka* this was accomplished not through the reunification with the body, but through the life-giving power of food. It was the *ka* that received the physical offerings at the tomb, through which the deceased could survive in the afterlife. However, the *ka* did not have a physical form in itself, and needed a physical manifestation of the deceased to inhabit (Taylor 2001:19-20).

These concepts of fragmentation and reconstitution lie at the center of Egyptian funerary religion. Only through the separation of the person into constituent parts could the deceased be reborn as a divine transfigured spirit, an *akh*, and attain afterlife. This reassembly also explains the practice of mummification, as it required a physical form to which to tether the spiritual aspects of the deceased's persona. The coffin functioned as the material manifestation of these regenerative powers, a vehicle that transported the deceased to the afterlife (Cooney 2010). The degree to which this complicated liturgy was comprehended by the likely non-literate population who buried their dead at the Wall of the Crow is of course unclear, but the general understanding of the coffin as a powerful transformative entity, a "ritual machine" (Willems 1988:239) of sorts, can probably be assumed.

In addition, the anthropomorphic coffin was intimately associated with the mummified body. In particular, it appears to have functioned as a conduit to the dead, through which the living could communicate with their lost loved ones. In a letter from the scribe Butehamen to his dead wife Ikhtay, he urges her coffin to convey a message to her:

> *O you noble chest of the Osiris chantress of Amon Ikhtay,*
> *who lies at rest beneath you,*
> *hearken to me and transmit my message.*
> *Say to her since you are near to her,*
> *"What is your condition? How are you?"*
> *It is you who shall say to her,*
> *"Alas, [Ikhtay] no longer prospers."*
> *Trans. Wente (1990:217-219)*

This close connection between the mummy and the coffin is also exemplified through the words used to refer to it. The word most often commonly to refer to the innermost mummiform coffin was *wt* () (Erman and Grapow 1971:379). The pustule sign indicates intimate contact with the body proper, and the same word, depending on determinative, could also denote "mummified" or "preserved" body, "embalming" or "bandages." With the wood determinative taken into account, then, the literal meaning of the word could probably be understood along the lines of "an embalmed body made of wood." Thus, the coffin can be seen as the eternal version of the mummified body (Cooney 2007:19), making it the most essential object in the funerary kit, particularly to those who could only afford one piece of funerary equipment.

The Body and its Wrappings

Because of the poor preservation of organic material at the Wall of the Crow site, it is difficult to ascertain to what extent the population buried there had access to mummification. However, the bodies of at least a few individuals had been extensively manipulated, and in a few instances a layer of resin was preserved on the bones, suggesting that at least a subset of the population received a cursory attempt at embalming. In addition, the position of skeletal elements within the grave suggest that most bodies were tightly wrapped at the time of burial. Fragments of linen adhering to some of the bodies or their jewelry, as well as imprints of linen in the mud packing of some interments, also support this conclusion. Finally, the narrow coffins would scarcely have fit fully fleshed corpses; it therefore seems likely that the bodies interred in coffins were at least dehydrated.

The symbolic aspects of the preservation of the body have been outlined above and need not be expounded upon here. However, a few words can be said about the process of transforming the corpse (; *ẖ3t*) into a mummy (; *sʿḥ*). The distinction between corpse and mummy was an important one. The determinative for the word *ẖ3t,* or corpse, is a supine body lying on a bier, while the determinative for the *sʿḥ* is the same hieroglyph standing upright, indicating life and regeneration (Assmann 2005:106). This juxtaposition between horizontality and verticality is recurring in Egyptian mortuary texts -- to be horizontal meant to be powerless and ineffective, while verticality meant the ability to regain control:

A great one is awakened, a great one wakes,
Osiris has raised himself onto his side;
he who hates sleep and loves not weariness,
the god gains power, the god gains control of his ḏt-body.
Horus has set him upright,
the one in Nedit, he has lifted himself.[18]
Trans. Assmann (2005:104)

The transition took place in two steps: first, the body was purified and embalmed, transforming the *ẖ3t*-corpse into an eternal, or *ḏt*-body. Embalming alone did not a mummy make, however -- not until the body was wrapped would it be considered a *sʿḥ* mummy (Riggs 2014). Instructions on how to properly wrap a body are handed down to us through two papyri, known as the "Embalming Ritual Papyri."[19] Despite their name, neither of the texts offer any detailed description of the actual embalming process, instead focusing on the anointing and wrapping of the already embalmed corpse. The texts prescribe the different types of bandages and oils used for the wrapping ritual, and supplies the incantations to be read over the body by the priests in charge of the process as the wrapping progresses. Similarly, the few iconographic depictions preserved of the mummification process -- a scene from the Nineteenth Dynasty tomb of Tjay in

[18] Text taken from Utterance 690 of the Pyramid Texts, c.f. Faulkner 1969, pp.298-300

[19] P. Louvre 5158 and P. Boulaq III from the Cairo collection, both most likely dating to the early Roman period, first century CE.

Thebes, TT23, and two Ptolemaic period coffins from El Hibeh (Dunand and Lichtenberg 2006:98) -- also depict the later stages of preparation (though the coffins from El Hibeh include the washing and anointing of the embalmed body as well), further underscoring the importance of the wrapping process in the making of the *sʾḥ*.

In fact, the wrapping process and addition of a mummy mask to the cocooned body effectively made the mummy divine. In this sense, the term "mummy mask" is a misnomer, since its function was rather opposite that of a mask, which conceals the face. In Egyptian mortuary liturgy, the mask was known as the "head of mystery," and was intended to enable the mummy to see and act as a god (Assmann 2005:107). A Late Period mortuary spell to be read over the mask tells us:

> *He sees, the one who sees with the head of a god.*
> *He sees: N. (Osiris-Khentamentiu) with the head of a god.*
> *He gives instructions to the gods.*
> *He gives them to them as the foremost among them.*
> *Trans. Assmann (2005:107)*

This perception of the mummy as a divine entity is perhaps easier to understand if we consider the prominence of statue cults in Egyptian religion. Statues were active and alive, and enabled the gods to physically manifest in the daily cult. Like the anthropomorphic coffin, the *sʾḥ* was the perfect, eternal image of the deceased. This is reflected in writing; the upright mummiform figure used as a determinative for the word *sʾḥ,* describing the mummy, is the same determinative used for the word for image, *twt* (Riggs 2014; Assmann 2005: 106).

Thus, the wrapping of the body effectively turned the body into a cult image in and of itself, transforming the deceased into a divine entity, capable of interacting with the gods, and worthy of veneration and offerings. With this in mind, the evidence of wrapped, but not coffined, interments at the Wall of the Crow cemetery takes on a different meaning, and it also complicates the division of the burials into those with or without coffins. It is possible that the wrapping of the body was an acceptable substitute for a coffin among those burying their dead at Giza. Rather than representing the destitute, then, the burials without coffins may simply reflect a different, but equally valid, choice regarding how the deceased was represented in death.

Amulets and Jewelry

The basic function of an amulet was as a protective charm ensuring the continued well-being of its wearer. This is reflected in the Egyptian words for amulet; *s3*, *mkt* and *nht*, meaning "protection" or "to guard" and *wḏ3*, meaning "health" or "well-being" (Andrews 1994:6). Amulets could come in the shape of deities (e.g., Bes, Hathor, Bastet), as symbols representing a deity (e.g., Eye of Horus, Girdle of Isis), in the form of body parts, which in a funerary setting could not only bestow its wearer with the properties of the living (e.g., the gift of sight from an eye amulet, the gift of movement from a representation of a leg), but could also stand in for a missing body part (Ikram 2003:97). They could be apotropaic, in the form of dangerous animals, or textual, in the form of spells written on small rolls of papyrus, and could also come in a variety of other forms, including scarabs or other insects, or inanimate objects.[20]

The protective powers of an amulet derived not only from its shape, but also from its color and material. Green stones or faience symbolized resurrection, youth and rebirth, for example, while carnelian and other red materials transmitted energy and power (Ikram and Dodson 1998:137). Amulets were worn by both the living and the dead -- those manufactured purely for a funerary function can sometimes be distinguished by the lack of loops or piercings for suspension, as they were often simply inserted between the layers of bandaging during mummification (Andrews 1994:6-8). Jewelry could also be amuletic in function. Indeed, at times it is difficult to distinguish between the two, since amulets were often worn on necklaces, and the different materials included in beaded necklaces or bracelets would carry symbolism as well. Cowrie shells, for example, could be present both as shells proper and used as beads, or as faience amulets in the shape of a shell.

In a funerary context, amulets ensured the safety of the body, and aided and protected the deceased during the perilous journey to the afterlife. It is perhaps not surprising, then, that the vast majority of amulets and jewelry from the Wall of the Crow cemetery were found in the graves of children, who may have been considered in need of added protection compared to adults. Similar patterns of amulet distribution have been found in other non-elite cemeteries from the Memphite area, so it seems this sentiment was not confined only to Giza (Giddy 1992, Strouhal and Bareš 1993).

The amulets were, with a few exceptions, very crudely made. Apart from a few bronze pendants depicting Amun-Min, Hathor or inanimate objects, and two lotus flowers made of carnelian and lapis lazuli, they were made of faience. Amulets were most commonly found in the area around the neck, likely originally suspended and worn as necklaces. Beads and cowrie shells were also often found around the wrists and ankles, probably worn as bracelets or anklets. In some cases, the beaded bracelets also included one or more amulets. The placement of the amulets in the burials at Giza is consistent with the pattern found in many other mummies of the Late Period, in which amulets were concentrated around the neck, skull and hands (Elias and Lupton 2011).

Most of the amulets from the Wall of the Crow cemetery were pierced or included a suspension loop for attaching to a string or necklace. Thus, it is difficult to say if they were made specifically for funerary purposes, or if they were worn in life. Even if they were, they need not have been worn in life by the children themselves -- they may have been included in the graves as gifts from bereaved family members. However, it is also possible that children, to a higher extent than adults, habitually wore amulets as part of their dress, and simply kept them in death. Parallels are known from the Roman period, during which both boys and girls were often presented with protective amulets at birth -- *bullae* for boys and *lunulae* for girls -- which they wore until they reached puberty (Edmondson 2008). It is likely that a similar custom existed during pharaonic times. We know that children were thought to be particularly vulnerable to chaotic forces, and a large section of Egyptian magical texts dealt specifically with the

[20] The symbolism of specific types of amulets is discussed in Chapter Eleven, which deals specifically with the child burials.

safeguarding of children. Many of these texts prescribed the making and wearing of amulets. A text preserved on papyrus, now in Berlin, contains such a spell:

> *A spell for a knot for a baby. Are you warm [in] the nest? Are you hot in the bush?*
> *Is your mother not with you? Is there no sister [to] give you air?*
> *Is there no nurse to afford protection?*
>
> *Let there be brought to me pellets of gold, balls of garnet,*
> *a seal [with(?)] a crocodile and a hand,*
> *to slay and to dispel the 'sweet one,' to warm the body, to slay this male enemy,*
> *this female enemy of the West. You will break out! This is a protection.*
>
> *This spell is to be said over pellets of gold, balls of garnet,*
> *a seal [with (?)] a crocodile and a hand.*
> *To be strung on a strip of fine linen.*
> *To be made into an amulet applied to the throat of a child. Good.*
>
> *Trans. Borghouts (1978: 42-43)*

Comparable customs are alive and well in Egypt today. For example, it is customary to bring a gold pendant or amulet as a gift when visiting a new mother and her baby, to be pinned on the baby's clothing to ward off the evil eye. Similarly, Bedouin girls sometimes wear necklaces strung from coral beads, green glass and cowrie shells for the same purpose (Vale 2015).

Moreover, changes in the types of amulets included in the graves from the Saite to the Roman period suggest a shift in eschatological beliefs (discussed in detail in Chapter Eleven). In particular, amulets included in the Saite graves had stronger connotations of fecundity, motherhood and fertility, while those in Roman period burials were more protective in nature. This may be related to changes in the understanding of the mechanisms for rebirth. During the pharaonic period these were based on general concepts of male virility and potency for all, while becoming more individualized during the Roman period (Riggs 2005:47-48).

Grave wealth accompanying children has often been explained as a sign of ascribed status, and used to support conclusions regarding the level of inherited status in past communities (Brown 1995). It is well known that Egyptian officials often inherited their office from their fathers (Arlt 2011), and most likely professions were inherited among the non-elite as well. Thus, one possible interpretation of the comparatively well-equipped child graves in the Wall of the Crow Cemetery is that they reflect familial, rather than individual, social status. However, the crude execution of the amulets, and the fact that they were more or less completely absent from the graves of adults, make their interpretation as status symbols less likely, regardless of whether or not they were worn in life or only in death. Instead, the distribution of amulets suggest a definite concern with the protection of children among the Giza population, in both the Saite and Roman periods, and may tell us more about the attitudes towards children than social stratification.

Pottery

Figure 4.2: One of the caches of Saite storage jars found during the 1998 excavations. Photo by Mark Lehner

Very few of the Wall of the Crow burials were equipped with pottery, particularly in the Saite period. Of the 228 burials, only 27 had pottery; less than a tenth of the Saite burials, and about one quarter of the Roman burials. In both periods, approximately three quarters of the burials with pottery belonged to adults, and only a quarter to children. This distribution of the pottery stands in contrast to the distribution of amulets and jewelry, which occurred more commonly in children's graves. Storage jars were common in both periods (amphorae in the Roman period and cylindrical storage jars in the Saite period). In addition to the amphorae, the Roman assemblage also contained several juglets, a cooking pot, dishes and bowls, and a miniature amphora. The Saite assemblage only contained one dish, but included two medium sized jars with polychrome post-firing decoration, pilgrim flasks and an imported Levantine storage jar (Tavares and Laemmel 2011). In addition to the pottery in the graves proper, two caches of Saite period storage jars were found in 1998, in association with the cemetery, but not with a specific grave (Fig. 4.2). Archaeobotanical analyses carried out on the fill of some of the vessels did not turn up any evidence of plant-based food; however, considering the poor preservation at the Wall of the Crow site, this does not necessarily preclude that the vessels contained food products that were not cooked or charred, and thus did not preserve. However, some of the larger Roman vessels contained sherds of additional broken pots within the fill (Tavares and Laemmel 2011).

Egyptian funerary pottery is often divided between that from a pure burial context, i.e., grave offerings, and pottery with a ritual function, i.e., that associated with a cult of the dead. Further divisions can be made of the burial pottery into groups of prestige objects (i.e., imported or decorated vessels), miniature vessels as symbolic commodities, and actual containers for provisions (Seiler 2005:48-52, Budka 2014). Naturally, such divisions are easier to make in theory than in practice, but if it is to be followed, then the Saite period burials appear to contain more prestige goods, whereas the miniature vessel and cooking jars from Roman period burials suggest a focus on commodities.

Figure 4.3: Position of a Saite storage jar within the grave.

The position of the storage jars may also suggest different usage. In the Saite period, these large jars were generally placed at the foot-end of the burial, and at the bottom of the grave (Fig. 4.3), while in the Roman period all of the pottery was as a rule positioned in the grave fill above the skeleton or coffin. In addition, the Roman pottery often appeared to have been placed in the fill broken (and this includes juglets, cooking pots and dishes as well as the amphorae), while many of the Saite jars were complete. Similar cylindrical storage jars have been found in Saite period tombs in the Assasif in Thebes, filled with embalming refuse such as linen, bitumen and natron, and in close proximity to the coffins of the tomb occupants (Budka 2014). Though embalming caches would normally be expected to be located separate from the grave or tomb (c.f. Lansing and Hayes 1937, Kawai 2011), the Assasif tombs suggest this was no longer the case in the Late Period.[21]

Though the funerary meal was a feature in the mortuary ritual throughout Egyptian history, post-burial cultic activities, including the funerary meal, were often enacted away from the tomb during the the Saite period, owing to the lack of a courtyard associated with the shaft-tombs common at the time, and likely also because of the perceived need for secrecy that had driven the choice of burial locations since the early Third Intermediate Period (Budka 2014). In contrast, texts from the Roman period tell us that the funerary meal was taken at the tomb proper or in a location near-by (Riggs 2010a). With the above in mind, it seems likely that the pottery assemblages from the Saite and Roman periods had different functions. I would suggest that the Saite pottery, which was deposited before or with the body, consisted of storage jars likely functioning as embalming caches, and imported and decorated pottery as prestige grave goods. In contrast, the pottery from the Roman period was deposited after the body had been covered

[21] Parallels also exist from earlier periods, most notably from KV 36 and 46 in the Valley of the Kings, in which containers with embalming materials were the first objects to be placed in the tombs, specifically in the burial chambers. See Eaton-Krauss 2008 for discussion.

with grave fill, and was probably broken on purpose, instead perhaps reflecting the funerary meal or other ritual activity taking place around the time of interment.

Implications for the Mortuary Analysis

As discussed in Chapter Three, traditional (that is, processual), mortuary analysis often focuses on statistical analyses of grave goods to infer status. To some extent, this is also the approach of the present study. For example, what can the relative homogeneity in mortuary treatment of males and females tell us about gender roles in the Saite and Roman periods? Conversely, how can the differential treatment of children increase our understanding of their place in the Giza community? How, if at all, did these attitudes change over time?

As shown above, the complex web of interconnected mortuary rituals in Egyptian religion, the relative dearth of grave goods, and the changing symbolism of the artifacts included in the Wall of the Crow funerary kit also make such an approach complicated for the Giza material. This need not be a disadvantage. Rather, when viewed as a whole, the Wall of the Crow cemetery allows us to examine the mortuary behavior of a socioeconomic group for which documents have not been lost, but simply never existed. Indeed, it is unclear to what extent the vast, non-literate, majority comprehended the complicated liturgical concepts so central to the Egyptian funerary religion of the elite. Nevertheless, the material nature of the Egyptian ways of death would likely have ensured exposure by the majority of the population to what constituted the 'ideal burial.' How, then, did the Giza population grapple with the gap between their own modest funerary provisions and those of the elite? How did they adapt to a tradition requiring provisions for the afterlife unattainable by all but the fortunate few? Did they consider their own 'bare bones' funeral kits adequate vehicles for the journey to the hereafter? Did adaptations change over time? These are all questions that may be examined through the analysis of the Wall of the Crow material.

PART II: CULTURAL CONTEXT

Chapter 5: Saite and Roman Mortuary Practices

5.1 Continuity and Change

To an outside observer, mortuary practices appear remarkably static and unchanging for the better part of Egyptian history. To some extent, this is certainly true, since the basic components of mortuary beliefs that developed at the very beginning of the pharaonic period remained in place, in some form or another, until the coming of Christianity in the Coptic period. Even then, Egyptian practices were not entirely abandoned. For example, at the Fourth century CE Coptic/ Byzantine necropolis at El Hibeh in Middle Egypt, the dead were in the still being wrapped in linen in a mummy-like fashion, and although the bodies were generally not eviscerated, they were sprinkled with natron, reminiscent of the practices of ages past.

However, to gloss over millennia of development in the funerary sphere as constant and immutable would be a gross oversimplification. Rather, the developments can perhaps be seen as variations on a theme. Thus, although the central tenets of belief in the afterlife remained the same, there were still subtle but definite modifications to the Egyptian approach to death during the country's long history. Because of the importance that Egyptians placed on the transition to the afterlife and the many accoutrements required to get there according to Egyptian religious beliefs, there is also a vast body of material available for study. Unfortunately, however, due to accidents of preservation and the narrow objectives of early researchers, the great majority of finds derive from the elite. Written evidence, as well, generally relates to customs and beliefs of the upper echelons of society. Thus, for the non-elite, particularly those of such seemingly humble stature as the Wall of the Crow cemetery population, comparable published material is much scarcer. In addition, it is difficult to gauge to what extent the complex religious beliefs espoused in the elite funerary texts and burial goods permeated society as a whole, considering that the vast majority of the population was likely illiterate. Nevertheless, because of the general continuity of Egyptian mortuary beliefs, as well as the tradition of conspicuous display in Egyptian society, the basic requirements needed for a successful transition to the afterlife would most likely have been known even by those at the lower end of the status scale, allowing for some extrapolation from the better known sphere of the elite.

Funerary remains from archaeological contexts may hold information about a range of aspects of sociocultural practice, such as religious beliefs, gender roles and status differentiation. The study of mortuary practices of the ancient Egyptians has a long tradition. Nevertheless, comparatively little has been written about the burials of the non-elite. Furthermore, while much research has been carried out on funerary religion, less attention has been afforded contextual analysis of burials and the organization of cemeteries, to the detriment of our ability to address a number of interrelated questions about the mortuary practices of the average Egyptians. For example, who decided where people were buried? How were the cemeteries organized spatially? Did the rules governing organization change over time? Are family groupings detectable? Can Roman influences be identified in the cemetery organization? The rich contextual and spatial information available for the Wall of the Crow burials enables us to address these questions as they pertain to the Saite and Roman non-elite population from Giza.

I have discussed the symbolism of the components of the Wall of the Crow 'burial kit' in the preceding chapter. Similarly, I explore changes in eschatological beliefs from the Saite to the Roman period, particularly as they apply to the transition to the afterlife, in Chapter Eleven. The actual funerary assemblages from the cemetery are detailed in Chapter Eight. Finally, in Chapter Six I describe the mortuary landscape of Giza in the later periods. In the following pages, I will therefore concentrate on the more practical aspects of Saite and Roman mortuary practices, such as the spatial organization of the necropolis, the physical evidence of funerary rituals, and the cost and business of burial.

5.2 Saite and Roman Period Funerary Ritual

The Tomb or Burial

The tomb was the physical gateway to the afterlife for the Egyptians, and had a dual purpose: it was a place where the living and the dead could interact, and it was the permanent abode protecting the body of the deceased, as reflected by its Egyptian name, "House of Eternity" (Taylor 2001:136). Elite tombs generally consisted of two components: a burial chamber below ground, which was not accessible, and a superstructure above ground through which family and friends could communicate with the deceased through offering and ritual. The form of the above-ground structure varied enormously, depending on time and the social standing of the deceased; from massive tombs such as the large mastabas surrounding the pyramids in Giza, to a simple stela above the burial for the less fortunate (Ikram and Dodson 1998:15). Those of lesser means could also benefit from proximity to more elaborate tombs, presumable through partaking in the continuing cult of those buried within. Though not subsidiary tombs *per se*, lesser tombs were often grouped around the larger one of a king or local ruler, or in some cases around extant monuments such as temples. Examples of this practice can be seen in the elite mastaba fields surrounding the pyramids at Giza, around the tomb of Ankhtifi in Moalla, in the cemeteries of Rifeh, and around the tomb of Horemheb in Saqqara (Snape 2011:34-6; 158-9; 221)

Throughout much of Egyptian history, the ideal tomb would be richly decorated and furnished, providing both actual physical objects and provisions needed for the afterlife, and magical depictions of the same as a safeguard and augmentation. Aside from the obvious items connected to the mummy of the deceased such as coffins and cartonnages, amulets, jewelry , shabtis and canopic jars,[22] elite tombs were often also filled with a plethora of daily life objects such as clothing, furniture, games, and toiletries (Ikram 2003:131-134). Ideally, these objects would provide for the deceased in perpetuity, combined with the funerary cult continued by the family. In reality, however, cults were often not very long-lived, tombs were neglected, and the

[22] Shabtis were a form of mass-produced mummiform servant statues, often made of faience, that magically carried out the work of the deceased in the afterlife. Canopic jars or chests were specialized containers for the mummified viscera of the deceased, associated with the four 'godlets' known as the Sons of Horus.

communal knowledge of the riches buried with the dead led to wholesale looting in times of unrest (Baines and Lacovara 2002).

That tombs were frequently violated was probably common knowledge; a series of papyri[23] from the end of the Twentieth Dynasty record the trials of a number of men accused of breaking in to the royal tombs in Thebes. The accused tomb-robbers were men of humble birth: a stonecutter, a peasant, a slave and a water-carrier are mentioned, for example. The trial records give the impression that tomb robberies were unusual and abhorred. However, several preserved letters from the same period between members of the necropolis artisan's village of Deir el Medina, and the High Priest of Amen and his cohort, suggest that in reality the practice was far more common. Indeed, the letters point to organized pilfering, through the collaboration of those traditionally charged with provisioning and safeguarding the tombs (Wente 1990, Jansen-Winkeln 1995).

This uncertainty, along with an economic downturn, led to increasingly "defensive" burial practices toward the end of the New Kingdom. Tombs became more clandestine, and were often reused from earlier periods. Visible superstructures were more or less dispensed with, and instead families utilized stelae or statues set up in communal places of worship such as temples. Grave goods were greatly reduced, so as to not draw the attention of the robbers. Instead, the burial assemblage became more centered on the mummy and the coffin itself, which became more densely decorated as a substitution for tomb wall decoration (Cooney 2011, Snape 2011:247-248).

This development culminated in the Third Intermediate Period, when those who could afford it, including the royal family, were commonly interred within temple compounds rather than in the adjacent necropoleis, presumably due to the added security of the temple walls (Ikram and Dodson 1998:43-45, Snape 2011:250-251). Similar practices are known from Giza, where a number of burials were found within the confines of the Isis temple near the pyramid of Khufu (Zivie-Coche 1991:83).

With the reunification of the country under the Saites, large visible tombs again became the ideal. At Giza, large rock-cut tombs were installed along the causeway to the Sphinx (Stammers 2009), and at least one monumental tomb was built in the southern hills of the necropolis, that of Thary, overlooking both the pyramids and the necropolis below (El-Sadeek 1984). As in earlier periods, these tombs were all richly decorated, although later looting precludes any assessment of the number or type of grave good they originally may have held.

One development, unique to the Memphite region and particularly popular at Giza, suggests a continued concern for security: the Saite shaft tomb. This type of tomb consisted of a deep shaft cut through the bedrock, at the bottom of which was a burial chamber. Both the chamber and shaft were undecorated, and as during the Third Intermediate Period the emphasis appears to have been on the body and coffins/sarcophagus and the grave goods immediately related to it, such as canopic chests and shabtis. After burial, the shaft was filled with fine, loose, sand, making it nearly -- but not completely -- impossible to rob. However, these tombs also had a religious function, the deep shaft connecting the deceased with Osiris and the netherworld

[23] Papyrus Amherst/Leopold II, Papyrus Abbott, Papyrus Mayer A & B, Papyrus British Museum 10052, and a few others.

(Stammers 2009). It is perhaps not surprising that these tombs are mainly found at Giza, considering the flourishing cult of the Giza-specific Osiride triad -- Osiris of Rosetau, Isis-Mistress-of-the-Pyramids and the Sphinx as Horus-in-the-Horizon -- that developed on the plateau in the Third Intermediate and Saite periods. These developments are discussed in the following chapter.

In the Roman period, reuse of old tombs became even more widespread. Older tombs were often used for communal burial, and the appointment of some of the mummies deposited in this way suggest that it was not purely an economical solution for the non-elite. Tombs used in this way were not generally modified, but sometimes they had to be enlarged to accommodate the large number of bodies placed inside. There were also a number of other tomb types available for the so-inclined -- indeed, one of the hallmarks of the Roman period is the bewildering array of variability in form. Tombs could be conceived as house- or temple-like structures, as above-surface constructions with internal loculi for the individual mummies, or as sarcophagi simply sitting above ground in cemeteries. Shaft tombs were still being used, but now most commonly containing more than one inhumation. These could have varied superstructures, such as pyramids, columns or chapels. Newly constructed (as opposed to reused) rock-cut tombs are also attested from the period, also often with individual loculi carved out of the rock. Finally, rural necropoleis often incorporate a number of these different types of tombs, including simpler graves, marked only with a stele or a small mudbrick surround (Cartron 2012).

A tomb type unique to the Graeco-Roman period, specifically to Alexandria, is the hypogeum. These monumental subterranean tombs, accessible to visitors via staircases from the surface, include an open courtyard that opens up onto one or several funeral chambers containing loculi or sarcophagi. The hypogea also commonly included triclinia, or banqueting halls, for the mourners, which functioned as meeting places for the living and the dead where they could interact during the funerary banquet (Savvopoulos 2014). Tableware and amphorae from these meals found during the early archaeological explorations of these tombs suggest that the triclinia were not just symbolic, but actually used for feasting and celebrating the dead (Empereur 2003:4-5). Thus, these tombs were meant to be accessible, and have been described as "theatrically constructed space[s] in which to perform the drama of the funerary service" (Venit 2002:187).

For the non-elite, the question of whether or not to announce the location of their final resting place with a superstructure was more or less a moot point. As in earlier periods, humble burials from the Third Intermediate Period and beyond often consist of a simple pit dug in the sand with the deceased placed in a crude coffin or simply wrapped, and with few or no burial goods. These cemeteries, as before, are often found in connection to earlier monuments, such as those surrounding the mastabas of Akhethetep (Janot et al. 2001b; Late Period), Ny-ankh-nefertem and Merefnebef (Myśliwiec 2008; Ptolemaic Period) the Anubeion (Giddy 1992; Late Period) and the pyramid of Teti (Bentley 1999; New Kingdom through Late Period) at Saqqara, the mastaba of Ptahshepses in Abusir (Strouhal and Bareš 1993; Late Period through Roman), or, in our case, the Wall of the Crow at Giza. Most likely, the older monument was seen as a form of communal superstructure for the cemetery in these cases, perhaps also filling a ritual function.

The cemeteries listed above are all considered 'non-elite.' However, based on a comparison of the grave goods, the Wall of the Crow cemetery appears to enjoy the dubious distinction of being the decidedly 'most non-elite' of the lot. Though some of the burials in these other cemeteries were coffin-less, and many lacked additional grave goods, the coffins that were preserved at Saqqara and Abusir were almost exclusively made of wood as compared to the mud coffins at the Wall of the Crow cemetery, and the few amulets and items of jewelry that were found were generally of better quality than those found at Giza. In the Ptolemaic period cemetery excavated by the Polish mission in Saqqara, cartonnages were often substituted for coffins. However, many of the cartonnages were quite lovely, and some of the burials were interred in anthropomorphic pits cut into the limestone in lieu of a sarcophagus (Myśliwiec 2008). In addition, a number of intact Saite burials from the Teti cemetery were fairly well equipped, with canopic chests and cedar coffins, suggesting that the social standing of those buried in simple pits in the ground was not always as humble as one might think (Gosford 2014).

To some extent, the poverty of the Giza burials may have benefitted their preservation. Though many of the Wall of the Crow burials were truncated by later interments due to the density of the cemetery, very few appeared to have been intentionally disturbed. In contrast, many of the Ptolemaic burials at Saqqara were completely ripped apart around the neck and hands, the regions of the body where amulets are most commonly found. The damage to the mummies appears to have been done shortly after burial, suggesting that it was perhaps, as before in Thebes, carried out by necropolis workers, who knew where to look (Myśliwiec 2008). It is of course possible that the Wall of the Crow cemetery workers were simply more conscientious than their Saqqara counterparts. More likely, however, is that the paucity of grave goods in the cemetery was known to the local population, who decided grave robbery was not worth the trouble. There certainly does not seem to have been any higher level of conscientiousness on the part of the actual undertakers in the Wall of the Crow cemetery, considering the continued disturbance of earlier burials from later activity, accidental or not. Rather, proximity to the massive wall appears to have been a higher priority than avoiding burials already present, at least during the Saite period.

There is some suggestion that the individuals that buried the dead in the cemetery in the Roman period took steps to prevent damage to the graves: the Roman period burials were sometimes equipped with a layer of limestone in the burial pit overlying the coffin or burial. In addition, a few fragments of worked blocks of stone in close connection with the Roman burials may indicate that there were some form of grave markers during this period; additionally, the pottery in the Roman burials was often placed at the top of the fill, and visible from the modern surface. However, it is also possible that the worked blocks of stone were part of the observed pattern of overlaying the coffin or body with limestone blocks, and displaced from one of the burials.

The Afterlife in the Egyptian Imagination

In the Egyptian imagination, the afterlife took place in a setting much like life on earth, albeit without most of the trials and tribulations associated with the living. Once they reached the *Fields of Iaru*, the deceased's physical abilities were restored: they could eat, drink, and even have sexual relations. Projecting their image of life onto that of death, Egyptians were also required to cultivate the fields, much like they had in life; however, in the afterlife, any work required of the deceased could be carried out by replacements, in the form of the *shabtis* mentioned above, guaranteeing the immortalized souls a fairly luxurious existence in the presence of the gods (Dunand and Zivie-Coche 2004:188). Nevertheless, regardless of the frequency with which the elite depicted their leisurely existence in the afterlife on the walls of their tombs, the journey to get there was a precarious one. To their aid, the dead therefore from the New Kingdom on employed a "guide book," a collection of spells aimed at helping the deceased navigate the treacherous route leading to the realm of the dead, today popularly known as "The Book of the Dead" (Ikram 2003:43).

These spells developed from the Old Kingdom Pyramid Texts, which were in their original form a prerogative of the king, but which were usurped by non-royals during the period of "democratization" of the afterlife in the First Intermediate Period and the Middle Kingdom, reappearing on the walls of coffins as the "Coffin Texts." The texts developed further at the beginning of the New Kingdom, and were now written on papyrus with vignettes illustrating the text. Many such papyri have been found in the tombs of the elite of the New Kingdom (Taylor 2001:32). By the Saite period, the use of the Book of the Dead had become widespread, and was no more confined to the elite. At this point, the text had become nearly canonized (Taylor 2010:58). The Book of the Dead was still being used in the Roman period, along with appropriation of the earlier Coffin and Pyramid texts. In addition, several new texts developed, such as the Book of Breathing and the Book of Traversing Eternity. These texts were not mutually exclusive, but often occurred together in a veritable hodge-podge of afterlife texts (Ikram 2003:44).

In its canonical version, the Book of the Dead was divided in four section, each dealing with a specific theme. In the first section, consisting of chapters 1-16, the corpse of the deceased regains its physical abilities, and he or she descends from the tomb to the netherworld. The following section, chapters 17-63, explains the mythological origins of important sacred places and the gods. Here, the deceased is reborn like the rising sun. The third section, chapters 64-129, is the most widely known. In it, the deceased travels across the sky in the sun-bark, eventually descending into the underworld and appearing before Osiris, who together with the judges of the dead evaluate his or her actions in life and decide if the deceased is worthy of entering the hereafter (Goelet 1998).

Scenes from this section of the text show the deceased being led by the jackal-headed god Anubis, god of embalming and protector of the necropolis, into the Hall of Judgement, presided over by Osiris. There, the deceased's heart is weighed against the feather of Ma'at, the goddess of truth, order and justice, in order to determine its purity. To prove his or her moral worth, the deceased also had to repudiate various offenses before a tribunal of divine judges. There were 42 of these little known deities, each responsible for judging one of the specific crimes that the deceased had to deny by way of 42 "negative confessions," outlined in Spell 125. These gods, with names such as "Nosey," "Eater of Entrails," "Hot-foot," and "Bone Breaker," assessed the innocence of the deceased with regards to offenses such as robbery, murder, stealing, and the killing of sacred bulls, but also in matters more obscure, such as "wading in water"(?), "babbling," or "hoodwinking" (Wilkinson 2003:84). Vindicated after the tribunal, the deceased is then described in the fourth section of the text, chapters 130-189, as one of the gods, traveling in the sun bark with Re. This section also dealt with matters related to the sustenance of the dead in the afterlife, such as protective amulets and the division of food (Goelet 1998).

Because of the widespread use of the Book of the Dead in the Saite period, the text appears to have become attainable even for those with fairly humble burials. Several of the papyri originating from such contexts are fairly crude, and the texts contain so many scribal mistakes as to be nearly unintelligible in places (e.g. Backes 2010). The many errors in these later copies may indicate that the meaning of some or all of the spells were poorly understood by the Saite scribes (Dunand and Zivie-Coche 2004:187). Nevertheless, the composition of the individual ‘books’ conveys at least a basic understanding of the main concepts, since illustrations are grouped with the appropriate texts. Further, though the full Book of the Dead was fairly standardized by this time, many of the extant papyri were shortened versions, most likely mass-produced based on existing templates. However, even among texts so similar that they most likely were made in the same workshops, sometimes belonging to members of the same family, the variation in spells is significant (Backes 2010). Thus, it appears individual choice, and perhaps individual religious preference, affected the final appearance of the papyri (Lucarelli 2006:261). This, in turn, suggests that not only the scribes, but also their customers, would have had to have at minimum a general idea of the meaning of the spells and their functions.

It should be noted that what constitutes a “humble” burial in the context of the funerary texts discussed above is still far removed from the burials at the Wall of the Crow cemetery in terms of funerary equipment. Though theoretically possible, because the poor preservation of organics at the cemetery means that the lack of papyri does not necessarily equate with absence at the time of burial, it appears very unlikely that any of the dead at the cemetery would have owned such a funerary object. As Christiane Zivie-Coche notes, “even when use of the Book of the Dead became widespread, never have archaeologists found one that belonged to a baker, a cowherd, or a fisherman” (Dunand and Zivie-Coche 2004:175). Nonetheless, the incorporation of these texts in the funerary assemblages of the lower middle classes in the Saite period shows that knowledge of the basic components of a successful transition to the afterlife permeated society well beyond the elite.

Some aspects of the burial assemblages of the Wall of the Crow dead suggests that this is indeed the case at the Wall of the Crow cemetery as well, though perhaps at a lesser scale. The coffins, for example, when inscribed, mainly invoke Osiris -- in his Giza specific form as Osiris of Rosetau -- Ptah-Sokar-Osiris, or Anubis. In addition, the decoration of one of the more elaborate coffins in the cemetery, burial 467, included motifs that, based on parallels, evoke themes from the Book of the Dead. This coffin was the square outer coffin of a double set, and was fairly well preserved, probably because it appears to have had a fairly substantial internal wooden frame, which is unusual in the Giza coffins. While the wood itself had deteriorated, clear traces of wooden boards were visible under the body and inner coffin.

Judging from the decoration and shape, this box-coffin is probably a cruder version of the box-coffin with vaulted lid, known as the *qrsw*-coffin, that became very popular in the Twenty-Fifth and Saite Dynasties (Grajetzki 2003: 112). These coffins were designed as models of the cosmos, the vault of the lid representing the sky, and the base representing earth and the realm of Osiris. The Wall of the Crow coffin, and an example of a more elaborate example of the *qrsw* type belonging to the Twenty-Fifth Dynasty priest Hor, can be seen in Figure 5.1.

Though the Giza example lacks the vaulted lid that symbolizes the sky in this type of coffin, and the lines of texts are represented only as stylized bands of red and blue, the design, and the deities flanking the sides of the Giza coffin, are similar to those in the more elaborate example. From Hor's coffin we know that these mummiform figures represent protective deities surrounding the tomb of Osiris (Raven 1981). The texts separating the deities on the sides of the coffin of Hor are excerpts from the Book of the Dead (Taylor 2003, Strudwick 2006:258-259), and it is possible that the bands, though devoid of text, of the Giza coffin, filled a similar function.

Figure 5.1: The side of the coffin of burial 467 (left), with insets enlarging the decoration, and of the priest Hor (EA15655). Photo of burial 467 by Scott Haddow, courtesy of AERA, photo of EA15655 courtesy of the British Museum.

The Mummification Process

Although the symbolic aspects of the mummification ritual are discussed in Chapter Four above, a few words about the actual process are in order. As we have seen, the preservation of the body was of paramount importance to the Egyptians, and the final product of this procedure, the mummy, was considered divine in its own right (Assman 2005:106). At its height, the process of embalming produced mummies of an eerily lifelike appearance, as can be seen in the Royal Mummy room in the Cairo Museum. King Seti I, of the Nineteenth Dynasty, still conveys a serene but decidedly royal air, and merely looks as if he is sleeping. Mummies of the Twenty-First Dynasty, such as that of the Forth Prophet of Amun Djedptahiufankh, have an almost doll-like appearance, achieved by subcutaneous stuffing of the bodies, and the insertion of artificial eyes between the eyelids.

These mummies, of course, are examples from the very pinnacle of the elite -- mummies of those of lesser stature show great variability in both preservation and competence of the embalmers. Nevertheless, it is from such mummies that most of our physical evidence derives, since the written records of the Egyptians are remarkably silent on the actual mummification process, concentrating instead on the ritual aspects of the wrapping of the mummy (Riggs 2014:81). The only written descriptions come down to us not from the Egyptians themselves, but from later writers who visited Egypt in the Late and Roman periods. The account of Herodotus, a Greek historian who visited Egypt in the 5th century CE, is the most often quoted. From

Herodotus, we learn that there were three different levels of mummification, explained to the family of the deceased by way of illustrative wooden models. All three methods took a prescribed seventy days to complete (Herodotus II.86).

The most expensive one entailed both excerebration and evisceration, after which the body was washed with palm wine and spices, filled with aromatic substances such as myrrh and frankincense, and covered in natron for seventy days, before it was washed again and wrapped in linen. The second quality eschewed the removal of organs by incision (and presumably the brain as well), the embalmers instead injecting oil of cedar through the anus to dissolve the innards, plugging it up, and covering the body in natron again. In the third and last level, according to Herodotus reserved for the poor, the body was simply washed and covered in natron for seventy days (Herodotus II.86).

For the most part, the physical evidence from the examination of mummies agrees with Herodotus' account, and there are also some Egyptian texts that support the length of the process as reported by him. However, dates given in some tomb inscriptions and on mummy labels from various periods of Egyptian history also record quite long periods elapsing between death and final burial, suggesting that the funeral did not always take place immediately after embalming was completed (Ikram and Dodson 1998:104).

The Late Period is often described as the beginning of the decline of the art of mummification, with many examples of what appears to be fairly hasty mummification (Ikram and Dodson 1998:128). However, Herodotus reports that it was during this period very common to keep the body of the deceased in the home for some days, before turning it over to the embalmer. Considering the hot climate in Egypt, it may well be that some of the subpar mummies from the period were the result of decomposition, rather than incompetence (Dunand and Lichtenberg 2006:66). Nevertheless, evisceration became less common, though the body cavity was still sometimes filled with mud or sawdust (Ikram and Dodson 1998:128). A particular type of mummy common in this period was the so-called "black mummy," so-called because of the liberal application of resin and/or bitumen, which rendered the mummy more statue-like and stiff (Dunand and Lichtenberg 2006:66).

According to the traditional view, a further decline occurred in the Roman period, and it is indeed true that a large number of fairly slip-shod mummies date to this period. However, as more recent archaeological work has shown, this development was not due to a loss of expertise, as previously thought. At the necropolis of Doush in the Kharga Oasis, for example, many expertly prepared mummies have been unearthed, conforming to what Herodotus referred to as 'the most perfect process." As Dunand and Lichtenberg have pointed out, what changed was not the mummification techniques, but rather the number of people that employed them. For the first time, mummification was obtainable by individuals from close to every level of society, resulting in a high proportion of mummies prepared with the cheapest and most expeditious techniques (Dunand and Lichtenberg 2006:72).

Once again, the poor preservation of organics at the Wall of the Crow site makes it difficult to ascertain to what extent the bodies in the cemetery were mummified. However, there is some evidence to suggest that some level of mummification was practiced in both the Saite and Roman periods. First and foremost, the narrow shape of many of the coffins would have made it nearly impossible to fit a fully fleshed body inside, particularly if it was wrapped in

Figure 5.2: Mudpacking in the abdomen and chest of burial 486, which could be dated to the late Twenty-Fifth or early Twenty-Sixth Dynasty on the basis of a large storage jar included in the grave.

several layers of textile, which fragments of linen adhering to the bones indicate was the case. Thus, it appears likely that the majority of the bodies were, at minimum, dehydrated before being placed in the coffins. The position of the skeletal elements in many of the graves, particularly the clavicles and shoulders, further suggest that the bodies were generally tightly wrapped. Several burials from both the Saite and Roman period were also covered with liberal amounts of a dark brown substance, most likely resin. Finally, there were also a few examples dating to the Saite period in which the ribcage and abdomen were stuffed with mud under the ribs and the sternum, indicating that the embalmers accessed the interior of the abdominal cavity and chest, possibly through an evisceration incision. The example shown here, burial 486, was also equipped with a large storage jar at the foot-end of the burial pit of a Twenty-Fifth to Twenty-Sixth Dynasty type that is often associated with embalming refuse (Budka 2014) in burials from the same period (Figure 5.2).

The Funeral and Mortuary Cult

Crucial to a successful transition to the afterlife was the funeral and its accompanying rituals. Elite funerals in the pharaonic period were loud and elaborate, centered on the funeral procession and banquet, often depicted on contemporary tomb walls, but also described in written sources. The processions were veritable spectacles of conspicuous display. Rows of offering bearers followed the coffin, carrying goods and provisions to be deposited in the tomb. Professional mourners also joined in, crying and wailing, and covering their heads with ash and dust (Fig. 5.3). The latter is a custom that persists in Egypt until the present day (Ikram 2003:184). Undoubtedly, the number of such mourners reflected the social status and wealth of the deceased, but they also had an important ritual function, echoing the cries of Isis and Nephtys as kites, mourning for the dead Osiris (Volokhine 2008).

In both form and concept, the funeral procession was similar to the procession of deities enacted during religious festivals. In elite tombs, for example, depictions of arbors with food and

Figure 5.3: Part of the funeral procession of the Eighteenth Dynasty vizier Ramose, depicted in his tomb, TT55. From the flickr stream of kairoinfo4u (Creative Commons): *https://www.flickr.com/photos/manna4u/11207498165/in/album-72157600225911077/*

drink along the processual route mirrored similar practices during festivals. These served as offering structures from which oblations could be presented to the passing sarcophagus, as well as hospitality for the funeral guests once the cortege had passed by (Assmann 2005:308). Captions on tomb walls associated with such depictions include songs that were also sung during religious festival processions: “Beware, earth, the god is coming!” (Settgast 1963:38-39). The concept of the ‘coming’ god was central to the Egyptian concept of the festival, and was in addition to the songs also expressed through the symbolic processual motion (Assman 2008:16). Thus, in addition to being an important social event, public and visible to the entire community, the funeral procession also had an important cultic function in the transfiguration of the deceased, as a hierophany, the appearance of a sacred being (Assmann 2005:308). Dancing was also an important part of the procession, expressing the emotion evoked by the appearance of this sacred being (Assman 2005:301). Though perhaps given the most prominence in elite tombs from the New Kingdom, funeral processions continue to be depicted in elite tombs of the Twenty-Fifth and Twenty-Sixth Dynasties (Pischikova 1998, 2009) through the Roman period (Venit 2015), and there is no reason to believe that the symbolic aspects of the practice changed.

Once at the tomb, the final step in turning the deceased into an *akh*, or blessed spirit, was the Opening of the Mouth ritual, designed to reanimate the mummy. Originally a ritual endowing statues with life, by the New Kingdom this ceremony was carried out on a variety of sacred objects, most importantly on the mummy. Its purpose was to restore the faculties of the deceased so that he or she could accept the nourishment provided by offerings to sustain the ka (Taylor 2001:190-191). The mummy was placed upright on its base outside the tomb, facing south. Assman (2005:318) takes this to mean that the ritual was carried out around noon, as the conclusion of a procession that started in the early morning. The ceremony was generally carried out by a *sem*-priest, clad in a leopard skin, who could be a member of the clergy or alternatively the son of the deceased (Ikram 2003:185). Illustrations, such as the vignette from the Book of the Dead of Hunefer (Fig. 5.4), often show the mummy being supported from behind by Anubis -- most likely, this is a representation of a priest and an Anubis mask (Assman 2005:310). Various implements -- a chisel, an adze and a flint-knife for example, were brought to the mouth of the mummy, while incense was being burnt and prayers recited (Taylor 2001:191).

Figure 5.4: The Opening of the Mouth ritual from the Book of the Dead of Hunefer. Image © The British Museum

Immediately following the Opening of the Mouth, the Offering Ritual was performed, in order to inaugurate his or her mortuary cult. Like the Opening of the Mouth, it consisted of several different rituals, including recitations, libations, censing and the presentation of food and drink (Taylor 2001:192). Thus revived, the mummy could then be buried, and the remnants of the fresh food offerings were consumed during a funerary feast at the tomb. Remnants of such meals have sometimes been found in association with the burial place. Family and friends said a final farewell, placing flowers and garlands on the coffin or mummy, and the tomb could finally be sealed (Ikram 2003:186-187).

In order to continue his or her existence in the hereafter the deceased required continued offerings in the form of a mortuary cult. Royal mortuary cults were often elaborate affairs, involving a large staff of priests responsible for the daily cultus in the mortuary temple of the kings. The cults were often supported by land endowment to these temples, and some temple complexes developed into mortuary cult settlements that persisted for centuries (Mumford 2010).

Beyond the royal family and the very pinnacle of the elite however, more commonly the cult was carried out by relatives, or by paid priests from the local temple. At a smaller scale, the private mortuary cults could also be supported by land-endowments, intended to pay for the material used in the cult as well as the hours put in by the priests. Offerings would be presented to the dead at several occasions throughout the year, such as birthdays, anniversaries of their death, and various religious festivals (Taylor 2001:177-178). The burial place also provided a point of contact with the deceased, as shown by the many letters to the dead that have been found in tombs, asking the tomb owners to intervene in the life of the living (Taylor 2001:42-43). The mortuary cult remained a central part of the interaction with the dead through the Roman period, and remnants of offerings deposited both at the time of burial and as part of the continuing cult have been found in association with fairly modest burials (e.g. Zych 2011).

At necropoleis devoid of decorated tombs such as the simple Wall of the Crow cemetery, archaeological evidence for funerary processions is naturally limited. However, both the passageway from the Sphinx area through the center of the wall, and the Old Kingdom road transecting the site just south of the North Street Gate House area, appear to have been in use during the same time as the cemetery, because burials occur on both sides, but respect the road

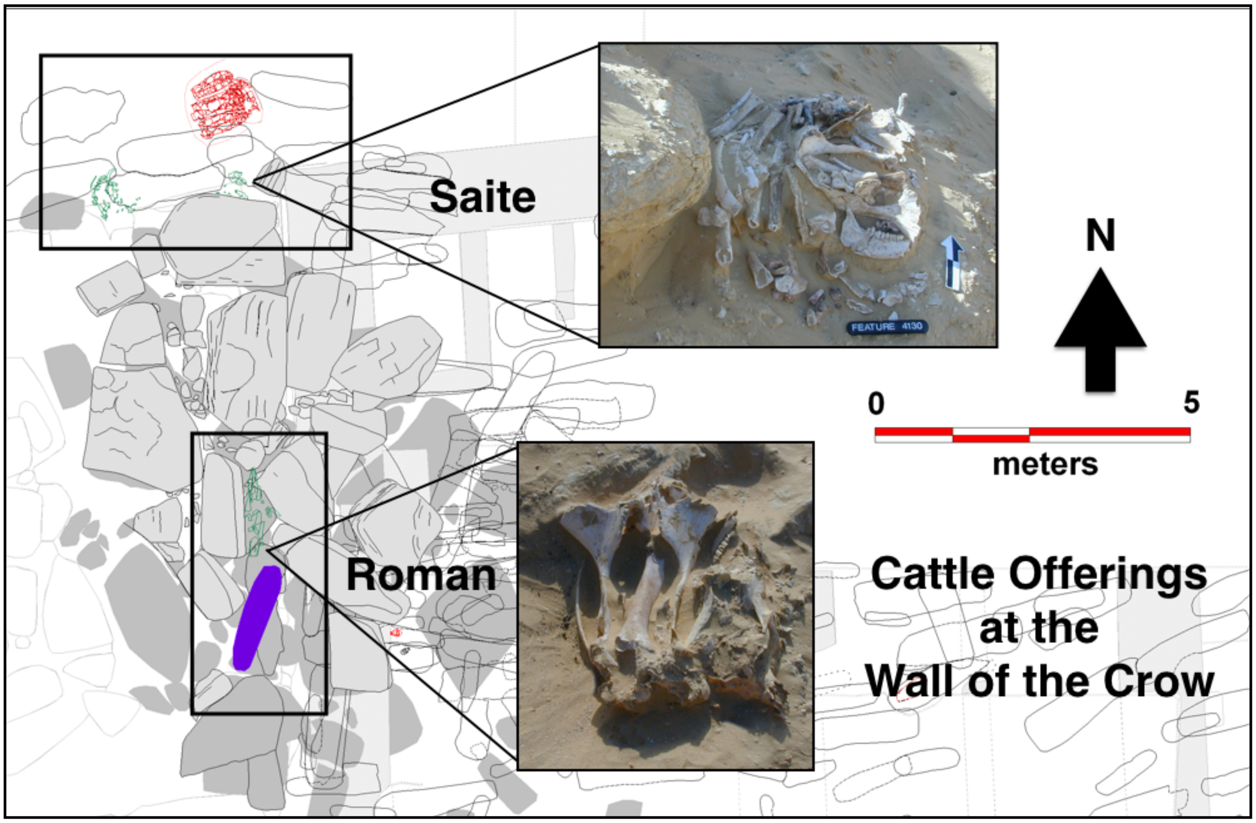


Figure 5.5: Saite and Roman cattle deposits (green), associated with Saite pottery (red) and a Roman burial (purple), respectively.

proper. Both roads would have provided suitable processional routes to the burial areas. In addition, several of the Roman burials were capped with deposits of pottery identified as cooking pots and food containers (Tavares and Laemmel 2011), perhaps suggesting that a meal was indeed consumed in association with the funeral. Finally, several deposits of cattle bone were found at the eastern end of the Wall of the Crow; two in association with a cash of Saite pottery at the base of the north-east corner of the wall, and one in association with the lone Roman burial in the Wall of the Crow area (Fig. 5.5). The Roman deposit was found on top of the wall, above the stone tumble covering the Saite burials, and in the same sand layer that covered the un-coffined burial of an elderly woman, dated on the basis of stratigraphy and burial position (arms crossed over chest) to the Roman period, and may have been deposited at the time of burial. The Saite deposits, dated on the basis of pottery, were not associated with any specific graves, and may be evidence of an ongoing mortuary cult, perhaps collective.

5.3 The Business of Death

5.3.1 The Necropolis Workers

In lieu of the private staff of priests employed by royals and the highest echelons of society, those of lesser means could in earlier periods contract with priests of the local temple to act as *ka*-priests for their mortuary cult in addition to their duties to the local god (Taylor 2001:176). By the Saite period, this task had been taken over by a specialized group of officiants, known as the water-pourers (***w3ḥ-mw***), or *choachytai* in Greek, who developed the trade into a veritable business. As a result of the custom of supporting the mortuary cult with a land endowment, many of the choachytes also expanded into agricultural land development, leasing out land under their control to tenant farmers (see discussion in Chapter Two). The basis for their livelihood was the number of mummies or tombs they controlled, the interest in which could be ceded, inherited or sold. The position of choachyte appears to have been hereditary; most often to sons, but female choachytes are also known (Donker Van Heel 2014). Archives of such choachytes are preserved from Saite through Ptolemaic Thebes (Donker Van Heel 2012, 2014), Graeco-Roman Memphis (Thompson 1988) and Hawara (Uytterhoeven 2009), and Roman Kharga (Doush) (Dunand and Lichtenberg 2006).

The choachytes belonged to a larger group of necropolis workers, known as the "Men of Anubis" or "***rmt.w n Inpw,***" which included men of rather high esteem and influence, such as the *taricheutai* or embalmers, closely associated with doctors, who were considered ritually pure, and who had access to the temple (Thompson 1988:155). At the lower end of the scale were the actual gravediggers, or *nekrotaphoi*, who appears to have been required to live in the necropolis (Uytterhoeven 2009:367). Another group associated with the *necrotaphoi* were the *exopylitai*, whose name literally means "those who live outside the gates" (Youtie 1973). A specialized officiant was also the *paraschistēs*, or cutter, who made the initial incision in the mummy. Diodoros Siculus tells us that after this was done, the *paraschistēs "*takes to flight on the run, while those present set out after him, pelting him with stones, heaping curses on him*"* (91.4). These particular necropolis workers, then, were the ones dealing with the initial phases of mummification, which surely would have been a fairly unpleasant stage of the preparation.

In earlier periods, the embalming process was started in the ***ibw***, sometimes referred to as the ***ibw***-tent, where the body was washed. The ***ibw*** would have been a light structure, located near a body of water (van Roode 2003). When the body had been purified, it was moved to the ***pr nfr*** (beautiful house) or ***wbt*** *(pure place)*, where the subsequent mummification took place (Ikram and Dodson 1998:108). In later times, the ***ibw***-tent was replaced by brick structures or enclosures that could hold a large number of bodies; presumably to lay them out for drying under heaps of natron. One such structure has actually been found at Deir in the Kharga oasis, dating to the Roman period. The structure contained remnants of an embalmer's cache, including quantities of natron (Dunand and Lichtenberg 2006:91, and note 3).

Exactly where the choachytes fit within the larger group of necropolis workers is unclear, and may have varied based on location. In Memphis, they intermarried with the *nekrotaphoi*, and appear to have lived in the same area of the necropolis, close to the Anubeion (Thompson 1988:167-168). At Thebes, they appear to have lived in the city on the east bank, close to Karnak temple (Donker Van Heel 2012, 2014). Very little is known about the *nekrotaphoi* in Thebes, if they even existed; since most of the burials took place in re-used tombs from earlier periods, there may have been little use for dedicated gravediggers in the Theban region. In Thebes, the choachytai appear to have had traditional priestly titles too, specifically as *pastophorai* in the temple of Amun of Ophis/Amenophis (***wn-pr n Imn-Ipj***), most likely located somewhere in the vicinity of Medinet Habu. Thus, the social position of the choachytai may have been slightly more elevated in Thebes than in Memphis. At Hawara, perhaps even more so, as the offices of the *choachytai* and the *taricheutai* occasionally appear to have been combined, perhaps because of the smaller size of the necropolis compared to those in Memphis and Thebes (Uytterhoeven 2009:365-372).

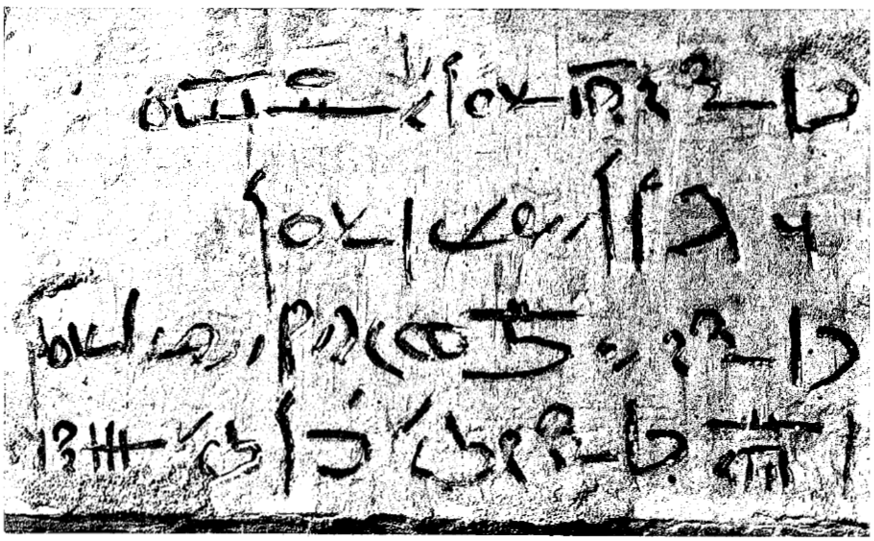


Figure 5.6: Demotic stela found by Petrie in the South Field, mentioning the names and affiliation of a family of choachytes: wḥ-mw n pr-Wsr-nb-rst / pꜣ-to s p-te-Wsr / wḥ-mw pr skh [……] s p-te-Wsr/s-ḥMṯ (?)wḥ-mw ṯꜣ-Mn tꜣ-khnt (?)-ḥtp (?) -- The choachytes of the house of Osiris, lord of Rosetau, Pato (Patous), son of Pete-wsir (Petosiris), the choachytes P-sekh . . , . . son of Pete-wsir (Petorisis), the female (?) choachytes Ta-min (Taminis), daughter of Khent-hotep (?).” From Petrie 1907, Plate XXXVIIA, and p 29. Now in the Cairo Museum.

We know that choachytes were active at Giza during the Saite period, since Petrie found several stelae associated with the many humble Saite graves he excavated in the Giza South Field, close to the tomb of Tjary, and just southwest of the Wall of the Crow cemetery, in 1906-1907. Petrie interpreted the stelae as “marks for the districts of the cemetery where certain firms of undertakers had the right of burying.” One of these stelae (Fig. 5.6) specifies that the choachytes in question were attached to the House of Osiris of Rosetau, the temple located in the village Bousiris, just to the south-east of the Wall of the Crow cemetery at the location of modern Naslet Batran. It reads: “The choachytes of the House of Osiris, Lord of Rosetau, Patous, son of Petosiris, the female (?) choachytes Taminis, daughter of Khenthotep” (Petrie 1907:29). Given that the Wall of the Crow cemetery lies just to the north and nearly equidistant from the tomb of Tjary and the location of the temple of Osiris of Rosetau in the village of Bousiris (fig. 5.7), this opens the possibility that the Wall of the Crow cemetery itself was in fact under the supervision of the choachytes of Osiris of Rosetau, who most likely lived, then, in the village of Bousiris themselves. Bousiris was the closest village to the Wall of the Crow cemetery, and many of the graves in the cemetery probably belonged to the villagers. It is certainly possible that some of the choachytes or other necropolis workers associated with them were even buried in the Wall of the Crow cemetery.

Figure 5.7: Google map showing the location of the tomb of Tjary and the South Field, in which the choachyte stele were found, in relation to the Wall of the Crow cemetery and the village of Bousiris.

5.3.2 The Cost of Death

Though non-elite cemeteries, particularly those from later periods, traditionally have received quite limited attention in Egyptology, this had begun to change in recent years, with several publications devoted to the results of such studies, particularly from the Memphite region. These include the secondary cemetery around the mastaba of Ptashepses in Abusir (Strouhal and Bareš 1993), the EES excavations around the Anubeion in Saqqara (Giddy 1992), the secondary burials in the Teti cemetery (Bentley 1999), the Louvre excavations around the mastaba of Akhethetep (Ziegler 2013), and the Ptolemaic burials around the mastabas of Ny-ankh-nefertem and Merefnebef (Myśliwiec 2008), also in Saqqara. These necropoleis are all described as "poor" by their excavators. In comparison, however, the Wall of the Crow cemetery is the absolutely poorest of them all, in terms of grave goods and coffin quality.

In addition, while other cemeteries of the Late and Roman periods, such as those at Hawara (Uytterhoeven 2009), Marina el-Alamein (Zych 2011) and Douch (Dunand et al. 1992a, 2005a) display a significant range of variation in terms of funerary expenditure, the Wall of the Crow cemetery stands out again because of its relative homogeneity. Only a few burials, in area WD, were decidedly better equipped than the rest, but these were excavated slightly up the hill from the rest of the cemetery, and may have belonged to a separate section of the necropolis that

Figure 5.8: Burial 324, showing the outline of the small coffin and the position of the partially disarticulated skeleton.

was of slightly higher status. Additional burials have been excavated farther up the hill by the Ministry of Antiquities; these are as yet unpublished, but preliminary results suggest that the quality of the coffins improved with elevation.

Granted, to automatically assume that a grave belonged to someone of low social status simply because of lack of grave goods can be precarious; first, because someone of greater wealth may have preferred a simpler burial, and second, because the deceased may not always have had a say in the way they were ultimately buried -- the living may have diverted funds meant for the funeral, and provided a sepulcher much more modest than intended (Jones 1993). Nevertheless, considering the materialistic approach to the afterlife generally taken by the Egyptians in both the Late and Roman periods, and the long tradition of conspicuous display in funerary practices, it is probably safe to assume that the dearth of grave goods and the crude nature of the coffins, along with the lack of variability, point to a population of limited financial means. In addition, the complete lack of Hellenized influences in the Roman burials, belonging to individuals who would have been interred during a time when the elite generally presented as Greek, also suggests that the cemetery population represents the lower rungs of the status scale.

The simple nature of the burial goods notwithstanding, all the burials in the Wall of the Crow cemetery were formal, meaning that they would have been associated with some cost. If the cemetery was indeed, as seems likely, supervised by the choachytes from the temple of Osiris in Bousiris, a grave in the cemetery would not have been free. In addition, the majority of the individuals in the cemetery were buried in coffins, which would also have had to be purchased. Several of the burials in the cemetery suggest that families sometimes had to cut corners to defray some of the cost. Two burials, 324 and 495, exemplify this particularly well. Neither of these burials are included in the osteological analysis in this study because they could not be dated securely to either the Saite or Roman periods. However, based on the areas of the cemetery in which they were interred, burial 324 is most likely Roman, whereas burial 495 is probably Saite.

Burial 324 (Fig. 5.8) belonged to a male in his late teens to early twenties. He was interred in a poorly preserved anthropomorphic mudcoffin with traces of black, red and white paint. When the grave was initially discovered, it was assumed to be a child burial, because of its small size. After removal of the lid, however, it became clear that the body of an adult had been intentionally dismembered in order to fit in the coffin. The legs and feet of the young man were still fully articulated, but the sacrum had been separated from the innominate bones and the upper body pushed down toward the feet, so that the left hand rested on the left knee. The sacrum and vertebral column were turned, lying left lateral aspect up. The proximal femora and the innominate bones were under the ribcage, which was disarticulated from the spine and positioned between the elbows, cranial aspect on top, as if it had been placed in the coffin in an upright position and subsequently collapsed. The patellae were not recovered.

Burial 495 (Fig. 5.9) belonged to a man in his mid-twenties to mid-thirties. He was interred in a coffin with a molded facemask and wig, painted in red, black, yellow and light blue. The body of this individual also showed signs of significant manipulation. The sacrum and spine were missing, and there was a tibia from a second individual inserted into the foramen magnum

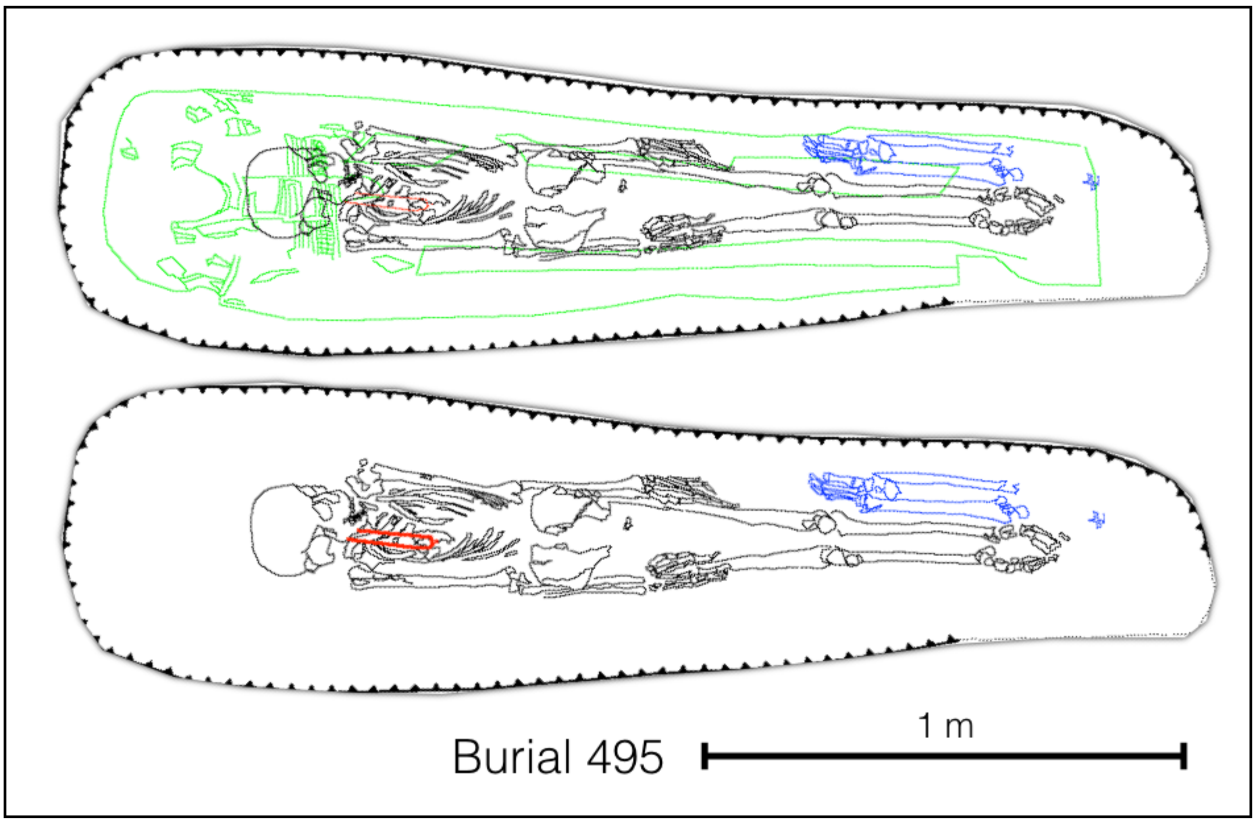


Figure 5.9: Burial 495, illustration showing the position within the coffin (top) and the skeleton after removal of the coffin (bottom). The tibia from individual two is marked in red, while the supernumerary lower legs are colored blue.

of the base of the skull, presumably to stabilize the mummy. The rest of the skeleton was articulated, and lying in a supine position. Next to the left lower leg of the individual, however, was an additional set of legs from a third individual, including both fibulae, tibiae, and feet. The supernumerary legs were lying in the opposite direction of the primary individual, feet next to the primary individual's knees.

"Composite" mummies are well attested from the later periods of Egyptian history, but are usually interpreted as attempts at restoration after robbery or damage (e.g. Giuffra et al. 2006, Aufderheide 2009), or as examples of indolent and incompetent or even fraudulent embalmers (Ikram and Dodson 1998:130). This does not appear to be the case here. Burial 324, for example, was clearly manipulated in order to fit in the burial container. It is difficult to imagine the embalmer who would do such a thing hoping the bereaved would not notice a mummy half the length of the body they had deposited with the undertaker; undoubtedly the family of the deceased would have noticed. This raises some interesting questions. Would the size of the coffin affect the price? Did the coffin makers occasionally have leftover coffins they would sell for less, and the family settled for a bargain? Was the presence of a coffin valued higher than the integrity of the body?

In contrast, the coffin of burial 495 would not have looked untoward from the outside; here, the family would indeed have been none the wiser. Nevertheless, the state of the body suggests a less than ideal embalming process, probably due to cost. Most likely, the disarticulation of the body occurred during the drying process. This may not have been purely due to incompetent embalmers. If the dead at Giza were, as they were at Douch, laid out in large enclosures at great numbers, it is a very real possibility that they could have been ravaged by scavenging animals. Today, for example, large flocks of feral dogs roam the Giza plateau, and this may have been so in earlier times as well. If this happened on a regular basis, the embalmers may well have had "extra" body parts at their disposal, while wooden sticks are more scarce in a country without trees. To use a long bone to reattach the head may have been the most economical solution. Perhaps the supernumerary legs had become separated from the body they belonged to, and were included in burial 495 for lack of other means of disposal. Or, perhaps there was a genuine concern with properly burying body parts.

Regardless of the reasons, the extensive manipulation of these burials strongly suggest the bodies were given over to professional necropolis workers, which would have been associated with cost. The exact cost of such rudimentary treatment is unknown, but accounts and receipts from Roman period Fayum show a great variability in prices for funerary services, ranging from 100 drachmas for the burial of a child, to 1500 drachmas for the burial of an elite member of the community. Linen alone is recorded as costing as much as 600 drachmas in one funeral account, though more modest arrangements required as little as 80 drachmas for the wrapping of the corpse (Montserrat 1997). Considering that the average laborer made between 600-700 drachmas per year during the same period (Bowman 1989:238), clearly these costs would have been prohibitive for those on the lower end of the socioeconomic scale. Add to this the high mortality in Roman Egypt, and prospects become even more dire -- most likely, deaths occurred quite often in the community, and would have to be paid for at regular intervals by the average family. This may be why some mummy labels suggest such long periods between death and burials for some individuals -- perhaps the funeral was simply too expensive, and the family had to save some money before the final rites could be carried out.

Treatment of the body and coffins would not have been the only expenses for the funeral, however. Funerary accounts from the Fayum again provide some examples of the range of costs:

> *"Account of funeral expenses. Myrrh-oil, 12 drachmas 2 obols;*
> *earthenware jar, 2 obols; red-dyed cover, 4 drachmas 19 obols;*
> *wax, 12 drachmas; myrrh, 4 drachmas 4 obols; honey, 4 obols;*
> *tallow, 8 obols; linen, 136 drachmas 6 obols; mask, 64 drachmas;*
> *cedar oil, 41 drachmas; dye for the wrappings, 4 drachmas;*
> *fine oil, 4 drachmas; wages of Turbon, 8 drachmas ;*
> *torches, 24 drachmas; price of an old tunic, 24 obols;*
> *sweets, 20 obols; barley, 16 drachmas; engraving, 4 drachmas;*
> *gum, 21 drachmas; pine-cones, 8 obols; garlands; 16 obols;*
> *mourners, 31 drachmas; fare for the donkey on the boat, 8 drachmas;*
> *fodder, 12 obols. Total 440 drachmas, 16 obols"*
>
> *SPP XXII 56, trans Montserrat 1997*

Clearly, again, the average laborer would not have been able to afford such an extravagant funeral. Nevertheless, some of the costs would be hard to avoid. In addition to the treatment of the body and the eventual coffin, many of the bodies at the Wall of the Crow cemetery show evidence of having been wrapped; in some burials there were also linen fragments preserved. Several bodies were also covered in resin; an expensive substance in a country without trees. The funerary feast and wake would also have been costly. Finally, the body would have to be transported to the cemetery.

How, then, did the Wall of the Crow population negotiate these financial requirements? One strategy was obviously to forgo all but the most necessary grave goods. Another strategy may have been the creation of "funerary clubs" to defray individual cost. Evidence from Thebes does indicate such clubs existed (Donker Van Heel 2012). Finally, the cattle offerings from the Wall of the Crow that were not associated with individual burials may perhaps suggest a communal mortuary cult for the individuals buried in the shadow of the wall. Taken together, the evidence from the Wall of the Crow cemetery shows that rituals and requirements could be subverted and substituted without losing their effectiveness.

CHAPTER 6:
THE LANDSCAPE OF GIZA IN RELIGIOUS AND MORTUARY CONTEXT

6.1 Funerary use of the Giza Plateau through time

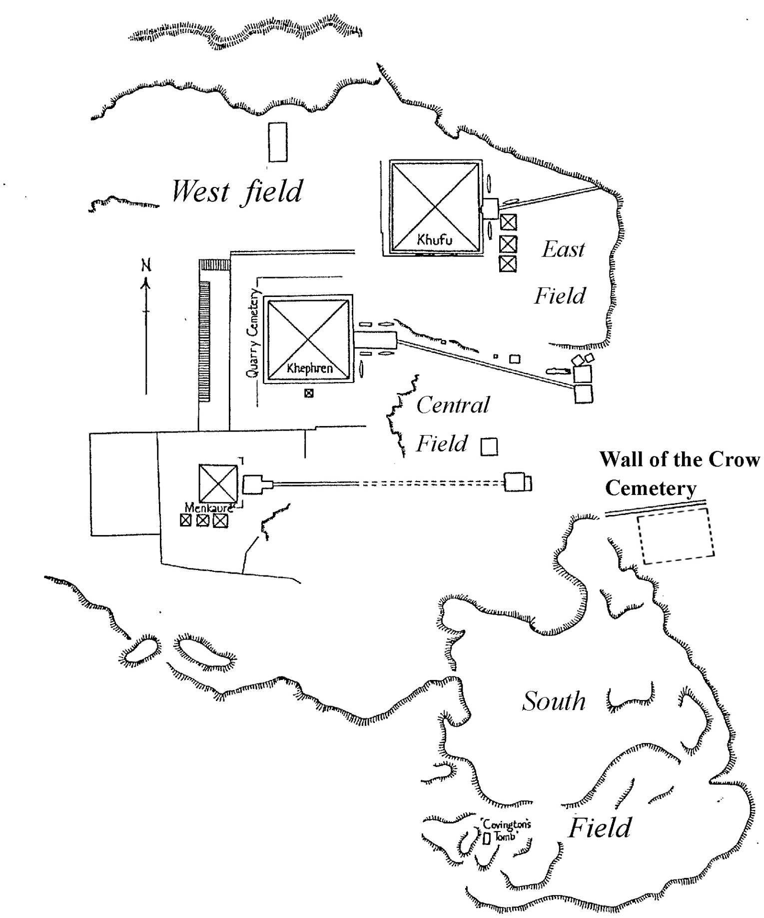


Figure 6.1: General plan of the Giza Plateau. After Porter and Moss 1974, Plate III.

Archaeological evidence suggests that the Giza Plateau was occupied as early as the Predynastic Period. It remains unclear, however, if this occupation was funerary (Ikram and Dodson 1998: 310) or domestic (Mortensen 1985) in nature. The earliest undisputed evidence of funerary use dates from the Early Dynastic period. In 1907, Petrie excavated a number of private mastabas and graves on the southeastern part of the plateau dating from the 1st, 2nd and 3rd Dynasties, some of which had been previously excavated or recorded by the earlier Egyptologists Georges Daressy, Allesandro Barsanti, Karl Lepsius and James Quibell (Petrie 1907: 2-8).

The peak of popularity for Giza as a necropolis was reached in the Fourth Dynasty, during which time first pharaoh Khufu, and later his successors Khafre and Menkaure, decided to build their imposing mortuary complexes on the plateau instead of in Saqqara. Over time, the necropolis developed into three main cemeteries surrounding the pyramids (Fig 6.1) – the eastern cemetery, where the Fourth Dynasty royals were interred; the western cemetery, consisting, for the most part, of the graves of high officials and clergymen from Khufu's reign; and the central cemetery where the followers of Khafre built their tombs (El-Sadeek 1984). After Menkaure's death, his successor, Shepseskaf, opted to build a more modest funerary complex in Saqqara. By the end of the Old Kingdom almost all funerary activity on the Giza Plateau had ceased. The only exceptions are the grave of Imset-Kai, G.4351 (Porter and Moss 1974: 126), which dates from the First Intermediate Period, and the isolated find of a panel to a false door dated to the Eleventh Dynasty (Porter and Moss 1974: 115), which was found out of context.

Evidence of mortuary activity from the New Kingdom is also notably absent. Christiane Zivie-Coche (1976: 51ff) has suggested that 6 groups of relief-fragments, two currently missing, two in the Cairo Museum (Maspero Cat No 4982-87 and 427-29) and one each in the British Museum and Boston MFA, BM 160 and BMFA 34.50 respectively, constitute evidence of New Kingdom tombs in Giza that have been lost to us today, but this view has been challenged by Malek (1981), who points out that the provenance for all of the fragments is tenuous at best.

During the Third Intermediate Period, the practice of burying the members of the royal family within the actual temple (as opposed to in a separate necropolis) evolved (Zivie-Coche 1991: 44-45), perhaps because the busier temple-area was easier to protect from pillaging. This practice appears to have been echoed at the Giza Isis-temple described below, although somewhat later, as evidenced by the wooden sarcophagus of Bepheses (MFA EXP. N. 26-1-88), dating from the Twenty-Second to Twenty-Third Dynasty, found in western part of the temple-area (Zivie-Coche 1991: 83-84). No other evidence of funerary activity from this period is known, although it seems likely that the burial of Bepeshes was not an isolated case, and that the funerary activities on this part of the plateau might be more continuous than previously thought. The lack of archaeological evidence might in part be due to incomplete excavation or excavation records, paired with the effects of major alterations to the temple-area that were made at a later point in time (Zivie-Coche 1991: 311).

With the beginning of the Twenty-Sixth Dynasty, the Saite Period, the necropolis of Giza had come full circle, and was once again used as a necropolis on a larger scale. Lavish tombs from the period were built to the north of the causeway of the Khafre pyramid, in an area that was not previously used for burials, and on the south part of the plateau (El-Sadeek 1984: 6). Old tombs were re-used, and poorer inhumations have also been found across the plateau, sometimes in shafts, sometimes buried in the sand, close to the surface. Several stelae with coachyte inscriptions uncovered by Petrie (1907: 29) suggest that there were some restrictions of access, as the choachytes were something akin to undertakers, with responsibility for mortuary cult and libation offerings to the cemeteries, who garnered a living from the sale of burial plots in areas under their control (Thompson 1988: 157). The extent of the poorer inhumations is difficult to determine, partly because they were relatively accessible and thus subject to easy pillaging, and partly due to the fact that they are part of an archaeological corpus that has not been sought by most excavators, especially during the eighteenth and nineteenth centuries CE. However, Petrie (1907: 26) reports that he uncovered a vast Saite period cemetery in the so-called Southern Mound, close to the tomb of Thary (Fig 4.1). He does not give much detail, other than to state that he had shipped 1400 complete skulls to London, presumably disposing of the rest of the skeletons and the ones with fragmented crania. At the time, it was not unusual that Late Period burials were discarded, while in other cases they were collected, but bones and artifacts were lost or never published properly (Zivie-Coche 1991: 268). A telling example is an entry in George Reisner's diary of the excavations at the Isis-temple from 1926, where he refers to the remains as "the usual Saiti-Roman rubbish" (Zivie-Coche 1991: 188). Reisner's notes from the excavations in the mastaba field proper also contain frequent references to “the usual bodies” (Saite, Ptolemaic or Roman) being removed, with little or no detail or recording being provided. From photographic evidence, Ann Macy Roth deduces that Reisner and his crew removed approximately seven meters of later remains without recording, while clearing the large mastaba field (Roth 1995: 38). Recent excavations by the Egyptian Supreme Council/Ministry of Antiquities (SCA/MSA) have revealed additional extensive cemeteries, both in the South Field and on both sides of the Gebel Gibli, adjacent to the AERA concession. Thus, it seems safe to assume that the Giza Plateau was used to a large extent as a necropolis during the Late Period, and continued to be used throughout Roman times, by the poorer classes as well as the more affluent few.

6.2 Religious building activity in the New Kingdom and later

When the Egyptians acquired the military technology of horses and chariots after the Hyksos invasion, the low tract of desert around Giza became as a favorite area for equestrian military exercises for the royal commanders and their troops. The growing threat of the emerging political powers in the Eastern Mediterranean probably played a part in the resurgence of Memphis as well, as the city’s strategic location was a better starting point for campaigns against enemies like Syria, Mitanni and the Hittite empire. After his conquests in the Syria and Canaan, the Eighteenth Dynasty king Tuthmose III established a large royal arsenal in Memphis, which then again became an important military center and administrative capital. The military successes of Tuthmose III and his successor Amenhotep II also brought with them a steady stream of immigrants from the conquered areas, and Memphis became quite the cosmopolitan city. (Stadelmann 1987: 436-437).

New Kingdom royal activity at Giza is first attested under Amenhotep I, but no actual buildings were constructed on the site before the reign of Amenhotep II, who erected a mud brick temple dedicated to the Sphinx to the north-east of the Sphinx itself. Tuthmosis IV then erected the famous “Dream Stela” between the paws of the Sphinx, and several other New Kingdom rulers, such as Tutankhamen, Ay, Horemheb, Ramses II and Seti I also left inscribed material in the area (Lehner 1991: 114ff).

Though there is ample later evidence for a popular interest in the Sphinx, the New Kingdom cult was definitely inaugurated by royal initiative. Outside of the renewed importance of Memphis during the New Kingdom, the Giza Plateau appears to have functioned as a military training ground for the king and his men, and several stelae found there have military allusions. The royal cult appears to have centered on the Sphinx as an ancient symbol of kingship, and royal dedication of buildings may have served as a way to confirm the status of the king as the son of a god (Lehner 1991: 125-126). Outside of the royal sphere, the sudden increase of religious activity on the plateau during the New Kingdom focused primarily on three interlinked deities; Isis, as Mistress-of-the-Pyramids, the Sphinx, as Hr-m-Akhet or Horus-in-the-Horizon, and finally Osiris, as The Lord of Ro-Setau (Zivie-Coche 1991: 94).

The era following the end of the New Kingdom, the Third Intermediate Period, was a tumultuous epoch, during which, at certain times, several different Dynasties governed the country simultaneously (Kuhrt 1995: 623-624). At the Giza Plateau, the cult of Isis, Mistress-of-the–Pyramids, was already firmly established at the base of the Great Pyramid, where the Old Kingdom funerary chapel of the pyramid of Henutsen (GI-c) had been renovated and enlarged to accommodate a temple dedicated to this specific incarnation of the goddess (Zivie-Coche 1991: 307). The Inventory Stela (Cairo, JE 2091), found in the Isis temple in 1853 by Auguste Mariette and dating to the Twenty-Sixth Dynasty, mentions both Isis, Horus-in-the-Horizon, and Osiris Lord of Rosetau. The stela also refers to a temple dedicated to this form of Osiris, and gives the topological information that the Isis-temple is situated northwest of the Osiris temple (Zivie-Coche 1991: 219). In addition, this temple is mentioned on the Donation Stele (JE 28171), dated to the Twenty-First Dynasty reign of Psametiqus I (Zivie-Coche 1991: 105), which was also found in the area of the Isis-temple in 1888. The stela tells about a donation of land that was made to Osiris, Lord of Rosetau, and his temple by a man named Harbes, and places the location of the temple most likely on the lower parts of the plateau, Southeast of the Sphinx (Zivie-Coche 1991: 119).

A temple of this kind, dedicated to Osiris, was excavated at the modern El Alya cemetery in Nazlet Batran by an SCA/MSA team under supervision of A. Moussa in 1982 (Abdel Aal 1999). The temple is believed to have been built on the plateau possibly as early as during the reign of Ramses II in the New Kingdom, and two ramesside pillars, re-used by Amenemope in the Isis-temple, are thought to originate from it (Zivie-Coche 1991: 38).

6.3 The Renegotiation of sacred space

During the Fourth Dynasty, access to Giza was severely restricted, and a burial place in the royal necropolis could only be obtained by decree of the king. During this period of exceptionally strong kingship, the pharaoh was viewed as god incarnate (Silverman 1991: 59ff), and the pyramids are perhaps best understood as religious monuments in their own right, rather than graves for mortals, and were the centers of extensive mortuary cults dedicated to the deceased kings that persisted long after their deaths. Thus, by securing a resting place for eternity in the vicinity of such power, the recipients of the mastabas surrounding the royal monuments could partake in the cultus of the dead monarchs, thereby benefiting even in the afterlife by their association with the king. When the absolute power of the king declined towards the end of the Old Kingdom, so did the grandeur of the royal monuments, and the later pyramids in the Memphite region are today more or less reduced to piles of rubble. The pyramids of Giza, of course, fared better, and must have been even more impressive during the New Kingdom than they are today, even after the memory of their original royal occupants had somewhat faded. When use of the Giza plateau resumed, then, the royal monuments gradually took on a new meaning, particular to the new utilization of the site.

As an example, the cult of the Sphinx in the New Kingdom is centered on the statue, as Hr-m-Akhet, “Horus-in-the-Horizon”, and not to the cult of its Fourth Dynasty owner, Khafre. This cult of a statue proper, rather than that of a representation of a god, is unique in Egyptian history (Zivie-Coche 1997). During the early New Kingdom onwards, a semitic deity, Hauron, also seems to have been associated with the Sphinx, possibly because of the similarities of the names "Horus" and "Haurun", and several stelae found in the area are dedicated to "Hauron-Harmakhis" (Lehner 1991: 112-114). It seems likely that this semitic god arrived with the recent immigrants to Memphis, some of whom may have been employed as mercenaries and present at military exercises in the area. The Sphinx was also sometimes referred to as Re-Horakhty, and appears to have been a local manifestation of the solar deity. This is interesting, as the Fourth Dynasty cult of the Sphinx and its associated temple, though obscure, appears to have had solar connotations as well. That memory of the former use of the area remained is also clear from the preserved texts related to the later Giza priesthood, many of whom held titles in the mortuary cults of Fourth Dynasty kings. Of course, the solar connotation may also stem from the view of the head of the sphinx framed by the Khafre and Khufu pyramids, particularly in relief against the sun, which is reminiscent of the Egyptian hieroglyph for horizon, ***ꜣḫt***.

The identification of the Sphinx with Horus also enabled a link to be established with the other deities specific to the Giza plateau, Isis-Mistress-of-the-Pyramids and Osiris of Rosetau, the latter of which had already been associated with Giza for some time through the syncretization with Sokar, the god of the Memphite necropolis (Gaballa and Kitchen 1969). Texts translated by I. E. S. Edwards (1986) mention two edifices, so called Shetayet, of Sokar-Osiris in the southern part of the desert plateau at Giza, close to the location of the Osiris temple in Nazlet Batran. In the same general area, Petrie in 1906-7 uncovered several large caches of extrasepulchral shabtis, some belonging to Khaemwase, a son of Ramses II, but most dedicated by private people. These types of deposits were generally associated with tombs of Osiris, as evidenced by similar deposits in Abydos and at Serapeum, and the fact that shabtis by definition were Osirian objects. Based on this evidence, Edwards (1986) argues that by the New Kingdom, the Shetayet of Rosetau had become the Lower Egyptian equivalent to the Osiris tomb in Abydos, something that may explain the New Kingdom practice of pilgrimage to the Giza plateau.

6.4 Pilgrimage

Egyptian Pilgrimage

Today, religious pilgrimage can perhaps be seen as a moral journey, undertaken to demonstrate devotion to a higher power, sometimes with the added motive to receive supernatural help with health issues or other problems. However, our modern view of the phenomenon has little in common with how pilgrimage was practiced by the early Egyptians, save for the elements of adoration and healing.

The views of religious scholars also differ on the topic. Beinlich (1986) states that the term should not be used at all in Egyptology, whereas other scholars have a less severe view of the definition. Erman (1907) suggests that the Egyptians practiced what he calls "occasional" pilgrimage, while Yoyotte (1960) proposes that the ancient Egyptians often "passed by" pilgrimage centers on the way to somewhere else, rather than undertaking a journey for the specific purposes of reaching a religious destination. According to the definitions of Erman and Yoyotte, then, evidence for ancient Egyptian pilgrimage is plentiful and can be found at numerous sites apart from Giza: mainly in Abydos but also in Thebes, Bubastis, Sais, Buto and Philae.

The earliest evidence of pilgrimage comes from Abydos, which by the Old Kingdom was considered the burial place of Osiris. During the early Middle Kingdom the understanding had become even more specific, and the tomb of the First Dynasty king Djer at Umm el Qa'ab was thought to be the actual sepulcher of the god (Wegner 2001). On a similar note, Abydos was also thought to be a reliquary of sorts, as it was the site where Isis found the severed head of her husband in the Osiris myth (Yoyotte 1960).

By the Twelfth Dynasty Abydos had also become a center for the yearly "mystery play" of Osiris, during which the death and subsequent resurrection of the god was re-enacted (David 1973: 245). During the festival, the image of the god was carried from the Osiris temple in Kom es-Sultan to Umm el Qa'ab, where offerings were presented to the god (Wegner 2001). Several stelae mention this ritual, suggesting that regular people participated in the re-enactment, but the most complete description is from the stela of Ikhernofret, an official under Senusret III (Sadek 1987: 9). On his stela, Ikhernofret's describes his activities at Abydos, where he was sent by King Senwosret III to reorganize the cult of Osiris and refurbish his shrine (David 1973, 245) In Abydos, Ikhernofret participated in the festival of Osiris, and his stela tells us that he personally "conducted the great procession" ***(iw ir.n.i prt 3't***) while "following the god in his footsteps" (***šms.i nṯr r nmtt.f***) (Sethe 1924: 70-71). At the end of the festival, a new statue was dedicated to the god, and the festival attendants made offerings. The ritual was so popular that the remnants of the votive gifts are what have given the site its name: Umm el Qa'ab "Mother of Pots". The crudeness of some of the votive tablets found suggest that the festival was attended by people from all walks of life (David 1973, 245), and the Osiris Mysteries is generally thought to have contributed to the popularity of Abydos as a pilgrimage destination (Sadek 1987: 9)

Following the instigation of the Osiris Mysteries, a large number of private chapels were erected along the the processional route leading from the Osiris temple to Umm el-Ga'ab. Excavations in the area during the last century have revealed a wealth of inscribed limestone stelae and other artifacts belonging to small offering chapels built by Egyptians of all walks of life, designed to provide them a lasting presence at the site and participation in the Osiris cult for eternity. The function of these stelae was to enable their owners to participate in the performance of rituals and to partake of the offerings given to Osiris, and the practice continues into Roman times (Volokhine 1998). It is also during the Middle Kingdom that the first depictions of the post-mortem journey to Abydos appear in tombs, namely in the tombs of Amenemhet and Khnumhotep in Beni Hassan. However, these depictions were probably more of a ritual substitute for burial in Abydos rather than representations of an actual event (Altenmüller 1975).

Judging from the declining number of stelae, Abydos lost some of its popularity as a pilgrimage destination during the New Kingdom, perhaps because the Osiris cult had developed so that more or less every regional center was considered to be a reliquary holding one of Osiris' body parts. Thus, the local cult centers appear to have been sufficient for most people, and the Abydene cemeteries of the New Kingdom do not show much evidence for burials of non-locals (Yoyotte 1960). Further, the inscriptions on stelae from the New Kingdom also became less detailed than those on their Middle Kingdom counterparts, and popular participation in the Osiris cult from the period is poorly understood (Volokhine 1998). However, as mentioned above, kings still built mortuary temples in the area, which themselves became pilgrimage destinations during the Greco-Roman era (Rutherford 2003).

Pilgrimage to Giza

There is no evidence of pilgrimage to Giza before the early New Kingdom, during which time the sphinx and the temenos around it were cleared of sand and restored. In contrast to Abydos, Giza evidence of pilgrimage consists mainly of small chapels, stelae, and votive gifts, rather than graffiti (Zivie-Coche 1991: 19-20). From the generally low artistic quality of the artifacts, it appears that the Sphinx was a popular destination for individuals of more modest walks of life, perhaps because the visibility of the enormous statue made it accessible as a place of worship (Bernand 1983). The stelae dedicated to the sphinx usually depict its owners in a gesture of adoration in front of the recumbent Sphinx, sometimes with the pyramids in the background. Some of the stelae also represent the god as a falcon, and several are so-called "hearing-ear" stelae (Zivie-Coche 2002:56-60). A notable difference between the votive offerings at Giza and those of Abydos is that monuments dedicated by high officials are almost entirely absent. Instead, the owners of the stelae appear to have been mostly local, and from the lower echelons of society: they are soldiers, scribes, artisans and minor officials. (Zivie-Coche 2002: 67) Similar small finds dedicated to Isis found in the Isis-temple temenos in GIc and the surrounding area further indicate and that the temple was a second destination on the plateau for the pilgrims, judging from the artifacts maybe as early as the Eighteenth Dynasty (Zivie-Coche 1991: 38-40).

The one graffiti inscription that appears to be unequivocally related to pilgrimage is a series of triangular markings ending in a depiction of a pair of feet on the casing stones of the Isis temple beginning in the Twenty-First Dynasty. Similar carvings are known from *proskynema*[24] from Greco-Roman Elephantine, and appear to have been meant to commemorate the spot where the pilgrim stood and worshipped, in order to enable him or her to remain in the god's presence (Maehler 1992). Though there is a general scarcity of graffiti on the plateau from later periods, the fourteen (Peden 2001: 278) to fifteen (Zivie-Coche 2002: 90) texts left in the temple of Isis-Mistress-of-the-Pyramids deserve mention. The inscriptions provide a family tree for a family of priests active from the Twenty-Sixth Dynasty through the reign of Xerxes in the Persian period. The titles of these individuals tell us that they were attached not only to the priesthood of Isis, but they also held offices in the mortuary cults of several Fourth Dynasty kings, the cult of the Sphinx and the local cult of Osiris, Lord of Rosetau. Thus, the inscriptions, though not technically evidence of pilgrimage, attest to the close connections between the various cults existing in the Giza area at the end of the pharaonic period. (Zivie-Coche 2002: 95-97).

As evidenced by the rich material from Abydos, there is ample evidence of pious travel by the Egyptians from the Middle Kingdom onwards. The prominence awarded to the journey to Abydos in tombs also attests to the importance Egyptians attached to sacred places. However, early evidence for pilgrimage does often appear to have been a "side effect" of travel for secular or official reasons, and many Egyptians were content with the ritual depiction of travel in their

[24] A *proskynema* is an inscription declaring a pilgrim's devotion in a temple or holy place.

tombs. Another reason for pilgrimage appears to have been the participation in religious festivals, again combining two goals for traveling, albeit both motivated by religion. Shorter trips to religious locations appear to have been more common, and in the inscriptions that give more detail we see that locals from all walks of life participated in the cult of their region, while non-local pilgrims more often had occupations that required travel in themselves, such as soldiers, messengers and royal officials on missions for the king. Perhaps this is not so surprising, considering that Egyptians in general were reluctant travelers. Several Egyptian literary texts convey a general aversion to travel (e.g., Sinuhe, Wenamun). One of the reasons for this aversion was probably the dangers involved in traveling, as dying abroad was considered particularly disagreeable. A large number of pilgrimage inscriptions also appear to have been left by the priests. Again, this is not surprising, considering the less restricted access members of the priesthood must have had to the sacred places.

Over the course of time, there is also a gradual change in the "types" of pilgrimages attested. While the stelae and cenotaphs erected in Abydos were motivated simply by a wish to establish a presence at the sacred burial ground of Osiris in order to partake in his offerings, many later pilgrims appear to have had more specific reasons for leaving their mark on a sacred site. In several cases, particularly during the Greco-Roman periods, pilgrims appear to have been motivated to visit already ancient monuments by a curiosity approaching tourism. Further, later pilgrims frequently asked for favors from the gods, such as the healing of an ailment or the answer to a question from an oracle. This change in motivation may be a result of Greek influence, since this manner of interacting with the gods had a long tradition in classical Greece (Dillon 1997). However, it is also important to consider the nature of the archaeological and epigraphical evidence, which from the earlier periods is mainly funerary in nature. It is certainly possible that the Middle and New Kingdom Egyptians engaged in similar activities, but in a way that left no archaeological traces.

6.5 The Cemetery of Rosetau?

The Wall of the Crow cemetery lies, as the name suggests, directly adjacent to its eponymous wall, which during the Old kingdom probably constituted the division between sacred and profane space on the plateau, given that it separated the settlement area from the royal necropolis. In the western end of the wall is a large gate, which is still in use today. The cemetery runs adjacent to the road leading through the gate, but all the burial cuts respect the road edges, suggesting it was used as a thoroughfare in ancient times as well. I suggest that the road was the continuation of a processual route, used by pilgrims but perhaps also during festivals, leading from the Isis temple past the Sphinx as Horus-on-the-Horizon to the Shetayet of Rosetau and the associated Osiris temple. Situating burials along roads was a common practice in pharaonic Egypt, where funerary stela were often inscribed with pleas to passers-by to stop and make an offering, and similar practices are also known from the Roman period (Davies 1999: 148). If the general rise in activity and the theological reinterpretation of the Sphinx as a god in its own right contributed to the funerary activity on the plateau in general, which is certainly plausible given that the most lavish Saite tombs were in the area closest to the Sphinx temenos, the proposed linking of the three deities Isis, Horus and Osiris by a processual route would most likely have contributed to the location of the Wall of the Crow cemetery in particular, by incorporating the previously profane space to the south of the wall into the sacred landscape of the Giza-specific triad.

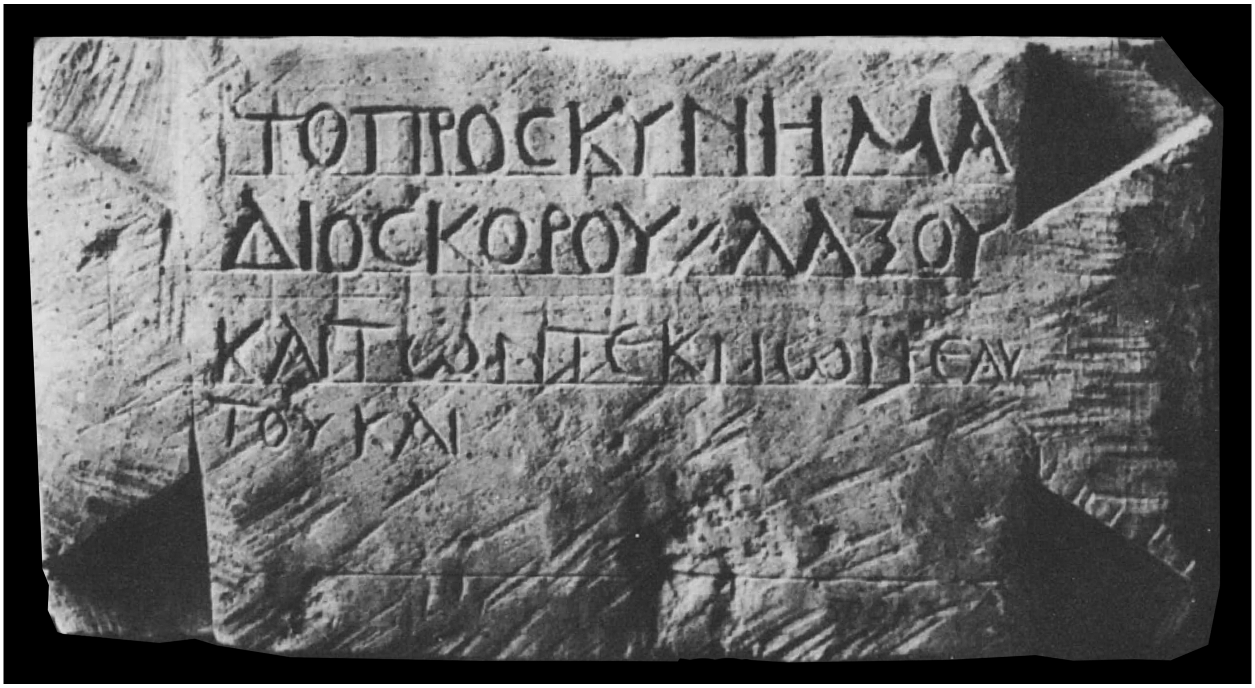


Figure 6.2: A Proskynema from the Sphinx temenos. After Bernand 1983, PL XII.2

The placement of the plot at the mouth of the Wadi leading towards the Osiris temple and the Shetayet of Rosetau probably also contributed to the popularity of the cemetery, and may be the reason for its somewhat surprising location at the bottom of a hill, where normal Egyptian practice, associated with the Osiris mound, would have been to bury the dead on the mound itself (Wilkinson 1994). The crude inscriptions present on some of the coffins found in the cemetery also support this conclusion, as they are invariably dedicated to Osiris of Rosetau. The proximity to the Wall of the Crow was likely also a factor in the choice of the site, as the density of burials across the site increases dramatically around it. The eastern end of the wall in particular appears to have been associated with children, as the percentage of juvenile graves in the area makes up more than 70 percent of the individuals there. With its massive proportions, the wall probably functioned as a stand-in burial monument guarding the final resting place of those who could not afford a superstructure for their graves, or those young enough to need extra protection.

If the theological reinterpretation of Giza was the main reason for the increase in burial activity on the plateau, the question still remains as to where the cemetery population lived. As several of the elite burial owners hailed from places as far away as Tanis and even Libya, it is certainly possible that burial at Giza constituted a final act of pilgrimage for individuals whose home base was elsewhere. The one burial where cranial analysis was possible in the Giza material – most crania are much too degraded to allow it – indeed plotted as central European rather than Egyptian against Howell's populations in ForDisc (whose Egyptian sample, in a twist of fate, consists of the Saite skulls Petrie removed from Giza in 1907). Though the cranial analysis of one individual alone is uncertain, the inclusion in the grave of a large and fairly well made amulet appears to support the results of the ForDisc analysis. The amulet, the only one of its kind in the material, depicted the little known Hatmehyt, goddess of the Greek town Mendes.

However, just like the evidence from the New Kingdom, Late Period and Roman artifacts and inscriptions related to pilgrimage in the Giza area, particularly to the sphinx, indicate that those that undertook this pious travel during later periods were either passers-by, visiting the site during travel for other reasons, or locals (Zivie-Coche 1980b, Bernand 1983, Volokhine 1998). In addition, the pilgrims appear to come from fairly modest backgrounds, perhaps similar to that of the Wall of the Crow cemetery population. Inscriptions are in general fairly crude, and may indicate that they were carved by the pilgrims themselves. When names and titles are preserved, they represent individuals from fairly modest walks of life. One pilgrim, Dioskouros, who probably lived during the Roman period, gives his title in his unfinished inscription (Fig. 6.2) -- he was a *laxos*, or stone cutter (Bernand 1983).

Regardless of its popularity as a pilgrimage destination, then, it seems the Sphinx and its environs did not attract worshippers from neither the upper reaches of society nor from far afield, and if this was the case for the living, it was probably also the case for the dead. Thus, the most likely explanation of the Late Period and Roman cemetery population at Giza is that it was mainly drawn from the surrounding areas, and perhaps from Memphis and possibly Letopolis, as the growing population of at least the former may well have started to fill the Memphite necropolis in Saqqara.

PART III: DATA

Chapter 7: Research Questions and Hypotheses

The biocultural approach, which has emerged as a dominant research paradigm in bioarchaeology in the last half century, emphasizes the interaction of biological and cultural dimensions of adaptation in past populations (Zuckerman et al. 2012, Larsen 2015). In particular, many studies using this approach utilize indicators of skeletal stress as a proxy for elucidating the success or failure of a given cultural system as a buffer against environmental stressors (e.g. Armelagos 1968, Lallo et al. 1978, Cohen and Armelagos 1984, Goodman et al. 1984, Goodman et al. 1988, Armelagos 1990, Buikstra 1991, Larsen 1995, Larsen 1997, Steckel et al. 2002). In short, anthropological models of stress (e.g., Goodman et al. 1984, 1988) hold that changing cultural and environmental circumstances may result in physiological disruption, particularly in the case of chronic, unmitigated stress. These changes can then be detected in a skeletal material as inhibited growth, pathological lesions, and elevated mortality.

Adaptation to changing cultural and environmental conditions is of course a common necessity in past and modern populations alike. However, the physical and social effects of the Roman conquest on the non-elite native Egyptians of 1st-2nd century Giza would likely have been quite noticeable. While the historical overview provided in Chapter Two suggests that the Saite population enjoyed relatively stable and prosperous times, the early to mid-Roman population lived during a period characterized by increasing oppression and segregation, heavy taxation and forced labor, several violent uprisings, and a major epidemic. In addition, the abandonment of the Egyptian legal system in favor of Greek and Roman legal traditions would have had significant implications for the status and roles of women in the Roman period. The effect of these changes on the living conditions of the Giza population can be investigated through analysis of their skeletal remains. In addition, the Roman conquest of Egypt also impacted long-standing religious practices, particularly in the mortuary realm of the elite. The combination of archaeological and skeletal data to investigate cemetery organization may elucidate to what extent these changes were felt among those on the lower end of the status scale.

The research questions investigated in this dissertation are as follows:

1. Did the sociopolitical changes caused by the Roman conquest negatively affect living conditions among the Wall of the Crow cemetery population?
2. a) Are gendered labor divisions detectable in the skeletal material as a whole? b) Is the change in status of women from the Saite to the Roman period reflected in the levels of skeletal stress of males and females in the Wall of the Crow cemetery population?
3. Is differential treatment of men, women, or children evidenced by the location of the graves within the cemetery or by disparities in the grave goods provided for the deceased?

7.1 Research Hypotheses and Expectations

Research Hypothesis 1:[25] The Roman skeletal sample from the Wall of the Crow cemetery will exhibit higher frequencies of physiological stress indicators than the Saite sample.

In contrast to the Saite period that was relatively stable and prosperous, particularly in northern Egypt, the Roman conquest brought with it several changes that would likely have negatively impacted living conditions for the Wall of the Crow cemetery population. No longer independent, Egypt was, under the Romans, governed as an asset to be exploited; taxation and corvée labor was increased (Milner 1992:159-160). Due to the Roman disdain for the worship of animals, the importance of Memphite region, which previously had benefitted from the resources spent on the cult of the Apis bull, declined. In addition, upward mobility was greatly restricted for native Egyptians -- the group to which the Wall of the Crow cemetery population most likely belonged -- through the segregationist policies implemented by the Romans (Lewis 1983:19). The resentment bred by the restrictions and fiscal burden imposed on the non-Roman population led to several revolts, some lasting for several years. Preserved texts from the period tell of both food and labor shortage, property damage, and the social ramifications resulting from men leaving their villages to join the uprisings (Capponi 2010). Finally, the Roman census records tell us of low life expectancy and high infant mortality (Bagnall and Frier 1994; 2006; Scheidel 2012). Since the census records are unique to the Roman period, it is of course impossible to directly compare Roman and Saite longevity and mortality. However, the end of the period under consideration saw a major disease outbreak in the form of the Antonine plague, which had devastating effects on the country and may have reduced the population with as much as ten percent (van Minnen 2000).

In light of the information above, it is anticipated that the Wall of the Crow Roman sample will exhibit a higher frequency of skeletal stress than the Saite sample. Since taxes were collected in kind, increased taxation as well as higher demand for corvée labor would have resulted in higher workloads for the Roman population compared to the Saite population. Higher rates of degenerative joint disease and occupational trauma in the Roman population would be consistent with that expectation. An increase in the proportion of agricultural product devoted to taxes would also have negatively impacted the diet of the Roman community. In addition, deteriorating social conditions due to continued political unrest may have reduced resistance to nutritional, environmental and disease-related stressors. Increased frequency of non-specific stress indicators such as cribra orbitalia, porotic hyperostosis, linear enamel hypoplasia, and periosteal new bone formation would be consistent with that expectation. Finally, the numerous political uprisings during the Roman period would have increased the potential for violent conflict. A higher frequency of traumatic injuries reflecting interpersonal violence in the Roman population would be consistent with that expectation.

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[25] $H_0 1$: The Roman skeletal sample will exhibit smaller or equal frequencies of physiological stress compared to the Saite sample.

Research Hypothesis 2:[26] **a)** Prevalence of skeletal indicators of stress (associated with infection and nutritional deficiencies) will be higher among females in both the Saite and Roman periods, while prevalence rates of degenerative joint disease will be higher in males. **b)** When compared by phase, Roman females will have higher rates of skeletal indicators of stress than Saite females.

Herodotus, the Greek historian who wrote about Egypt in the 5th century BCE, famously remarked that the Egyptians "in their manners and customs seem to have reversed the ordinary practices of mankind" since "women attend market and are employed in trade, while men stay at home and do the weaving." (Herodotus 2003 [trans. de Sélincourt-Marincola]:109). Though Herodotus (in this case and others) was prone to exaggeration, it is certainly true that Egyptian women enjoyed many rights and freedoms denied women of other ancient cultures. They could inherit, buy and sell property, conduct business without the aid of a male guardian, instigate their own divorces and even take men to court (Graves-Brown 2010:33). Elite women could hold titles related to the overseeing of storehouses or other female workers (dancers, musicians and so on), though these types of titles became less common after the Old Kingdom. Elite women also held court positions and religious offices (Robins 1993:115-116). However, it is important to remember that Egyptian society by no means was completely emancipated, and that there were substantial differences between rich and poor. True administrative offices (and thereby careers) were by and large closed to women, and the ideal woman was the passive and obedient wife (Graves-Brown 2010:33). Labor division among the non-elite was also gender specific -- in general, men carried out most of the agricultural work on the fields, while women cared for the household. Women could also work outside the home -- as wetnurses, in the textile industry, with milling and baking, and as musicians or dancers. Many other areas of occupation appear to have been reserved exclusively for men, however; tomb decorations depicting craft production of all kinds, brewing, and cooking and preparing meat rarely include any women (Robins 1993:115-117).

The comparatively strong position of women in Egyptian society persisted even through the Ptolemaic period. Though women had virtually no legal independence under Greek law, the Ptolemies retained the native Egyptian legal system parallel to their own, and recognized demotic contracts of all kinds as valid. Since both men and women could choose to record transactions under either Greek or Egyptian law, it was quite common for women to use two different names in official records, one Greek and one Egyptian, depending on the nature of the record. Thus, Egyptian women continued to conduct business and manage properties and inheritance on their own until the end of the Ptolemaic period (Vandorpe 2002; 2012). With the Roman conquest, however, women's legal independence was curtailed. The Romans no longer recognized demotic contracts, meaning that women -- excluding to some extent Roman citizens -- required the assistance of a male guardian in all legal matters (Vandorpe 2012). In addition, the Augustan marriage laws severely restricted one of the few avenues of upward mobility available

[26] $H_0$2a: Frequencies of skeletal indicators of stress in females will be equal or lower to those of males in both phases, whereas rates of degenerative joint disease will be equal or higher among females compared to males. $H_0$2b: When compared by phase, Roman females will have lower or equal frequencies of skeletal indicators of stress than Saite females.

to women, by strongly discouraging intermarriage between native Egyptians and the Hellenized classes (Vandorpe and Waebens 2010).

Although gendered labor division may not have resulted in great differences in physical activity among the elite because they would have employed servants to carry out menial tasks, it almost certainly did among those on the lower end of the status scale, such as individuals from the Wall of the Crow cemetery population. A higher prevalence of activity-related stress markers in males of both phases would be consistent with that expectation. Furthermore, the many areas of occupation reserved more or less exclusively for males, many presumably involving food provisions as part of the remuneration, likely meant greater access to a larger variety of foodstuffs and better nutrition for males than females. A higher prevalence of skeletal stress markers associated with nutritional stress and infection in females of both phases would be consistent with that expectation. Finally, the curtailing of women's legal status and possibilities for upward mobility instigated by Augustus most likely meant a decline in both economic and legal independence for women in Roman Egypt compared to earlier periods. A higher prevalence of skeletal markers of stress in Roman females compared to Saite females in the Wall of the Crow cemetery population would be consistent with that expectation.

Research Hypothesis 3:[27] The Wall of the Crow Cemetery will be organized by recognizable societal groups (i.e., age and/or sex) in both the Saite and the Roman period. The distribution of grave goods will differ among men, women and children of both phases.

Several studies have shown a disparity in the distribution of grave goods among the elite, with men receiving a significantly greater amount of grave goods than women (Smith 1992, Meskell 1998, Cooney 2007). Given the higher status and visibility of men in Egyptian society, this is perhaps not surprising. In addition, the majority of funeral monuments were owned by men, although their wives and families could be included in the tomb decoration and interred in the same tomb, thus partaking in the funerary cult of the primary tomb owner (Robins 1993:172-173). Children were very rarely provided with their own monuments before the Late and Greco-Roman periods, but could be included in the tombs of their parents, though commonly with very meagre grave goods of their own (Harrington 2007).

Outside of the elite sphere, in which individual interments were more common than funerary monuments, cemeteries were often organized in zones based on age and/or sex. Surprisingly, burial expenditure among those on the lower rungs of the status scale appear to have been less favorable toward males than among the elite (Bruyere 1937:11, Brunton 1948, Meskell 1999a:163, Meskell 2002:82). In fact, children in non-elite cemeteries were quite often provided with more grave goods than adults (Giddy 1992, Strouhal and Bareš 1993, Craig Patch 2007, Ziegler 2012).

Based on the humble graves of the Wall of the Crow Cemetery, the communities that buried their dead in the necropolis did not belong to the elite. Nevertheless, they were members of a strongly patriarchal society, in both the Saite and the Roman periods. A higher expenditure

[27] $H_0$3: No societal groupings (i.e., based on age and/or sex) will be discernible in the organization of the Wall of the Crow cemetery. The distribution of grave goods will be equal between men, woman and children in both phases.

on the graves of males compared to those of females would be consistent with that expectation. At the same time, excavations at other non-elite cemeteries have shown that children quite often were equipped with more grave goods than adults. Thus, a similar pattern at the Wall of the Crow Cemetery seems a reasonable expectation. Finally, spatial analysis of other non-elite cemeteries have shown that cemetery space was often organized in zones based on age and/or sex (Bruyere 1937, Brunton 1948, Meskell 1999a:162-163, Craig Patch 2007). Again, a similar pattern at the Wall of the Crow Cemetery would seem a reasonable expectation.

CHAPTER 8: MATERIALS

8.1 The Wall of The Crow Site: The Old Kingdom Settlement

The Ancient Egypt Research Associates' (AERA) concession is a low tract of desert situated approximately 400 meters southeast of the Sphinx (Fig. 8.1). The site is bounded by the massive Wall of the Crow to the north, the village of Naslet es-Samman to the East, the Abu El-Hol soccer field to the South and the Ministry of State for Antiquities' (MSA) excavation of The Workers' Cemetery to the West, as well as both a modern Coptic and Muslim Cemetery at the western end of The Wall of the Crow. As of April 2015, the excavation covers an area of about 9 hectares.

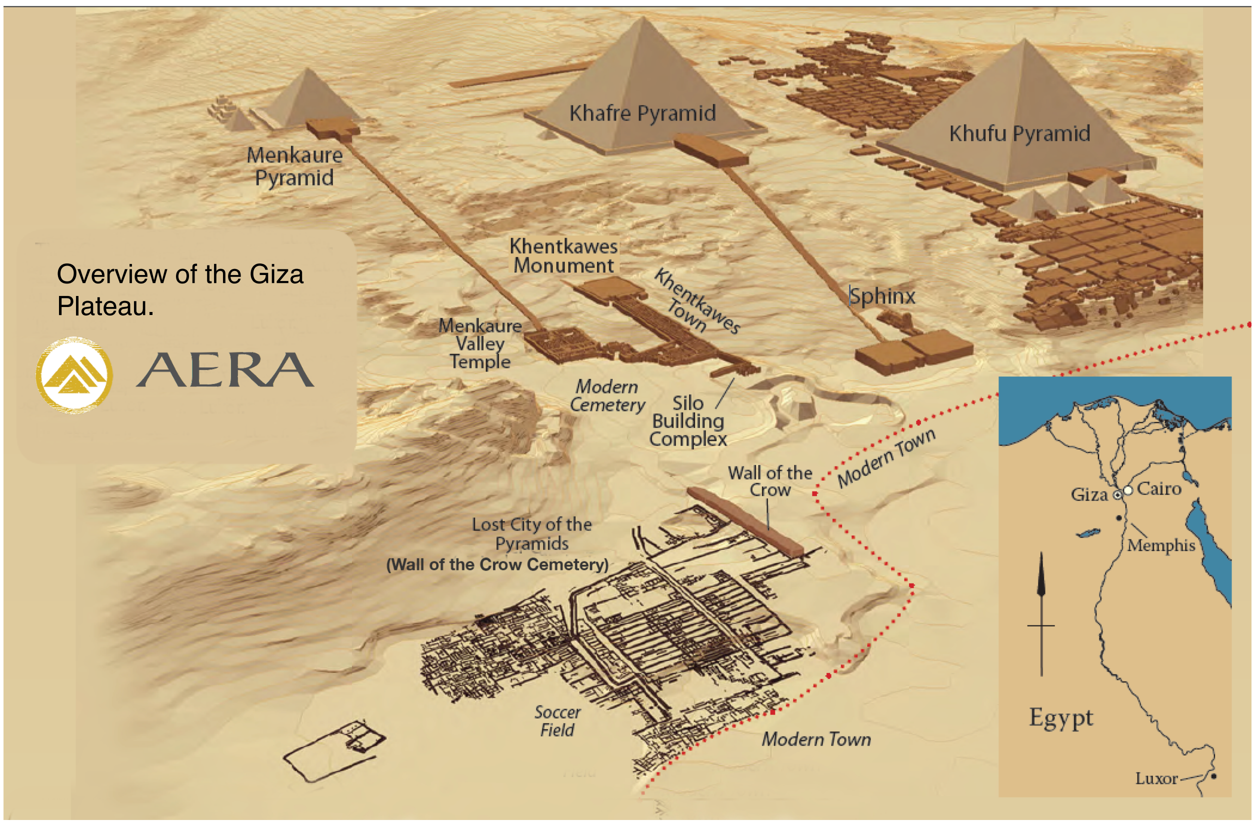

Figure 8.1: Overview of the Giza Plateau, rendered in GIS, showing the relationship between the cemetery and other monuments on the plateau, as well as the location within Egypt. The Wall of the Crow site is at bottom center. Image courtesy of AERA.

The overarching goal of AERA's mission is to find evidence of the social and economic structures that supported the building and maintenance of the Giza pyramids during the Fourth Dynasty of the Old Kingdom. So far, the excavations have unearthed a large urban compound, mainly consisting of four large sets of north-south oriented galleries transected by three east-west running paved streets and surrounded by a thick enclosure wall. At strategic points of entry into the streets, the excavations have revealed large structures that most likely are the remains of houses, which may have functioned as check points and residences for administrators who controlled traffic in and out of the blocks of galleries. The site has been dated through pottery and seal-impressions to the reigns of Khafre and Menkaure, (2520-2472 BCE), and appears to be related to the building of these two ruler's pyramids atop the plateau.

In the south-east corner of the gallery compound, a large walled complex has been interpreted as a royal administrative building based on seal impressions found in the ruins. Within the gallery system evidence of food production such as bakeries and fish- drying facilities have been found. Other areas of production indicated by the excavations are faience and copper-tool production. The "industrial" use of the galleries is mostly limited to the south-east part of the complex, and the current interpretation is that the remaining galleries were used to house the large mobile work force needed for the construction of the Khafre and Menkaure pyramids, or alternatively that they housed a Royal Guard concerned with protecting the construction area.

In contrast to the highly planned galleries, a more "organic" settlement has been uncovered to the east and south of the complex. These remains may represent the dwellings of more "full-time" artisans and craftsmen connected to the royal necropolis, as opposed to the likely more seasonal nature of the mobile workforce or guard. Regardless of its function, the settlement was not very long-lived. When Menkaure's successor Shepseskaf moved his royal mortuary complex to Saqqara, the site fell into disuse and indeed appears to have been intentionally dismantled. Despite deep deposits and rather complex reuse and rebuilding at the site, the material so far processed points to an occupation during the middle to late Fourth Dynasty, during the reigns of Khafra (2558-2532 BCE) and Menkaura (2532-2503 BCE)[28], thus covering only two to three generations.

The Wall of the Crow site consists of a large expanse of compact gray alluvial soil resulting from a seemingly intentional tear down of mud brick settlement walls, interspersed with deposits of desert marl clay (tafla) and gravelly calcareous sand. Covering this surface was until recently an overburden of windblown sand, varying in depth from 1-6 meters. Substantial deposits of sand blown over Old Kingdom surfaces have been noted elsewhere at Giza as well as other Old Kingdom sites at Saqqara and Abusir, and appear to have accumulated over the GPMP site not long after the Fourth Dynasty and certainly well before the end of the Old Kingdom. Furthermore, up until the building of the Aswan Dam, the site was also flooded during inundation every year, as the water of the Nile originally came all the way to the Giza Plateau. Even today, the ground water level on the site is fairly high, and the previous recurring flooding and drying of the site has resulted in a relatively poor level of preservation of organic material.

[28] Following the chronology in Shaw 2000

8.2 The Wall of The Crow Cemetery

8.2.1 The Cemetery Excavations

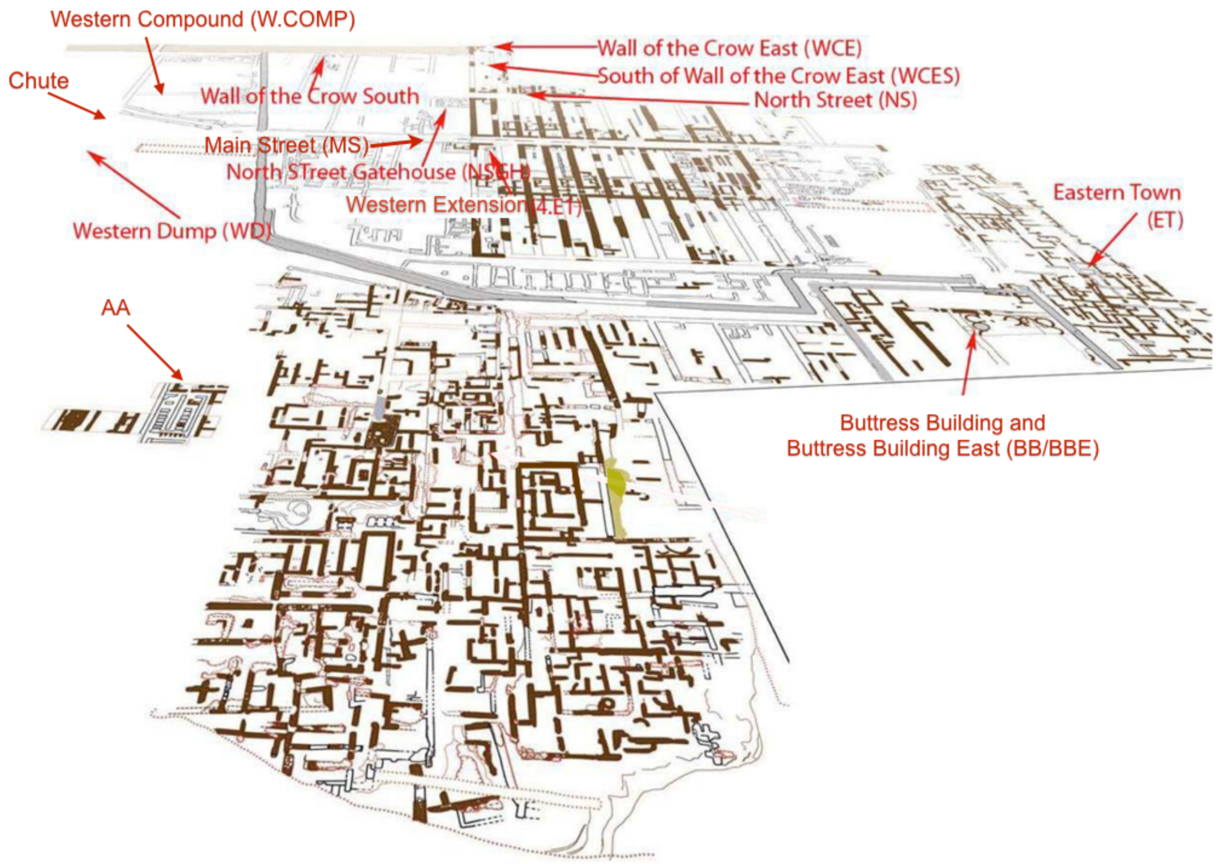

Figure 8.2: Burial excavation areas. Image courtesy of AERA.

Human burials were first encountered at the site in 1998, but it was not until 2000 that large-scale cemetery excavations began. Between then and 2009, a total of 348 primary (*in-situ*) inhumations and 105 secondary (disturbed) deposits of human bone were excavated. Without exception, the primary inhumations were humble, with few or no grave goods, in graves sunk directly in the sand. Most of the excavated graves were simple sand-filled pits. In general, the surface from which the graves were originally sunk has been lost due to erosion, but judging from the few cases where all or parts of the pit walls remain, the adult burials were originally approximately six feet (2 meters) deep, while the child burials where shallower, approximately 1-1.5 meters deep. No remains of grave markers have been found in the Wall of the Crow area, and although this could in part be due to erosion of the original surface, the high incidence of intercutting graves suggests that such markers were not used in the cemetery, at least during the Saite period[29]. However, several deposits of cattle bone and pottery associated with the burials at

[29] Two worked fragmented blocks of stone were found in the area of the Roman burials, and may be remains of grave markers for this later period of cemetery use

the eastern end of the Wall of the Crow suggest that the wall itself was used as a focal point for the cemetery, where food offerings could be made.

Because of the Old Kingdom focus of the AERA excavations, the cemetery excavations (which with a few exceptions concerned material post-dating the Old Kingdom) can best be likened to a salvage operation. Generally, the osteological team was called in to excavate burials that were overlying the Old Kingdom architecture on the site when they occurred in areas selected for excavation according to the research design for the pyramid settlement, and thus excavated areas do not correspond to any cohesive plan for the cemetery excavations.

In all, burials were excavated in thirteen different areas of the site (Fig. 8.2) in eight seasons of work: from January through May of 2000-2002, 2004-2007 and 2009. In addition, four seasons were designated study seasons: 2003, 2005 (fall), 2008 and 2010. The majority of the burials were excavated between 2000-2004; after 2005 the excavations were part of the AERA/ARCE field school, and work moved more slowly. A complete list of areas and grid squares where burials were excavated can be found in Table 8.1; these correspond to the grid squares on the site map provided in Appendix V. However, for the purposes of this study, only burials from areas WCE, WCES, WD, NSGH, CHUTE and W.COMP are considered.

Abbreviation	Area	Squares Excavated
AA	AA	5.K48, 6.K48
BB	Buttress Building	6.S26, 6.T25
BBE	Buttress Building East	6.U31, 6.V29, 6.W32
ET	Eastern Town	4.B30, 4.C29-30
CHUTE	Chute	3.L42-43, 3.M42-43
MS	Main Street	3.L48, 3.M45-46, 3.M50, 3.N46, 3.N48
NS	North Street	4.S8. 4.V9, 4.V10
NSGH	North Street Gate House	4.Q4-6, 4.R4-6, 4.S4-6
WCE	Wall of the Crow East	2.B6-8, 2.C6-9, 2.D5-7, 2.E4-7, 2.F7
WCES	South of Wall of the Crow East	2.A8-9, 4.Y6, 4.Y9, 4.Z5-7, 4.Z9
W.COMP	Western Compound	3.P43-44, 3.Q43-44, 3.R42, 3.R44, 3.S44
WCS	Wall of the Crow South	3.W36, 3.X35-38
WD	Western Dump	3.I-J44, 3.K42, 3.K44
WE	Western Extension	4. E1

Table 8.1: Correspondence of area designations and grid squares

To gauge the distribution of burials across the site, a burial survey was carried out during the 2005 season (Figure 8.3), measurements were taken with a total station, after which each burial was given a survey number, and sketched on a 1:100 plan. Any visible features were noted, such as the approximate dimensions and shape of the cut, whether or not coffins or bones were exposed, orientation, and visible burial objects. The total station points were downloaded each night, and plotted against the 1:100 plans to ensure accuracy. We surveyed 800 burials in this manner.

Originally, the aim was to survey the entire site. Due to time constraints, however, only the area from Wall of the Crow to Main Street was intensively surveyed, with one test range stretching from Main Street to AA. Furthermore, since cleaning such a large area was so time- and labor consuming, only every-other range (row of squares running north-south) were cleaned for survey, because this would still provide an idea of the spread of burials across the site.

Figure 8.3: Excavated (in black) and surveyed (in red) burials at the Wall of the Crow site.

Burials were also recorded across all other open areas; however, much of the north-western area of the site was covered with aeolian sand that obscured the cuts.

Because of these limitations, only the four of the eight easternmost ranges of the northern expanse were satisfactorily surveyed. On average, each square in these four ranges contained nine burials. In total, we surveyed 630 burials north of Main Street, and 100 additional burials across the site that were visible without clearing the overburden. It is important to remember that the survey only recorded burials visible from the surface, and only every other range. During complete excavation in previous seasons, we have encountered, on average, seven times more burials after complete excavation than what was visible from the surface. For example, nine burials were visible in area NSGH in 2004 before extensive excavation was started. At the end of the season, 64 burials had been excavated. Thus, if previously excavated areas can be taken as the norm, the area north of Main Street alone (covering the eight easternmost ranges) could contain close to 9000[30] burials.

The Wall of the Crow seems to limit the Late Period burial ground to the north, and Main Street limits the cemetery to the south. No Late Period burials were identified south of Main Street, and the southern limit of the grave field is very abrupt. Hence, it is possible that the Old Kingdom walls or some otherwise defining feature of this Old Kingdom thoroughfare was still visible and recognizable during the Late Period. It seems unlikely, however, that Main Street was still in use as a street proper, since 16 burials were located along the edges of the street, resting on street level. Apart from one burial that was interred north-south (partly under the tumble and therefore deemed Old Kingdom), and two Old Kingdom child burials from area WE, no burials were noted between Main Street and South Street. It is possible that additional Old Kingdom burials are hidden under the limestone tumble in this area, but even so, the burials in this area seem to be few and far between.

8.2.2 Dating and Phasing

The burials at the Wall of the Crow cemetery were mainly dated based on stratigraphy or ceramics encountered in the graves. Though fairly few burials contained pottery or other datable material, the density of the cemetery meant that a large number of burials could be dated relatively to those that did contain ceramics. A Harris matrix was constructed for the Saite and Roman burials and is provided in Appendix V.

The eight earliest burials on the site date to the Old Kingdom, to the later phases of use of the pyramid city, or just after its abandonment. One of these burials may be contemporary with the settlement (c. 2558-2503 BCE). It belonged to a young man, buried in a reed mat in the Western Compound area, just west of the galleries. The burial was sealed by architecture built during the later stages of use of the galleries, and it is possible that the area in which he was buried was used as a cemetery for the inhabitants of the town during an earlier phase of use. An additional three burials, all children, were found in a building in the Western Extension area, just south of the so-called Main Street. They were all interred in the same room of a building that appears to have been still in use at the time, though dilapidated. A hearth and a stamped mud floor were contemporary with the burials. However, the walls of the building in question were partially caved in, suggesting that the phase of use associated with the burials may be later than the worker's settlement (i.e., later than c. 2500 BCE), but earlier than the dismantling of the site, which likely occurred sometime during the Fifth Dynasty (2494-2345 BCE). The four final burials clearly post-date the pyramid town, but were sealed by deposits dating to the late Old Kingdom. They belonged to two adults and two young children, who were buried in the rubble of

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[30] Only four of the eight test ranges were surveyed, but these four ranges yielded 630 burials. The other four ranges in the survey area would likely contain a similar number, hence 630+630=1260. Finally, other areas of the site have yielded on average seven times as many burials during complete excavation as were visible from the surface, i.e., 1260x7=8820. However, this is just a small section of the site -- the actual number is likely higher.

the abandoned architecture in the southern part of the site, in close proximity to the so-called "Worker's Cemetery" to the south-west. The Worker's Cemetery overlies the pyramid town, and most likely dates to the Fifth Dynasty (Lehner 2005). Despite what the name suggests, the cemetery belonged to those of fairly high status; not directly related to the king, but still able to afford substantial mortuary monuments. It is quite common in Egypt to find poorer burials surrounding monumental tombs, allowing the less fortunate to partake in the cultus of those able to afford one (Grajetzki 2003). Thus, the simple pit-burials found just outside the cemetery are most likely poorer outliers to the more elite tombs up the hill.

Following the close of the Old Kingdom, the Wall of the Crow site was abandoned for more than one and a half millennia. From the late Twenty-Fifth Dynasty through the end of the Twenty-Sixth (Saite) Dynasty (c. 725-525 BCE), however, the site was once again used as a cemetery, this time at a much grander scale than during the Old Kingdom. Of the excavated burials, 165 could be securely dated to this phase. Two of these were double inhumations, and two were empty coffins; thus, the number of primary individuals was the same as the number of burials, 165. For ease of reference, the burials from this phase are hereafter referred to as "Saite."

After the end of the Saite period, the cemetery once again fell into disuse. It was not used as a burial ground again until the early to mid-Roman period, first to second century CE. Sixty-one burials date to this phase, two of which were double inhumations, bringing the number of individuals to 63. It is with the Saite and Roman phases of the cemetery that the present study is concerned.

Because of lack of grave goods and stratigraphical relationships with surrounding burials, 105 burials could not be dated with higher precision than "Late to Roman periods." Further, a final nine burials in the south-eastern part of the site were dated to post-pharaonic times on the basis of coins in the graves, likely to the late Byzantine period. Since the aim of the present study is to examine changes in health and mortuary behavior from the Saite to Roman periods, these burials, as well as the Old Kingdom burials, were excluded from the analysis. Thus, the burials considered here are the 226 burials that could be dated to either the Twenty-Fifth through Twenty-Sixth (Saite) or Roman periods.

8.2.3 Grave Goods

One of the aspects that makes the Wall of the Crow cemetery unique is, paradoxically, the uniformity with which grave goods were distributed, not only across time, but also between the sexes and different age groups (excluding children: see Chaper Ten for a detailed discussion of the amulets and their meaning). The repeated recurrence of the same types of grave goods (coffins, ceramics and jewelry/amulets), suggests that the dead at Giza were buried according to long-standing funerary rituals and ceremonies (Baker 2012:90) that did not change much from the Saite to Roman period. With very few exceptions, the pottery, jewelry, coffins, and amulets included in the burials were rather crude, and most likely mass-produced. Nevertheless, the inclusion of burial goods in many of the graves from both periods suggest that those buried at Giza were, though not prosperous, not among those at the absolute bottom of the status scale in either the Saite or the Roman period. A detailed inventory of the objects found in the Giza graves can be found in Appendix III.

The coffins in the Giza material were made of unfired, finely levigated mud, and were without exception extremely poorly preserved. They majority of the coffins were painted, with molded masks at the head end. They were most commonly anthropomorphic in shape, but rectangular coffins also occurred. Generally, the center of the lid of the coffin had collapsed, and the decoration on the coffin lids was not usually preserved. In some cases, however, an inscription could be seen, in a band running down the center of the coffin lid. These inscriptions were all very crude, but could be recognized as the standard ***htp di nsw*** offering formula evoking Osiris. However, the crude hieroglyphs suggest that the manufacturers most likely were not literate themselves, but merely copying the signs of the formula, with sometimes erroneous results. Illustrations of the more complete coffins can be found in Appendix II.

When the coffins were first encountered in 1998, they were initially thought to be just covers, manufactured *in situ.* Continued excavation demonstrated that they were indeed true coffins, with a base and a lid. In addition, the presence of paint on the outside bottom of the base, as well as rope marks still visible on the bottom and sides of some of the coffins, suggest that the coffins were constructed elsewhere and sturdy enough to be transported to the burial site with the body inside. Indeed, the presence of wood particles within the mud-matrix indicate that the coffins originally had some kind of interior wooden support structure. In addition, fabric-impressions left in the paint suggest that it was applied to a layer of linen rather than directly on the mud, which would also have contributed to the stability of the coffin. Parallels to this type of coffin exist, and are known for example from the secondary cemetery at the mastaba of Ptashepses in Abusir (Strouhal and Bareš 1993), and also from the Anubeion cemetery in Saqqara (Giddy 1992).

8.2.4 The Skeletal Material

As outlined above, the graves from the Wall of the Crow cemetery considered in this study date to either the late Twenty-Fifth Dynasty through Saite period (c. 725-525 BCE), or the early to mid-Roman period (first to second century CE), based on stratigraphy and datable pottery. Thus, the collection of human skeletons recovered from the cemetery represents two communities that occupied the area during distinct periods of time.

Period	Adults	Subadults	Total
Saite	75 (45.5%)	90 (54.5%)	165
Roman	40 (63.5%)	23 (36.5%)	63

Table 8.2: Number of individuals in each period

Table 8.2 shows the number of securely dated individuals recovered and analyzed from each period of occupation, as well as the proportion of adults and subadults. The detailed age and sex distribution of the sample is presented in Chapter Ten. All securely dated individuals available for analysis were examined in this dissertation research. The skeletal material from the cemetery was overall quite poorly preserved. In antiquity and up until approximately 50 years ago when the Aswan dam was built, the plain where the cemetery was located was flooded by the Nile every year, and the recurring flooding and drying of the remains affected the bones negatively. In recent years, Cairo’s rising aquifers have further damaged the bones. In addition, many of the burials had been disturbed by later graves or modern intrusions due to the density of the cemetery. The severity of the damage of each burial, if any, is detailed in Appendix I.

CHAPTER 9: METHODS

9.1 Methods of Excavation and Field Recording

Discrete stratigraphic units, in site records referred to as a “features,”are the basis for all excavation at AERA sites. A feature is defined as a “depositional event”, thus including structures, deposits, fills, and “negative contexts” such as cuts and truncations. Each feature was given a unique feature number, removed in the reverse order from which it was deposited, and documented within a single context recording (SCR) system adapted from the Museum of London ‘Archaeological Site Manual’ (MoLAS 1994). SCR is suitable for large and complex sites with deep stratigraphy, and simplifies the process of constructing a Harris Matrix (Harris 1979) of the excavated sequence. The Wall of the Crow burials were excavated in the same manner as any other features on the site. Separate numbers were given to each “depositional event” (cut, fill, coffin, skeleton, et c.), with the only difference being the burial number, which was used as an entity number, and assigned to the entire burial for ease of processing. As the sequence of features would always be in the same stratigraphical order for each grave, it was the burial number that was used for the Harris Matrix of the cemetery features. The burial excavation procedure is described in more detail below.

The AERA site is located in the desert, and the entire area was covered with a sand overburden prior to excavation, in some cases as much as 10 meters thick. In these extreme cases, the overburden was removed with mechanical front-end loader to about 1–1.5 meters above the Old Kingdom archaeological remains, after which a team of workmen removed the rest. This approach was taken across the site before it had been noted that there were burials present. As a result, some of the burials located at a higher elevation that the settlement remains were damaged. It should also be noted that the level from which the burials were originally dug does – with a few exceptions -- not exist anymore. It seems likely that the original surface was aeolian sand, and that this sand has moved over the centuries, leaving only the lower part of the original burial cut intact. This situation made it very difficult to distinguish the burial cuts until the skeletons were very close to the surface being excavated.

The area of the Wall of the Crow cemetery was flooded repeatedly in antiquity. In contrast to many other archaeological sites in Egypt, the excavated material was therefore very poorly preserved. Hence, the cemetery excavation was a very labor-intensive project, where a majority of measurements and a initial analysis had to be done *in situ*, simply because the material would not survive transport to the laboratory and information would have otherwise been lost.

Top-plans at a scale of 1:20 were made for all areas chosen for excavation. The surface was also photographed with 35mm color transparency, black & white negative, and digital photos. Once a burial had been located and a burial registration form prepared, the edges of the burial cut were defined, and drawn on a separate location plan at a scale of 1:50. A top measurement was also taken, as well as elevations at the east and west extremes of the grave. For cases in which the burial was not oriented E-W, elevations were also taken at the head- and foot-end of the grave. All “top-measurements” refer to the level at which the burial was discovered, and not necessarily to the level from which it was originally sunk. Each burial was given a Burial Number referring to the entire entity. Feature numbers were given to the burial cut, its fill, and the coffin (if present). In addition, any complete ceramic jars, if found within the burial, were given separate feature numbers. A number was also given to the skeleton. If more than one individual was represented in the burial, each individual was given a separate number. As the skeleton feature number is unique to each individual, this number is used as the key for the AERA osteological database in post-excavation analysis. Because all coffins so far excavated had collapsed, it was impossible to distinguish between the fill of the coffin and the fill of the cut, and therefore no separate feature number was given to the fill of the coffin.

The shape of the burial cut (oval, rectangular and so forth) was noted on the burial form, as well as the type of grave (simple sand-filled pit, mud-lined grave etc.) and where the burial was located within the 5x5 meter archaeological grid square. The greatest width and length of the burial cut were recorded, as well as greatest dimensions at north-south and east-west of the grave. Each cut was then carefully cleared, using small trowels and brushes, as well as wooden skewers. When approaching the coffin and/or skeleton, puffs of air were used. All burial fill was screened through a ¼-inch wire sieve. In addition, the Munsell color of the burial matrix was noted, as was its texture, inclusions and compaction. Any foreign objects in the fill (e.g., pottery, sealing material, charcoal, animal bone, exotics) were collected, bagged and sent to the site lab/storeroom. Furthermore, the residue in the sieves was collected and sent to the site lab/storeroom as wet-sieve.

If a coffin was present, similar measurements and elevations were taken as for the burial cut, and the Munsell colors of the coffin decoration were recorded. The shape and type of the coffin was also noted, and a sketch was prepared. Color transparencies, black and white negatives, and digital photos were taken of all coffins, both as detailed views (macros) and total vertical views. A blanket was used to shade the grave and provide even lighting for the photographer. The coffins were also recorded digitally for inclusion in the site GIS. Numbered photo-crosses were laid out around the coffin, and several digital photos were taken from the same level above the coffin. Coordinates were then taken on the photo-crosses with a total station. The digital recording of the burials was then done post-excavation, and saved valuable time in the field. A more detailed account on how this was achieved is given below.

The coffins were generally very poorly preserved. Consolidation of the entire coffin was attempted in some cases, but proved futile. If a mask was present it tended to be more robust than the remainder of the coffin, and an attempt at consolidation was usually made. Paralloid B 72, (dissolved in acetone) was used for the coffins as well as for the bones, albeit with a higher concentration for the coffins, ca 10%. When the coffin was fully recorded and a detailed description had been written in the field notebook in addition to the burial form, the mask was lifted separately and the rest of the coffin lid was dug away. The thickness of the coffin lid and walls were noted as work progressed. Sediment samples were taken inside the coffin (or grave if no coffin was present), and within the pelvis. A control sample was then taken outside the burial pit as well.

Once the upper part of the coffin was removed, the skeleton inside was excavated similarly. In addition to the wooden skewers, small brushes and puffs of air, dental picks were used when more detailed work was required. Care was taken not to scrape the bone surface. The skeletal material unearthed at the Wall of the Crow cemetery was generally in very poor condition. The portions of the grave that were exposed, but not being worked on, were covered with a damp cotton sheet during excavation. Even so, exposure to the sun and air would cause the bones to rapidly deteriorate once uncovered. Consequently, the consolidant B 72 in a 5-7% solution was applied to the most fragile osteological material in the field. The solution was applied as work progressed, allowed to dry, and re-applied several times if necessary. B 72 is essentially diluted glue, and will cause sand and other particles if present to adhere to the bone. However, it is a reversible process, and it would not have been at all possible to lift some of the bones if consolidant had not been used.

When the entire skeleton had been uncovered, it was photographically recorded in the same manner as the coffins, with color transparencies, black and white negatives, and digital photos. Closeup views were taken of the pelvis and teeth, and any visible pathologies and unusual taphonomic modifications. The skeleton was then digitally recorded in the same way as the coffin. If associated burial items were present, these were left *in situ* during the digital recording of the skeleton so that they could be incorporated into the digital plan.

On the burial recording form the burial was classified as primary or secondary, and the minimum number of individuals (MNI) represented was noted. A description of the burial followed, detailing the burial position, head orientation, and placement of the hands and feet. Elevations were taken at the highest points of the skull, pelvis, hands and feet. The orientation of the burial was measured by compass, noted as “head xx degrees west of north”. All visible pathologies, non-metric traits, unusual taphonomic modifications, and preliminary estimations of sex and biological age at death were also noted on the burial form. Notes were taken on the articulation of the bones in order to be able to determine whether the individual had been interred before or after decomposition. Finally, any remnants of organic material associated with the bones was sampled and recorded where present.

Once all required information was entered on the burial form a visual skeletal recording form (adapted from Buikstra and Ubelaker; Chapter 2, Attachments 3-5) was prepared for each individual. The form consists of a line drawing representation of a skeleton on which the existing bone elements are filled in using color-code denoting the state of preservation as “good”, “fair”, “poor” “very poor” or “bone stains” for the individual bones. All obtainable measurements were also recorded on this form. Because of the poor state of preservation of the osteological material it was necessary to obtain many measurements *in situ*. This was true especially concerning the long bones, which were almost impossible to lift in one piece. Moreover, because the bones in these cases were still in the ground it was not always possible to use an osteometric board. Instead we used a large Haglöfs caliper, with an accuracy of 0.5 mm, to measure the bones. All measurements were taken according to the guidelines in “Standards for Data Collection from Human Skeletal Remains” (Buikstra and Ubelaker 1994; 39-46, 69-84).

Once all obtainable measurements had been taken we proceeded to remove the skeletal elements from the excavation. There are a number of different methods that can be used when lifting human remains, the most notable difference between them being whether the burial is lifted *en bloc* for detailed excavation in the laboratory, or element-by-element. At AERA we chose the latter approach because of its time efficiency and relative ease.

Measurements that were not attainable while the skeleton was still intact were taken as the bones were being lifted, and an osteometric board was used for long bone measurements whenever possible. In addition, several other forms were filled in as the lifting progressed. The first was an inventory recording form, again adapted from Buikstra and Ubelaker (1994), on which all cranial elements were coded individually as Blank -- Absent, 1 -- Present Complete, 2 -- Present Fragmentary, 3 -- Bonestain, 4 -- Antemortem Loss. For recording of long bones, each individual bone was divided in the sections of proximal epiphysis, proximal, middle and distal third, and distal epiphysis, which were then coded in the same way as above. This inventory was taken as a precaution, since it was not always possible for an osteologist to accompany the Antiquities Authorities' sanctioned transport of archaeological material from the site to the laboratory, and was checked against the more detailed MNI recording forms in the laboratory to account for any possible post-excavation damage or loss during transport.

A dental inventory form was prepared for each individual (Buikstra and Ubelaker 1994, attachment 14). This form was initialized on-site and finalized in the laboratory. A site-specific pathology and taphonomy recording form was also started on site and finalized in the laboratory. In addition to individual scoring of osteophytic growth by vertebra and enamel hypoplasia by tooth, this form also recorded data on other bone lesions encountered during analysis, as well as information on degree of preservation, truncation and damage observed on site, color and weathering (if present) of the bone, conditions of excavation, and information on any archaeological features that may have affected preservation, such as depth and elevation of grave and surrounding archaeological structures, even when not stratigraphically relevant. The basis for the field assessment of age and sex was also recorded on this form, to be checked in the laboratory. All forms described above, including the more detailed laboratory MNI recording forms, are provided in Appendix IX.

After confirming that each bone that was to be lifted had been properly consolidated if necessary, and that incipient fractures were bonded, each bone was undercut and a strip of aluminum foil slipped under it. The two ends of the strip were carefully pulled together and were folded in several indentations until tightly wrapped around the bone. Additional aluminum was placed under the bone for support and overlapping strips were then wrapped around the bone in the same manner until the whole bone was supported. The bones were then lifted by two persons, one holding the ends or epiphyses and one holding the medial part of the bone, and placed in cardboard boxes with a layer of cloth or sand at the bottom. The process was subsequently repeated until the entire skeleton had been lifted. However, the skull and mandible would often be lifted *en bloc*, since the cranium rarely had time to dry and would be damp at the time of excavation. The sand surrounding the skull would help to hold it together, and could be more easily removed in the laboratory. Once all skeletal elements had been removed from the grave and placed in boxes they were sent to the storeroom for drying and subsequent re-packing.

The Digital Mapping Process

One main concern when excavating the burials was to lift the bones as swiftly as possible. This was in part due to the Old Kingdom focus of the excavations, but also because the bones were very poorly preserved, demineralized and friable. Deterioration began as soon as a skeleton was uncovered. To protect the fragile bones from bleaching and further cracking, we used damp cotton sheets to cover part that were not actively being excavated. During the 2000 season, and most of the 2001 season, all graves were drawn by hand at a scale of 1:5. The plans had to be very accurate, and the process was slow and painstaking. The rapid deterioration of the bones was visible to the naked eye as the plans were made, especially since the protective cotton sheets had to be removed during drawing.

Digital mapping proved to be the solution to the problem. In the digital mapping process of the burials we utilized three software programs, Adobe Photoshop and the Geographical Information System (GIS) programs Idrisi32 and MapInfo 5.5. Because the burials were the first features on the site to be recorded with a GIS in 2002, the osteological team approach here differed somewhat from the GIS approach to the rest of the site, for which a GIS was not implemented until 2005, at which time the new GIS team decided to utilize the more common platform of ArcGIS. However, both Idrisi and MapInfo are compatible with ArcGIS through ArcLink or MIF (MapInfo Interchange Format), and all digitized burial features were exported to ArcGIS at the end of each season, so that site maps could be generated for the entire site with the burial data included.

The first step towards a digital plan of a burial is stitching the digital photos. In order to get a high level of detail in the finished plans we needed high-resolution digital photos with a minimum of distortion. To achieve this, multiple overlapping photos were taken of each burial. The separate photos were then stitched together in Photoshop. To minimize the photographic distortion, the lateral parts of the individual photos were discarded, and only the center portion of each image was used. After stitching, the image was ready to be registered.

Idrisi is a raster-based GIS and image-processing program that was first and foremost used to “flatten” images where distortion occurred. The program accomplishes this by “stretching” the image so that pixels and coordinates match in two dimensions. Ideally, the digital photographs were taken at a 90º angle and flattening was not necessary. However, in some cases it was difficult to obtain photographs from immediately above the burial, and in these cases Idrisi proved helpful, provided the distortion was not too severe.

MapInfo 5.5 is a desktop mapping program with digitizing capabilities. What makes it so valuable in the field is that you can digitize directly from raster images, without the need for a digitizer-pad or a puck, although these features are available. Consequently, the stitched digital photos could be registered and geo-coded directly in MapInfo. As mentioned above, photo-crosses were laid out around the skeleton or grave when the digital photos were taken. Coordinates were then taken on each photo-cross with the total-station. When registering the photo in MapInfo, each cross was marked with its known coordinates. Although MapInfo does not have the ability to stretch photos, the program calculates the error in pixels. If the error was too great, the photo had to be either flattened in Idrisi, or re-stitched. Once the error-margin was under 10 pixels, the registration was accepted, and the stitched image was saved as a MapInfo table. Naturally, any image with geographical information can be registered in the same manner. For instance, the 1:5 plans from the 2000 season were scanned and registered in the program.

Next came the digitizing of the registered table, which was done by tracing the stitched photo. Once the feature had been fully traced, the tracing layer was saved as a separate table, and thus a vectorized map of the feature was created. These maps can be opened separately and printed to scale, or against a base map of the site. MapInfo also allows for scales and arrows to be printed with the maps. Numerous examples of what the maps look like can be found throughout this volume, since all site illustrations except the objects were made in MapInfo.

9.2 Methods of Osteological Analysis

9.2.1 General Data Collection Procedures

Because the osteological material at AERA was so poorly preserved, every effort was made to obtain as many measurements as possible during the excavation and immediate post-excavation handling. After excavation, when the bones were deemed dry enough for storage, they were further cleaned if required, and a standard morphological analysis was carried out. This analysis included a dental and skeletal inventory, an overall visual examination of the bones, and metric data collection. All visible pathologies, non-metric traits and unusual taphonomic features were noted and photographed if deemed appropriate. In addition, all burials were analyzed a third time during study-seasons in 2005, 2007, 2009 and 2010 when MNI data (see below) were collected. The laboratory methods used for both pre-and post excavation data collection were standard and are outlined in more detail below. Metric data were collected using a caliper accurate to 0.1 mm and an osteometric board accurate to 1 mm. For the field measurements of long bones too fragile to lift in one piece, a large Haglöfs caliper accurate to 0.5 mm was used prior to removal of the skeletal element.

9.2.2 Statistical Analysis

As discussed in Chapter Seven, the present study compares indicators of physiological stress by temporal phase, sex, and age groups using frequencies.[31] The same groups are also used to compare frequencies of different types of grave goods (e.g., coffins, ceramics, amulets), and aspects of burial practices (e.g., burial position, grave type). Depending on the variable examined, prevalence was calculated both by skeletal element and by individual; prevalence of cribra orbitalia, for example, was calculated on a by individual basis only, while frequencies of linear enamel hypoplasia were calculated both by tooth and by dentition. When skeletal elements were treated separately, prevalence rates were expressed as the number of affected bones or teeth of the total number of that bone or tooth type in the sample. The calculations used for each skeletal marker or archaeological find category are detailed in their respective sections below, along with a justification of choice. All calculations were carried out with the statistical package IBM SPSS Statistics, version 20.0, for Mac.

The size of the Wall of the Crow sample, 228 individuals, is fairly respectable for an archaeological sample, but poor preservation resulted in missing data for most of the variables explored in the study. For that reason, categories were sometimes collapsed for the purpose of increasing sample size. Sex assessment, for example, initially placed each individual in one of

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[31] The prevalence of a particular condition refers to the number of individuals affected by that condition divided by the total number of individuals in the sample (Waldron 2007:249).

five groups -- male, probable male, undetermined, probable female and female -- based on the confidence with which sex could be assessed. To increase sample size, probable and secure sex assessments were collapsed, resulting in only three categories: male, female and undetermined. The same was done for some categories for which severity was recorded during data collection; these were collapsed into binary categories of absence/presence when sample sizes were small.

The majority of statistical tests involved exploring the relationship between categorical variables through nonparametric statistics. When possible, Pearson's chi-square test was used to test association between variables. This test uses a unimodal distribution heavily skewed to the right (negatively skewed), which changes shape depending on degrees of freedom[32] (df) rather than sample size. The chi-square test compares observed counts (O) versus expected counts (E) and measures whether or not the values in the cells are associated to a higher degree than what could be expected by chance (VanPool and Leonard 2010:240-243).

At its inception in the 1950's, the chi-square test was recommended only when over 80% of expected frequencies were over five, and this rule of five is still the conventional approach (VanPool and Leonard 2010:249). However, more recent research has shown that the rule of five is unnecessarily conservative, and that the test is generally applicable with expected counts as small as 1 (Lewontin and Felsenstein 1965b, Slakter 1966, Yarnold 1970, Roscoe and Byars 1971, Larntz 1978, Everitt 1992:13-14). For that reason, the chi-square statistic was reported for all tests unless the expected count was less than 1. The significance level was set as $p < 0.05$. For p-values lower than 0.05, the null hypothesis[33] was rejected. There is of course still the question of how appropriate and reliable the results of such tests are when sample sizes are very small, and this is taken into account in all final conclusions.

To compensate for the sometimes small sample sizes, Yates' continuity correction was reported for all chi-square tests with a 2x2 table. Because the chi-square distribution is continuous, but contingency tables are dichotomous, the accuracy of the approximation decreases with smaller sample sizes. To correct for that, the Yates correction subtracts .5 from each absolute difference between the observed and expected cell frequencies. However, statisticians are divided on the utility of the correction, since it is overly conservative and prone to Type II errors[34] (VanPool and Leonard 2010:250-252). For the sake of completeness, however, it is reported here in addition to the chi-square tests. As above, the significance level for Yates' was set as $p < 0.05$. For p-values lower than 0.05, the null hypothesis was rejected.

An alternative to the chi-square test and Yates' correction when sample sizes are small is Fisher's exact test. Unlike the chi-square and many other statistical tests, Fisher's exact test does not employ a mathematical function to estimate the probability of a value of a test statistic. Instead, Fisher's exact test calculates an actual probability value, under the null hypothesis that the proportions are the same. However, although Fisher's exact test is traditionally recommended for small samples, it has, like the Yates' correction, been shown to be overly conservative and prone to Type II errors (VanPool and Leonard 2010:250-252). Nevertheless, for lack of an

[32] The degrees of freedom are determined by the following equation: (df)= (number of rows-1)(number of columns-1), resulting in a df value of 1 for a 2x2 table, a df value of 2 for a 2x3 table and so on.

[33] H0: $O_{ij} = E_{ij}$, i.e., the variables being tested are unrelated.

[34] A Type II error is the failure to reject the null hypothesis when it is actually false (a false negative).

alternative, Fisher's exact test was used when expected counts were less than one in any cell in the chi-square matrix, and was also reported alongside the chi-square statistic when sample sizes were larger. The significance level was set as p <0.05. For p-values lower than 0.05, the null hypothesis was rejected.

In addition to the tests for independence, Phi values were also reported for all tests. The Phi coefficient is a measure of association between two binary variables. The Phi coefficient varies between 0 to 1, with higher values (negative or positive) indicating a stronger association between the two variables. For the present study, effect size follows Cohen's (1988) criteria of .10 for small effect, .30 for medium effect, and .50 for large effect.

When a table was larger than 2x2, adjusted residuals were also reported for all groups, and Cramer's V coefficient was reported rather than Phi for effect size. The adjusted residual allows for direct comparison with the z-value for α=0.05 (1.96), and is calculated based on the difference between the observed and expected values for a cell. The larger the residual, the greater the contribution of the cell to the magnitude of the resulting chi-square obtained value. A standardized or Pearson residual is calculated by dividing the raw residual by the square root of the expected value as an estimate of the raw residual's standard deviation. However, in order to use the residual value in direct comparison with the z-value of α=0.05 (i.e., 1.96), the Pearson residual has to be further transformed into an adjusted residual with the following equation: Adjusted residual = (observed – expected) / √[expected x (1 + row total proportion) x (1- column total proportion)]. A residual greater than 1.96 or less than − 1.96 indicates a significant difference (VanPool and Leonard 2010: 246-247).

Cramer's V coefficient is a correlation coefficient that takes into account the degrees of freedom in the chi-square table. As the Phi coefficient, it ranges between 0 to 1, with higher values indicating a stronger correlation between variables. For the present study, the effect size follows Gravetter and Wallnau's (2004:605) criteria of .06 for small effect, .17 for medium effect, and .29 for large effect.

The only variables measured on a continuous scale in the present study were stature and average age-at-death. For stature, Normal Q-Q plots and the Shapiro–Wilk test were performed on both the Saite and the Roman population to assess the normality of the distribution of the sample. The results of the test were not statistically significant, and the Q-Q plots also suggested a normal distribution (Razali and Wah 2011) prompting the use of the independent samples t-test for the comparison of groups. This test measures whether or not there is a statistically significant difference between the means of two groups with normal distribution of scores. To determine whether the variance within each group was the same, Levene's test for equality of variance was used in conjunction with the t-test (VanPool and VanPool 2001:125-127). Finally, effect size was evaluated using the Cohen's d statistic, following the guidelines of Cohen (1988) as .2 or above for small effect, .5 or above for moderate effect and .8 for large effect.

Not surprisingly, given the high number of subadults in the sample, the average age-at-death[35] was not normally distributed in either the Saite or Roman period samples. For that

35 This variable (AgePoint) was calculated by calculating the mid-point of the assessed age range for each individual. Individuals that could not be assigned a narrower age-range than "Adult" (18-79 years) were excluded from the analysis.

reason, the Kaplan-Meier analysis, a non-parametric statistic used to estimate the survival function from lifetime data (Kaplan and Meier 1958), was used for the comparison of groups.

9.2.3 Minimum Number of Individuals

A total of 226 burials could be dated to either the Saite or the Roman periods. Of these, four were double inhumations, and two contained intact but empty coffins, resulting in a total number of 228 primary individuals to be included in this study. Because of the density of the cemetery and the fairly long time period of its use, earlier burials had sometimes been truncated and disturbed by later burials, with bone elements from the former being re-deposited in the fills of the latter. Forty-three of the burials considered here included such secondary, re-deposited bone elements from one or more individuals in addition to the primary inhumation. In these cases, the Minimum Number of Individuals (MNI) was determined per burial, based on the number of duplicate skeletal elements by sex and age in the same grave. Each distinguishable individual was given a separate skeletal feature number, so that a unique database record could be created, 52 in total. However, in order to reflect the true MNI of the material, the re-deposited material would need to be analyzed as a whole, rather than by grave. Many of the burials are in close proximity to one another, and it is likely that skeletal elements from the same, disturbed grave could be re-deposited in several later graves. For that reason, detailed skeletal inventory forms with counts of all bone elements were filled out for each grave for the entire Giza material, for entry into a flat Excel database. Because of time constraints, this data entry remains to be completed, though the data have been collected. In addition, this study considers only those burials that could be securely dated (n=226), whereas the entire Giza cemetery material comprises an additional 162 primary burials, 37 of which contained re-deposited secondary remains. Because some of these burials were excavated from the same areas as the datable graves, an MNI analysis of the Saite and Roman burials alone would likely be inaccurate. For these reasons, the re-deposited, secondary material was omitted from this study, and only the primary skeletal material was considered.

9.2.4 Age Estimation

Age estimation is integral to the construction of demographic profiles, and there is an extensive literature devoted to the potential of different skeletal elements to serve as a basis for accurate age-at-death estimates. In essence, age estimation is a transformative process, in that the analyst relies on a range of methods to estimate the the developmental or degenerative status of the skeleton of the individual, and then transforming that estimate into a chronological age (i.e., years since birth). Most commonly, the final age estimate is arrived at by using a combination of methods (Nawrocki 2010). These methods are generally more accurate for juveniles and young adults, because age estimation of immature remains mainly involves the observation of the progressive development of largely genetically driven factors such as dental formation and eruption and epiphyseal closure. In contrast, age estimation methods for adult remains rely on degenerative changes of the skeleton, which are much more susceptible to extrinsic influences such as activity level, diet and disease (Chamberlain 2006; 101-105). In addition, different methods produce estimates of varying accuracy and precision. This is often a concern with archaeological samples, because fragmentation often precludes the use of multiple age estimation methods for some individuals, resulting in age estimates of differing reliability within the same skeletal sample.

For the Giza material, several age estimation methods, described in detail below, were combined whenever possible to arrive at a final age estimate for both adults and subadults. Each individual was then placed in one of the following age groups, as suggested by Sjøvold (1978): Infant (<1 year); Infans I (0-7 years); Infans II (5-14 years); Juvenilis (10-24 years); Adultus (18-44 years); Maturus (35-64 years) and Senilis (50-74 years). In eight cases, poor preservation prevented an age assignment narrower than "adult," and an additional age group Adult (18-79) years was employed for those occurrences. However, since the majority of the Giza sample comprises complete skeletons, it was often possible to assign a more narrow age range to each individual than those suggested by Sjøvold, particularly in the subadult sample.

Thus, with the exception of one subadult individual where age could not be assigned any more narrowly than 0-7 years due to poor preservation, and the eight "Adult" individuals mentioned above, the actual age ranges employed for the Sjøvold categories were Infant (<1 year); Infans I (1-5 years); Infans II (5-12 years); Juvenilis (12-18 years); Adultus (18-35 years); Maturus (35-50 years) and Senilis (50+ years). In addition to the classification by age group, both age ranges and a point measure (mean age) was noted for each individual. However, in the analysis accuracy was preferred over precision, and all comparative analyses were based on the broader age groups given above, even when narrower age ranges had been assigned. The specific age groups and ranges assigned to each individual and the morphological features upon which age estimation was based are outlined in Appendix VIII.

9.2.4.1 Age Estimation of Immature Remains

For immature remains, age estimation was based primarily on dental development and secondarily on epiphyseal closure. Dental eruption was recorded according to Ubelaker (1999; Fig. 62), whereas stages of formation of permanent teeth and resorption of the deciduous dentition were documented following Moorrees, Fanning and Hunt (1963a, b). Epiphyseal closure was assessed based on the illustrations and charts provided in Schaefer and colleagues (2009: 338-355). In rare cases[36] where the skeleton was only partially preserved, subadult age was estimated using diaphyseal length (Maresh 1970, Fazekas 1978). The different age estimation methods were then combined to arrive at a final age estimate for each individual. When the different methods gave conflicting results, they were subjectively weighed as described below.

The study of tooth mineralization offers the advantage that dental age can be estimated at any stage during the formation of a tooth, rather than being confined to the time of emergence, which may vary considerably between individuals and populations (Scheuer and Black 2000:13). Moreover, several studies have shown that dental development is largely genetically driven (Ubelaker 1987, White et al. 2012: 385), and is less affected by both extrinsic and intrinsic factors such as poor nutrition and disease, and thus less variable than skeletal development in

[36] Diaphyseal length was used as the sole means of age estimation in two cases only (Burials 264 and 266) because only the leg bones were preserved.

relation to chronological age (Lewis and Garn 1960, Demirjian 1986, Smith 1991). For these reasons, crown and root mineralization was given the strongest consideration of the age estimation methods whenever possible. The approximate age was the estimated by comparing the Moorrees and colleagues tooth formation stages with the chart provided by White (2012; Fig. 18.3: based on work by Gustafson and Koch, 1974, and Anderson and colleagues, 1976).

In contrast, dental eruption is more susceptible than tooth mineralization to disease and nutritional stress (Hurme 1948, Shaw 1970), and may also be affected by premature loss of deciduous teeth, which can cause early eruption of the permanent dentition (Fanning 1962, Scheuer and Black 2000:12). However, in individuals where the mandible and maxilla were complete, it was not always possible to observe unerupted teeth. In these cases, dental eruption patterns were instead given the highest consideration pending radiography.

The dental eruption chart used for the Giza sample (Ubelaker 1999: Fig 62) was initially adapted from a study on white children with dental abnormalities (Schour and Massler 1944) to function as a population-specific standard for indigenous American and other non-white skeletal samples after it was discovered that the Schour and Massler chart consistently overaged immature individuals from a prehistoric Arikara skeletal population (Merchant and Ubelaker 1977) when compared to standards from Moorrees and colleagues (1963a, b). However, a recent study testing the two methods on a known-age sample of modern subadults of European ancestry found that the two charts performed equally well (Smith 2010).

No population-specific studies of dental eruption exists for ancient Egypt, and since several studies have shown that the ancient Egyptians shared a broad biological affinity with other African groups (Keita 1993, Keita and Boyce 2005), it was assumed for the purpose of this study that the chart prepared by Ubelaker for use with non-white populations would be best suited for the Giza material. Another consideration when estimating age from dental development is that dental growth is highly sensitive to sex and populational differences (Garn et al. 1958, Demirjian 1986). However, because of the unreliability of methods for estimating sex from immature remains (Mays and Cox 2000), no sex assessment was attempted for pre-pubescent individuals in the Giza material. For that reason, age ranges based on dental development are generally broader than they would be had sex of the individual been known (Smith 2010).

Skeletal maturation was used as a complement to dental age estimation methods, though dental age was given greater consideration when estimates conflicted, due to the higher variability of the former in relation to chronological age (Ubelaker 2010). Females generally mature earlier than males, but there is also considerable variation both between and within populations (White et al. 2012: 391). A recent study on dry bone comparing North American and Bosnian war dead of known age found that the epiphyseal fusion was completed up to two years earlier in the Bosnian sample (Schaefer and Black 2005), and roentgenographical studies on modern living populations have reported similar differences between populations of European, Mexican and African ancestry (Crowder and Austin 2005). An earlier roentgenographic study on modern Egyptian males (Sidhom and Derry 1931) as well as unpublished data from an archaeological sample in the Fayum (Harrison 1966: n. 2) suggest that the same may hold true for ancient Egyptian populations.

For younger individuals, fusion of primary elements in the base of the skull and mandible as well as the vertebral column and pelvic girdle were recorded whenever possible, and for adolescents and young adults, epiphyseal union of all available elements of the post cranial elements were assessed. Sex assessment was carried out prior to age estimation whenever possible, after which union of both primary elements and epiphyses was scored as "open" (unfused), "partial union" or "complete union." Age was then estimated based on illustrations and tables from Schaefer and colleagues (2009).

When no other other diagnostic features are preserved, age can also be estimated from long bone length. However, this method is much less precise than others, and there is substantial variation both between and within populations, and this increases with age (Merchant and Ubelaker 1977, Ubelaker 1987). In addition, the comparative standards for postnatal children are based on longitudinal studies (i.e., repeated observations over long periods of time) on modern living children, whereas information from archaeological samples is restricted to long bone length at the time of death. For that reason, long bone length was generally not used for age estimation of the Giza individuals, except in two cases[37] in which the leg bones were all that remained of the skeleton. However, diaphyseal length was recorded for every individual with preserved long bones, and assigned a long bone age based on the data from Maresh (1970). The Maresh tables are separated by sex, but since no sex estimates were attempted for pre-pubescent individuals in the Giza sample, the ranges for boys and girls were combined.

9.2.4.2 Adult Age Estimation

Adult age estimation methods are based on degenerative processes, which are influenced by health, lifestyle and environment to a greater extent than bone and tooth development (Chamberlain 2006: 105-107, Rogers 2008, Nawrocki 2010). Macroscopic methods mainly consist of assessment of dental wear and morphological changes to joints with limited movement. The latter include the sternal rib-end, cranial suture closure, pubic symphysis morphology and auricular surface (Cox 2000). Reliability varies not only between and within populations, but also between locations in the skeleton. In addition, reliability of any given method also varies due to level of observer error, age and sex dimorphism, hereditary factors, asymmetry within the same skeleton, intertrait correlation, and other factors (Saunders 1989). For these reasons, age estimation is one of the most challenging aspects of demographic analysis, and some researchers have suggested that the correlation between chronological and physiological age is so poor that age estimation for adult remains is more or less futile (Bocquet-Appel and Masset 1982, 1985, Jackes 2000). In particular, these authors contend, age estimates for the target sample are largely a reflection of the reference sample used. As a result, most age estimation methods have a tendency to overage young individuals and underage old individuals (Aykroyd et al. 1997, Rogers 2008, Nawrocki 2010). Finally, the applicability of age standards derived from modern populations, whose lifestyles and environment likely differed significantly from those of archaeological populations, is unclear (White et al. 2012: 381).

Although Bocquet-Appel and Masset's critique was not universally accepted (c.f. Van Gerven and Armelagos 1983, Buikstra and Konigsberg 1985, Green et al. 1986, Konigsberg and Frankenberg 1994), , the ensuing debate led to the development of new age estimation methods. In general, these methods combined multiple diagnostic traits to increase accuracy, described in more detail below (Acsádi and Nemeskéry 1970, Workshop of European Anthropologists 1980, Lovejoy et al. 1985a, Mensforth and Lovejoy 1985, Isćan 1989). In recent years, several researchers have also introduced methods based on Bayesian statistics to ameliorate bias

[37] Burials 264 and 266

introduced by the "attraction to the middle" (Bocquet-Appel and Masset 1982, 1985) introduced by traditional regression analysis (Hoppa and Vaupel 2002, Chamberlain 2006).

In addition to the development of new techniques, several existing methods have also been extensively tested for correlation between the morphological feature used for age assessment and chronological age. If the correlation coefficient is low, the method is prone to error both in terms of individual estimates and for the demographic profile of the entire sample (Kemkes-Grottenthaler 2002). When available, correlation coefficients are provided for each age estimation method discussed below. However, opinions differ as to how high the correlation coefficient should be in order to provide acceptable age estimates. Bocquet-Appel and Masset (1982) assert that coefficients below 0.90 will yield inaccurate age estimates, whereas Lovejoy and colleagues (1985a) maintain that a factor of 0.70 is sufficient. As evident from the discussion of individual methods below, even the lowered threshold of 0.70 would effectively designate a majority of methods as highly inaccurate. In addition, Kemkes-Grottenthaler (1996b, 2002) suggests that correlation coefficients are of limited use due to the nonlinear relationship between assigned age stages and chronological age. She advocates the inclusion of scatterplots of predicted versus actual ages as a means to detect nonlinearities in the samples investigated.

Macroscopic Methods

Sutural Closure

Most of the earliest methods of age estimation focused on the skull. One of the first methods was developed by Todd and Lyon (1924, 1925a, b, c) on crania from the Hamann-Todd collection. The authors found that endocranial sutures were more dependable than ectocranial, but reported low accuracy for both. In addition, they also reported interracial differences between groups of African-American and European ancestry. Other early evaluations of cranial sutures as a means of age estimation reported similarly discouraging results (Hrdlicka 1939, Singer 1953, McKern and Stewart 1957). More recently, Meindl and Lovejoy (1985) suggested that their revised method focusing on the lateral-anterior sutures could be useful if employed in conjunction with other methods. They reported a correlation coefficient of 0.57 for the lateral -anterior sutures, and 0.50 for the vault sutures. Tests of the Meindl and Lovejoy method, however, found that the sutural closure stages corresponded poorly with age, particularly for individuals under 30 or over 50 years of age (Saunders et al. 1992) and that they showed strong sexual dimorphism. However, the results of the tests in terms of sexual dimorphism are somewhat contradictory; Key and colleagues (1994) found the method more accurate for estimating the age of females than males in a test performed on the Spitalfields sample, whereas Kemkes-Grottenthaler (1996b) reported a correlation coefficient of 0.59 for males, but only 0.34 for females.

Pubic Symphysis

The pubic symphysis is the fibrocartilaginous joint connecting the innominate bones at the ventral aspect of the pelvis. As a person ages, a series of progressive age related changes flattens the initially ridged symphyseal surface and it becomes pitted and porous. The first systematic method of pubic symphyseal aging was developed by Todd (1920, 1921a, b) on a large sample of males from the Hamann-Todd collection. Todd identified ten phases of pubic symphysis morphology, starting at 18-19 years and ending at 50+ years (White et al. 2012: 394). However, the reliability of the reported ages in Todd's reference sample has been called into question, and an additional concern with his method is that he disregarded individuals that fell outside of the recognized age ranges (Rogers 2008).

The Todd method was reevaluated using the same skeletal sample by Brooks (1955), who proposed a shift in the age ranges as well as suggesting alternative morphological criteria, and later tested by McKern and Stewart (1957) on a sample of Korean war-dead. Rather than assigning ages to the total morphological pattern of the symphyseal surface, McKern and Stewart instead proposed a component system, which scored the dorsal plateau, the ventral rampart, and the symphyseal rim separately, and then combined the scores to arrive at a final age estimate. They reported issues with the restricted age range, in addition to the lack of a female standards. Gilbert and McKern (1973) attempted to rectify the latter omission, but later tests found problems with their method as well, specifically with the standard deviations, which were later recalculated by Snow (Suchey 1979, Snow 1983, Kemkes-Grottenthaler 2002).

Hanihara and Suzuki (1978) developed a similar component system to that of McKern and Stewart and tested it on a Japanese autopsy sample, but instead of averaging the scores for each component, the component scores were used as raw data for multiple linear regression analysis. They reported a very high correlation coefficient, 0.92, for mid-range adults, but cautioned that the method should not be used on individuals under the age of 18 or over 38 years of age.

Linear regression was also employed by Katz and Suchey (1986) in a study testing both the Todd and McKern-Stewart methods on a large sample from the Los Angeles County coroner's office. They found that the Todd method performed slightly better than the component system of McKern-Stewart, with correlation coefficients of 0.85 and 0.73, respectively. Meindl and colleagues (1985) reported much lower coefficients for the Todd ten-stage method from a test utilizing the Hamann-Todd collection, at 0.57 for males and the combined sample, and 0.64 for females. They also tested the McKern-Stewart/Gilbert-McKern and Hanihara-Suzuki methods, and found that both methods were more accurate for females than males, with coefficients of 0.36 for the combined sample, 0.37 for males and 0.68 for females using the Mckern-Stewart/Gilbert-McKern method, and 0.60, 0.52 and 0.66 respectively for the Hanihara-Suzuki method.

Despite the overall higher coefficients for later symphyseal aging methods, however, Meindl and colleagues found that the original Todd method was still the most accurate when all phases were considered. They suggested some basic modifications of the phase descriptions to increase accuracy, grouping them into five overarching biological phases, and carried out a second test on a different subsample of the Hamann-Todd collection, for which they reported correlation coefficients of 0.84 for males, 0.69 for females, and 0.78 for the combined sample (Meindl et al. 1985).

Perhaps best known of the modifications to the Todd method is the six-phase Suchey-Brooks method. This method was developed using a very large (n=1225) sample from the Los Angeles County coroner's office, and the authors contend that the documentation for this more recent autopsy sample is better than that of the Hamann-Todd collection (Brooks and Suchey 1990). Brooks and Suchey chose the Todd modal method as a starting point for their revisions, and dismiss the component approach as more complex than necessary in its application. However, they found the Todd phases to be narrower than the method allowed, and collapsed his ten phases into six broader phases, for which they provided statistically sound standard deviations (Klepinger et al. 1992, Nawrocki 2010). The Suchey-Brooks method was first made available for the male os pubis in 1986, and later expanded to include a female standard (Brooks and Suchey 1990). In addition, a modification of age ranges in the six phases based on race (African-American, Hispanic and White) was published by Katz and Suchey in 1989.

Key to the Suchey-Brooks method is the use of casts of type specimens for each phase, which are more easily compared to skeletal elements under analysis than written descriptions, drawings or photos. A test of the Suchey-Brooks and McKern-Stewart/Gilbert-McKern method by Klepinger and colleagues (1992) found that the Suchey-Brooks method performed better. The authors suggest that this may be due to the homogeneity of the sample (mostly young, white males) used to develop the McKern-Stewart/Gilbert-McKern method, compared to the more diverse sample utilized by Suchey and Brooks.

Auricular Surface

Despite the utility of the pubic symphyses for age estimation, it is not always possible to apply it to skeletons from archaeological populations because of poor preservation. In contrast, the auricular surface of the ilium usually preserves better, and can also be useful for age estimation. In 1985, Lovejoy and colleagues noticed a strong correlation between age (estimated with other methods) and morphological changes of the auricular surface in the Libben archaeological sample, and subsequently developed a eight-phase method for age estimation based on this area using the Hamann-Todd collection, the Libben skeletal sample, and additional forensic samples from the Cuyahoga County Coroner's Office (Lovejoy et al. 1985b). To minimize research time and reduce inter-observer error, the sample was first seriated. Similar to the pubic symphysis methods, the auricular surface was placed into one of the eight phases based on age-related changes in granularity, micro- and macroporosity, billowing and transverse organization. The phases were divided in 5-year intervals (between ages 20–49 years) or 10-year intervals (50–59years), with an open-ended category for individuals over the age of 60. The authors suggested that their method offered the advantage over that pubic symphysis to be applicable to individuals over the age of 50, and reported correlation coefficients ranging between 0.76 and 0.81 from blind tests of the technique (Lovejoy et al. 1985b).

Subsequent tests of the method by other authors, however, found that though auricular surface age estimation was unbiased in terms of sex and race (Murray and Murray 1991), the method consistently overaged younger individuals and underaged those of advanced age (Murray and Murray 1991, Saunders et al. 1992, Bedford et al. 1993, Schmitt 2004). The method is also somewhat difficult to master, even by the original authors' admission (Lovejoy et al. 1985b), and high inter-observer errors were reported (Murray and Murray 1991, Saunders et al. 1992). In addition, a high level of variability made placing individuals in the correct modal stage difficult (Saunders et al. 1992).

To improve on the intra-observer error and simplify the application of the technique, Buckberry and Chamberlain (2002) published a revision of the method, in which each of the features described by Lovejoy and colleagues was recorded independently and assigned a numerical score corresponding to successive stages of degrees of expression. The features used were transverse organization, surface texture, microporosity, macroporosity, and changes in morphology of the apex. Buckberry and Chamberlain found the retroauricular area to be a poor predictor of age, and it was excluded from the revised method (2002). The scores from the different features were totaled into composite scores for each individual, which were then grouped into seven age stages. The authors reported correlation coefficients of 0.624 for males and 0.626 for females.

The Buckberry and Chamberlain method was subsequently tested by Mulhern and Jones on a large sample from the Terry collection, and compared to the original method proposed by Lovejoy and colleagues (Mulhern and Jones 2005). In addition to finding the revised method of Buckberry and Chamberlain easier to apply than the Lovejoy and colleagues technique, Mulhern and Jones concluded that both methods were unbiased in terms of sex and race, but that the original method was more accurate for individuals between 20-49 years of age, whereas the revised method was more accurate for individuals between 50-69 years of age. A more recent test of the revised method by Falys and colleagues (2006) on a sample from St. Brides Crypt, however, found substantial variation in age characteristics of single trait scores, prompting the authors to suggest that the combination of scores into composites likely conceals true variation, resulting in an overestimation of the correlation between actual age and trait expression. Independent two-tailed t-tests on the St. Brides sample found no justification for the seven stages suggested by Buckberry and Chamberlain, and Falys and colleagues instead recommend combining these seven phases into only three stages of age progression, in effect limiting the Buckberry and Chamberlain method only to the distinction between young, middle and old adults. Falys and colleagues do stress that their new stage III offers the opportunity to confidently identify individuals beyond the age of 60 years, though no further distinction within that category is possible (Falys et al. 2006).

Metamorphosis of the Sternal Rib End

Age-related changes at the sternal rib end can also be useful for age estimation. The method was developed by Işcan and colleagues (Işcan et al. 1984a, c, 1984b, 1985) and places the fourth rib into one of nine phases (0-8) based on the metamorphosis of the depression at the sternal end of the rib. The original authors report an accuracy between 2-7 years (Işcan et al. 1984c); however, later tests were less successful (Russell et al. 1993, Kemkes-Grottenthaler 1996a). The method can also be difficult to apply to archaeological populations because of the fragility of the sternal rib-end, and the difficulty involved in isolating the fourth rib if it was not set aside during original excavation (Russell et al. 1993, Jackes 2000). Though the correlation between rib-end morphology and age is generally accepted (White et al. 2012: 404), tests of the method have revealed a number of problems with bias, particularly in older individuals (Dudar et al. 1993, Russell et al. 1993), poor repeatability (Dudar et al. 1993), and populational differences (Işcan and Loth 1986, Işcan et al. 1987, Oettlé and Steyn 2000, Kimmerle et al. 2008). To improve these shortcomings, recent studies have suggested clarifying the phase descriptions (Fanton et al. 2010), or revising the age-ranges and standard deviations for each phase (Hartnett 2010).

Dental Wear

Because teeth generally preserve better than other parts of the skeleton, aging methods based on the dentition are of considerable value to archaeologists. Macroscopic dental aging methods generally rely on assessment of dental wear, which begins shortly after eruption and continues with advancing age (White et al. 2012: 387). Strong correlations have been shown to exist between dental wear and age at death in archaeological populations (Miles 1962, 1963, Nowell 1978, Scott 1979, Smith 1984, Lovejoy 1985, Walker et al. 1991, 2001, Mays 2002, Oliveira et al. 2006). However, wear rates are influenced by multiple factors, such as diet, tooth size, bruxism, malocclusion, health status, environment and non-dietary tooth use (Walker et al. 1991, Beach et al. 2010, White et al. 2012: 387). Thus, the rate of wear may vary both between and within populations, wear rates are highly relative, and the wear in one skeletal series may not at all reflect the rate of wear in another (Johannson et al., 1992, 1993).

Age Estimation of the Giza Sample

As with immature remains, adult age estimation was carried out using several different methods which were then combined and subjectively weighed to arrive at a final age range for each individual. The age range was subsequently translated into one of the age groups discussed above: Adultus (18-35 years); Maturus (35-50 years) and Senilis (50+ years). A total of 107 individuals could be placed in one of these three age groups. Eight individuals were too poorly preserved to assign to a narrower age group than "Adult, 18-79 years."

9.2.5 Sex Assessment

In order to control for the varying reliability of sexually dimorphic features as well as differential preservation of the material, eleven dimorphic traits were used to arrive at a two-part (labeled protocols A and B respectively) weighted sex assessment for each individual, using a method adapted from Kjellström (2004), in which five pelvic (the sciatic notch, ventral arc, subpubic concavity, ischiopubic ramus ridge and arc composé) and five cranial sexually dimorphic traits

	Male						Probable Male						Female						Probable Female					
Score	M		A		B		M		A		B		M		A		B		M		A		B	
Sex	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Juvenilis	3	2	5	4	3	2	5	4	3	2	5	4	2	2	11	9	4	3	10	8	1	1	7	6
Adultus	24	19	28	22	20	16	5	4	1	1	9	7	19	15	20	16	14	11	1	1	0	0	6	5
Maturus	22	17	25	20	19	15	3	2	0	0	5	4	7	6	11	9	5	4	4	3	0	0	5	4
Senilis	9	7	11	9	8	6	2	2	0	0	3	2	10	8	10	8	9	7	0	0	0	0	0	0
Adult	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	**58**	**46**	**70**	**55**	**50**	**39**	**16**	**13**	**4**	**3**	**22**	**17**	**38**	**30**	**52**	**41**	**32**	**25**	**15**	**12**	**1**	**1**	**18**	**14**

Table 9.1: Age and sex distribution of the full sample, denoting number and percent of individuals assigned to each sex category based on visual and morphological examination (M), and protocols A and B.

(the nuchal crest, mastoid process, supra-orbital margin, glabella and mental eminence) were scored, as well as the vertical diameter of the femoral head (Table 9.1).[38] Traits that were initially

[38] In the Kjellström method, the epicondylar breadth of the femur is also included for a total of twelve traits to be evaluated. However, since this is one of the poorest preserved skeletal elements at Giza, this measurement was omitted from the weighting procedure, reducing the number of evaluated traits to eleven.

scored on a three-point scale (male, female and ambiguous) were normalized to a five-point scale, "1" being hyper-feminine and "5" hyper-masculine. In protocol A, the score from each available pelvic trait was multiplied by four, cranial traits by two, and the femoral head by one. Missing traits were omitted. The total sum of the score was then divided by the number of traits, including multiplicators, arriving at a mean value between one and five[39] that was then used to assign sex to the individual based on the relative weight of the available traits. In protocol B, the traits were weighted in the same manner, but unobservable traits were assigned a neutral score of three, and were included in the calculation. Thus, in protocol B, individuals with several traits unobservable due to poor preservation were more likely to be assigned to the interval denoting ambiguous sex. Scores A and B were then compared to the initial morphological sex assessment to evaluate the effect of differential preservation on sex assessment. Based on morphological evaluation and under protocol A, sex assessment was possible for 127 individuals. Under protocol B, seven of those individuals were assigned to the ambiguous category, leaving a total of 122 individuals for which sex could be assessed.

When the sex assignments derived from the morphological assessment (M) were compared to protocols A and B, it was clear that protocol A assigned individuals to conclusive categories (Male and Female) to a much higher extent than morphological assessment and protocol B (Fig. 9.1). As expected, protocol B assigned individuals to the "probable" and "undetermined" categories more often than morphological assessment and protocol A. However, the difference in the number of individuals assigned to "probable " categories by morphological assessment and protocol B was fairly slight. A review of the observable dimorphic features of the five individuals assigned to the "undetermined" category by protocol B showed that of the five, three were initially assigned to

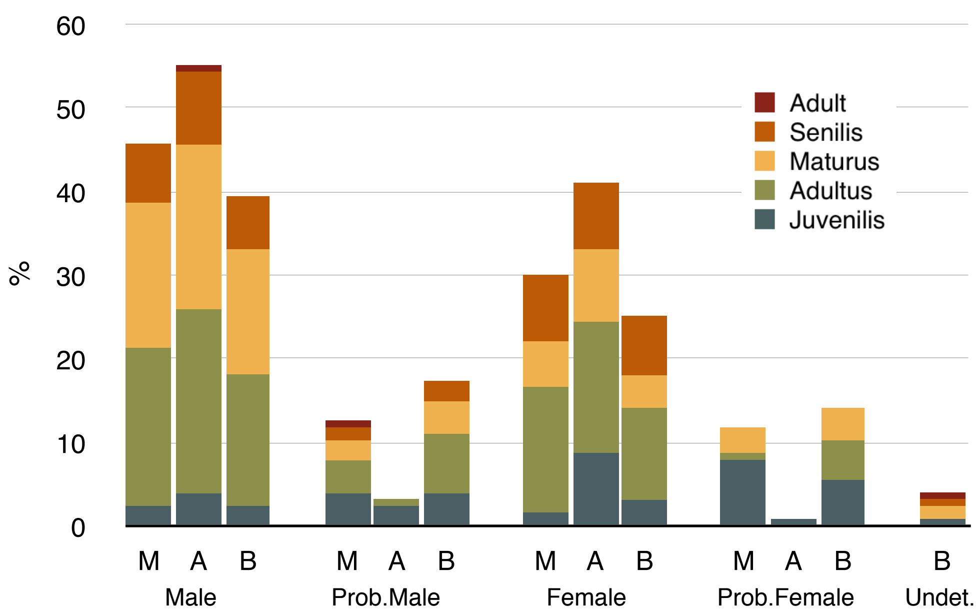

Figure 9.1: Comparison of sex distribution based on morphological assessment, and protocol A and B (n=127). For sample sizes across groups see table 9.1 above.

[39] Following Kjellström, 1-1.8 were considered female, 1.9-2.5 probable female, 2.6-3.4 ambiguous, 3.5-4.1 probable male, and 4.2-5 male.

the "probable" categories based on strongly dimorphic pelvic traits, whereas the remaining two were assigned based on three cranial features each that were scored as very masculine (5) and very feminine (1) respectively. The inclusion of these individuals in the "probable" categories they were initially assigned to was deemed justifiable in all five cases. Although protocols A and B as outlined by Kjellström (2004) provides a mathematical model for weighting traits based on dimorphic strength, sex assessment based solely on morphological evaluation always involves informal weighting of traits based on the experience of the analyst. In sum, protocol A and B proved useful as a means to evaluate the initial sex assignment and the preservation of the material. However, the high number of individuals assigned to the "Male" and "Female" categories by protocol A obscures the differences in the confidence levels of the individual sex assignments, whereas protocol B omitted individuals with highly dimorphic traits that would justify at least a "probable" sex assessment. For these reasons, the sex assessments ultimately used in the skeletal analysis of the Giza material were those based on the initial morphological analysis rather than the mathematically weighted protocols A and B. However, the results of all three methods of sex assessment for each individual are provided in Chapter Ten. The morphological features upon which sex estimation was based, and individual scores for protocols A and B are further provided in Appendix VIII.

9.2.6 Stature

Although adult stature is, to a large extent, determined by hereditary factors (Hirschhorn et al. 2001), maternal environmental factors during pregnancy, disease, environmental stress and adverse living conditions during childhood and adolescence can significantly impact genetic growth potential (Kemkes-Grottenthaler 2005). Adult stature was estimated to compare the Giza samples both between phases and with other published Egyptian skeletal populations.

The most commonly used stature regression formulae for ancient Egyptian remains are Trotter and Gleser's (1952, 1977) formulae for US Black populations. However, using regression formulae derived from one reference population to calculate stature estimates for another target population can produce significant errors. Recently, Raxter et al. (2008) published improved regression formulae based on a Giza skeletal sample complete enough to allow for error checking with the more accurate technique of anatomical reconstruction of stature, and it is these formulae that were used for the present study. The use of the Raxter et al. formulae also offer the added benefit of being able to use tibial measurements, something which is not possible when using the Trotter and Gleser formulae because of the previously reported issues with mis-measurement of this bone in their reference sample (Jantz et al. 1995).

During general data collection, stature for each individual was estimated from the bone (or bones) producing the smallest error estimate in the Raxter et al. (2008) formulae. Thus, male stature was calculated using both tibia and femur combined whenever possible, tibia or femur alone, or a combination of humerus and radius length when none of the leg bones were available. For females, stature was calculated with preference for the tibia alone, followed by the femur alone, or the humerus when none of the leg bones were available. Individuals over the age of 30 were subjected to a correction factor (Raxter et al. 2008) to account for age-related stature loss.

The left side was used when possible, but the right side was substituted if the left side was not preserved. The results of this calculation are provided for each individual in the Burial Catalogue (Appendix I)

For the statistical analysis, however, stature was calculated from the tibia for both males and females to enable comparison between groups in the Giza sample. Mean stature was also compared with other published Egyptian materials[40] (Raxter 2011). Stature was not calculated for individuals with unknown sex. Mean stature for males and females, as well as mean stature for the Giza material and comparative samples are provided in Chapter Ten.

9.2.7 Linear Enamel Hypoplasia

Linear Enamel Hypoplasias were scored according to the guidelines of Steckel and colleagues (2006: 15-16) as:

0:Tooth not present or unobservable owing to wear or other causes.
1: No linear enamel hypoplasia.
2: One hypoplastic line present (can be felt with fingernail).
3: Two or more hypoplastic lines present.

The teeth were visually assessed under strong oblique light, using a 10-power hand lens. As per the agreement with the Egyptian Ministry of Antiquities (MSA), conditions governing the retrieval and analysis of human remains at Giza preclude any destructive analysis such as thin sectioning, and thus the present study relies only on macroscopic analysis.

Because the vast majority of linear defects occur on the incisors and canines (Goodman and Armelagos 1985, Goodman and Rose 1990, Moggi-Cecchi et al. 1994, Hillson 1996:167), only these teeth were considered during data collection.

Linear enamel hypoplasia was recorded for both upper and lower permanent incisors and canines, and prevalence[41] was calculated both by tooth and by individual. All present anterior teeth that retained at least 3/4 of the crown were included in the analysis. To increase sample size, the categories denoting severity of hypoplasia (i.e., one vs. two or more hypoplasias) were collapsed to Absence/Presence for the initial analysis, and secure and probable sex assessments were combined.

For 2x2 tables comparing two sets of binomial variables, Pearson's chi-square tests and Yates' continuity corrections were carried out when the expected count in all cells exceeded 1

[40] The samples provided in Raxter (2011) were chosen because stature was calculated using the same Egypt-specific formulae developed by Raxter et al. (2008). However, while stature for the Giza individuals was calculated exclusively from the Tibia, stature for the comparative samples was calculated using the available bone with the lowest SEE for each individual.

[41] Frequency was calculated by dividing the number of observable teeth by the number of affected teeth.

(Lewontin and Felsenstein 1965a), and Fisher's exact test was carried out for all teeth. In addition, Phi correlation coefficients[42] were obtained for all teeth.

When the number of categories in one variable exceeded two, Yates' continuity correction could not be performed. Chi-square analysis and Fisher's exact test were carried out even on larger tables, however, to examine the prevalence by age group on a per individual basis for the sexes combined, and for males and females separately. Because the matrices for both tests were larger than 2x2, adjusted residuals[43] were also reported for all age groups, and Cramer's V coefficient[44] was reported rather than Phi for effect size.

During laboratory analysis, enamel defects were also assessed for deciduous teeth. However, only one deciduous tooth in the entire material carried a defect, and the deciduous teeth were therefore omitted from the statistical analysis.

9.2.8 Porotic Hyperostosis

Porotic hyperostosis was scored according to the criteria of Steckel and colleagues (2006) as:

0: No parietals present for observation.
1: Absent with at least one observable parietal.
2: Presence of slight pitting or severe parietal porosity.
3: Gross parietal lesion with excessive enlargement of bone.

Porotic hyperostosis was recorded per individual with reference to the parietals only. All individuals in which at least one parietal was more than 75% preserved, and who did not exhibit any pitting, were given an "Absent" score. Individuals that exhibited slight to severe lesions were given a score of 2 or 3 respectively, even if less than 75% of the bone was preserved.

During the laboratory analysis, bony reactions were also scored as "1 = active," "2 = healed" or "3 = mixed." Active lesions were defined as those exhibiting porosity interspersed with increasingly thin bridges of bone, resulting in a a sieve-like appearance. Healed lesions were identified based on the definition of Mensforth et al. (1978:23) of the presence of remodeling in the form of a "smooth lamellar texture with bone filling of the peripheral pores."

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[42] The Phi coefficient is a measure of association between two binary variables. The Phi coefficient varies between 0 to 1, with higher values (negative or positive) indicating a stronger association between the two variables. For the present study, effect size follows Cohen's (1988) criteria of .10 for small effect, .30 for medium effect, and .50 for large effect.

[43] A raw residual is the difference between the observed and expected values for a cell. The larger the residual, the greater the contribution of the cell to the magnitude of the resulting chi-square obtained value. A a standardized or Pearson residual is calculated by dividing the raw residual by the square root of the expected value as an estimate of the raw residual's standard deviation. However, in order to use the residual value in direct comparison with the z-value of α=0.05 (i.e., 1.96), the Pearson residual has to be further transformed into an adjusted residual with the following equation: Adjusted residual = (observed – expected) / $\sqrt{}$[expected x (1 + row total proportion) x (1-column total proportion)]. The adjusted residual can then be directly compared with the z-value for α=0.05 (1.96). A residual greater than 1.96 or less than − 1.96 indicates a significant difference (VanPool and Leonard 2010: 246-247)

[44] Cramer's V coefficient is a correlation coefficient that takes into account the degrees of freedom in the chi-square table. As the Phi coefficient, it ranges between 0 to 1, with higher values indicating a stronger correlation between variables. For the present study, the effect size follows Gravetter and Wallnau's (2004:605) criteria of .06 for small effect, .17 for medium effect, and .29 for large effect.

Individuals that exhibited both textures were scored as “Mixed.” However, because only two cases of active or mixed lesions were identified in each temporal phase, evidence of bone remodeling was not considered in the final analysis. Further, to increase sample size, slight to severe pitting (code 2) and gross parietal lesions (code 3) were collapsed to “present” for the statistical analysis, and the severity of the lesions was not considered, though the data were collected.

As above, lesion prevalence was compared between groups using Pearson’s chi-square test and Yates’ continuity correction when expected cell counts exceeded 1. Fisher’s exact test was carried out for all subsamples.

9.2.9 Cribra Orbitalia

Cribra orbitalia was scored according to the guidelines of Steckel and colleagues (2006) as:

0: No orbits present for observation.
1: Absent with at least one observable orbit.
2: A cluster of mostly fine foramina covering a small area (≤1 cm2).
3: Substantial area (> 1 cm2) covered by small and/or larger foramina with a tendency to cluster together.

As above, lesions were also scored as active, healed, or mixed. Cribra orbitalia was recorded per individual with reference to the orbital roof of the frontal bone. All individuals in which at least one orbital roof was more than 75% preserved, and who did not exhibit any pitting, were given an “Absent” score. Individuals that exhibited slight to severe lesions were given a score of 2 or 3 respectively, even if less than 75% of the bone was preserved. However, as above, codes were collapsed to Absent/Present in the statistical analysis in order to increase sample size, and bone remodeling was not considered in the final analysis.

9.2.10 Osteoarthritis/Degenerative Joint Disease (DJD)

Synovial Joints

In the present study, osteoarthritis was scored according to the criteria of Steckel end colleagues (2006; 32) as:

0: Joint not available for observation.
1: Joint shows no evidence of pathological changes.
2: Slight marginal lipping (osteophytes less than about 3mm) and slight degenerative or productive changes are present. No eburnation is present but the surface may include some porosity.
3: Severe marginal lipping (osteophytes greater than about 3mm) and severe degenerative or productive changes are present. The surface may include substantial porosity.

4: Complete or near complete (more than about 80%) destruction of articular surface (margin and face), including ankylosis.
5: Joint fusion (synostosis).

Six joints or joint groups were scored: shoulder, elbow, hip, knee, wrist/hand and ankle/foot. Both left and right side joints were scored, and when at least one element in a joint was affected OA was scored as present. When more than one element was affected, the most severe occurrence was scored (Steckel, et al. 2006: 31).

9.2.11 Trauma

Category	Description
Dislocation	1. Traumatic 2. Congenital 3. Cause Ambiguous
Fracture Type	1. Partial (Greenstick/Bowed) 2. Simple (Transverse/Oblique) 3. Comminuted/Butterfly 4. Spiral 5. Compression/Crush/Torus 6. Depressed skull fracture (outer table involvement only) 7. Depressed skull fracture (outer and inner table involvement) 8. Other (e.g., impacted, avulsion, stress/fatigue, secondary/pathological)
Fracture Characteristics	1.Pathological 2.Blunt Round 3.Blunt Oval 4.Edged/Sharp force trauma 5.Projectile entry 6.Projectile exit 7.Projectile embedded 8.Radiating/Stellate 9.Amputation 10.Other
Fracture Class	1.Extra-articular 2.Intra-articular
Long bone fracture description only (LARA)	1.Length: Normal/Distracted/Shortened 2.Apposition (shift): Anterior-Posterior and/or Medial/Lateral 3.Rotation: Internally or Externally 4.Angulation (alignment): Anterior-Posterior; Varus-Valgus
Trauma Complications	1.Nonunion 2.Tissue necrosis 3.Infection 4.Traumatic arthritis 5.Joint fusion 6.Traumatic Myositis Ossificans 7.Deformation 8.Traumatic Enthesopathy
Perimortem fractures	1.Clearly perimortem 2.Ambiguous: possibly postmortem
Antemortem fractures: healing	1.Callus formation: woven bone only 2.Callus formation: sclerotic reaction 3.Healing/Obliteration of fracture

Table 9.2: Trauma recording protocol. Buikstra and Ubelaker 1994, O'Brien and Dudar 2011 and Lovell 1997; 2008

During initial data collection, detailed information on each traumatic lesion encountered in the skeletal material was recorded and entered in the BADaBooM database. Lesions were first described according to side, section (long bones: proximal or distal epiphysis/articular surface; proximal, middle, or distal third), and aspect (superior/inferior surface or inner/outer table; medial; lateral; dorsal/posterior; ventral/anterior or circumferential), and the dimensions and exact location of each lesion were measured. The subsequent recording protocol (Table 9.2) generally followed that set out in the OsteoWare manual (O'Brien and Dudar 2011), which in turn is modeled on the "*Standards for data collection from human skeletal remains*" (Buikstra and Ubelaker 1994). In addition to the OsteoWare categories, data was also collected on long bone fracture class (intra- vs. extra-articular) and length/apposition/rotation/angulation (LARA), following Lovell (1997; 2008). Spondylolysis and traumatic vertebral fractures were described in a similar manner (but with sections categorized as body, arch, spinous or transverse process, and superior or inferior articular facet), and recorded on the Vertebral Pathology tab in the BADaBooM database.

Timing of Fractures

Antemortem trauma that occurred long enough before death for healing to begin is easily recognizable even in dry bone, based on visible bone remodeling at the fracture site. The differentiation between perimortem trauma (fractures that were sustained just before, or shortly after death) and postmortem breakage is much more difficult. In the absence of soft-tissue to aid in determining the timing of an injury, the distinction between peri- and postmortem trauma has to be based on the condition and elasticity/plasticity of the bone when the trauma occurred. Living or freshly deceased bone is a viscoelastic material with high moisture and collagen content, which will warp or deform significantly before it breaks (Galloway et al. 2013). Typically, fresh bones will fracture at obtuse or acute angles and a curved outline, and concentric or radiating patterns are common. Fracture edges are often smooth and sharp or beveled, and there may be deformed or warped bone fragments or splinters still adhering to the break surface (often referred to as flaking or peeling) (Sauer 1998, Loe 2008, Moraitis et al. 2008, Mann and Hunt 2012, Ubelaker and Montaperto 2014). In dry environments such as Egypt, both collagen and moisture content degrade after death, changing the material properties of the bone matrix and reducing plasticity (Sauer 1998). The edges of postmortem breaks are therefore rougher and more jagged, transverse in outline, with a "torn paper" appearance, less beveling, and with less or no adhering fragments (Loe 2008, Mann and Hunt 2012). Due to decreased flexibility, dry bone is also more likely to shatter in smaller and more regular fragments, and concentric or radiating fractures are uncommon (Galloway et al. 2013). However, depending on factors such as burial environment, fragmentation, and premortem condition, bone specimens may retain the properties of fresh bone for several months after death (Galloway et al. 2013).

In addition to the breakage patterns, staining, color and patina can also aid in the determination of fracture timing. Soil mineral content, decomposition, vegetation, and other factors will all contribute to discoloration of the exposed surfaces of buried bone over time. Thus, breaks in which the color and patina of the external and internal bone surfaces at the fracture site do not differ significantly are most likely non-recent, whereas newly fractured surfaces will differ in color compared to surrounding bone, since these surfaces were exposed to the environment later in time (White 1992:133, Sauer 1998, Moraitis et al. 2008, Galloway et al. 2013).

Finally, contextual information may also be informative in regards to the timing of fractures. For example, if a burial is a closed find, or the skeleton is interred in an intact burial receptacle, any fractures encountered can be assumed to be at the very least pre-depositional. In Egyptian contexts, however, pre-depositional events need not necessarily have occurred close to the time of death. According to textual sources, traditional mummification took around seventy days, and in some cases, inscriptions tell us that more than a year had elapsed between death and burial (Riggs 2005:183). Mummification was also an invasive practice, and several bodies in the Wall of the Crow sample show evidence of extensive postmortem manipulation. Burial 486, a Saite period skeleton belonging to a middle-aged male, had its ribcage tightly stuffed with mud (see Chapter Five, figure 5.2), presumably through an incision in the abdomen. Another male, burial 324, had been bisected at the waist (the embalmers leaving cut marks on the third and fourth lumbar vertebrae in the process) and stuffed into a much too small coffin. Finally, the skeleton of a young female, burial 495, had a supernumerary tibia inserted into the foramen magnum, presumably to shore up the mummy, which lacked a spine. The same burial also contained the lower legs of a third individual (in addition to the primary occupant of the grave and the secondary tibia that replaced the spine) within the coffin.[45]

Based on the criteria outlined above, three cranial fractures in the Wall of the Crow skeletal material were recorded as having occurred perimortem. The three burials, belonging to one elderly male and two young females, all dated to the Saite period.

Scoring system: Dislocations

As for osteoarthritis above, six joints or joint groups were scored for visible dislocations: shoulder, elbow, hip, knee, wrist/hand and ankle/foot. Both left and right side joints were scored in the following way:

0: Joint not available for observation.
1: Joint shows no evidence of pathological changes.
2: Evidence of dislocation with slight tissue involvement.
3: Evidence of dislocation with pseudoarthrosis.

However, no dislocations were identified in the material, and thus no statistical analysis was carried out.

Scoring system: Cranial bones

All cranial bones that were at least 75% complete were included in the analysis, and with the exception of the nasal bones separated by side, when applicable. This method was adopted to enable comparison with other skeletal materials from the region (Judd 2004, 2006). Scoring was done in the following way for each individual and bone:

0: No observable bone.
1: No observable fracture.
2: Fracture with evidence of healing (antemortem) -- linear.
3: Fracture with evidence of healing (antemortem) -- depression.
4: Fracture with evidence of healing (antemortem) -- puncture.
5: Fracture with evidence of healing (antemortem) -- multiple.
6: Non-recent fracture with no evidence of healing (perimortem) -- linear.
7: Non-recent fracture with no evidence of healing (perimortem) – depression.
8: Non-recent fracture with no evidence of healing (perimortem) -- puncture.
9: Non-recent fracture with no evidence of healing (perimortem) -- multiple.

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[45] Burials 324 and 495 were unfortunately not included in this study, since they could not be dated any narrower than "Late Period/Roman."

Scoring system: Long bones

All long bones, including the clavicle, were included in the analysis. Following Judd (2004, 2006) preservation was noted as complete if more than 90% of the bone was present, incomplete if 50-90% of the bone was available for analysis, and fragmentary if less than 50% of the bone was preserved. Fragmentary and incomplete bones were excluded from the analysis unless a fracture could be clearly recognized. All bones were separated by side, and scored in the following way:

0: No bone available for analysis.
1: Complete bone, no evidence of trauma.
2: Fracture with evidence of healing (antemortem) -- Proximal third.
3: Fracture with evidence of healing (antemortem) -- Middle third.
4: Fracture with evidence of healing (antemortem) -- Distal third.
5: Non-recent fracture with no evidence of healing (perimortem) -- Proximal third.
6: Non-recent fracture with no evidence of healing (perimortem) -- Middle third.
7: Non-recent fracture with no evidence of healing (perimortem) -- Distal third.

Statistical Analysis

Because of the small sample size, the detailed information collected during initial recording had to be collapsed into broader categories for chi-square tests as described above. Dislocations were recorded as absent, or present with or without pseudarthrosis. Cranial fractures were first categorized as either ante- or perimortem per the criteria above, and then recorded as linear, depression, puncture or a combination of the three. Fractures were recorded as linear when there was a break in the bone with single, branched or parallel fracture lines, but no displacement, and as depressed when bone fragments had been displaced and pushed inward below the level of the adjacent bone. Penetrating injuries without displacement of adjacent bone were recorded as puncture fractures (Lovell 1997; 2008). In cases where more than one of the above criteria were present (a depressed fracture with linear fractures radiating from its center, for example), fractures were placed in the "multiple" category.

For long bones, fracture type (e.g., oblique, spiral, comminuted, incomplete, impacted, compressed, crush, or avulsion) was not differentiated during statistical analysis, although this information was recorded during data entry in the BADaBooM database. As with cranial fractures, long bone fractures were first categorized as ante- or perimortem, after which they were separated by location on the bone (proximal, distal, or middle third). The scoring schemes for dislocations and fractures are provided below.

Chi-square analysis was only possible for a few skeletal elements; in most cases, Fisher's exact test was employed. For that reason, the chi-square categories described below were further collapsed to absence/presence only. Fractures were recorded as absent when at least 90% of the bone was complete, and no breaks were identified. All elemental fractures recorded were antemortem with signs of healing, but three perimortem fractures were identified in the cranial bones of the Saite sample. Since these fractures may have been sustained during life, they were included in the statistical analysis. All fractures are also described in detail in sections 10.2.5 (Saite period) and 10.3.5 (Roman period), and summaries are provided in the Burial Catalogue (Appendix I).

9.2.12 Periosteal New Bone Formation (PNB) and General Infections

Long Bones

Periosteal new bone formation was scored for each long bone that was at least 75% complete, both left and right sides, using a modified form of the criteria from Steckel and colleagues (2006) as:

1. No PNB present.
2. Markedly accentuated longitudinal striations.
3. Slight, discrete patch(es) of reactive bone involving less than one quarter of the long bone surface.
4. Moderate involvement of the periosteum, but less than one-half of the long bone surface.
5. Extensive periosteal reaction involving over half of the diaphysis, with cortical expansion, pronounced deformation.
6. PNB likely associated with a fracture.

In addition, PNB of the long bones was recorded by individual as “Present” when any long bone showed evidence of the lesion, and as “Absent” when at least eight of the twelve bones assessed (all long bones, not including the clavicle) were at least 75% complete and showed no evidence of PNB.

General Infections

This category included periostosis of bones other than the long bones, and other disease states, such as osteomyelitis and mastoiditis and was recorded on a by-individual basis. Because the periostosis or infection in this category could occur on any bone, it was recorded as “Absent” for any reasonably well preserved skeleton in the sample not showing signs of infection, resulting in a slightly higher number of assessed individuals in this category than in the long bone category. Again, the lesions were scored using the criteria adopted from Steckel et al. (2002):

0. No periosteal reaction on any other bone than the tibiae.
1. Periosteal reaction on any other bone(s) than the tibiae.
2. Evidence of systemic infection involving any of the bones (including the tibiae) of the skeleton.

Lesion Activity

Lesions were also categorized as either active or healed, based on the presence of either woven bone (reflecting active inflammatory responses at the time of death) or sclerotic/remodeled reactions indicative of healing:

0. No periosteal reaction.
1. Active (Presence of woven bone).
2. Healed or healing (Presence of sclerotic rection/remodeling).

Statistical analysis

Because of the small sample size, the categories of severity for both general infection and PNB of the long bones were collapsed to Absence/Presence for the statistical analysis. The two categories were compared by individual both across age groups and between sexes using chi-square analysis. However, and again due to the small sample size, age groups were collapsed to Infant (<1), Child 1+-12, Adolescent 12-18, and Adult. Since the multiple age groups resulted in a matrix larger than 2x2, adjusted residuals were reported for each group, with a z-value of +/-1.96 (p= <0.05) as the cut-off for statistical significance.

PNB of the long bones was also compared by skeletal element. Again, the categories for severity were collapsed to Absence/Presence because of the small sample size, but results were also reported in chart form, including severity.

To investigate whether or not lesion activity had an impact on survival, a Kaplan–Meier survival analysis was conducted, comparing mean age-at-death of individuals with active versus healed periosteal lesions, as well as individuals without evidence of periosteal reactions. Mean age-at-death was calculated by averaging the age-range for each individual. Individuals who could not be assigned a narrower range than “adult” were excluded from the analysis.

9.3 The Giza Database

A computerized database is imperative for the successful management and analysis of large skeletal and archaeological samples. The only currently existing such database available as open source is OsteoWare, developed by the Smithsonian Institution to deal with the inventory of Native American remains in the Smithsonian's collections after the passing of NAGPRA (Wilczak and Dudar 2011). However, because OsteoWare was custom built for already excavated museum collections, it does not allow for entry of archaeological data. In addition, the database file is not customizable. For that reason, a new database, the Bio-Archaeology Data Base Module (or BADaBooM for short) was developed for the Wall of the Crow material. The database was built in Filemaker Pro Advanced 13 and is modeled mainly after *Standards* (Buikstra and Ubelaker 1994) and OsteoWare (Wilczak and Dudar 2011), with the addition of data entry layouts for archaeological data and burial items. Though the database was developed specifically for the Wall of the Crow material, it is customizable and can be adapted to other site recording schemes. For example, a version of the BADaBooM database was used for the osteological material from the Johns Hopkins expedition to the Mut Temple Precinct, where the author is currently head osteologist. When this dissertation is filed, the BADaBooM database will be made available to other researchers who can adapt it to meet their own needs. To that end, a detailed description of all database tables and scripts can be found in the database documentation in Appendix X.

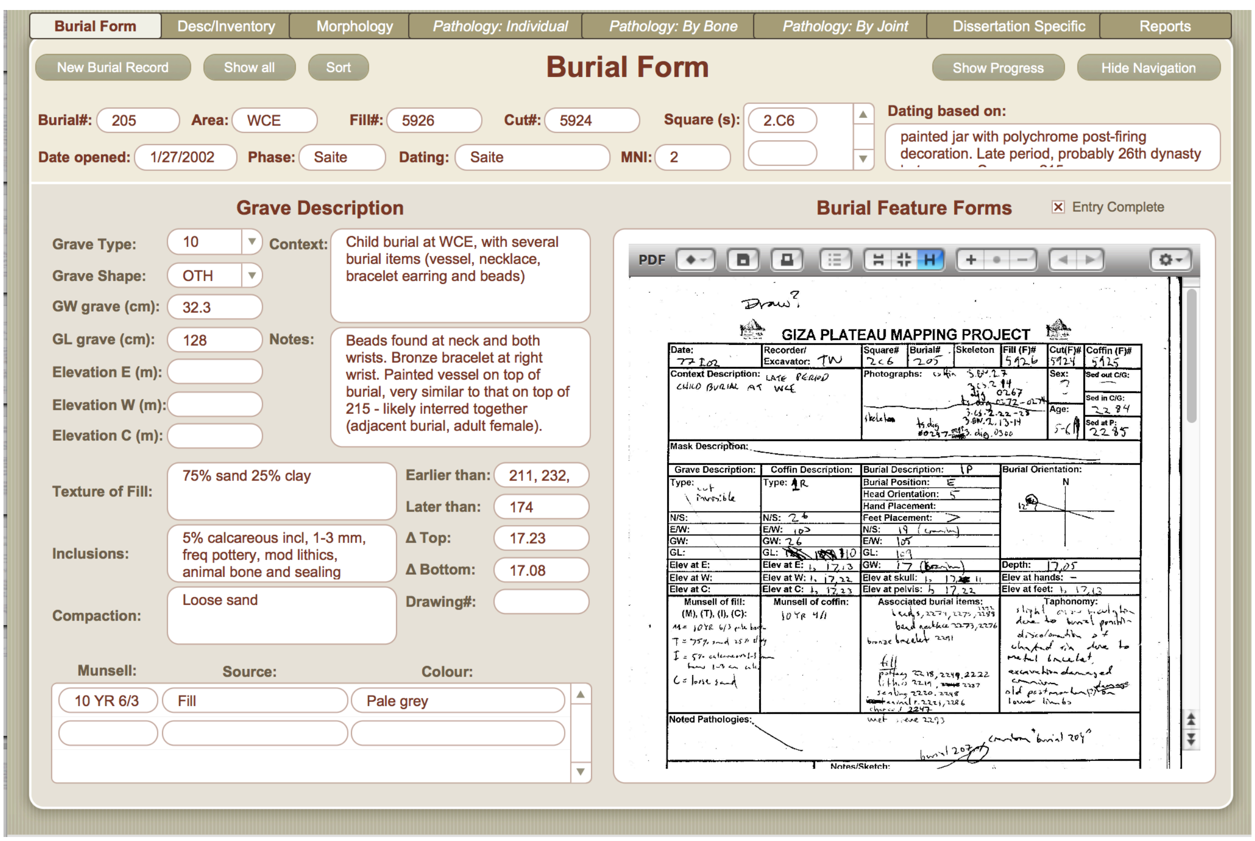

Figure 9.2: The BADaBooM burial form

The primary key of the BADaBooM database is the skeleton feature number. However, the inventory and pathology by bone layouts are element specific, to enable statistical analysis. In addition, a separate layout is linked by burial number so that archaeological information can be recorded by burial feature rather than by individual skeleton.

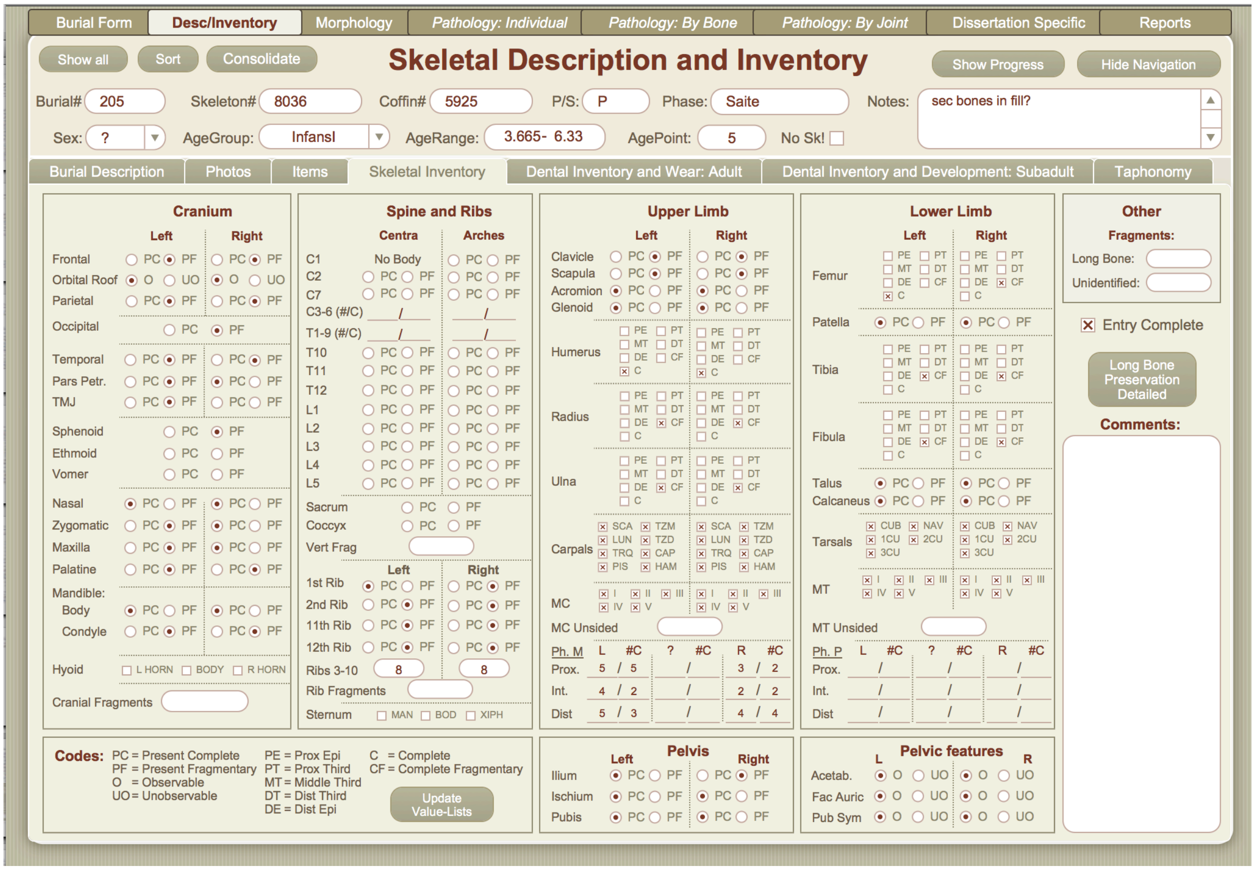

Figure 9.3: The Skeletal Inventory sub-layout

The Burial Form contains the archaeological information on each grave feature, such as date opened, location, cut and fill feature numbers, dimensions, elevations, context, phase and fill composition (Fig. 9.2). Also, the form includes a container field holding a pdf of the original field paperwork. The header of the Burial Form contains fields for burial number, feature numbers of grave cut and fill, phase, excavation date MNI per grave and burial location on site (i.e., area and square designations). From the Burial Form, buttons at the top of the screen allow for navigation between the database layouts. For all but the Burial Form layout header, which contains

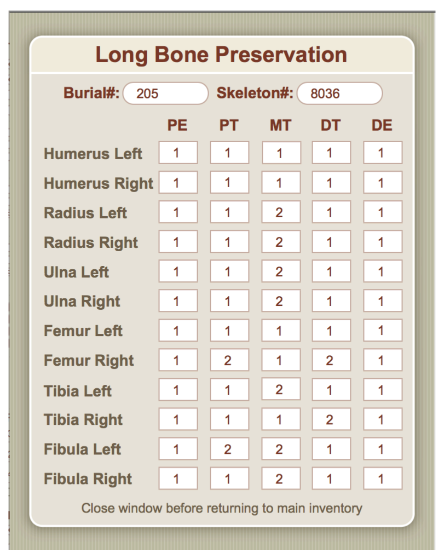

Figure 9.4: The long bone preservation form.

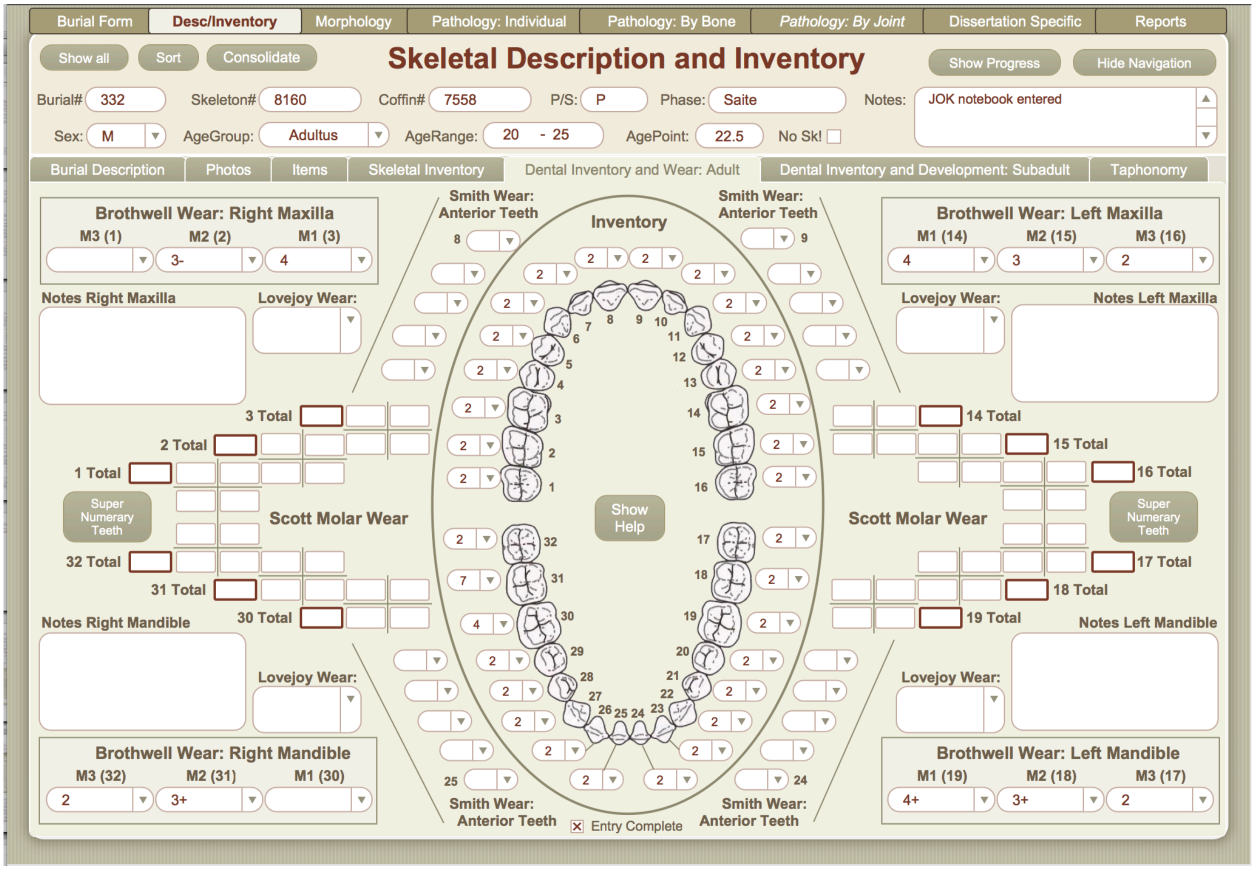

Figure 9.5: The Adult Dental Inventory and Wear layout.

information on the entire burial feature and thus pertains to all individuals encountered in the grave[46], the header on remaining layouts stays the same and contains information specific to one individual, such as skeleton and coffin feature number, age, sex, and phase.

When navigating from the Burial Form, the next layout, Desc/Inventory, contains several sub-layouts, chief among which is the Skeletal Description and Inventory form (Fig. 9.3). This form is a detailed inventory of each individual, including an additional long bone preservation inventory, accessible through a button on the main inventory layout (Fig 9.4). Further, the inventory form includes information on important diagnostic elements, such as the pubic symphysis and orbital roof for example, which can be scored as "Observable" (O) or "Unobservable (UO). The skeletal inventory serves as a basis for dynamic value lists on the remaining data entry forms, meaning that only elements that have been marked as present are available as choices in the drop-down lists of the remaining forms. This was done to minimize the risk of human error during data entry.

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[46] A number of the burials at the Wall of the Crow cemetery were multiple inhumations with more than one primary individual in the same grave. In addition, the majority of the graves contained secondary (re-deposited) skeletal elements in the grave fill.

Similarly, the Dental Inventory and Wear layouts, one for permanent (Figure 9.5) and one for deciduous teeth, serve as bases for the dental pathology layouts; a graphic interface on the pathology layouts will show only the inventoried teeth as present. Further, these layouts and many others include help files, accessible through buttons on the data entry forms (Fig. 9.6). The help files were included to provide a data entry reference in case of multiple observers so that scoring standards could be easily accessible from within the database itself.

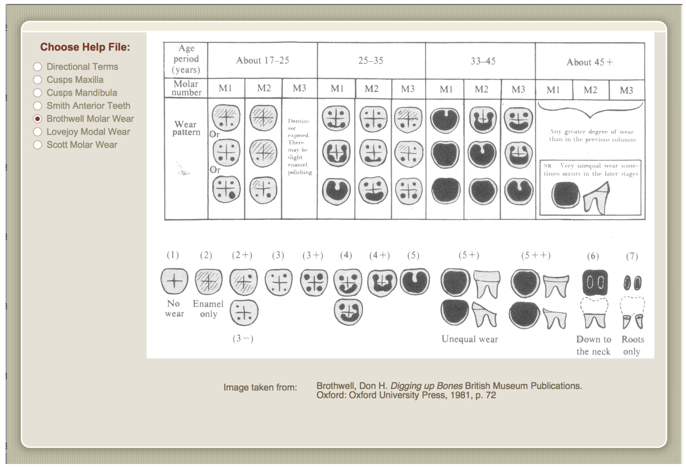


Figure 9.6: Dental Wear help file

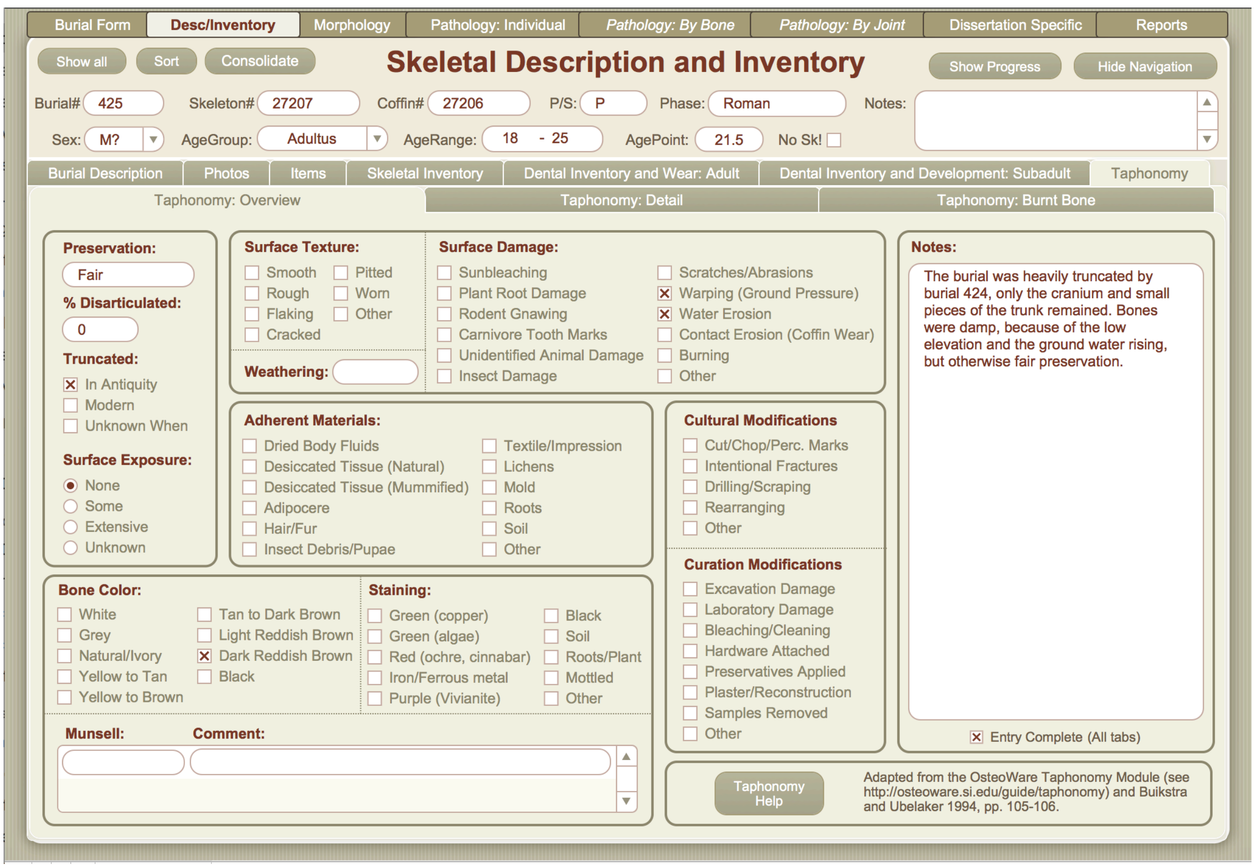


Figure 9.7: The Taphonomy Overview layout.

The Skeletal Inventory and Description layout also contains a sub-layout for the burial description, detailing body position, elevations on the skeleton, coffin and mask description, and container fields for field sketches, as well as a tab for photos for each skeleton and associated items, and a layout for items associated with the burial. Finally, the last sub-layout on this form is dedicated to taphonomy. The first tab is an overview of the preservation of the skeleton (Fig. 9.7), modeled after the corresponding entry form in OsteoWare and linked through the skeleton number. Additional taphonomy tabs are element specific, the Taphonomy Detail containing fields for weathering, discoloration, polish, gnawing, cut/chop/percussion marks and cultural modification, and the Burnt Bone layout detailing color, warping, surface texture and eventual shielded surfaces. Both layouts are modeled after the *Standards for data collection from human skeletal remains* and utilize the dynamic drop-down lists based on the skeletal inventory.

The next layout is the Skeletal Morphology form (Fig. 9.8). This layout has tabs for age and sex assessment, measurements, non-metric traits and musculoskeletal stress markers. As before, help buttons in each section opens pop-up windows with relevant scoring systems and accompanying illustrations. The first tab, age and sex assessment, contains fields for standard

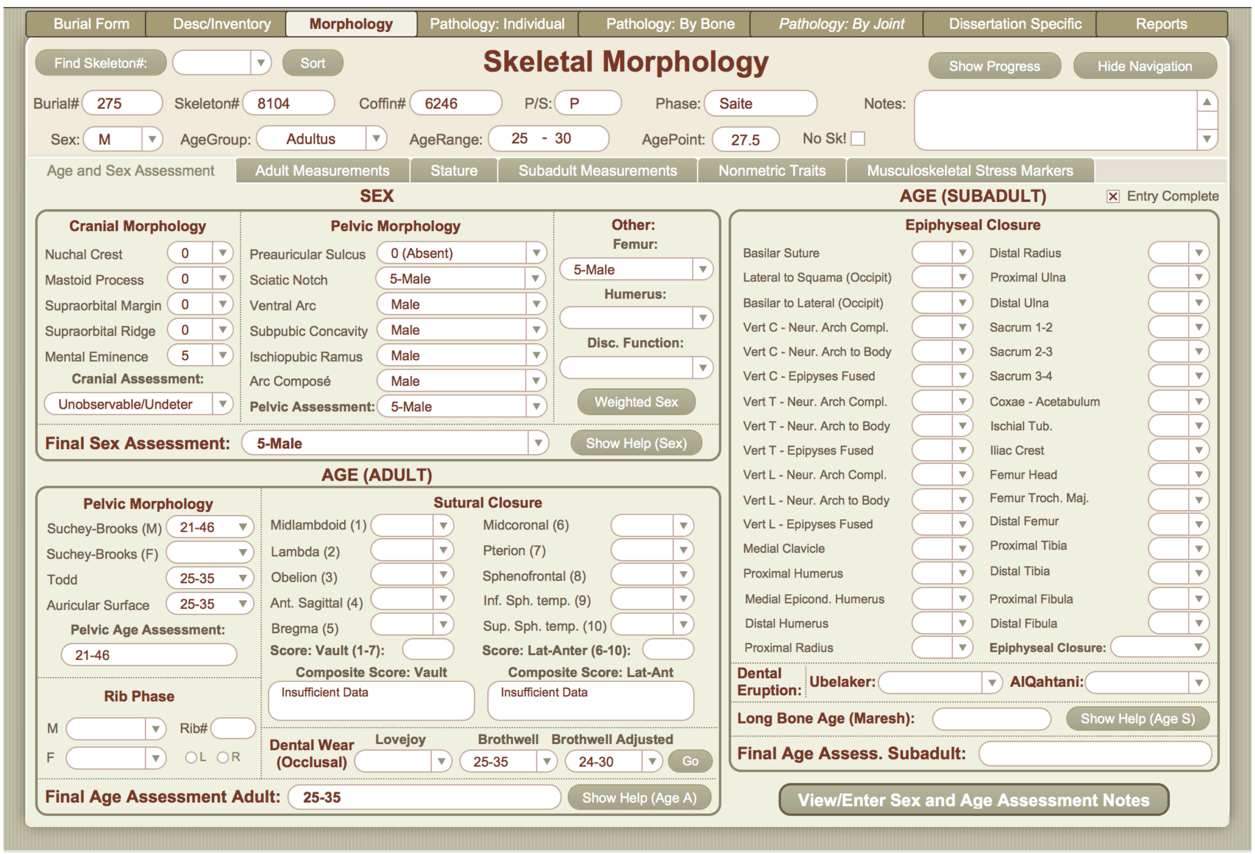


Figure 9.8: The Skeletal Morphology layout.

assessment techniques (Pearson 1917-1919, Todd 1920, 1921b, a, Phenice 1969, Stewart 1979, Brothwell 1981, Novotný 1982, Işcan et al. 1984b, Işcan et al. 1984c, Işcan et al. 1985, Lovejoy 1985, Lovejoy et al. 1985b, Meindl and Lovejoy 1985, Dittrick and Suchey 1986, Bass 1987, Brooks and Suchey 1990, Milner 1992, Buikstra and Ubelaker 1994, White et al. 2012).

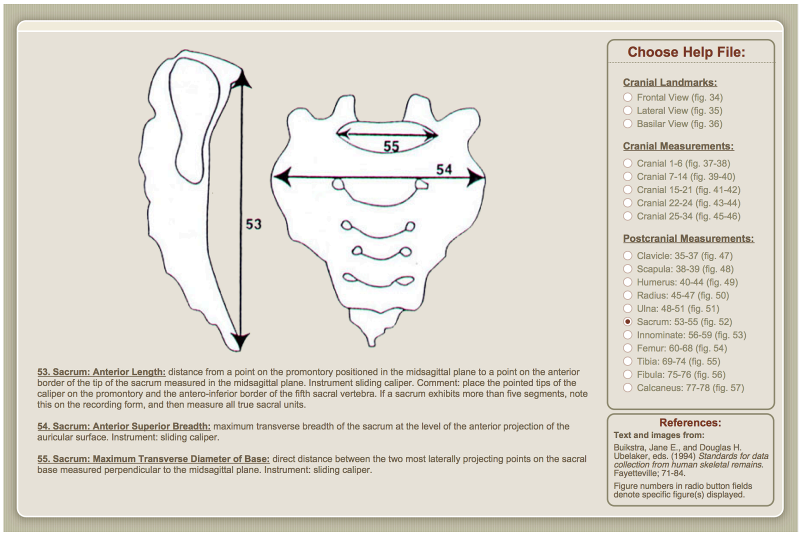


Figure 9.9: An example of a measurement reference help file.

Additionally, the sex assessment section contains a pop-up for weighted sex-assessment (see section 9.2.5 and Kjellström 2004), and the age section calculates the composite scores for sutural closure automatically, following Meindl and Lovejoy (1985). The section for subadult age follows the recommendations by Schaefer, Black and Scheuer (2009) for epiphyseal closure, and also contains fields for scoring dental eruption according to both Ubelaker (1978) and AlQahtani et al. (2010).

The next tab, Adult Measurements, follows the measurements recommended in *Standards for data collection from human skeletal remains*, each with a corresponding help file adapted from its reference illustrations (Fig. 9.9). Relevant measurements from this tab are then carried over to the Adult Stature tab (Fig. 9.10), on which stature is automatically calculated with a click

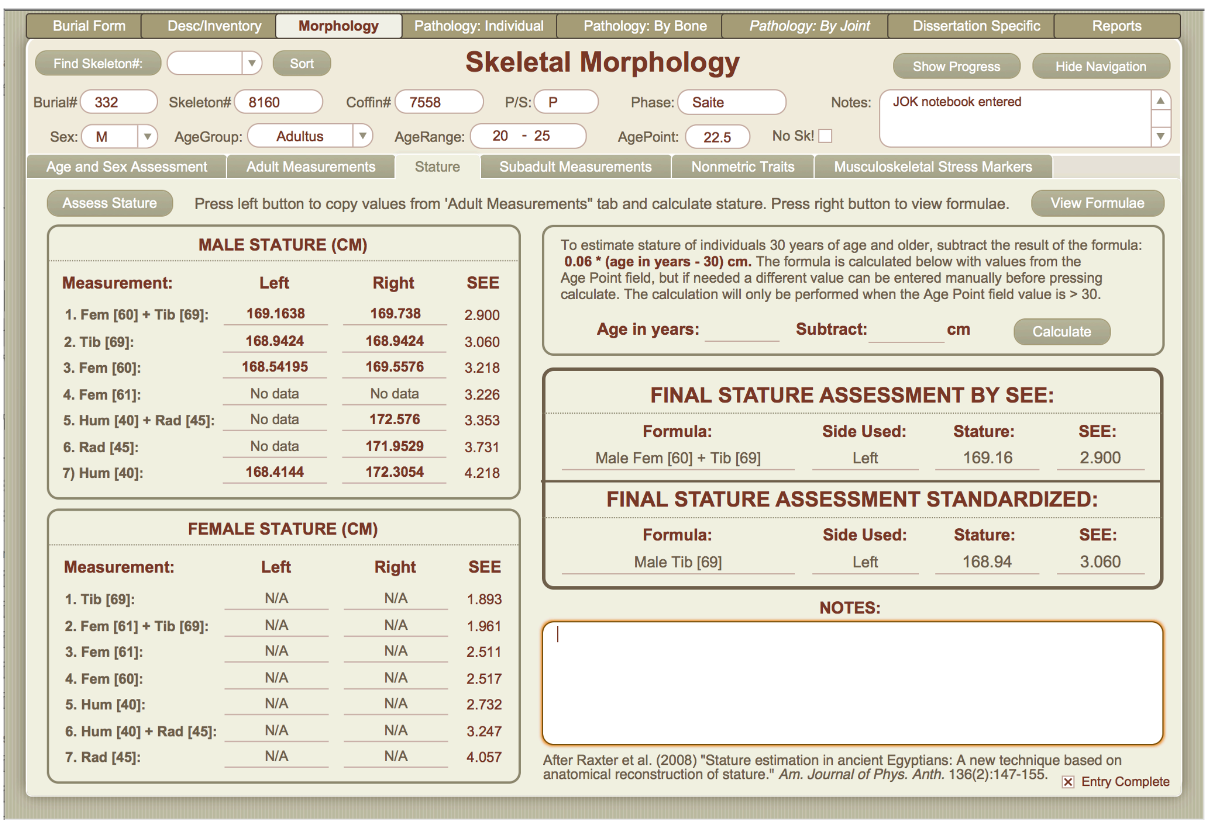


Figure 9.10: The stature calculation tab.

of a button, following the formulae specific to Egyptian populations developed by Raxter et al. (2008). Because the formulae differ between the sexes, automatic stature calculations are only available for individuals of known sex. The results of the formulae are listed in order of standard estimation error (SEE; from smallest to largest). A field at the top left of the tab further allows for calculation of the formula for deduction in stature for individuals of advanced age. The final stature assessment can then be entered manually in the relevant section at the right of the tab.

Like the Adult Measurements tab, the Subadult Measurements tab follows the recommendations in *Standards,* with accompanying reference illustrations accessible through a pop-up window (Buikstra and Ubelaker 1994). In addition, the tab also contains fields for long-bone age, following Fazekas and Kósa (1978) and Maresh (1970).

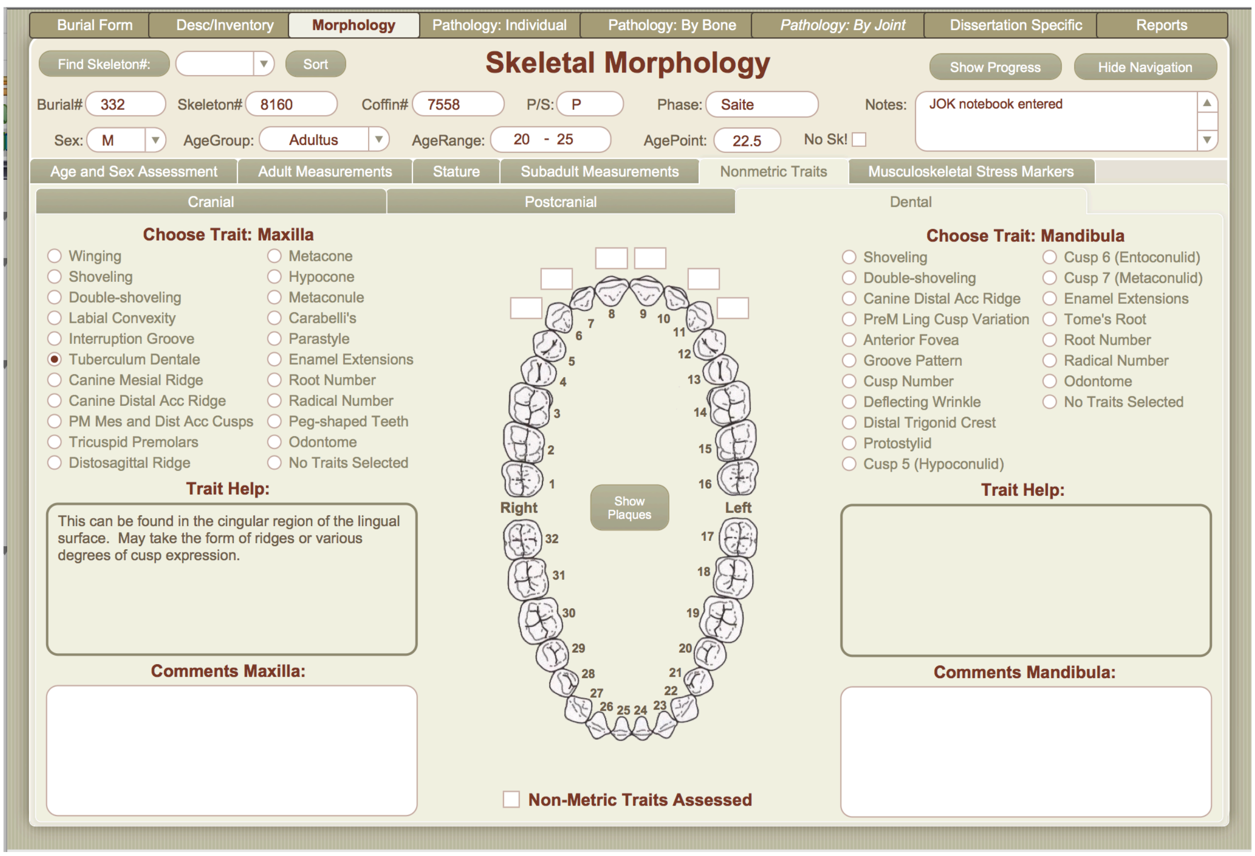


Figure 9.11: The dental nonmetric trait tab on the morphology layout.

The penultimate tab on the Skeletal Morphology layout is dedicated to nonmetric traits. The scoring of cranial traits follows *Standards* (Buikstra and Ubelaker 1994), whereas the scoring of postcranial traits follows OsteoWare (Wilczak and London 2011), in that it contains fields for scoring vertebral anomalies in addition to those recommended by Buikstra and Ubelaker (1994). The scoring of dental traits follows the Arizona State Dental Anthropology System (Turner et al. 1991). When a trait is selected for data entry, fields with drop-down lists appear on the graphic interface at the relevant location(s) in the dental arch (Fig. 9.11). As before, each trait is accompanied by a reference illustration when available accessible through the help buttons.

The final tab on the Skeletal Morphology layout allows for scoring musculoskeletal stress markers (MSM's) according to the system developed by Hawkey and Merbs (1995). Detailed descriptions of the scoring procedures, as well as illustrations taken from the 1995 publication, are accessible through the help button on the MSM tab.

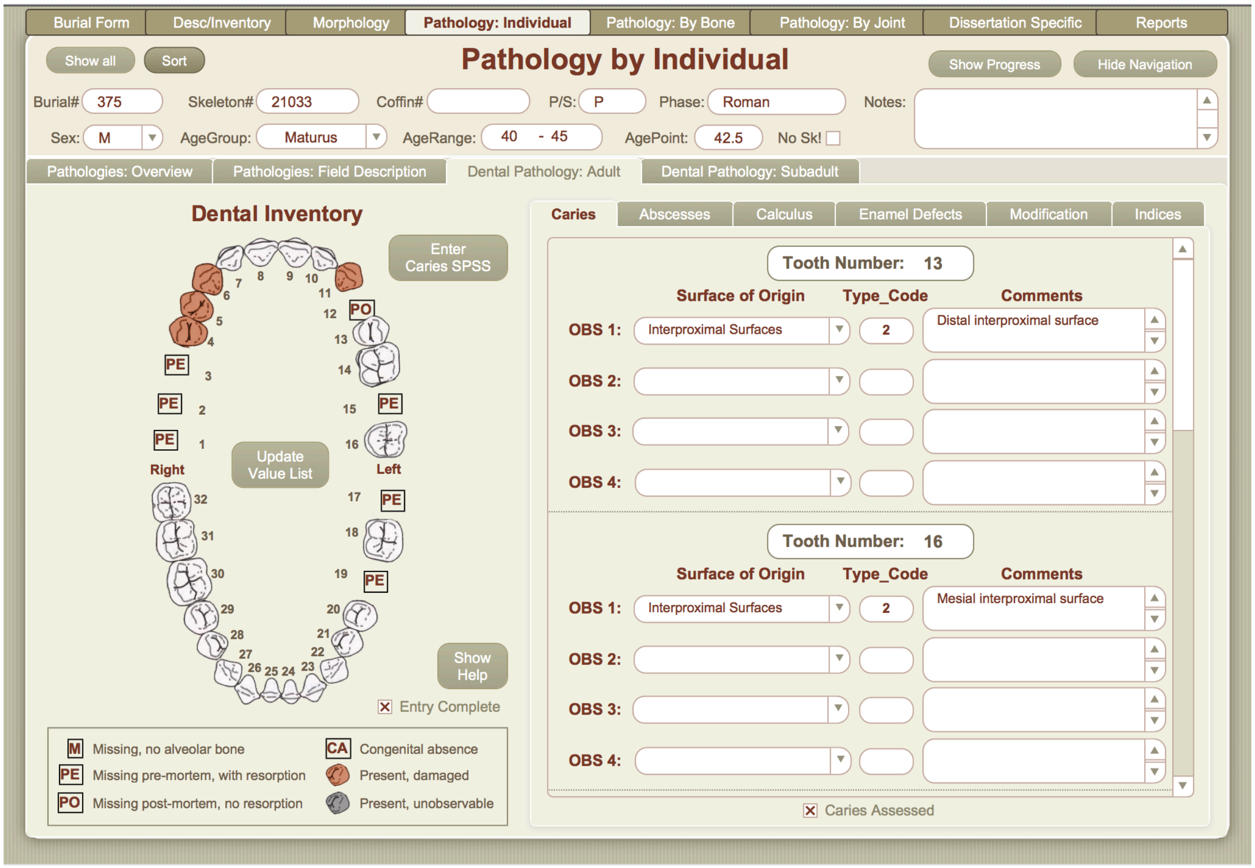


Figure 9.12: The Dental Pathology: Adult tab, showing the graphic linked to the dental inventory. For mixed dentitions, both tabs (Adult and Subadult) can be used for the same individual.

The next four layouts in the database are all devoted to pathologies. The first layout, Pathology: Individual provides a quick overview of conditions encountered in each individual (arthritic changes, infections and inflammations, porosis, dental disease, etc.) on the first tab, to allow for swift searches for common conditions, as well as a tab for field notes (Pathologies: Field Description) collected during excavation. The last tab is site specific to Giza and the recording system there, but can easily be removed or adapted for use with other field note schemes. The final two tabs on the layout (Dental Pathology Adult/Subadult) contain fields for entering dental pathologies for permanent and deciduous teeth respectively. The dental pathology tabs display a graphic of the dental arch linked to the dental inventory form, which shows existing teeth, as well as symbols for missing or congenitally absent teeth (Fig. 9.12). This was done to minimize inconsistencies between the dental inventory and pathology observations due to human error.

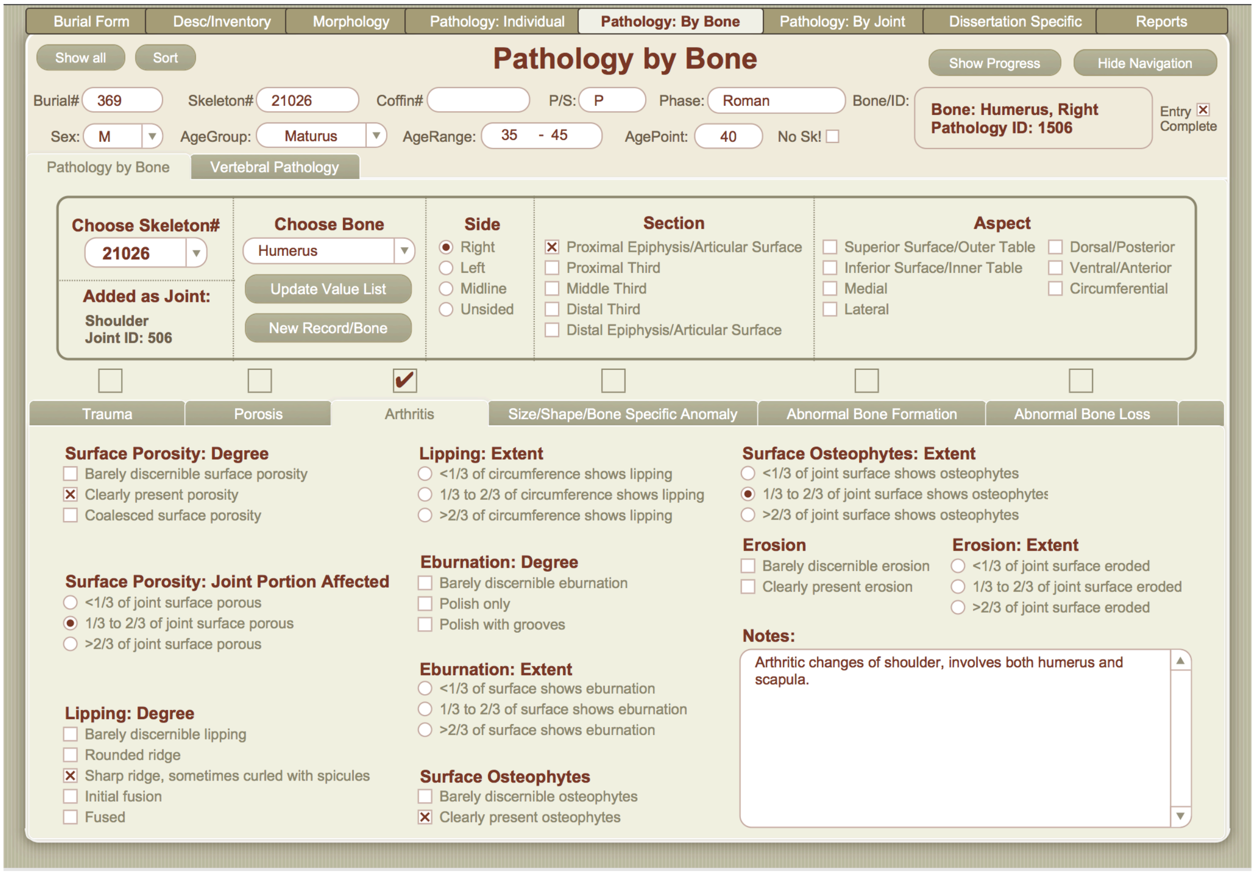


Figure 9.13: The Pathology By Bone layout

The next layout, Pathology By Bone (Fig. 9.13), is element specific, though a search for a specific skeleton number in the header will bring up all pathologies for that individual. The data entry fields on this layout closely follow the content in the pathology section of OsteoWare, which in turn are adapted from *Standards*. Any modifications to the *Standards*/OsteoWare coding scheme are detailed in the database documentation (Appendix X). As before, the header contains information on the individual being assessed. The header of the pathology layout further contains the unique ID number for the pathological observation in a field in the top right corner which also is searchable, to enable swift queries for specific observations.

To start entering data on this layout, the user must first choose an existing skeleton number from the drop-down list. This activates the dynamic value lists for that individual, which in turn only allows entries for skeletal elements already inventoried on the Desc/Inventory layout. The tabs in the lower half of the form then allow entries for trauma, porosis, arthritis, size, shape, or bone-specific anomalies, abnormal bone formation and abnormal bone loss. The size/shape/bone specific tab contains sections for cranial (e.g., premature suture closure, hydro/micro/anencephaly) and long bone anomalies, as well as a section for conditions that affect the whole skeleton, such as dwarfism or gigantism. This tab is contextually driven, meaning that the sections only allow for data entry when an appropriate bone element or skeletal section is chosen from the drop-down list.

A second sub-layout in the middle section of the layout allows for entry of vertebral pathologies. Unlike the previous tab, the vertebral pathology tab does not have multiple choices in the lower part of the layout, but all existing fields are visible when the tab is selected.

The next layout is the Pathology By Joint form. This layout was added to speed up data entry, and contains much the same fields as the Pathology By Bone layout, but allows for simultaneous entry of all skeletal elements involved in a joint. As on the previous layout, a

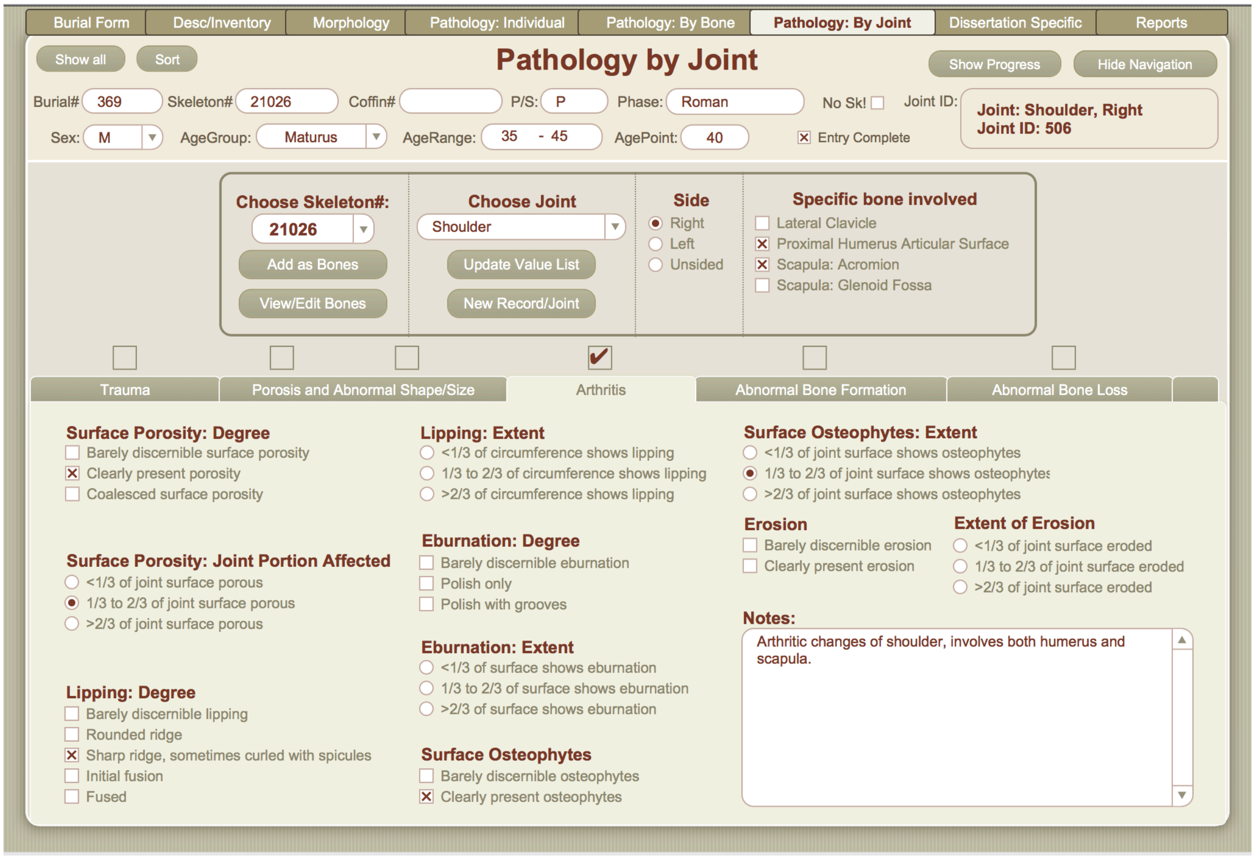


Figure 9.14: The Pathology By Joint layout

skeleton number must first be chosen from the drop-down list to activate the dynamic value list. Once this is done, the value list will show only joints represented by at least one bone in the skeletal inventory. When a joint is chosen, a section in the middle right portion of the layout will display the bones or skeletal elements involved in the joint, and the specific bones can be checked. In the example above (Fig. 9.14), an arthritic shoulder joint with involvement of the proximal articular surface of the humerus and the acromion process of the scapula has been entered. Since two skeletal elements have been chosen, the checked descriptions will apply to both elements. The joint is also automatically given a unique Joint ID, visible in the top right corner of the header. These entries can then be sent to the Pathology By Joint layout as separate by clicking the button “Add as Bones” under the skeleton number drop-down list. If additional detail needs to be added to one or more of the skeletal elements the entries can easily be pulled up for editing by clicking the “View/Edit Bones” button. When separate skeletal elements have first been entered as part of a joint, this is denoted by the Joint ID displayed on the Pathology By

Bone layout, in the section "Added as Joint," located just under the drop-down list for the skeleton number (Fig. 9.13).

The fourth and final pathology layout, Dissertation Specific, is as the name implies developed for the research questions asked in the current study, and may be deleted if the database is adapted for other materials than the Wall of the Crow sample. As before, the header contains information on age, sex, feature numbers and phase pertaining to each individual. Five tabs allow for entry of linear enamel hypoplasia, cribra orbitalia and porotic hyperostosis, degenerative joint disease, and periostosis. Rather than adhering to the recommendations from *Standards* and OsteoWare, the fields on this layout follow the scoring scheme developed by Steckel et al. (2006) for the Global History of Health Project for all forms except for the trauma data entry forms. The latter instead follow the recording scheme developed by Lovell (1997, 2008). The tabs on this layout rely on the skeletal inventory not only for dynamic value lists but also for the auto-filling of fields based on the inventory, to speed up the data entry process.

The first tab on the Dissertation Specific layout is the linear enamel hypoplasia (LEH) tab. As on the Pathology by Individual layout, the LEH tab displays a graphic showing existing, damaged and missing teeth in the dentition, ti use as a reference. For scoring, there are fields for entering absence or presence of hypoplastic lines of the incisors and canines.

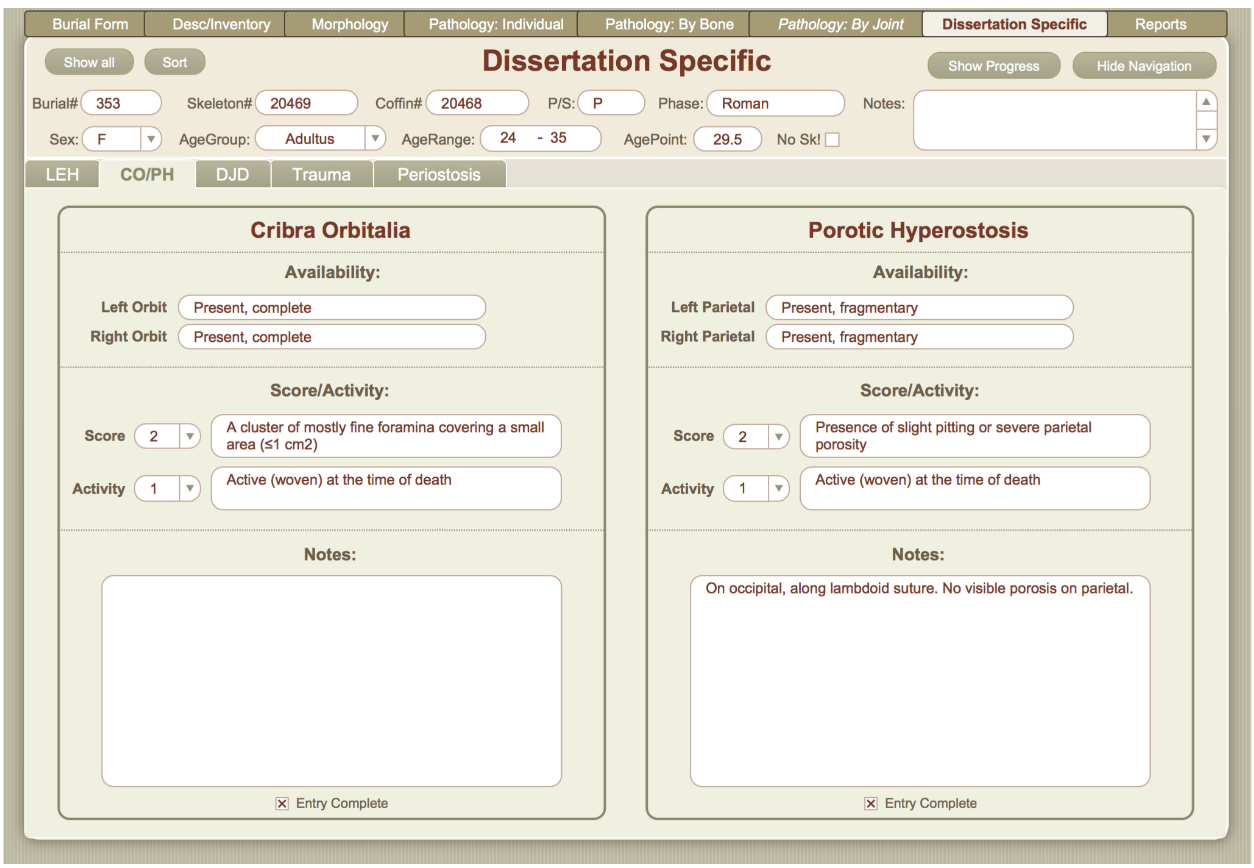


Figure 9.15: The Cribra Orbitalia/Porotic Hyperostosis tab on the Dissertation Specific layout.

The next tab on the layout records cribra orbitalia and porotic hyperostosis (Fig. 9.15). Fields in the upper portion of each section of the tab are linked to the skeletal inventory, and automatically show the availability of the orbital roofs and parietals respectively. Depending on what was entered in the skeletal inventory, the availability fields for the orbits state either "No orbit present," "Unobservable" or "Present, complete," whereas the porotic hyperostosis section have fields stating either "No parietal present," "Present, fragmentary" or "Present, complete." This was done to provide an easy reference while entering data, and to minimize mistakes due to human error. For the purposes of the statistical analysis in the current study, both cribra orbitalia and porotic hyperostosis were recorded on a per individual basis, when at least one orbital roof or one parietal were observable.

The third tab on the layout contains fields for entering data on degenerative join disease (Figure 9.16). The synovial joint form is again linked to the skeletal inventory. Two buttons in the top left corner allow for automatic data entry. For statistical purposes, it is important to assess all joints of every skeleton, and specifically to note whether or not the joint is available for observation. To make this process easier, a button at the top left of the layout labeled "Load Joints" runs a script that checks the availability of each joint for the current skeleton, and auto-enters the text "Joint not available for observation" in the fields corresponding to joints for which no bones have been entered in the skeletal inventory. The auto-entered fields are also greyed out if the skeletal inventory is empty for all components of the joint. The fields corresponding to

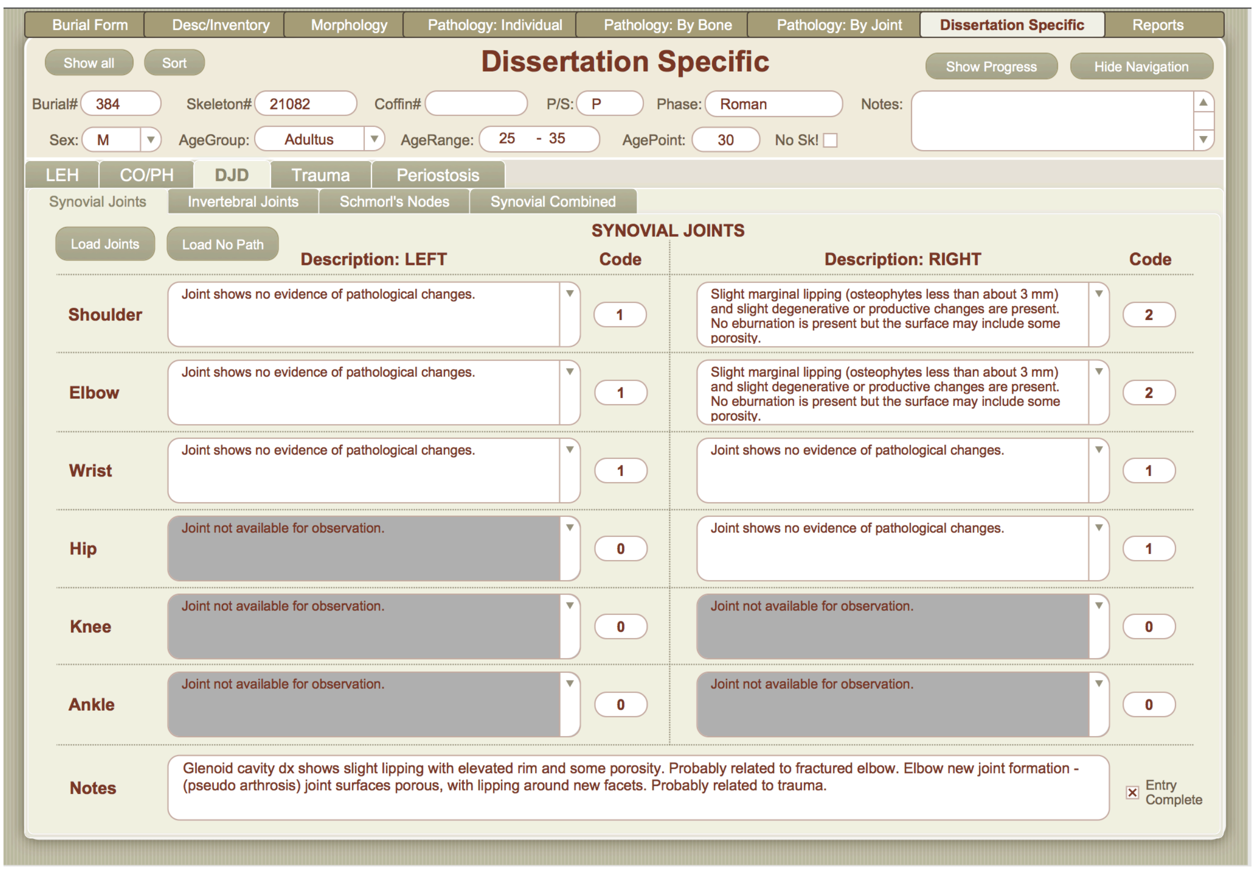


Figure 9.16: The DJD-Synovial Joints tab

joints where at least one component has been inventoried stay white, and instead display the text "Joint available: Choose DJD stage." A second button labeled "Load no Path" is also provided to speed up data entry for individuals with no pathological changes to observable joints -- this button runs the same availability check, but enters the text "Joint shows no evidence of pathological changes" in the fields for which at least one skeletal element has been inventoried.

Two additional forms on the DJD tab, Schmorl's Nodes and Synovial Combined, have similar buttons to speed up data entry. The former records Schmorl's nodes at each vertebral junction for the thoracic and lumbar spine, whereas the latter simply combines the information from the first synovial joint form and returns a result of either absent, unilateral or bilateral joint pathology. Further, the Invertebral Joints tab allows for recording of invertebral disc disease for the cervical, thoracic or lumbar spine, though not separately for each vertebra.

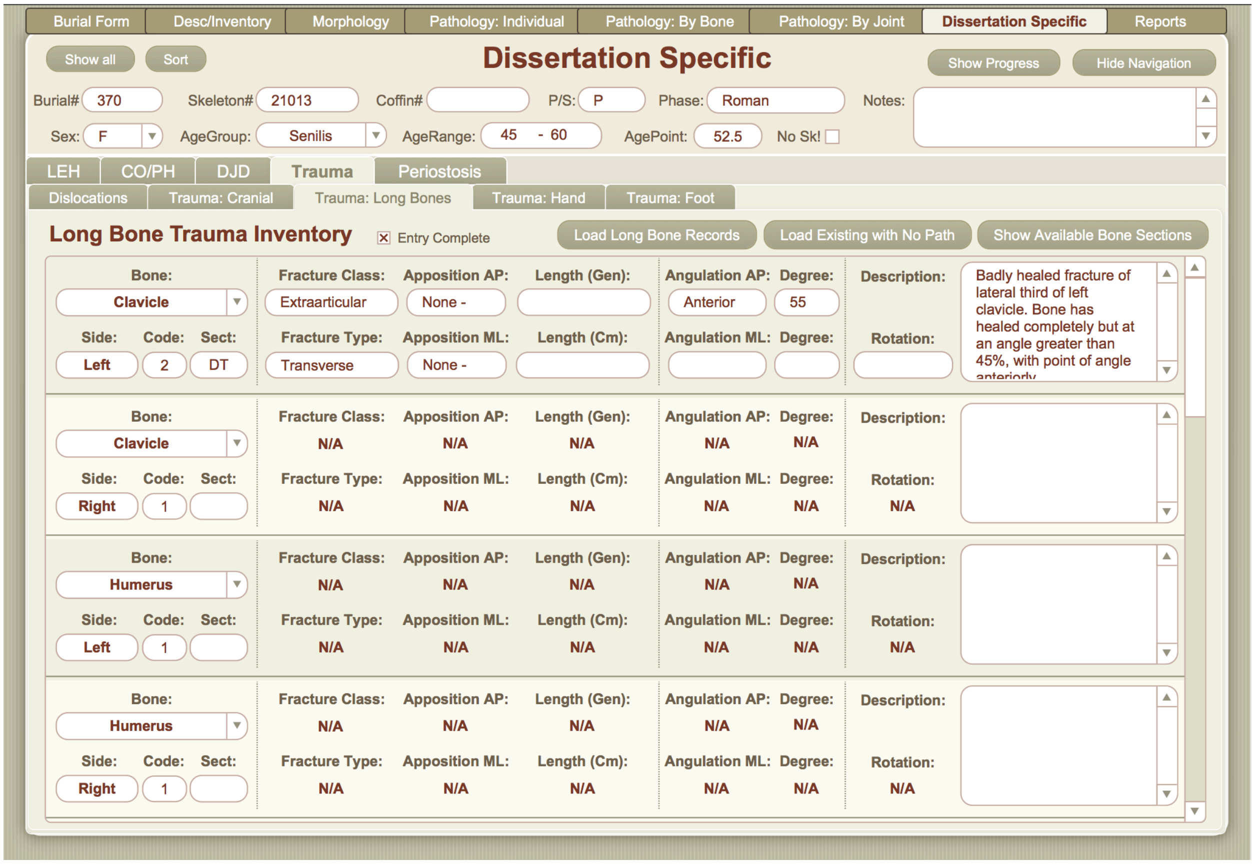
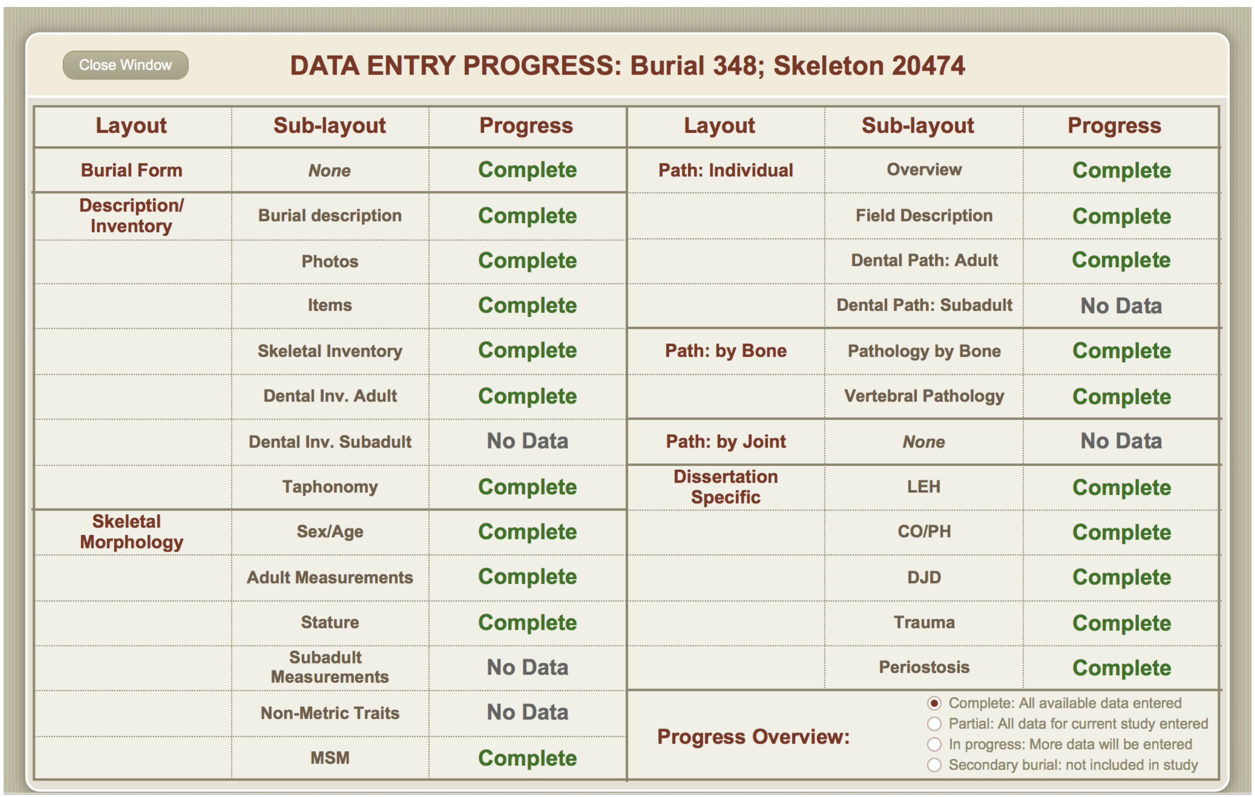


Figure 9.17: The Long Bone Trauma form.

Because the recording of trauma in the Global History of Health coding scheme consists of a simple text description, the trauma section of the Dissertation Specific layout instead follow the recording system recommended by Lovell (1997, 2008), which is more easily quantifiable. Information is collected on element and affected section (proximal or distal epiphysis, proximal, middle or third section of shaft), as well as on eventual apposition or angulation. Buttons in the top right section of the form allow for auto-entry of available bones, based on the skeletal inventory, to speed up data entry. In addition, a third button brings up a window showing available bone sections, based on the detailed long bone inventory (Fig. 9.17). The remaining forms on the trauma tab work in a similar fashion -- buttons on the hand and foot trauma tabs auto enter available bones based on the skeletal inventory, and the cranial trauma tab automatically shows a list of available cranial bones. All three tabs follow the recording scheme recommended by Lovell (1997; 2008). In contrast, the dislocations tab is similar to the DJD tab and follows the recording scheme of Steckel et al. (2006).

The last tab on the Dissertation Specific layout is labeled Periostosis and allows for the recording of periosteal new bone formation (PNB) of the long bones, as well as general infections affecting other skeletal elements. As before, two buttons linked to the skeletal inventory enable auto-filling of all long bone fields to speed up the data entry process, and a third button brings up a window showing available bone sections for reference. The lower section of the form records general infection on a per individual basis, per the guidelines of Steckel et al. (2006).

Throughout the various forms of the database, a button in the header labeled "Show Progress" brings up a window detailing the data entry progress of the current skeleton, provided the checkbox labeled "Entry Complete" has been checked on all completed forms (Fig. 9.18). The window shows a list of all layouts and sub-layouts, and whether data entry is "Complete," "In Progress" or if the form is empty ("No Data"). The "Progress Overview" field in the bottom right corner is further linked to a report detailing the data entry progress of the material as a whole.



Close Window

DATA ENTRY PROGRESS: Burial 348; Skeleton 20474

Layout	Sub-layout	Progress	Layout	Sub-layout	Progress
Burial Form	*None*	Complete	Path: Individual	Overview	Complete
Description/ Inventory	Burial description	Complete		Field Description	Complete
	Photos	Complete		Dental Path: Adult	Complete
	Items	Complete		Dental Path: Subadult	No Data
	Skeletal Inventory	Complete	Path: by Bone	Pathology by Bone	Complete
	Dental Inv. Adult	Complete		Vertebral Pathology	Complete
	Dental Inv. Subadult	No Data	Path: by Joint	*None*	No Data
	Taphonomy	Complete	Dissertation Specific	LEH	Complete
Skeletal Morphology	Sex/Age	Complete		CO/PH	Complete
	Adult Measurements	Complete		DJD	Complete
	Stature	Complete		Trauma	Complete
	Subadult Measurements	No Data		Periostosis	Complete
	Non-Metric Traits	No Data	Progress Overview:	Complete: All available data entered Partial: All data for current study entered In progress: More data will be entered Secondary burial: not included in study	
	MSM	Complete			

Figure 9.18: The Data Entry Progress Window

The eight and final layout in the database is the Report layout. This layout does not contain any fields for data entry. Instead, it provides buttons organized by category which allow for easy navigation through various scripted reports. Naturally, searches (the FileMaker equivalent to queries) can also be done ad-hoc, on any of the fields in the database, using the status toolbar. A few pre-scripted reports are also available from within the database. For example, photos can be searched directly on the photo form and easily exported to a folder on the desktop from there. Complicated reports, however, are run from the Reports layout.

The first tab on the layout contains the various catalogues generated by the database. Three of these catalogues are provided as appendices to this dissertation: the Burial Catalogue (Appendix I), the Object Catalogue (Appendix III) and the Pathology Catalogue (Appendix IV). Other reports provide specialized queries for specific conditions (cribra orbitalia, enamel hypoplasia etc.), and table format layouts combining fields from several different fields, to enable easy searches for data categories that occur on different forms in the database (e.g., age, sex, and items). For the purposes of this study, however, the most important database report is the SPSS table, which enables export to the IBM SPSS statistical package in spreadsheet format of the variables used in the statistical analysis of the Wall of the Crow material. The coding keys used in the analysis can be found in Appendix VII, and the raw data exported from the database is provided in Appendix VIII.

What is presented above is a general overview of the basic features of the BADaBooM database. By employing standardized coding schemes (Buikstra and Ubelaker 1994, Steckel et al. 2006, Wilczak and Dudar 2011), the hope is that database can be used by other researchers, particularly in Egypt, to allow for cross-site comparisons of skeletal materials. Site- or regional-specific features of the database (e.g., excavation numbering systems, stature assessment formulae) can be adapted to fit other materials as well. The database documentation (Appendix X) provides a detailed description of the database structure, as well as the complete scripts used for the various functions of the database, to allow for easy customization. Because it was developed in FileMaker, the database is cross-platform, and can be used with both Windows and Mac systems, provided the FileMaker software is installed. A copy of the empty database can be obtained by contacting the author.

CHAPTER 10: RESULTS

10.1 Demographic Patterns

The Saite Material

Age

Age Group	Infant	Infans I	Infans II	Juvenilis	Adultus	Maturus	Senilis	Adult	Totals
(n)	20	35	18	17	33	24	11	7	165
%	12.1	21.2	10.9	10.3	20	14.5	6.7	4.2	100

Table 10.1: Age distribution of the Saite sample.

The Saite material comprised 165 individuals, of which 75 were adults and 90 subadults. The detailed age distribution of the Saite sample is given in table 10.1 above. Children under the age of twelve (the groups Infant through Infans II) make up 44.2% of the Saite sample (n=73), and individuals under the age of five make up 33.3% (n=55). The proportion of infants is relatively low; 12.1% (n=20), with only two individuals estimated to have been perinatal[47] at the time of birth. A further six individuals were estimated to have been between three to six months at the time of death, and the remaining individuals were older than six months. Juveniles (individuals between 12-18 years of age) make up 10.3% (n=17) of the material.

Among the adults, the largest age-group in the Saite material is the Adultus group (young adults between the ages of eighteen to thirty-five), which comprise 20% of the sample (n=33), after which the numbers decline with advancing age, with only 6.2% (n=10) of the individuals estimated to have been above the age of 50 at time of death. This pattern persists even if the seven individuals that could not be aged more narrowly than “Adult” are omitted.

Sex

As discussed in section 9.2.4, final sex assessments were based on morphological analysis (Protocol M), rather than on quantified weighing of dimorphic traits (Protocols A and B) (Kjellström 2004). Based on the morphological analysis of dimorphic traits, sex assessment as either Male/Probable Male or Female/Probable female was possible for 81 of the 165 individuals

[47] Here defined as within a month prior to, or following, birth.

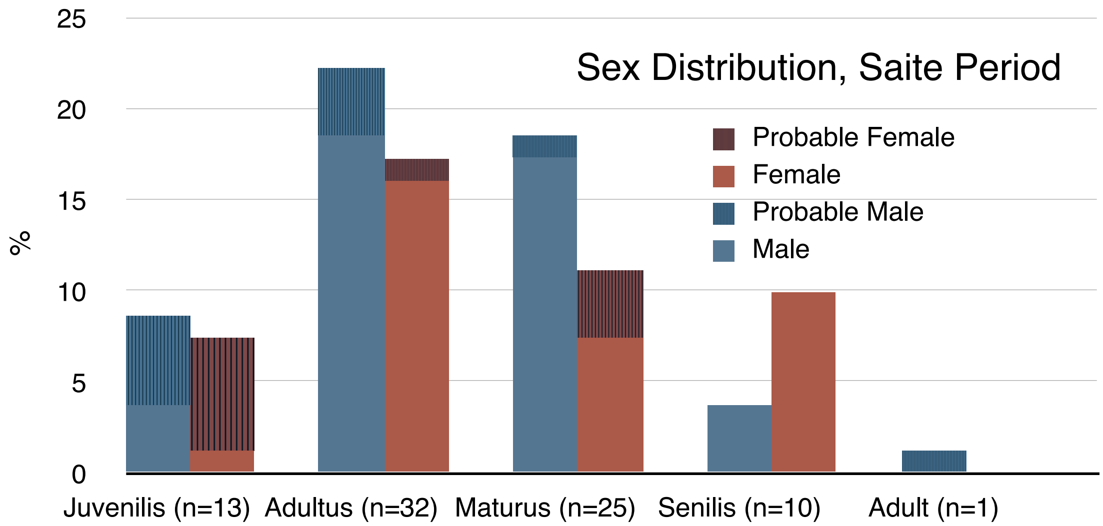


Figure 10.1: Comparison of sex assessment broken down by age-group for the Saite material (n=81). For detailed distribution across age groups see table 10.2 below.

in the Saite material. The detailed sex distribution by age group is laid out in table 10.2 below. The sex ratio[48] of the Saite sample (with conclusive and probable assessments combined) favors males at 119 when the full Saite sample is considered and does not vary markedly even when the Juvenilis group is omitted.[49] When compared side by side (Figure 10.1), males outnumber

	Male		Probable Male		Female		Probable Female		Totals	
Sex	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Juvenilis	3	*3.7*	4	*4.9*	1	*1.2*	5	*6.2*	**13**	***16***
Adultus	15	*18.5*	3	*3.7*	13	*16.0*	1	*1.2*	**32**	***40***
Maturus	14	*17.3*	1	*1.2*	6	*7.4*	3	*3.7*	**25**	***31***
Senilis	3	*3.7*	0	*0.0*	8	*9.9*	0	*0.0*	**10**	***12***
Adult	0	*0.0*	1	*1.2*	0	*0.0*	0	*0.0*	**1**	***1***
Totals	**35**	***43***	**9**	***11***	**28**	***35***	**9**	***11***	**81**	***100***

Table 10.2: Sex distribution of the Saite sample, by age group

[48] The sex ratio is the number of males per 100 females, and is calculated by dividing the number of males with the number of females, and multiplying by 100.

[49] For the full sample, the sex ratio is 118.9 (44/37), and with juveniles omitted it rises very slightly, to 119.3 (37/31). These numbers are reported for comparative purposes only; with a sample this small, the margin of error is too large to draw any conclusions. Calculated for a 95% confidence interval, the sex ratio could range from 77 to 187 with the margin of error (+/- 10.9% for the proportion of males) included.

females in all age groups except the Senilis group (individuals over 50), for which the reverse is true. For both males and females, most individuals fall into the Adultus category (individuals between 18-35 years of age), followed by the Maturus category (individuals between 35-50 years of age). Only one individual could not be assigned a narrower age group than "Adult" and would not change this pattern in any significant way.

The Roman Material

Age

Age Group	Infant	Infans I	Infans II	Juvenilis	Adultus	Maturus	Senilis	Adult	Totals
(n)	2	11	3	7	17	12	10	1	63
%	3.2	17.5	4.8	11.1	27	19	15.9	1.6	100

Table 10.3: Age distribution of the Roman sample.

The Roman material comprised 63 individuals, of which 40 were adults, and 23 were subadults. The detailed age distribution of the Roman sample is outlined in table 10.3 above. Children under the age of twelve (the groups Infant through Infans II) make up 25.4% of the sample (n=16). The largest number of subadults fall into the Infans I category (between 1 to 5 years of age): 17.5% (n=11). The proportion of infants is very low -- only two individuals fall in the Infant age group (under the age of 1 years), and both of these individuals were older than six months at the time of death. Juveniles (individuals between 12-18 years of age) make up 11.1% (n=7) of the material.

Among the adults, the largest age-group in the Roman material, too, is the Adultus group (young adults between the ages of eighteen to thirty-five), which comprise 27% of the sample (n=17), after which the numbers decline with advancing age. However, the proportion of mature and old adults is slightly higher in the Roman material than in the Saite sample, with 19% (n=12) in the Maturus age group (individuals between 35-50 years of age) and 15.9% in the Senilis age group (individuals over the age of 50). Only one individual in the Roman sample could nor be aged any narrower than "Adult, 18-79 years."

Sex

Sex assessment as either Male/Probable Male or Female/Probable female was possible for 46 of the 63 individuals in the Roman material. The detailed sex distribution by age group is laid out in table 10.4 below. The sex ratio of the Roman sample favors males to the extreme, at 188[50] when the full Roman sample is considered, and 290 when the Juvenilis group is omitted. When

[50] Again, the margin of error for a sample is very large. Calculated for a 95% confidence interval, the sex ratio could range from 106 to 378. Nevertheless, even with the margin of error included, the sex ratio favors males to a higher extent than expected.

	Male		Probable Male		Female		Probable Female		Totals	
Sex	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Juvenilis	0	*0*	1	*2*	1	*2*	5	*11*	**7**	***15.2***
Adultus	9	*20*	2	*4*	6	*13*	0	*0*	**17**	***37.0***
Maturus	8	*17*	2	*4*	1	*2*	1	*2*	**12**	***26.1***
Senilis	6	*13*	2	*4*	2	*4*	0	*0*	**10**	***21.7***
Totals	**23**	***50.0***	**7**	***15.2***	**10**	***21.7***	**6**	***13.1***	**46**	***100.0***

Table 10.4: Sex distribution of the Roman sample, by age group

compared side by side (Figure 10.2), males outnumber females in all age groups except the Juvenilis group (individuals between 12-18 years of age), for which the reverse is true. For both males and females, most individuals fall into the Adultus category (individuals between 18-35

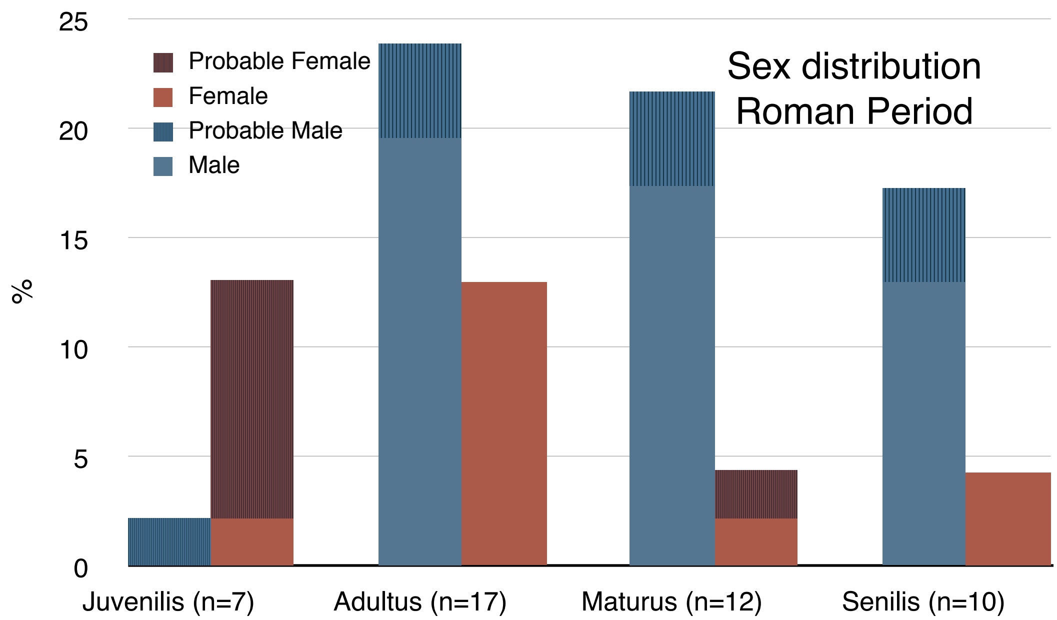


Figure 10.2: Comparison of sex assessment broken down by age-group for the Roman material (n=46). For detailed distribution across age groups see table 10.4 above.

years of age), followed by the Maturus (individuals between 35-50 years of age) and then the Senilis (individuals over the age of 50) category for males, but with the remainder of the sample divided more or less equally between the Maturus and Senilis categories for females. In the sample as a whole, males outnumber females at almost two to one, and at three to one when the Juvenilis group is omitted. In contrast, females outnumber males at six to one in the Juvenilis category.

Inter-phase comparison

Subadult age

A comparison of the subadult age distribution between the Saite and Roman samples is provided in Figure 10.3. Though the proportions of juveniles (individuals between 12 to 18 years of age) were relatively similar in the two samples, the percentage of individuals under the age of twelve was higher in the Saite sample, 44.2%, versus only 25.4% in the Roman sample. Individuals under the age of five (the Infant and Infant I age groups combined) made up 33.3% of the Saite sample, but only 20.6% of the Roman sample. The proportion of infants (individuals under the age of 1 year) was low in both samples, 12.1% in the Saite sample, and only 3.2% in the Roman samples, with only two individuals from the Saite period estimated to be perinatal[51] at the time of death.

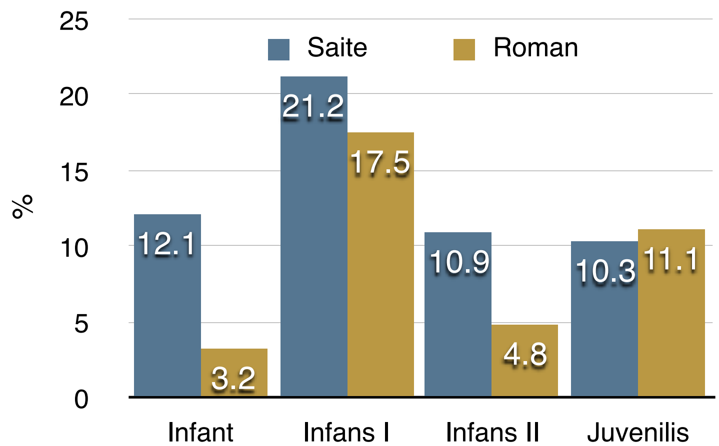


Figure 10.3: Comparison of subadult age distribution between the Saite and Roman samples, in percent of total samples (Saite: n=165, Roman: n=63).

A proportion of 30% is often cited as the percentage against which underrepresentation of children should be measured in archaeological samples (Lewis 2007; 22, Waldron 2007; 35). Goodman and Armelagos (1989) cite an even higher number, suggesting that a full 40% of a skeletal assemblage should consist of individuals under the age of five for the sample to be representative of the once-living population. Though the percentage of individuals under twelve exceeds the suggested 30% when the Saite sample is considered, the Roman sample falls short, and neither sample reaches the suggested proportion of 40% for individuals under the age of five.

In both the Saite and Roman skeletal materials, the largest number of subadults fall into the Infans I category (1 to 5 years of age). The peak in this age-range may correspond to the weaning process, which both textual and isotopic evidence suggests would be completed by age three in Ancient Egypt (Dupras et al. 2001, Dupras and Tocheri 2007). The process of weaning has been linked to elevated risks of mortality and morbidity because of the new sources of infection that may be introduced through the weanling diet, as well as the loss of passive immunity through the mother (Katzenberg et al. 1996), and thus a large number of children in this age group is perhaps to be expected. However, with a high child mortality rate (deaths between one to five years of age) an equally or perhaps even higher infant mortality rate (death prior to the first birthday) would be anticipated, particularly during the first week of life (Frier 2000, Pilkington 2013), and this is not reflected in the material. The proportion of infants was low in both skeletal samples, and only two individuals, in the Saite material, were estimated to

[51] Here defined as within a month prior to, or subsequent to, birth.

have been perinatal at the time of death. The low number of infants in the sample suggests that the very youngest were buried outside of the cemetery, particularly during the Roman period.

Sex and Age Distribution of Adults

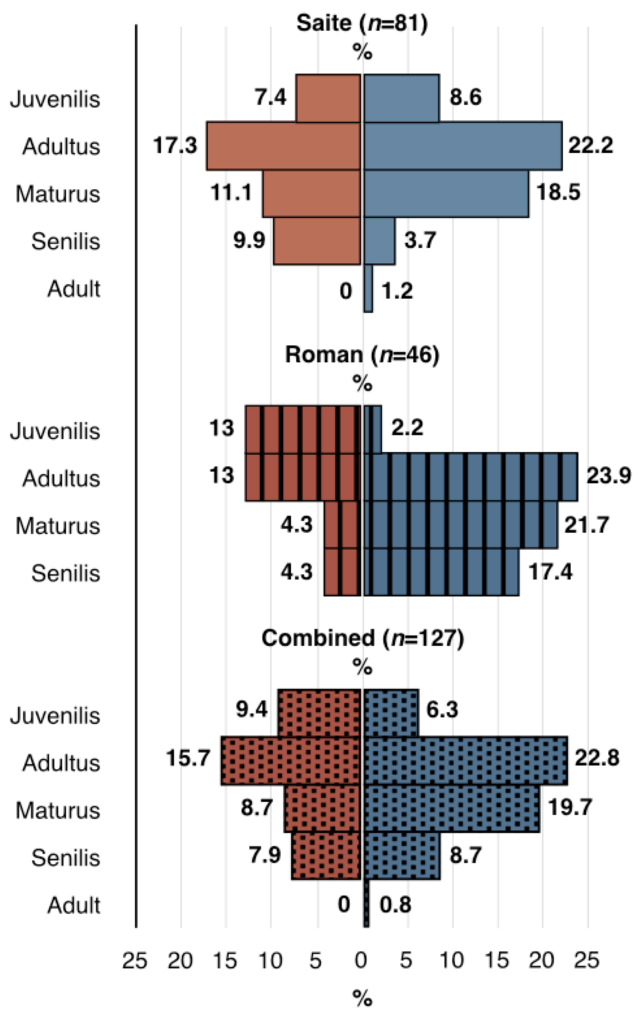


Figure 10.4: Comparison of sex assessment between the Saite and Roman materials, as well as the sample as a whole in percent, broken down by age-group.

Males outnumbered females in both samples, but to the extreme in the Roman sample, with a sex ratio of 188 (Fig. 10.4). The sex ratio in the Saite sample was somewhat lower, but still in favor of males at 119[52]. In modern stable populations with unbiased access to nutrition and healthcare, the sex ratio at birth averages around 105, after which it declines with age and eventually favors females. This reversal occurs because male births slightly outnumber female births, whereas females generally have the advantage of lower mortality over the course of the lifetime. However, in populations with high female mortality, the high sex ratio persists and sometimes even increases over time (Coale 1991, Dyson 2012). Census records from Roman Egypt suggest that female mortality was indeed high. Based on these records, Bagnall and Frier (1994; 93-96) estimated an overall sex ratio of 108 for the population. At a 95% confidence interval. a sex ratio of 108 falls squarely within the margin of error for the Saite[53] sample, but is at the lowest extreme of the Roman[54] sample, even when the margin of error is included.

Bias in favor of males is often encountered in large skeletal series and has been estimated to be as high as 12%. It is often particularly marked in older individuals, with mature females significantly underrepresented (Weiss 1972). The most frequently cited reasons for this disparity are unrecognized age changes in cranial morphology, which cause older females

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[52] This pattern persists and is even exacerbated if only the conclusively sexed individuals are considered, with sex ratios of 125 and 230 for the Saite and Roman samples, respectively.

[53] The Saite sex ratio was 119, with a margin of error for z=1.96 of 10.8%, resulting in a range between 77-187.

[54] The Roman sex ratio was 188, with a margin of error for z=1.96 of 13.7%, resulting in a range between 106-378.

to be mistaken for males when sex assessment is based mainly on cranial traits. In addition, it has been suggested that the higher prevalence of osteoporosis in females affects overall skeletal mass and robusticity rendering the bones of elderly females more subjective to decay (Walker et al. 1988, Walker 1995). However, a previous study on the taphonomy of the Giza material suggests that preservational bias is not the reason for the higher number of males at the Wall of the Crow cemetery. In the study, preservation was evaluated for 80 adult skeletons for which sex could be assessed with confidence, by scoring 18 paired and 5 unpaired measurements, as well as 8 paired, and 5 unpaired skeletal landmarks, arriving at a total preservation score between 0 and 1, with 1 denoting a complete skeleton (Kaiser 2006). The study showed that skeletons of female individuals were on average better preserved than those of males, particularly those excavated in the area south of the Wall of the Crow, where most of the Roman burials were located. Of course, the results of the taphonomy study assumes that there is no significant bias in sexing at the outset of the analysis since groups were compared based on sex assessment.

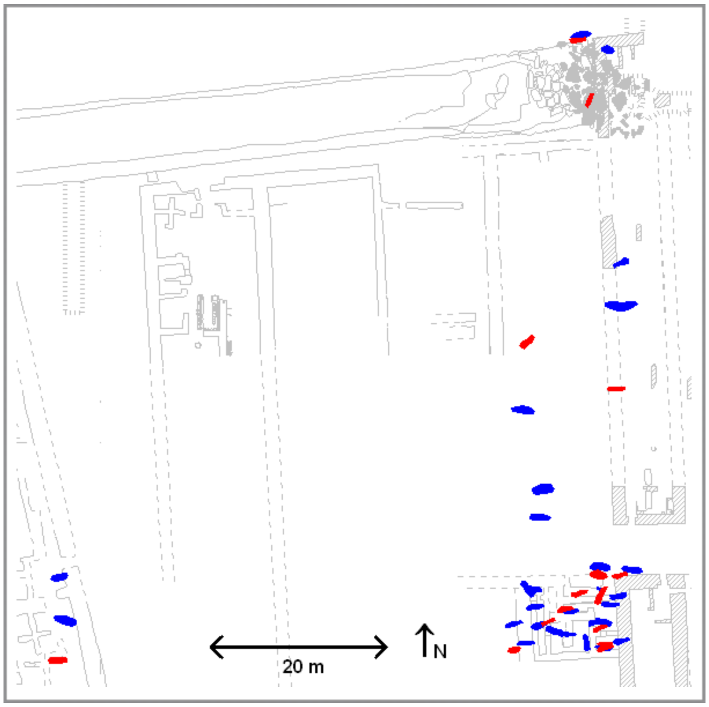

Figure 10.5: Spatial distribution of the Roman burials at the Wall of the Crow site (one outlier omitted). Burials belonging to males are marked blue, while those of females are marked in red.

If there is, in fact, a systematic bias in sexing in the Giza material, it should be more noticeable in the older age groups, since the development of more masculine cranial features and osteoporosis is more common in post-menopausal women (Walker 1995), and there is indeed a much higher number of mature and older males than females in the Roman sample. However, this difference is much less marked in the Maturus age group (individuals between 35-50 years old) of the Saite sample, and in the Senilis category (individuals over the age of 50) of the Saite sample, female individuals are in the majority. When the two samples are combined, there is still a larger number of males in the Maturus category, but the Senilis category is distributed more or less evenly between males and females (Figure 10.4). This pattern persists even when using the most conservative sex assessment protocol that controls for missing features (protocol B -- see Chapter Nine) and when individuals in the "Probable" categories are omitted. When only individuals in the "Male" and "Female" groups are considered -- that is, individuals for whom sex assessment could be done based on the pelvis -- the sex ratio in both the samples rises, to 230 for the Roman material, and to 125 for the Saite material. Thus, the predominance of males in the Giza material does not appear to be due to bias in sexing.

One possibility that must be considered is that more males than females were dated to the Roman period because males were more likely to receive ceramics as grave goods than females, creating a bias towards males in the material. However, only five burials were dated exclusively on the basis of pottery, and of those five, two belonged to females, so this does not appear to be the case. Another possibility is of course that many females were buried elsewhere, either outside of the Wall of the Crow cemetery or in an area not yet excavated. A visual examination of the location of the Roman burials, among which the predominance of males was the most marked, does not reveal any spatial divisions based on sex (Figure 10.5) -- females are present in all excavated areas, albeit at a lower rate than males. Nevertheless, incomplete excavation or differential burial is probably the most likely explanation for the excess of males in the Roman material.

10.2 Markers of Skeletal Stress: The Saite Burials

10.2.1 Linear Enamel Hypoplasia

Prevalence by Sex -- Saite Sample

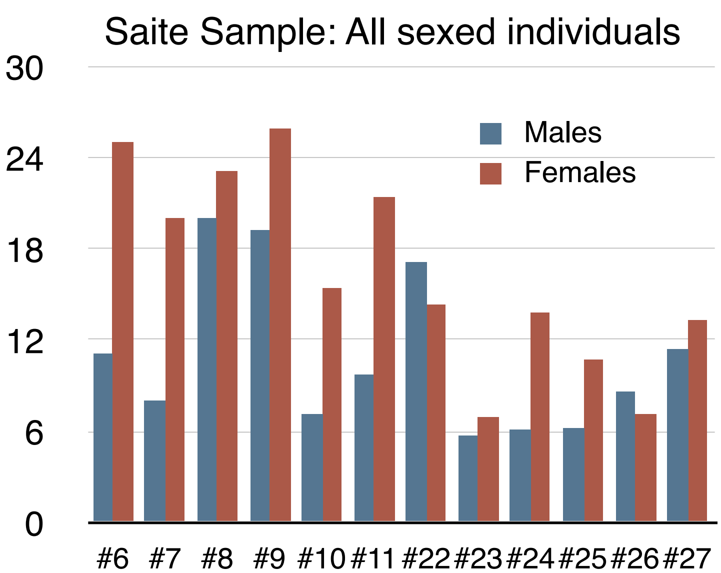

Figure 10.6: Frequency of linear enamel hypoplasia, presented by tooth and sex. Frequencies were calculated by tooth, in percent. For the total number of teeth observed in each group, see Table 10.5 below.

As discussed in Chapter Nine, linear enamel hypoplasia was recorded for both upper and lower permanent incisors and canines, and prevalence[55] was calculated both by tooth and by individual. The first test to be carried out examined whether there was a difference in prevalence of linear enamel hypoplasia between all males and females in the Saite period sample. This test included both adult and post-pubescent juvenile individuals (i.e., individuals whose pelvic tri-radiate complex was fused and for whom sex assessment could be carried out).

To increase sample size, the categories denoting severity of hypoplasia (i.e., one vs. two or more hypoplasias) were collapsed to Absence/Presence for the analysis, and secure and probable sex assessments were combined. Pearson's chi-square tests and Yates' continuity corrections were carried out when the expected count in all cells exceeded 1

[55] Frequency was calculated by dividing the number of observable teeth by the number of affected teeth.

(Lewontin and Felsenstein 1965b). For subsamples with expected counts of less than one, only Fisher's exact test was carried out. Phi correlation coefficients were obtained for all teeth.

When prevalence was broken down by tooth (Fig. 10.6), Saite females displayed a higher frequency of hypoplasias than males for all teeth, except for the left lower canine (#22) and right lower lateral incisor (#26). However, when the teeth were pooled, the overall difference between the sexes was relatively small; 10.6% of the teeth belonging to males (n=367) showed enamel defects, versus 16.2% of the teeth belonging to females (n=328).

The results of the chi-square and Fisher's exact tests revealed that there was no significant relationship between sex and enamel defects in the Saite sample when all sexed individuals were considered (df =1, p < .005; see Table 10.5 for test values of the respective

Saite	All Males			All Females			Chi-square				Yates			Fisher's		Phi
Tooth	Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Phi
#6	24	3	11.1	18	6	25.0	1	1.687	0.194	No	0.866	0.352	No	0.276	No	-0.182
#7	23	2	8.0	20	5	20.0	1	1.495	0.221	No	0.664	0.415	No	0.417	No	-0.173
#8	20	5	20.0	20	6	23.1	1	0.071	0.789	No	0.000	1.000	No	1.000	No	-0.037
#9	21	5	19.2	20	7	25.9	1	0.339	0.560	No	0.064	0.800	No	0.745	No	-0.080
#10	26	2	3.1	22	4	15.4	1	0.927	0.336	No	0.280	0.596	No	0.413	No	-0.131
#11	28	3	9.7	22	6	21.4	1	1.572	0.210	No	0.794	0.373	No	0.285	No	-0.163
#22	29	6	17.1	24	4	14.3	1	0.095	0.758	No	0.000	1.000	No	1.000	No	**0.039**
#23	33	2	5.7	27	2	6.9	1	0.038	0.846	No	0.000	1.000	No	1.000	No	-0.024
#24	31	2	6.1	25	4	13.8	1	1.056	0.304	No	0.357	0.550	No	0.405	No	-0.130
#25	30	2	6.2	25	3	10.7	1	0.390	0.533	No	0.024	0.876	No	0.657	No	-0.081
#26	32	3	8.6	26	2	7.1	1	0.043	0.835	No	0.000	1.000	No	1.000	No	**0.026**
#27	31	4	11.4	26	4	13.3	1	0.054	0.816	No	0.000	1.000	No	1.000	No	-0.029

Table 10.5: Chi-square, Fisher's exact test and Phi correlation coefficients for the Saite sexed sample, presented by tooth for males and females.

teeth). There was a weak[56] negative correlation[57] between sex and linear enamel hypoplasia for the right upper canine (#6: *Phi* = -0.182; *p* =.194), right lateral upper incisor (#7: *Phi* = -0.173; *p* =.221), left lateral upper incisor (#10: *Phi* = -0.131; *p* = .336), left upper canine (#11: *Phi* = -0.163; *p* =.210) and left lower central incisor (#24; *Phi* = -0.130; *p* =.304), meaning that females were slightly more likely to have enamel defects on those teeth. However, as shown by the *p*-values above (Table 10.5), none of the correlations were statistically significant.

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[56] Effect size follows Cohen's (1988) criteria of .10 for small effect, .30 for medium effect, and .50 for large effect.

[57] Since the variable sex was coded as 0=female and 1= male, a negative association between sex and linear enamel hypoplasia means that females are more likely to display enamel defects; a positive correlation means that males are more likely to show the marker.

The same tests were carried out by individual, where linear enamel hypoplasia was scored as either “absent” or “present” for the entire dentition (Table 10.6). For an “absent” score, dentitions were considered observable if eight or more of the twelve anterior teeth were observable. Dentitions with fewer than eight anterior teeth were omitted from the analysis. The score of “present” was given when one or more teeth displayed an enamel defect of one or more linear hypoplasias, regardless of the number of preserved teeth in the dentition.

All Males			All Females			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
22	10	31.2	15	9	37.5	1	0.239	0.625	No	0.041	0.839	No	0.777	No	-0.065

Table 10.6: Prevalence of linear enamel hypoplasia in males and females from the Saite period.

When assessed by individual, 31.2% of the males (n=32) and 37.5% of the females (n=24) had linear enamel defects. Though this is a slightly higher prevalence in females, the difference was not statistically significant: x^2 (1, n=56) = .239, p = .625, phi = .065).

Prevalence by Sex -- Adults in the Saite Sample

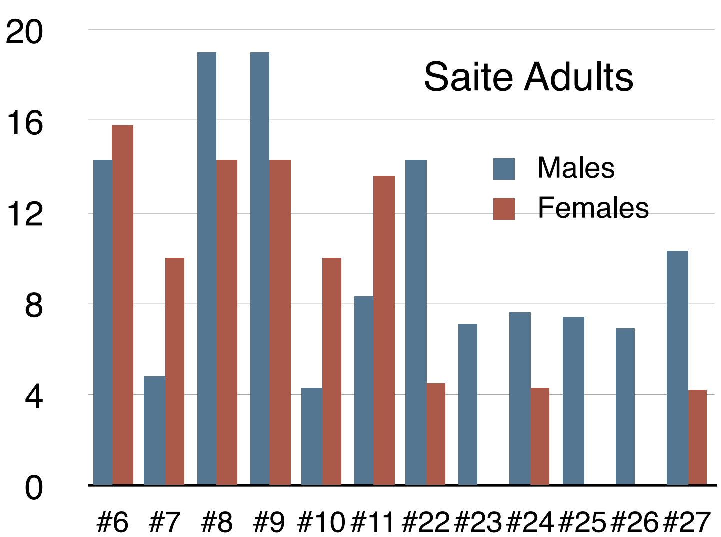

Figure 10.7: Frequency of linear enamel hypoplasia, presented by tooth and sex. Frequencies are expressed in percent, by tooth. For the total number of teeth observed in each group, see table 10.7 below.

To examine whether the combination of age and sex affected the prevalence of linear enamel hypoplasia, the Saite sample was further divided into adults and juveniles. First, statistical analysis was carried out on the adult subsample. To increase sample size, the adult age groups of Adultus (18-35 years); Maturus (35-50 years) and Senilis (50+ years) were combined.

When prevalence in adults was broken down by tooth, Saite males displayed a higher frequency of hypoplasias than females for all teeth, except for the upper canines (#6 and #11) and lateral incisors (#7 and #10) (Fig. 10.7). However, with the exception of the left lower canine (#22), the differences between the sexes were slight, and when the teeth were pooled, the frequencies of affected teeth were also relatively similar for adult males and females in the Saite sample: 10.1% of the observable teeth (n=298) belonging to males had one or more hypoplasias, versus 7.3% of the teeth belonging to females (n=259).

Saite	Adult Males			Adult Females			Chi-square				Yates			Fisher's		Phi
Tooth	Ab	Pr	% Affected	Ab	Pr	% Affected	df	x²	p -- x²	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Phi
#6	18	3	14.3	16	3	15.8	1	0.180	0.894	No	0.000	1.000	No	1.000	No	-0.021
#7	20	1	4.8	18	2	10.0	1	0.414	0.520	No	0.002	0.517	No	0.606	No	-0.101
#8	17	4	19.0	18	3	14.3	1	0.171	0.679	No	0.000	1.000	No	1.000	No	**0.064**
#9	17	4	19.0	18	3	14.3	1	0.171	0.679	No	0.000	1.000	No	1.000	No	**0.064**
#10	22	1	4.3	18	2	10.0	1	0.527	0.468	No	0.016	0.900	No	0.590	No	-0.111
#11	22	2	8.3	19	3	13.6	1	0.333	0.564	No	0.011	0.918	No	0.659	No	-0.085
#22	24	4	14.3	21	1	4.5	1	1.299	0.254	No	0.442	0.506	No	0.368	No	**0.161**
#23	26	2	7.1	23	0	0.0	1	1.710	0.191	No	0.340	0.560	No	0.495	No	**0.183**
#24	24	2	7.6	22	1	4.3	1	0.238	0.626	No	0.000	1.000	No	1.000	No	**0.070**
#25	25	2	7.4	22	0	0.0	-	-	-	-	-	-	-	0.495	No	**0.186**
#26	27	2	6.9	22	0	0.0	-	-	-	-	-	-	-	0.500	0.176	**0.018**
#27	26	3	10.3	23	1	4.2	1	0.718	0.397	No	0.106	0.745	No	0.617	No	-0.029

Table 10.7: Chi-square, Fisher's exact test and Phi correlation coefficients for the Saite adult sample, presented by tooth for males and females.

The results of the chi-square and Fisher's exact tests revealed that there was no significant relationship between sex and enamel defects in adults (df =1, $p < .005$; see Table 10.7 for chi-square values of the respective teeth). There was a weak negative correlation between sex and linear enamel hypoplasia for the left upper lateral incisor (#10: *Phi* = -0.11; p =.468) and a weak positive correlation for the lower left canine (#22: *Phi* = 0.161; p =.254), lateral incisor (#23: *Phi* = 0.183; p =.191), and right lower central incisor (#25; *Phi* =-0.186; p =.192). Thus, males were slightly more likely to have enamel defects on the latter three teeth, whereas females were more likely to show enamel defects on the left upper lateral incisor. However, as demonstrated by the p-values above (Table 10.7), none of the correlations were statistically significant.

Adult Males			Adult Females			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x²	p -- x²	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
18	7	28.0	14	4	22.2	1	0.184	0.668	No	0.005	0.941	No	0.736	No	0.065

Table 10.8: Prevalence of linear enamel hypoplasia in adult males and females from the Saite period.

The same tests were carried out by individual, where linear enamel hypoplasia was scored as either absent or present for the entire dentition (Table 10.8). For an absent score, dentitions were considered observable if eight or more of the twelve anterior teeth were observable. Dentitions with fewer than eight anterior teeth were omitted from the analysis. The score of present was given when one or more teeth displayed an enamel defect of one or more linear hypoplasias, regardless of the number of preserved teeth in the dentition.

When assessed by individual, 28% of the adult males (n=25) and 22.2% of the adult females (n=18) had linear enamel defects. Though this is a slightly higher prevalence in males, the difference was not statistically significant: x^2 (1, n=43) = .184, *p* = .67, *phi* = .07).

Prevalence by Sex -- Juveniles in the Saite Sample

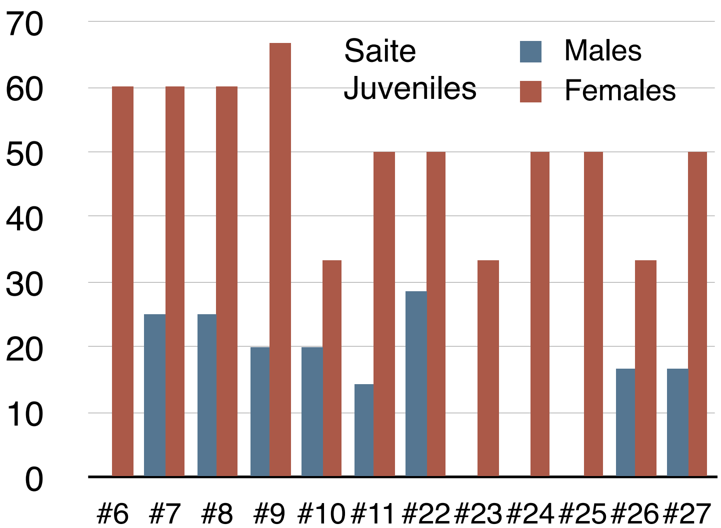

Figure 10.8: Frequency of linear enamel hypoplasia in the juvenile sample, presented by tooth and sex. Frequencies are expressed in percent, by tooth. For the total number of teeth observed in each group, see table 10.9 below.

Linear enamel defects were also compared between the sexes for post-pubescent individuals in the Juvenilis age group (i.e., for those individuals where the pelvic tri-radiate complex was fused, and sex assessment could be carried out).

As shown in Fig. 10.8, enamel defects were more common in teeth belonging to females, sometimes quite substantially. When all teeth were pooled, 49.3% of the teeth belonging to females (n=69) had hypoplastic defects, versus only 13% of those belonging to males (n=69).

The results of the chi-square and Fisher's exact tests (df =1, p < .005; see Table 10.9 below for chi-square values of all of the the respective teeth) revealed that there were significant differences in the distribution of linear enamel hypoplasia between juvenile males and females for the right upper canine (#6: x^2 (1, n=11) = .4.95, *p* = .0.026, *phi* = -0.671) and the left lower central incisor (24: x^2 (1, n=13) = 4.550, *p* = .033, *phi* = -0.592). In addition, there was a strong negative correlation between sex and linear enamel hypoplasia for the right lower central incisor, which also had a *p*-value that approached significance (#25: *Phi* = -0.559; *p* = 0.064). There were also moderate negative correlations for the right upper lateral incisor (#7), both upper central incisors (#8 and #9), the left upper canine (#11), the lower left lateral incisor (#23) and the right lower canine (#27), and weak negative correlations for the upper left (#10) and lower right (#26) lateral incisors. The results indicate that juvenile females were somewhat to moderately more likely than males to have enamel defects. However, none of the latter eight correlations were statistically significant.

Saite	Juvenile Males			Juvenile Females			Chi-square				Yates'			Fisher's		Phi
Tooth	**Ab**	**Pr**	**% Affected**	**Ab**	**Pr**	**% Affected**	**df**	**x^2**	**p -- x^2**	**p<0.05**	**Yates**	**p -- Yates**	**p<0.05**	**p -- Fisher's**	**p<0.05**	**Phi**
#6	6	0	0.0	2	3	60.0	1	4.950	0.026	**Yes**	2.387	0.122	No	0.061	No	-0.671
#7	3	1	25.0	2	3	60.0	1	1.102	0.294	No	0.141	0.708	No	0.524	No	-0.350
#8	3	1	25.0	2	3	60.0	1	1.102	0.294	No	0.141	0.708	No	0.524	No	-0.350
#9	4	1	20.0	2	4	66.7	1	2.396	0.122	No	0.883	0.347	No	0.242	No	-0.467
#10	4	1	20.0	4	2	33.3	1	0.244	0.621	No	0.000	1.000	No	1.000	No	-0.149
#11	6	1	14.3	3	3	50.0	1	1.935	0.164	No	0.621	0.431	No	0.266	No	-0.386
#22	5	2	28.6	3	3	50.0	1	0.627	0.429	No	0.048	0.826	No	0.592	No	-0.220
#23	7	0	0.0	4	2	33.3	-	-	-	-	-	-	-	0.192	No	-0.461
#24	7	0	0.0	3	3	50.0	1	4.550	0.033	**Yes**	2.169	1.000	0.141	0.070	No	-0.592
#25	5	0	0.0	3	3	50.0	1	3.438	0.064	No	1.379	0.240	No	0.182	No	-0.559
#26	5	1	16.7	4	2	33.3	1	0.444	0.505	No	0.000	1.000	No	1.000	No	-0.192
#27	5	1	16.7	3	3	50.0	1	1.500	0.221	No	0.375	0.540	No	0.545	No	-0.354

Table 10.9: Chi-square, Fisher's exact test and Phi correlation coefficients for the Saite juvenile sample, presented by tooth for males and females.

As above, chi-square, Yates' and Fisher's tests were also carried out by individual, where linear enamel hypoplasia was scored as either absent or present for the entire dentition (Table 10.10). When assessed by individual, 42.9% of the juvenile males (n=7) and 83.3% of the juvenile females (n=6) had linear enamel defects. There was a moderate negative correlation between sex and enamel defects, meaning that there was a somewhat higher prevalence in females, but the difference was not statistically significant: x^2 (1, n=13) = 2.236, p = 0.135, *phi* = -0.415.

Juvenile Males			Juvenile Females			Chi-square				Yates			Fisher's		Phi
Ab	**Pr**	**% Affected**	**Ab**	**Pr**	**% Affected**	**df**	**x^2**	**p -- x^2**	**p<0.05**	**Yates**	**p -- Yates**	**p<0.05**	**p -- Fisher's**	**p<0.05**	**Value**
4	3	42.9	1	5	83.3	1	2.236	0.135	No	0.853	0.356	No	0.266	No	-0.415

Table 10.10: Prevalence of linear enamel hypoplasia in juvenile males and females from the Saite period.

The two age groups were also compared by sex on a by individual basis. This analysis revealed that enamel defects were generally more common in juveniles than adults. As shown above, 42.9% of the juvenile males (n=7) had linear enamel hypoplasias on at least one tooth, compared to only 28% of the adult males (n=25; Table 10.11). However, though there was a weak negative correlation between age and prevalence, the difference was not statistically significant: x^2 (1, n=32) = .562, p = 0.454, *phi* = -0.133.

Juvenile Males			Adult Males			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
4	3	42.9	18	7	28.0	1	0.562	0.454	No	0.083	0.773	No	0.648	No	-0.133

Table 10.11: Prevalence of linear enamel hypoplasia in juvenile and adult males from the Saite period.

When sexed females were compared by age, the difference was more evident (Table 10.12). A full 83.3% of the juvenile females (n=6) had enamel defects, versus only 22.2% of the adult females (n=18). There was a strong correlation between age and prevalence, meaning that juvenile females were more likely to display defects than adult females. The difference was statistically significant for all tests: x^2 (1, n=24) = 7.170, p = 0.007, Yates = 4.800, p = 0.028, Fisher's p = 0.015, *phi* = -0.547.

Juvenile Females			Adult Females			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
1	5	83.3	14	4	22.2	1	7.170	0.007	**Yes**	4.800	0.028	**Yes**	0.015	**Yes**	-0.547

Table 10.12: Prevalence of linear enamel hypoplasia in juvenile and adult females from the Saite period.

Prevalence by Age -- Saite Sample

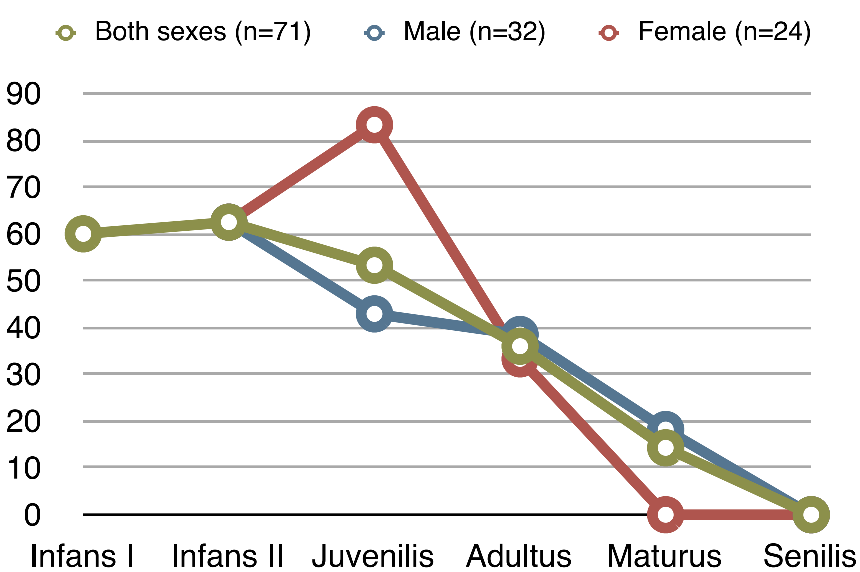

Figure 10.9: Frequency of linear enamel hypoplasia, presented by age group and sex

To examine whether age was a predictor for the prevalence of linear enamel hypoplasia across the entire Saite sample, the percentage of individuals displaying enamel hypoplasias were first plotted against age group. In the Saite sample, no teeth could be assessed for the Infant age group, and this age group was therefore omitted from the analysis. Further, since the above analysis had shown that juvenile females were significantly more likely than males to have enamel defects, age groups were plotted not only by age group but also separated by sex (Figure 10.9). As shown by the graph, enamel defects generally appear to decline by age when both sexes are combined. However, when separated by sex, there is a clear peak in the juvenile age group for females, whereas male prevalence instead decreases.

Chi-square analysis was carried out on the prevalence by age group on a per individual basis for the sexes combined, and for males and females separately (Table 10.13). Because there were more than two age groups, Yates' continuity correction could not be performed. Both Pearson's chi-square test and Fisher's exact test were carried out. Because the matrix for both tests was larger than 2x2, adjusted residuals[58] were also reported for all age groups, and Cramer's V coefficient was reported rather than Phi for effect size.

Saite	Sexes Combined				Males				Females			
Age Group	**Ab**	**Pr**	**%**	**AR**	**Ab**	**Pr**	**%**	**AR**	**Ab**	**Pr**	**%**	**AR**
Infans I	2	3	60.0	1.0	-	-	-	-	-	-	-	-
Infans II	3	5	62.5	1.5	-	-	-	-	-	-	-	-
Juvenilis	7	8	53.3	1.4	4	3	42.9	0.7	1	5	83.3	2.7
Adultus	16	9	36.0	-0.3	8	5	38.5	0.7	8	4	33.3	-0.4
Maturus	12	2	14.3	-2.0	9	2	18.2	-1.2	3	0	0	-1.4
Senilis	4	0	0.0	-1.6	1	0	0.0	0.7	3	0	0	-1.4
Totals	44	27	38.0	-	22	10	31.3	-	15	9	37.5	-

Table 10.13: Prevalence for the sexes combined, males and females of the saite sample, with adjusted residuals (AR) for each age group.

As shown in Table 10.13 38% of the assessed[59] individuals (n=71) in the Saite sample had linear enamel hypoplasias on one or more teeth when the sexes were combined. When the sexes were separated, 31.3% of the males (n=32) had enamel defects, versus 37.5% of females (n=24). The difference between age-groups were statistically significant only for the females in the sample with a large effect size indicating a strong correlation between age group and enamel defects: x^2 (3, n=24) = 9.067, p = 0.028, Fisher's p = 0.310, Cramer's V[60] = 0.615. Not

[58] A raw residual is the difference between the observed and expected values for a cell. The larger the residual, the greater the contribution of the cell to the magnitude of the resulting chi-square obtained value. A a standardized or Pearson residual is calculated by dividing the raw residual by the square root of the expected value as an estimate of the raw residual's standard deviation. However, in order to use the residual value in direct comparison with the z-value of α=0.05 (i.e., 1.96), the Pearson residual has to be further transformed into an adjusted residual with the following equation: Adjusted residual = (observed – expected) / √[expected x (1 + row total proportion) x (1-column total proportion)]. The adjusted residual can then be directly compared with the z-value for α=0.05 (1.96). A residual greater than 1.96 or less than − 1.96 indicates a significant difference (VanPool and Leonard 2010: 246-247)

[59] As before, linear enamel hypoplasia was scored as absent for dentitions with eight or more of the twelve anterior teeth observable and not showing evidence of enamel defects, and as present when one or more teeth in the dentition showed enamel defects, regardless of the number of observable teeth in the dentition.

[60] Effect size was calculated per a larger matrix as small=.06; medium=.17 and large =.29 (after Gravetter and Wallnau 2012:605)

surprisingly, the adjusted residuals for the female subsample indicate that it is the Juvenilis age group that had the greatest impact on the chi-square results.

Though with *p*-values higher than 0.05, the results of both the chi-square and the Fisher's test for the sexes combined approached significance, with a strong correlation between age group and linear enamel hypoplasia: x^2 (5, n=71) = 10.395, *p* = 0.065, Fisher's *p* = 0.06, Cramer's V = 0.383. However, only the adjusted residual value for the Maturus group was significant at -2.0, indicating that the prevalence of enamel defects in that age group was lower than expected. Conversely, the adjusted residuals for the Infans I, Infans II and Juvenilis groups of 1, 1.5 and 1.4 respectively show that the prevalence in those groups was higher than expected. However, none of the residuals for the three latter groups was greater than the z-value for α=0.05 at 1.96.

The chi-square and Fisher's tests for the male subsample were not significant: x^2 (3, n=32) = 2.083, *p* = 0.555, Fisher's *p* = 0.650, Cramer's V = 0.255.

Saite	Infans I			Infans II			Juvenilis			Adultus			Maturus			Senilis			Chi-Square			Fisher's	Cr. V
Tooth	**Ab**	**Pr**	**%**	**Ab**	**Pr**	**%**	**Ab**	**Pr**	**%**	**Ab**	**Pr**	**%**	**Ab**	**Pr**	**%**	**Ab**	**Pr**	**%**	**df**	**x^2**	***p* -- x^2**	***p* -- F**	**V**
#6	1	1	**50.0**	5	2	**28.6**	10	3	**23.1**	19	5	**20.8**	11	1	**8.3**	4	0	**0.0**	5	-	-	0.583	0.242
#7	5	1	**16.7**	3	1	**25.0**	7	4	**36.4**	20	3	**13**	13	0	**0.0**	5	0	**0.0**	5	-	-	0.134	0.353
#8	3	3	**50.0**	4	3	**42.9**	7	4	**36.4**	19	6	**24.0**	12	1	**7.7**	4	0	**0.0**	5	7.208	0.206	0.195	0.330
#9	8	3	**27.3**	2	3	**60.0**	8	5	**38.5**	19	6	**24.0**	12	1	**7.7**	4	0	**0.0**	5	7.899	0.162	0.175	0.334
#10	4	1	**20.0**	3	1	**25.0**	10	3	**23.1**	22	3	**12.0**	14	0	**0.0**	4	0	**0.0**	5	-	-	0.307	0.272
#11	3	1	**25.0**	5	0	**0.0**	11	4	**26.7**	21	5	**19.2**	14	0	**0.0**	6	0	**0.0**	5	-	-	0.217	0.315
#22	2	1	**33.3**	5	0	**0.0**	9	6	**40.0**	25	4	**13.8**	16	1	**5.9**	5	0	**0.0**	5	-	-	0.087	0.373
#23	4	2	**33.3**	7	0	**0.0**	13	2	**13.3**	26	2	**7.1**	18	0	**0.0**	6	0	**0.0**	5	-	-	0.149	0.336
#24	6	1	**14.3**	8	0	**0.0**	12	3	**20.0**	25	3	**10.7**	16	0	**0.0**	6	0	**0.0**	5	-	-	0.377	0.266
#25	9	1	**10.0**	8	1	**11.1**	10	3	**23.1**	27	2	**6.9**	15	0	**0.0**	6	0	**0.0**	5	-	-	0.321	0.263
#26	4	2	**33.3**	9	0	**0.0**	11	3	**21.4**	26	2	**7.1**	17	0	**0.0**	6	0	**0.0**	5	-	-	0.074	0.363
#27	3	1	**25.0**	7	0	**0.0**	10	4	**28.6**	24	3	**11.1**	18	1	**5.3**	7	0	**0.0**	5	-	-	0.242	0.305
Tot:	52	18		66	11		118	44		273	44		176	5		63	0						
N/%	70		**25.7**	77		**14.3**	162		**27.2**	317		**13.9**	181		**2.7**	63		**0.0**					

Table 10.14: Chi-square, Fisher's exact test and Cramer's V correlation coefficients for the Saite juvenile sample, presented by tooth with the sexes combined.

Prevalence was also assessed by tooth for all age groups with both sexes combined (Table 10.14). The highest prevalence rates were found in the Juvenilis age group (12-18 years), in which 27.2% of the teeth (n=162) had enamel hypoplasias, followed by the Infans I age group (1-5 years), in which 25.7% of the teeth (n=70) displayed enamel defects. Sample sizes per teeth were generally small, and chi-square tests could only be carried out on the upper central incisors; Fisher's exact test was carried out for all teeth. When assessed by tooth, there were no statistically significant differences between age group and prevalence. However, the values for two of the teeth approached significance: the lower left canine (#22) and the lower right lateral incisor (#26). For tooth #22, the values were: Fisher's (5, n=74) = *p* = 0.087, Cramer's V =

0.373, with a strong[61] correlation between age and prevalence. The adjusted residuals for this tooth revealed that the prevalence in Juvenilis group had the highest impact on test values, with a positive AR value of 2.8, meaning that juvenile individuals were significantly (α=0.05 = 1.96) more likely to exhibit enamel defects on that tooth. For tooth #26, the values were: Fisher's (5, n=80) = p = 0.074, Cramer's V = 0.363, again with a strong correlation between age group and prevalence. For #26, it was the Infans I age group that most impacted the test values, with an AR value of 2.2, meaning that individuals in this age group were significantly (2.2 > 1.96) more likely to have enamel defects on that tooth. The Juvenilis age group also contributed to the test results with an AR value of 1.8, but for this tooth, the AR value of the Juvenilis age group was not statistically significant.

To investigate whether or not the presence of LEH had a negative impact on morbidity, an independent samples t-test was conducted to compare the average age-at-death for adult individuals with or without LEH. The results showed that individuals with at least one hypoplastic line had an average age-at-death significantly lower than those with no LEH at all (Absent = 35.047, SD = 12.16; Present 26.591, SD = 8.4048, p = 0.039).

A second independent samples t-test was conducted to compare the average stature of adult individuals with and without enamel defects. Females with LEH averaged 152.7 cm in height (SD=8.4), whereas females without LEH averaged 154.2 cm (SD=3.2). Males with LEH averaged 163.3 cm (SD=5.9) in height, whereas males without LEH had an average height of 165.4 (SD=4.5). However, while the conducted tests showed a shorter average stature for both males and females with enamel defects compared to those without, neither test was statistically significant.

Prevalence by Age -- Younger Subadults

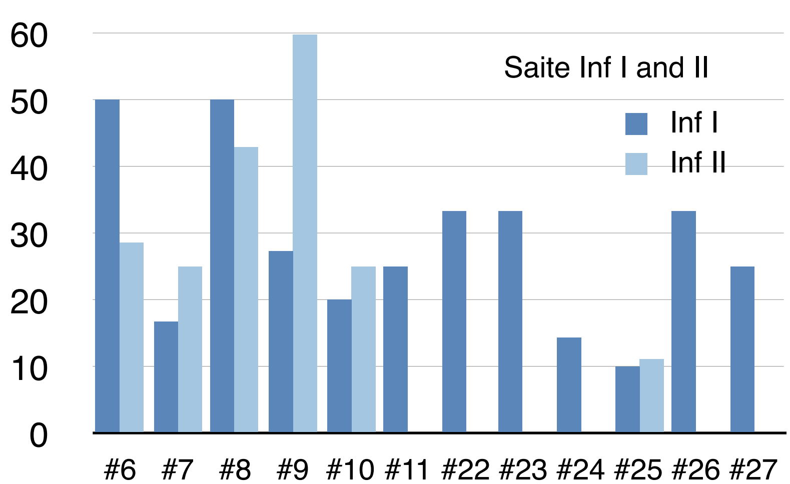

Figure 10.10: Frequency of linear enamel hypoplasia in the younger subadult sample, presented by tooth and age group. Frequencies are expressed in percent, by tooth. For the total number of teeth observed in each group, see table 10.15 below.

The permanent teeth of younger subadults were also compared separately. When pooled, 25.7% of the teeth belonging to individuals in the Infans I age group (1-5 years; n=70) were affected, versus 14.3% of the teeth belonging to older children in the Infans II age group (5-12 years; n=77).

In the Infans I group, enamel defects occurred on both upper and lower anterior teeth. In the Infans II group, however, only one lower tooth, a right lateral incisor (#25) was affected. The

[61] > 0.29, after Gravetter and Wallnau 2012:605

distribution, in percent, of hypoplasias in the two age groups, can be seen in Fig. 10.10.

Because of the small sample size, expected counts were less than one for most teeth, and only Fisher's exact test could be carried out for the younger subadult sample, with the exception of the upper incisors (#8 and #9, Table 10.15). There were no statistically significant differences in prevalence between the Infans I and Infans II age groups. There were moderate negative correlation between age and enamel defects for the lower canines (#22 and #27) and lateral incisors (#23 and #26) as well as the upper left canine (#11), and a weak negative correlation for the upper right canine (#6), meaning that the younger individuals in the Infans I age group were more likely to display defects on those teeth. Conversely, there was a moderate positive correlation between defects and age group for the left upper central incisor (#9) and weak positive correlations between the upper right lateral incisor (#7) and lower central incisor (#25), suggesting that the older individuals in the Infans II age group were slightly to moderately more likely to have enamel defects on those teeth. However, none of these correlations were statistically significant.

Saite	Infans I			Infans II			Chi-square				Yates'			Fisher's		Phi
Tooth	Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	*p* -- x^2	p<0.05	Yates	*p* -- Yates	p<0.05	*p* -- Fisher's	p<0.05	Phi
#6	1	1	50.0	5	2	28.6	-	-	-	-	-	-	-	1.000	No	-0.189
#7	5	1	16.7	3	1	25.0	-	-	-	-	-	-	-	1.000	No	0.102
#8	3	3	50.0	4	3	42.9	1	0.066	0.797	No	0.000	1.000	No	1.000	No	-0.071
#9	8	3	27.3	2	3	60.0	1	1.571	0.210	No	0.485	0.486	No	0.299	No	0.313
#10	4	1	20.0	3	1	25.0	-	-	-	-	-	-	-	1.000	No	0.060
#11	3	1	25.0	5	0	0.0	-	-	-	-	-	-	-	0.444	No	-0.395
#22	2	1	33.3	5	0	0.0	-	-	-	-	-	-	-	0.375	No	-0.488
#23	4	2	33.3	7	0	0.0	-	-	-	-	-	-	-	0.192	No	-0.461
#24	6	1	14.3	8	0	0.0	-	-	-	-	-	-	-	0.467	No	-0.286
#25	9	1	10.0	8	1	11.1	-	-	-	-	-	-	-	1.000	No	0.018
#26	4	2	33.3	9	0	0.0	-	-	-	-	-	-	-	0.143	No	-0.480
#27	3	1	25.0	7	0	0.0	-	-	-	-	-	-	-	0.364	No	-0.418

Table 10.15: Chi-square, Fisher's exact test and Phi correlation coefficients for the Saite younger subadult sample, presented by tooth for the Infans I and II age groups.

A chi-square test was also carried out comparing the number of individuals with enamel hypoplasia in each age group of the younger subadult sample. The prevalence in the two age groups was very similar: 60% of the individuals in the Infans I age group (1-5 years) had one or more enamel defects, versus 62.5% in the Infans II age group (5-12 years). There was no statistically significant difference between the two groups (Table 10.16).

Infans I			Infans II			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
2	3	60.0	3	5	62.5	1	0.008	0.928	No	0.000	0.028	No	1.000	No	0.025

Table 10.16: Prevalence of linear enamel hypoplasia in individuals from the Infans I and Infans II age groups of the Saite material.

Linear Enamel Hypoplasia -- Saite Period Summary

Differences between Males and Females

When all sexed individuals in the Saite sample were compared, enamel hypoplasias were slightly more common in females. When compared by individual, 31.2% of the males (n=32) in the sample had one or more tooth with hypoplasia, versus 37.5% of the females (n=24). When the teeth were pooled, 10.6% of the teeth belonging to males (n=367) were affected, versus 16.2% of the teeth belonging to females (n=328). However, these differences were not statistically significant. Chi-square tests by tooth for the sexed sample did not show any significant differences between males and females with adults and juveniles combined.

When adults (18-50+ years) alone were compared by sex, males instead had a slightly higher prevalence of linear enamel hypoplasia: 28.0% of the male individuals (n=25) versus 22.2% of the adult females (n=18) had linear enamel hypoplasia on at least one tooth. When the teeth were pooled, 10.1% of all pooled teeth belonging to adult males (n=298), versus 7.3% of the teeth belonging to adult females (n=259) had linear enamel hypoplasia. However, these differences were not statistically significant. Chi-square tests by tooth for the adult sample did not show any significant differences between adult males and females.

When juveniles (12-18 years) alone were compared by sex, females had a higher prevalence of linear enamel hypoplasia: 42.9% of the male juveniles (n=7) versus 83.3% of the juvenile females (n=6) had enamel defects on at least one tooth. When the teeth were pooled, 13% of all pooled teeth belonging to juvenile males (n=69), versus 49.3% of the teeth belonging to juvenile females (n=69) had linear enamel hypoplasia. Though the differences may seem quite substantial, they were not statistically significant. Chi-square tests by tooth for the juvenile sample, however, revealed significant differences between juvenile males and females for both the right upper canine (#6) and the left lower central incisor (#24), and the *p*-value approached significance for the right lower central incisor (#25), indicating that juvenile females were more likely to have linear enamel hypoplasia on those teeth.

Differences between Age Groups

When linear enamel hypoplasias were compared by individual across age groups for males, females, and individuals of undetermined sex combined, infants were excluded from the analysis, since no permanent teeth could be assessed for this age group. There was a very slight rise in prevalence (2.5%) from the Infans I (1-5 years) to the Infans II (5-12 years) age group, after which prevalence declined.

With both sexes combined, 60% of the individuals in the Infans I age group (n=5)had linear enamel hypoplasia, 62.5% of the individuals in the Infans II age group (n=8), 53.3% of the juvenile individuals (n=15), 36% of the individuals in the Adultus group (n=24), 14.3% of the individuals in the Maturus group (n=14), and none of the individuals in the Senilis group (n=4). The differences between the age groups were not statistically significant with both sexes combined.

When older individuals were separated by sex, however, there was a definite peak in prevalence in the female individuals in the Juvenilis age group (12-18 years), after which prevalence for females sharply declined. For males, prevalence declined with age. The differences between age groups were statistically significant only for females in the sample, with the Juvenilis age group having the greatest impact on *p*-value.

When the teeth were pooled, 25.7% of the teeth from the Infans I age group (n=70), 14.3% of the teeth from the Infans II age group (n=77), 27.2% of the teeth belonging to the Juvenilis age group (n=162), 13.9% of the teeth from the Adultus age group (n=317), 2.7% of the teeth from the Maturus age group (n=181), and none of the teeth from the Senilis age group (n=63) displayed enamel defects. The differences between age groups were not statistically significant, though values from two teeth, #22 and #26, approached significance and had statistically significant AR values for the Juvenilis and Infans I age groups respectively. For #22 (p = 0.087), the adjusted residual values indicated that the teeth in the Juvenilis group had the greatest impact on p-value (AR +2.8), whereas for #26 (p = 0.074) it was the Infans I group that most impacted the test result (AR=2.2).

Prevalence of linear enamel hypoplasia was also compared between younger subadults separately. When the teeth were pooled, 25.7% of individuals in the Infans I age group (n=70) had enamel defects, versus 14.3% of the teeth from the Infans II age group. The difference was not statistically significant. When broken down by tooth, there were no statistically significant differences between teeth from the Infans I and Infans II age groups. However, because of the small sample size, the results from this last analysis is spurious.

10.2.2 Porotic Hyperostosis

As discussed in Chapter Nine, all individuals with at least one preserved parietal were assessed for porotic hyperostosis. Because the lesions generally present bilaterally, individuals with only one preserved parietal which did not exhibit the lesion were given the score of absent. In the Saite sample, 116 individuals could be assessed for porotic hyperostosis. Of these 116, nine individuals (7.8%) exhibited the lesions. None of the observed lesions qualified as severe in the Saite period skeletal sample, and with the exception of one Infans I individual with active lesions and one Adultus individual with mixed active and healed lesions, all individuals that had porotic hyperostosis presented with healed lesions. For that reason, and because of the small sample size, comparisons were only performed on a presence/absence score, and lesion activity was not taken into account in the analysis.

Prevalence by Sex

When the sexes were compared, 16.1% of the females (n=31) had porotic hyperostosis, versus 8.1% of the males (n=37). Though the prevalence was higher in females, the difference was not statistically significant (Table 10.17)

All Males			All Females			Chi-square				Yates			Fisher's		Phi
Ab	**Pr**	**% Affected**	**Ab**	**Pr**	**% Affected**	**df**	**x^2**	**p -- x^2**	**p<0.05**	**Yates**	**p -- Yates**	**p<0.05**	**p -- Fisher's**	**p<0.05**	**Value**
34	3	8.1	26	5	16.1	1	1.045	0.307	No	0.415	0.519	No	0.454	No	-0.124

Table 10.17: Prevalence of porotic hyperostosis among all males and females of the Saite sample.

The distribution changed very little when juveniles were omitted from the sexed sample (Table 10.18): when compared for adult individuals only, 16% of females (n=25) had porotic hyperostosis, versus 10% of the males (n=30). Again, the result was not statistically significant.

Adult Males			Adult Females			Chi-square				Yates			Fisher's		Phi
Ab	**Pr**	**% Affected**	**Ab**	**Pr**	**% Affected**	**df**	**x^2**	**p -- x^2**	**p<0.05**	**Yates**	**p -- Yates**	**p<0.05**	**p -- Fisher's**	**p<0.05**	**Value**
27	3	10.0	21	4	16.0	1	0.442	0.506	No	0.067	0.796	No	0.689	No	-0.090

Table 10.18: Prevalence of porotic hyperostosis among adult males and females of the Saite sample.

When juvenile males and females were compared, the picture slightly changed (Table 10.19). Still, 16.7% of females (n=6) had porotic hyperostosis. However, none of the juvenile males exhibited the lesion. A Phi-coefficient of -.312 indicates a moderately strong negative correlation between sex and prevalence, indicating that females were more likely to have porotic hyperostosis in the juvenile cohort. Nevertheless, the sample size was too small to allow a chi-square analysis, and the result of Fisher's exact test was not statistically significant.

Juvenile Males			Juvenile Females			Chi-square				Yates			Fisher's		Phi
Ab	**Pr**	**% Affected**	**Ab**	**Pr**	**% Affected**	**df**	**x^2**	**p -- x^2**	**p<0.05**	**Yates**	**p -- Yates**	**p<0.05**	**p -- Fisher's**	**p<0.05**	**Value**
7	0	0.0	5	1	16.7	1	-	-	-	-	-	-	0.462	No	-0.312

Table 10.19: Prevalence of porotic hyperostosis among juvenile males and females of the Saite sample.

Prevalence by Age

Age Group	Ab	Pr	% Affected
Infant	6	0	0.0
Infans I	24	1	4.0
Infans II	13	0	0.0
Juvenilis	15	1	6.2
Adultus	21	6	22.2
Maturus	20	0	0.0
Senilis	8	8	11.1
Totals	**107**	**9**	**7.8**

Table 10.20: Prevalence of porotic hyperostosis across age groups of the Saite sample.

The distribution of porotic hyperostosis across age groups is given in Table 10.20. Interestingly, the majority of cases occurred in the Adultus (18-35 years) age group, and only one child exhibited the lesion. However, because of the small sample size, age groups were collapsed to Adult (18+)/Subadult (0-18) only for the test for independence across age groups (Table 10.21). When these two groups were compared, 3.3% of the subadults (n=60), and 12.5% of the adults (n=56) exhibited porotic lesions. Though the results of the tests all had p-values larger than .05, the Pearson's chi-square value approached significance: x^2 (1, n=116) = 3.401, *p* = .065, *phi* = .171

Subadults			Adults			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	*p* -- x^2	p<0.05	Yates	*p* -- Yates	p<0.05	*p* -- Fisher's	p<0.05	Value
58	2	3.3	49	7	12.5	1	3.401	0.065	No	2.241	0.134	No	0.087	No	0.171

Table 10.21: Prevalence of porotic hyperostosis between subadults and adults of the Saite sample.

10.2.3 Cribra Orbitalia

Cribra orbitalia was recorded for each individual exhibiting at least one observable orbit. In the Saite sample as a whole, cribra orbitalia was observed more frequently than porotic hyperostosis. Of a total of 97 individuals, 26 (26.8%) exhibited the lesion.

Prevalence by Sex

When all sexed individuals in the sample were compared (Table 10.22), the prevalence of cribra orbitalia was nearly identical: 21.9% for males (n=32), and 20% for females (n=30). Not surprisingly, there was no significant difference between males and females.

Males			Females			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	*p* -- x^2	p<0.05	Yates	*p* -- Yates	p<0.05	*p* -- Fisher's	p<0.05	Value
25	7	21.9	24	6	20.0	1	0.033	0.856	No	0.000	1.000	No	1.000	No	0.023

Table 10.22: Prevalence of cribra orbitalia between all males and females of the Saite sample.

When only adult individuals were compared (Table 10.23), prevalence for both males and females declined somewhat, to 15.4% for males (n=26) and 12.5% for females (n=24). However, the difference was still not statistically significant.

Adult Males			Adult Females			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
22	4	15.4	21	3	12.5	1	0.086	0.769	No	0.000	1.000	No	1.000	No	0.042

Table 10.23: Prevalence of cribra orbitalia between adult males and females of the Saite sample.

If instead only juveniles were compared, prevalence rose to 50% for both males (n=3) and females (n=3). Since the proportions of males and females in the juvenile sample were identical, not test for independence was carried out.

Prevalence by Age

Age Group	Ab	Pr	% Affected
Infant	3	0	0.0
Infans I	9	11	55.0
Infans II	8	2	20.0
Juvenilis	8	6	42.9
Adultus	20	4	16.7
Maturus	17	2	10.5
Senilis	6	1	14.3
Totals	**71**	**26**	**26.8**

Table 10.24: Prevalence of cribra orbitalia across age groups of the Saite sample.

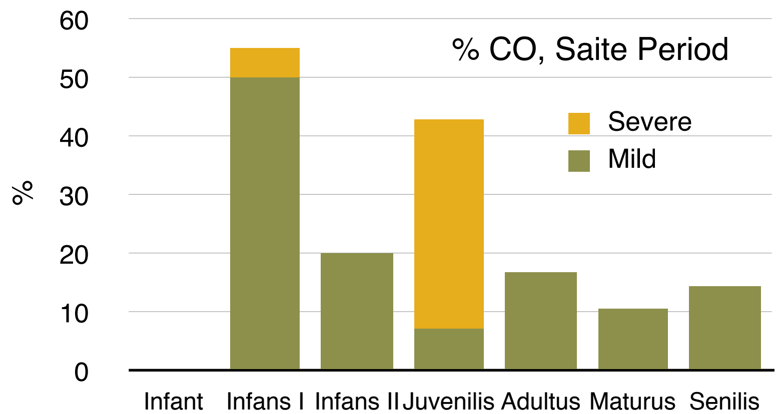

Figure 10.11: Distribution of cribra orbitalia across age groups

When compared by age group (Table 10.24 and Figure 10.11), the highest prevalence of cribra orbitalia was found in the Infans I age group (1-5 years), followed by the Juvenilis age group

Age Group	% Active	% Healed	% Mixed
Infant	0.0	0.0	0.0
Infans I	50.0	0.0	5.0
Infans II	20.0	0.0	0.0
Juvenilis	35.7	0.0	7.1
Adultus	4.2	4.2	8.4
Maturus	0.0	10.5	0.0
Senilis	0.0	14.3	0.0

Table 10.25: Percentage of active, healed and mixed lesions in the Saite sample

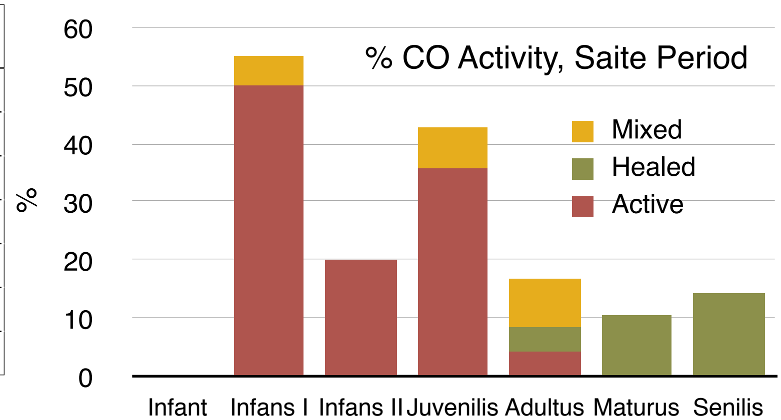

Figure 10.12: Distribution of lesion activity across age groups

(12-18 years). These two groups were also the only two in which some individuals had a more severe expression of the lesion; one in the Infans I group (5%), and five in the Juvenilis group (35.7%). Because of the small sample size for the Infant age group, Pearson's chi-square could not be performed, but Fisher's exact test does return a statistically significant result, with a correlation coefficient signifying a strong correlation between age group and prevalence: (6, n=97; Fisher's 13.788, p = .02, Cramer's V = .402). Adjusted residual values were significant for the Infans I group (AR = +3.2), with the Maturus group (AR = -1.8) approaching significance. Though the Juvenilis group had the second highest prevalence, the adjusted residual for this group was not significant (AR = + 1.5)

Subadults			Adults			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
28	19	40.4	43	7	14.0	1	8.623	0.003	Yes	7.329	0.007	Yes	0.005	Yes	-0.298

Table 10.26: Prevalence of cribra orbitalia between subadults and adults of the Saite sample.

During data collection, lesions were scored not only for severity but also for evidence of healing. As shown in Figure 10.12 and Table 10.25, the majority of active lesions occurred in the younger age groups, whereas the older age groups exhibited exclusively healed lesions.

To increase sample size, age groups were collapsed and a comparison was performed on subadults (0-18 years) versus adults (18+ years) in the sample. When the age groups were pooled, 40.4% of subadults (n=47) versus 14% of adults (n=50) had cribra orbitalia. The difference was statistically significant for all three tests (Table 10.26).

10.2.4 Osteoarthritis/Degenerative Joint Disease (DJD)

Synovial Joints

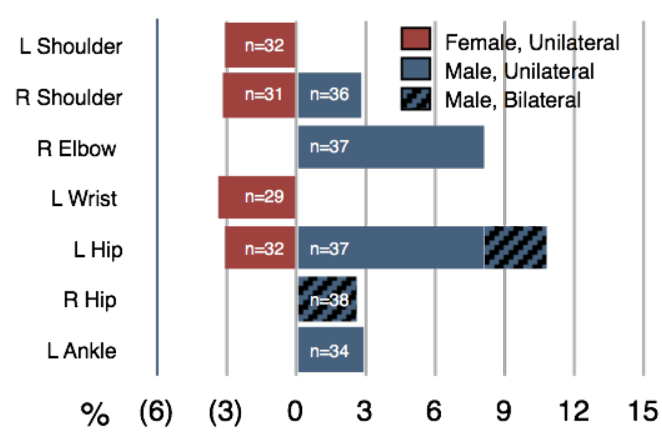

Figure 10.13: Frequency of DJD in the Saite sample (n=52) by joint and sex. Bilateral occurrences are marked with diagonal lines.

In the Saite sample, 23.1% of observable individuals[62] (n=52) had osteoarthritic changes to at least one synovial joint. When broken down by sex, 17.4% of the females (n=23) had one or more arthritic joint, versus 27.6% of the males (n=29). The difference was not statistically significant (Table 10.27).

To increase sample size, scoring for severity was collapsed into absence/presence scores for all joints. When joints were assessed separately, osteoarthritic changes were found in the right shoulder (1/36, 2.8%) and elbow (3/37, 8.1%), left (4/37, 10.8%) and

[62] Individuals in which all twelve synovial joints (shoulder, elbow, wrist, hip, knee and ankle, both left and wright sides) were observable but showed no evidence of osteoarthritic changes were marked as "Absent." Individuals in which at least one joint showed evidence of osteoarthritic changes were marked as present, regardless of the total number of observable joints.

right (1/38, 2.6%) hip, and left ankle (1/34, 2.9%) in the Saite males. Of these, one pelvis had bilateral osteoarthritic changes. In the females, the left (1/32, 3.1%) and right (1/31, 3.2%) shoulder were affected, as well as the left wrist (1/29, 3.4%) and right hip (1/32, 3.1%). None of

Males			Females			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
21	8	27.6	19	4	17.4	1	0.751	0.386	No	0.287	0.592	No	0.513	No	0.120

Table 10.27: Prevalence of osteoarthritis in males and females of the Saite sample.

the females had bilateral osteoarthritis in any of the joints (Figure 10.13). Perhaps not surprisingly, given the small sample size, the differences in prevalence between males and females were not statistically significant for any of the joints.

As expected, osteoarthritis became more common with age. In the Saite sample, 16.7% (n=24) of the individuals in the Adultus age group (18-35 years) had osteoarthritic changes to one or more joints, versus 23.5% (n=17) of the Maturus individuals (35-50 years) and 50% (n=8) of the Senilis individuals. The differences were not statistically significant, though the Cramer's V coefficient of .272 suggested a moderate correlation between age and osteoarthritis.

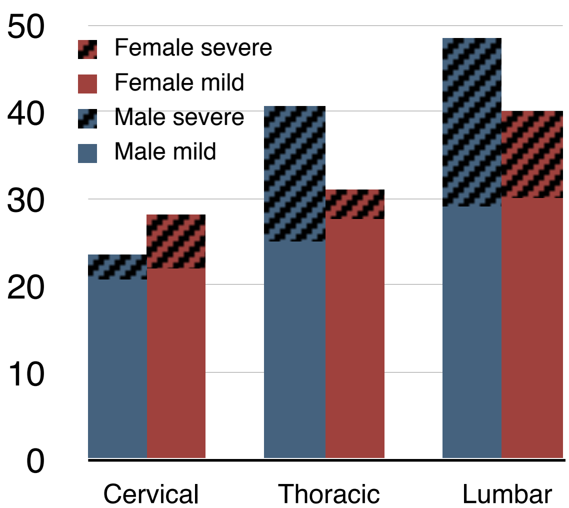

Figure 10.14: Comparison, in percent, of osteoarthritic changes in males and females of the Saite sample (For totals see table 10.28).

Invertebral Joints

Among individuals in the Saite sample in which the entire spine was observable (n=62), 59.7% had osteophytic growth to either the cervical, thoracic or lumbar vertebrae. When broken down by sex, 62.5% of males (20/32) and 56.7% of females (17/30) were affected. The difference between the sexes was not statistically significant.

When the cervical, thoracic and lumbar spine were assessed separately, males more commonly had osteophytic growth on thoracic and lumbar vertebrae, whereas females had a slightly higher prevalence of osteophytosis in the cervical spine. In addition, a larger proportion of male cases were severe in the thoracic and lumbar spine, while the reverse was true for the cervical spine, in which

	Males			Females			Chi-square				Yates			Fisher's		Phi
Saite	Ab	Pr	%	Ab	Pr	%	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
Cervical	26	8	23.5	23	9	28.1	1	0.182	0.670	No	0.021	0.885	No	0.781	No	-0.053
Thoracic	19	13	40.6	20	9	31.0	1	0.607	0.436	No	0.607	0.436	No	0.594	No	0.100
Lumbar	18	12	40.0	16	15	48.4	1	0.435	0.510	No	0.161	0.688	No	0.609	No	0.084

Table 10.28: Distribution of degenerative joint disease of the spine in the Saite sample.

females exhibited the most severe cases (Figure 10.14 and Table 10.28). The differences were slight, however, and not statistically significant. When divided by age and spinal section, osteophytosis became more common with age for both sexes and spinal sections, with the exception of the cervical spine in males, in which osteophytosis was slightly more common in the Maturus (35-50 years) than the Senilis (50+ years) age group.

When both sexes were combined, the differences between the increase in osteophytosis with age was statistically significant for both the cervical, thoracic and lumbar spine. When divided by sex, however, the increase with age was only statistically significant for the thoracic and lumbar spine in males, and for the lumbar spine alone in females, though the chi-square value did approach significance for the cervical spine as well in females (Figure 10.15 and Table 10.29).

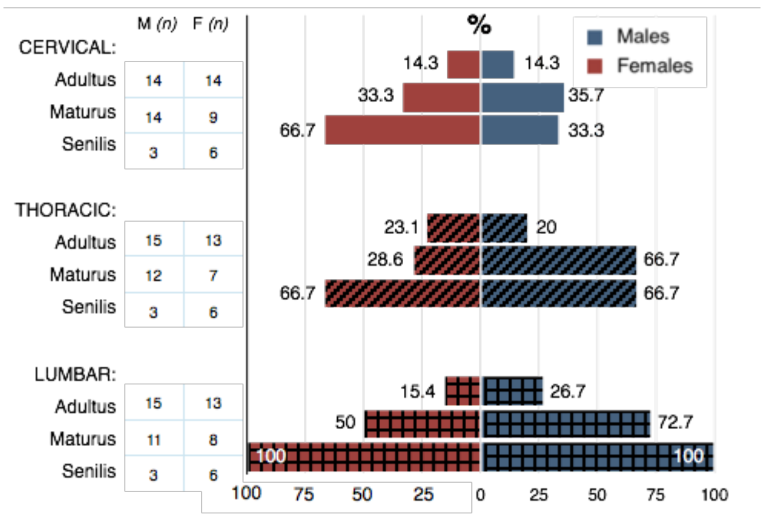

Figure 10.15: Degenerative joint disease of the spine divided by section and sex, Saite period.

Saite		Adultus			Maturus			Senilis			Chi-square				Fisher's		Cramer's V
		Ab	Pr	%	Ab	Pr	%	Ab	Pr	%	df	x^2	p -- x^2	p<0.05	p -- Fisher's	p<0.05	Value
All	Cervical	24	4	14.3	15	8	34.8	4	5	55.6	2	6.477	0.039	**Yes**	0.039	Yes	0.329
	Thoracic	22	6	21.4	9	10	52.6	3	6	66.7	2	7.991	0.018	**Yes**	0.015	Yes	0.378
	Lumbar	22	6	21.4	7	12	63.2	0	9	100	2	19.412	0.000	**Yes**	0.000	Yes	0.589
Males	Cervical	12	2	14.3	9	5	35.7	2	1	33.3	2	1.777	0.411	No	0.411	No	0.239
	Thoracic	12	3	20.0	4	8	66.7	1	2	66.7	2	6.652	0.036	**Yes**	0.032	Yes	0.471
	Lumbar	11	4	26.7	3	8	72.7	0	3	100	2	8.515	0.014	**Yes**	0.015	Yes	0.542
Females	Cervical	12	2	14.3	6	3	33.3	2	4	66.7	2	5.416	0.067	No	0.052	No	0.432
	Thoracic	10	3	23.1	5	2	28.6	2	4	66.7	2	3.601	0.165	No	0.223	No	0.372
	Lumbar	11	2	15.4	4	4	50.0	0	6	100	2	12.046	0.002	**Yes**	0.001	Yes	0.668

Table 10.29: Degenerative joint disease of the spine, divided by age, section and sex, saite period.

Schmorl's nodes

No females in the Saite sample had Schmorl's nodes, while the condition occurred in 16.1% of the male Saite individuals (n=31). Not surprisingly, therefore, Pearson's chi-square test was indeed statistically significant for difference between the sexes (Table 10.30). However, in contrast to osteophytic growth, prevalence of Schmorl's nodes did not increase with age. Though the Maturus age group had a slightly higher prevalence (3/13, 23.1%) than the Adultus group, (2/15, 13.3%), there were no cases at all in the Senilis age group. The difference between age groups was not statistically significant.

Males			Females			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
26	5	16.1	26	0	0.0	1	4.597	0.032	Yes	2.802	0.094	No	0.056	No	0.284

Table 10.30: Prevalence of Schmorl's nodes in males and females of the Saite sample.

10.2.5 Trauma

During analysis, the material was assessed for both dislocations and fractures. However, no dislocations were identified in the Saite material. Further, since no fractures were identified in juvenile remains, tests were carried out comparing prevalence in adult, sexed individuals only. Finally, because of the poor preservation of the material, fractures were recorded by bone during statistical analysis, rather than by individual.

Trauma -- Cranial by Skeletal Element

	Males			Females			Fisher's Exact Test			Phi
Saite	Ab	Pr	%	Ab	Pr	%	df	*p* -- Fisher's	p<0.05	Value
Maxilla L	11	0	0	11	0	0	-	-	-	-
Maxilla R	11	1	8.3	11	0	0	1	1.000	No	0.204
Mandible L	23	1	4.2	18	0	0	1	1.000	No	0.135
Mandible R	24	0	0.0	20	1	4.8	1	0.467	No	-0.161
Frontal L	15	2	11.8	16	0	0.0	1	0.485	No	0.246
Frontal R	17	1	5.6	14	1	6.7	1	1.000	No	-0.023
Parietal L	10	1	9.1	5	1	16.7	1	1.000	No	-0.112
Parietal R	12	0	0.0	5	0	0.0	-	-	-	-
Temporal L	22	0	0.0	16	0	0.0	-	-	-	-
Temporal R	16	0	0.0	13	0	0.0	-	-	-	-
Zygomatic L	12	0	0.0	12	0	0.0	-	-	-	-
Zygomatic R	7	0	0.0	7	0	0.0	-	-	-	-
Nasals	9	0	0.0	9	0	0.0	-	-	-	-
Occipital	13	0	0.0	10	1	9.1	1	0.458	No	-0.227

Table 10.31: Cranial trauma in adults of the Saite sample, divided by sex.

Very few examples of cranial trauma were identified in the Saite material, and there were no significant differences in trauma prevalence between males and females. In total, six fractures (2.9%) were identified in 208 cranial elements for males, and four fractures (2.3%) in 171 cranial elements for females. The tests for independence for the Saite subsample when all cranial elements were combined did not show any statistically significant differences between the sexes: x2 (1, n=379) = 0.109, p = 0.7416, Fisher's p = 0.650, Phi = 0.020.

Because of the small sample size, only Fisher's exact test could be carried out when fracture prevalence was compared by cranial element (Table 10.31). None of the tests showed any statistically significant differences between the sexes. The Phi correlation coefficient indicated a small effect favoring males for the left frontal, right maxilla and left mandible, and favoring females for the occipital, right mandible and left parietal. However, no more than two fractures were recorded for any cranial element, so the effect size is likely more a reflection of the availability of non-pathological specimens than any considerable variation in the number of fractures.

Trauma -- Cranial by Individual

As discussed in section 9.2.2, the statistical analysis of cranial trauma combined the ante-and perimortem categories recorded during data collection. For that reason, the cranial fractures are described by individual in greater detail below. However, because of the low number of complete

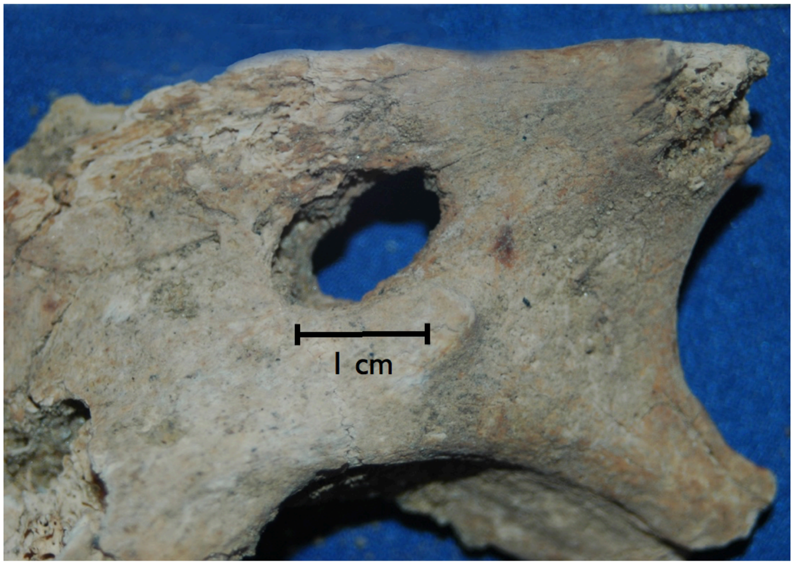

Figure 10.16: Puncture fracture on the left mandibular ramus, burial 120. Lingual view, superior is to the right.

skulls in the material no statistical analysis was carried out on a by individual basis.

A total of four individuals in the Saite sample, three males and one female, showed evidence of antemortem cranial trauma. Burial 120, an adult male between 35-45 years of age, had two oval puncture fractures on the skull and mandible; one on the left mandibular ramus, c. 1.8 cm inferior to the mandibular notch (Figure 10.16), and one just posterior to pterion on the left parietal. The superior edges of the mandibular fracture had begun to remodel, and the fracture edges were rounded. This initial osteogenic reaction generally happens between one to three weeks after injury (Sauer 1998), suggesting that the fracture was sustained antemortem. However, no such remodeling could be seen on the parietal bone, though three broken bone fragments still attached to the parietal fracture site at the time of excavation suggest that the fracture took place at or around the time of death (Ortner 2003:123). Since fracture healing varies with bone type (Ortner 2003:126), it is possible that also the parietal fracture was sustained antemortem but that the cranial vault fracture site took longer to begin healing.

Burial 161, an adult male between 35-40 years of age, had a depressed skull fracture in the glabella region of the frontal bone, with the outer table pressed into the sinus cavity. Superior to the depression fracture were three oval penetrating fractures, the largest of which (22.7x7 mm) was 5 cm above the left supraorbital margin, and the two smaller fractures (11.6x5mm and 17x10mm respectively) were situated superior to (c. 3cm) and on either side of the glabella. A simple linear fracture involving the outer table only ran from the edge of the smallest penetrating fracture to the midpoint of the sagittal suture. A second linear fracture involving both inner and outer table ran from the edge of the frontal bone along the largest penetrating fracture to the line of the first fracture, where it stopped (Figure 10.17). The edges of the fractures were sharp ectocranially, but smooth and slightly remodeled endocranially, indicating the individual survived for a short time after the injury.

In addition to multiple fractures on the frontal bone, there was also a penetrating fracture to the occipital (oval, 11.8x5 mm), just inferior to lambda, and penetrating the skull at the sagittal sulcus. As with the frontal bone fracture, the edges of the bone were rounded endocranially, indicating initial remodeling of bone at the fracture site.

Burial 301, an adult male between 35-45 years of age, had two healed incised fractures in the lambda region, mainly on the occipital bone, but extending across the lambdoid suture onto both parietals. Both fractures were significantly, though not completely, healed. The superior fracture crossed the left lambdoid suture c. 1.5 cm from lambda, and continued parallel to the right lambdoid suture for 22 mm. The inferior fracture, 53 mm in length, was almost perpendicular to the first, crossing the right lambdoid suture 3 cm from lambda, and the left lambdoid suture 4 cm from lambda. There was also an area of sclerotic bone surrounding lambda. An osseous hard callus had formed along the superior edge of both fractures, indicating that the injury happened well before death. The two fractures were of the same width, approximately 5 mm, lensing out to the edges, suggesting that the same sharp instrument had caused both fractures. The fracture edges were completely closed, though a groove could still be seen at the inferior aspect of the fracture.

Unfortunately, burial 301 was one of three burials that were damaged during a storm, when the large army tent holding the human burials pending transportation to the lab collapsed on top of the bone boxes, and it was not possible to photograph the fractures in the laboratory. However, the sketch from the site notebook, made before depositing the burials in the site storage tent, shows their approximate location on the skull (Figure 10.18).

The final burial to exhibit evidence of antemortem trauma was burial 413, which belonged to an elderly female. This individual had sustained a complete fracture of the right mandible well before death. The fracture was healed with extensive remodeling, and the right mandibular body was shortened (Figure 10.19). A pseudoarthrosis with two contact points had formed between the two mandibular sections, which were articulated at the time of excavation, but broke apart when the bones were lifted. In addition, a large hole was left in the mandibular body at the fracture site (Figures 10.19 and 10.20). All but three teeth (18, 30 and 31) had been lost

Figure 10.17: Ectocranial (top) and endocranial (bottom) view of the frontal bone of burial 161.

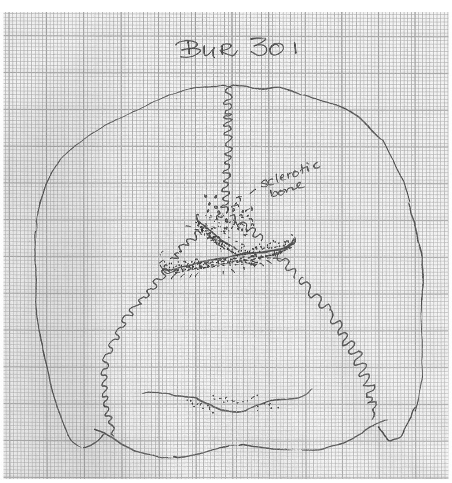

Figure 10.18: Location of the occipital fractures of burial 301

Figure 10.19: Superior view of the mandible from burial 413, with the two segments articulated at the pseudoarthrosis.

premortem with significant resorption of bone. It is possible that the tooth-loss occurred as a result of the fracture since the individual retained all maxillary teeth. Extensive calculus formation on teeth 30 and 31 suggest that she likely had trouble chewing. In place of the incisors and canines a sharp ridge had formed, and there were arthritic changes to the left mandibular condyle.

Because of the extensive remodeling, it is difficult to say how the injury was sustained. However, this individual had multiple other pathologies, including extensive degenerative joint disease and osteophytosis of all spinal segments, bilateral osteochondritis dissecans,[63] extensive periosteal new bone formation on both tibia and fibulae, arthritic changes with osteophytic growth to both hands, and enlarged muscle attachments to both ulnae and radii. Thus, it is possible that she was engaged in habitual behavior involving not only her lower arms, knees, and legs but also her mouth, which perhaps caused a stress fracture of the mandible.

In addition to the cranial fractures that showed evidence of healing, one male and two females had sustained cranial fractures perimortem, that is, at, or shortly before or after the time of

Figure 10.20: Left and right mandibular segments, lingual view, showing the two contact points of the pseudoarthrosis on the left mandibular segment.

[63] Osteochondritis diseccans is the separation of a segment of articular cartilage, and its underlying avascular subchondral bone, from the surrounding cancellous bone.

Figure 10.21: Skull of burial 191 in situ, detail.

death. Burial 191, an older male between 50-70 years of age, had a large incised fracture across the face and frontal bone (Figure 10.21). Judging from the edges of the cut, the injury was caused by some type of large bladed instrument, which had impacted the face and forehead at an oblique downward angle to the frontal bone. The fracture was classified as perimortem for several reasons. First, the intact coffin lid covering the cranium indicated that the damage to the skull must have been sustained before the body was placed in the coffin. The uniform coloring[64] of the fracture edges and the surrounding bone also suggested that the fracture occurred in antiquity (White 1992:133, Moraitis et al. 2008). Further, the impact had compressed the outer surface of the frontal bone in the glabellar region into the frontal sinuses, and warped the right supraorbital ridge, suggesting the bone was 'green' at the time of fracture (Sauer 1998, Maat 2008).

If this injury were indeed sustained before death, it would almost certainly have been fatal. However, given the evidence of fairly rough handling of several of the bodies from elsewhere in the cemetery, (see Chapter Five for discussion) the most likely explanation is probably that it occurred as a result of mortuary treatment.

Burial 271 belonged to a young adult female, between 20-25 years of age. This individual had a penetrating fracture in the center of the right parietal, oval in shape, measuring approximately 3.5 by 2 cm. Again, the fracture was deemed perimortem because of the uniform color of the fracture edges compared to the surrounding bone. Further, several smaller bone fragments adhered to the margins of the fracture, indicating that it was sustained while the periosteum was still intact (Ortner 2003:136).

Figure 10.22: Perimortem depressed skull fracture in burial 291.

Finally, one more young adult female, burial 291, exhibited a perimortem fracture in the glabella region of the frontal bone. The fracture was located just superior and medial to the right supraorbital notch (Figure 10.22). It consisted of an oval depression, c. 2.5x2cm, with beveled edges. The outer table was depressed into the frontal sinuses, creating a concave depression. The fracture was deemed perimortem due

[64] Note that the lighter color evident on the superio-lateral edge of the fracture edge is due to a fragment breaking off during cleaning of the skeleton. The entire cranium was extremely fragile, and was not possible to lift in one piece.

to the warping of the bone, suggesting that the bone was still wet when the fracture was sustained (Ubelaker and Montaperto 2014).

Trauma -- Long Bones

	Males			Females			Fisher's			Phi
Saite	Ab	Pr	%	Ab	Pr	%	df	*p* -- Fisher's	p<0.05	Value
Clavicle L	33	0	0	32	0	0	-	-	-	-
Clavicle R	35	0	0	30	0	0	-	-	-	-
Humerus L	35	0	0.0	32	0	0.0	-	-	-	-
Humerus R	22	1	4.3	12	0	0.0	1	1.000	No	0.124
Radius L	33	0	0.0	30	1	3.2	1	0.484	No	-0.130
Radius R	38	0	0.0	30	0	0.0	-	-	-	-
Ulna L	36	1	2.7	29	1	3.3	1	1.000	No	-0.018
Ulna R	37	0	0.0	31	1	3.1	1	0.464	No	-0.130
Femur L	38	0	0.0	30	1	3.2	1	0.449	No	-0.134
Femur R	40	0	0.0	30	2	6.2	1	0.194	No	-0.189
Tibia L	36	1	2.7	27	0	0.0	1	1.000	No	0.108
Tibia R	37	0	0.0	27	1	3.6	1	0.431	No	-0.144
Fibula L	36	0	0.0	27	0	0.0	-	-	-	-
Fibula R	36	0	0.0	28	0	0.0	-	-	-	-

Table 10.32: Long bone trauma in adults of the Saite sample, divided by sex.

All fractures identified in the long bones of the Saite period sample were antemortem, with evidence of healing. Identified fractures are described individually in table 10.33. As with cranial trauma, the number of fractures was low. In total, four fractures were identified in 459 long bones for males (0.8%), and six fractures in 373 skeletal elements for females (1.6%). The chi-square test for independence for the Saite subsample when all skeletal elements were combined did not show any statistically significant difference in fracture prevalence between the sexes: x2 (1, n=832) = 0.9416, p = 0.332, Fisher's p = 0.357, Phi = 0.03.

When separated by element, the small sample size precluded the use of the chi-square test, and only Fisher's exact test was carried out (Table 10.32). None of the tests showed any statistically significant differences between the sexes. The Phi correlation coefficient indicated a small effect favoring males for the right humerus and left tibia, and favoring females for the right femur, right tibia, left femur, right ulna and left radius. However, no more than two fractures were recorded for any skeletal element, so again the effect size is more a reflection of the available non-pathological specimens than any significant variation in the number of fractures.

Summary: Trauma in the Saite Period Sample

The number of fractures in the Saite sample was low: only 2.8% of assessed cranial elements (n=379) and 1.2% of assessed postcranial elements (n=832) showed evidence of trauma. There were no significant differences in the distribution of trauma between males and females for either cranial or postcranial skeletal elements. Postcranial injuries were well healed, and the majority of fractures were of the distal radius or ulna. Injuries at these sites are most commonly associated with falls (Galloway 1999:138). Further, the lack of misaligned fractures may suggest that the Saite population had access to some form of medical treatment, as all postcranial fractures appeared to be well set. In contrast, the skull injuries observed among the Saite population were predominantly localized puncture injuries and not typical of skull fractures resulting from falls (Galloway 1999: 67–68), likely suggesting some level of interpersonal violence in the Saite population.

Burial	Sex	Bone	Description
191	M	Left Ulna	Healed simple fracture of distal third of ulna, and fractured and remodeled styloid process. Distal radius not recovered.
221	M	Right Humerus	Healed comminuted fracture of humeral shaft, with anterior-posterior compression and widening of shaft. Shaft is bowed medially, and distracted compared to the left humerus.
434	M	Left Tibia	Healed comminuted fracture on distal third of left tibia. Shaft is deformed and thickened, with striations on surface.
297	F	Right Tibia	Callus formation on proximal third of tibia, well healed simple fracture, no deformation.
297	F	Right Femur	Well healed simple fracture on distal third of femoral shaft. Bone is slightly distracted.
331	F	Right Ulna	Fractured and remodeled ulnar styloid process.
405	F	Left Ulna	Fractured and remodeled ulnar styloid process.
405	F	Left Radius	Colles' fracture of distal radius.
413	F	Left Femur	Osteochondritis disseccans.
413	F	Right Femur	Osteochondritis dissecans.

Table 10.33: Description of long bone fractures in the Saite sample.

10.2.6 Periosteal New Bone Formation (PNB) and General Infections

Periosteal New Bone Formation -- Age Distribution

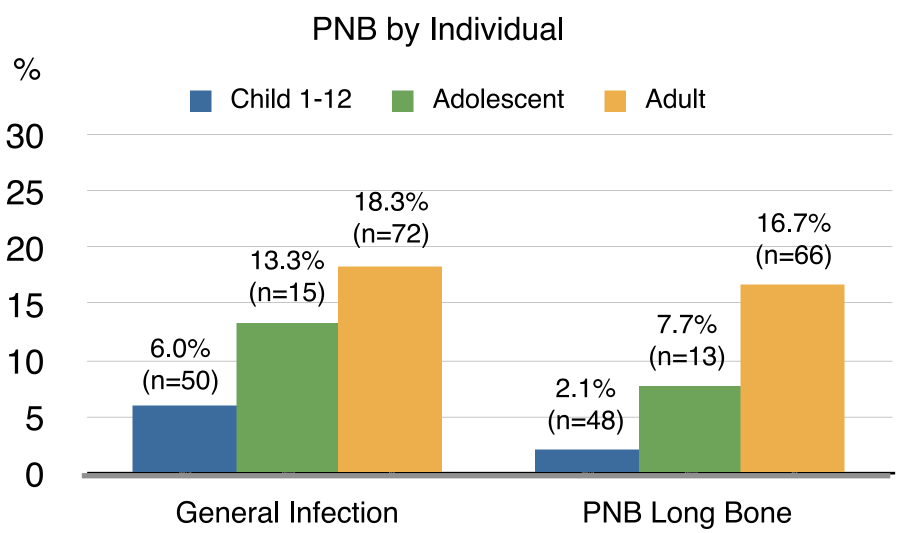

Figure 10.23: Distribution of PNB across age groups for the Saite sample.

Because of the small sample size, it was not possible to perform chi-square tests for independence by skeletal element compared by age group, since the expected count was less than one in too many cells of the matrix. Further, there was no evidence of PNB in any individuals from the Infant (<1 year) age group and this group was therefore omitted from the analysis. Thus, statistical comparison of the distribution of PNB and general infection across age groups was carried out on a by individual basis only. Results showed that PNB -- both on the long bones and as markers for general infection -- was more common in adults than in younger age groups (Figure 10.23).

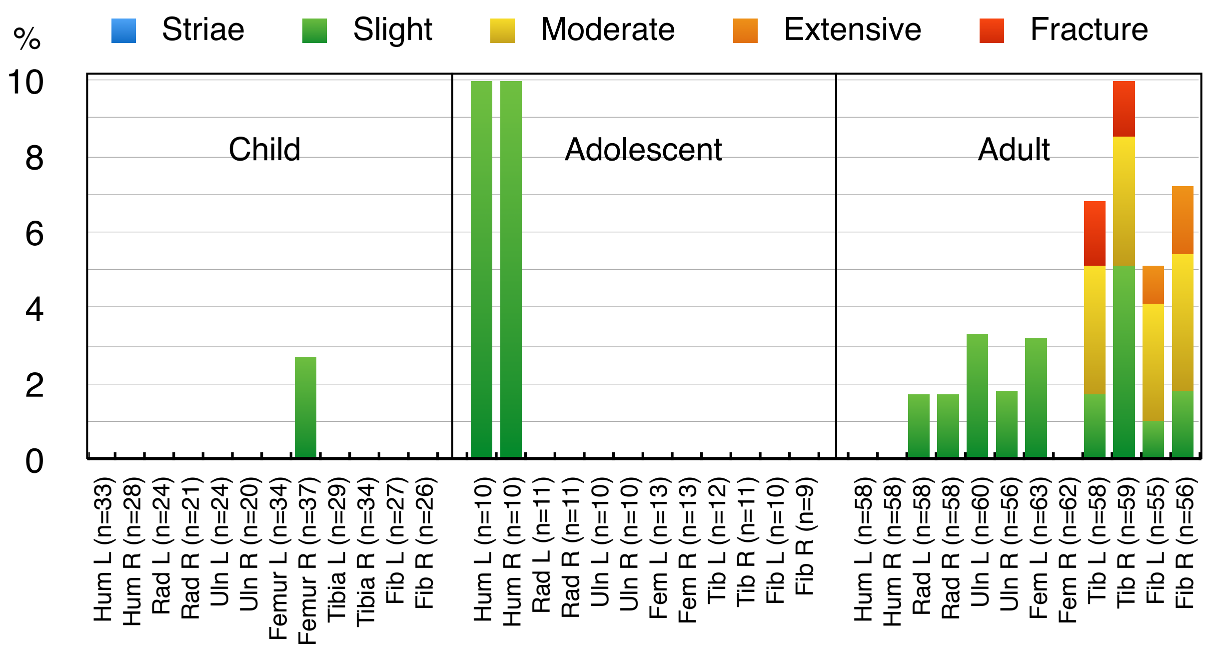

Figure 10.24: Age-distribution of PNB by skeletal element

However, the difference between age groups when assessed by individual was only statistically significant for PNB of the long bones: x^2 (2, n=127) = 6.534, p = .038, *phi* = .227), specifically between children (adjusted residual -2.4) and adults (adjusted residual 2.5).

Though the sample size was too small for any statistical analysis of severity for PNB of the long bones, the results are presented in chart form in Figure 10.24. As shown in the chart, PNB occurred more commonly in adults, and it was also in the adult group that the only extensive expressions of the condition or cases related to fractures were found. In the adult age group, PNB was found primarily on the Tibia and Fibula, with preference for the right side. In adolescents and children, however, other bones were affected rather than the lower legs.

Periosteal New Bone Formation -- Comparison of Males and Females by Individual

When compared by individual, 11.9% of the Saite males (n=42) and 26.5% of the Saite females (n=34) showed evidence of general infection on bones other than the long bones. PNB of the long bones occurred in 25% of saite females (n=32), while 10.8% of Saite males (n=37) were affected. The differences between males and females were not statistically different for either case.

Periosteal New Bone Formation -- Comparison of Males and Females by Skeletal Element

Saite	Males			Females			Chi-square				Yates			Fisher's		Phi
Bone	**Ab**	**Pr**	**%**	**Ab**	**Pr**	**%**	**df**	**x^2**	**p -- x^2**	**p<0.05**	**Yates**	**p -- Yates**	**p<0.05**	**p -- Fisher's**	**p<0.05**	**Phi**
Humerus L	35	1	2.8	30	0	0.0	1	-	-	-	-	-	-	1.000	No	0.113
Humerus R	35	1	2.8	30	1	3.2	1	-	-	-	-	-	-	1.000	No	-0.013
Radius L	37	0	0.0	29	1	3.3	1	-	-	-	-	-	-	0.448	No	-0.137
Radius R	37	0	0.0	30	1	3.2	1	-	-	-	-	-	-	0.456	No	-0.133
Ulna L	37	0	0.0	28	2	6.7	1	-	-	-	-	-	-	0.197	No	-0.195
Ulna R	35	0	0.0	29	1	3.3	1	-	-	-	-	-	-	0.462	No	-0.135
Femur L	40	0	0.0	30	1	3.2	1	-	-	-	-	-	-	0.437	No	-0.136
Femur R	40	0	0.0	31	0	0.0	-	-	-	-	-	-	-	-	-	-
Tibia L	33	2	5.7	27	2	6.9	1	0.04	0.846	No	0.000	1.000	No	1.000	No	-0.024
Tibia R	34	1	2.9	24	5	17.2	1	3.86	**0.049**	**Yes**	2.355	0.125	No	0.083	No	-0.246
Fibula L	33	1	2.9	23	4	14.8	1	2.82	0.93	No	1.462	0.227	No	0.161	No	-0.215
Fibula R	34	0	0.0	23	4	14.8	1	5.39	**0.020**	**Yes**	3.244	0.072	No	**0.034**	**Yes**	-0.297

Table 10.34: Distribution of PNB by skeletal element for males and females in the Saite material.

When all skeletal elements were pooled, PNB occurred on 1.4% of long bones from the Saite male sample (n=436) and 6.2% of long bones from the Saite female sample (n=356). The difference in prevalence between Saite males and females was statistically significant: x^2 (1, n=511) = 13.2602, p = 0.0003, *phi* = -0.1294.

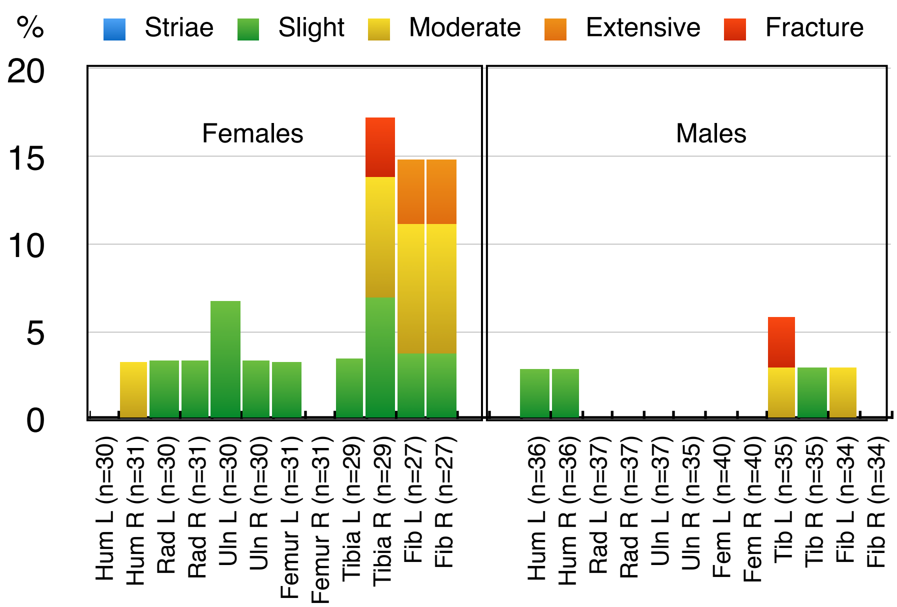

Figure 10.25: Sex-distribution of PNB by skeletal element, in % by element

When compared separately, however, not all long bones were more commonly affected in females than in males. Further, because of the small sample size, chi-square tests were only possible for the tibiae and fibulae in the Saite sample. For the remaining skeletal elements, Fisher's exact test was carried out. When compared by skeletal element, females had a higher rate of PNB than males for all bones except the left humerus. However, the results were only statistically significant for the right tibia and fibula (Table 10.34).

When severity was taken into account, extensive expression of PNB only occurred in females, but both males and females had PNB associated with fractures. There was also a larger spread across bone type in females than in males, with all bones except the right femur affected in females, but only the humeri, tibiae and left fibula in males (Figure 10.25).

10.2.7 Adult Stature Estimation

For the statistical analysis, stature was calculated based on the Raxter et al. (2008) formulae for Egyptian remains, using the left tibia whenever possible, though the right tibia was substituted when necessary. An independent samples t-test, equal variances assumed, was conducted to compare the stature between sexes in the Saite sample (Table 10.35). Not surprisingly, there was a significant difference between males (M = 165.3, SD = 4.98) and females (M = 153.6, SD = 5.55); t (52) = -8.175, p -- 0.00, two-tailed). The magnitude of the difference (mean difference = -11.719, 95% CI -14.6--8.84) was very large (Cohen's d = 2.22).

Saite Males			Saite Females			*t*-test for Equality of Means					95% CI	
n	Mean	Std. Dev.	*n*	Mean	Std. Dev.	*t*	df	Sig. (2-tailed)	Mean Diff.	Std. Err. Diff.	Lower	Upper
29	165.3	4.98	25	153.6	5.55	-8.175	52	0.00	-11.719	1.433	-14.6	-8.84

Table 10.35: Independent sample t-test for difference in stature between males and females from the Saite sample.

10.3 Markers of Skeletal Stress: The Roman Burials

10.3.1 Linear Enamel Hypoplasia

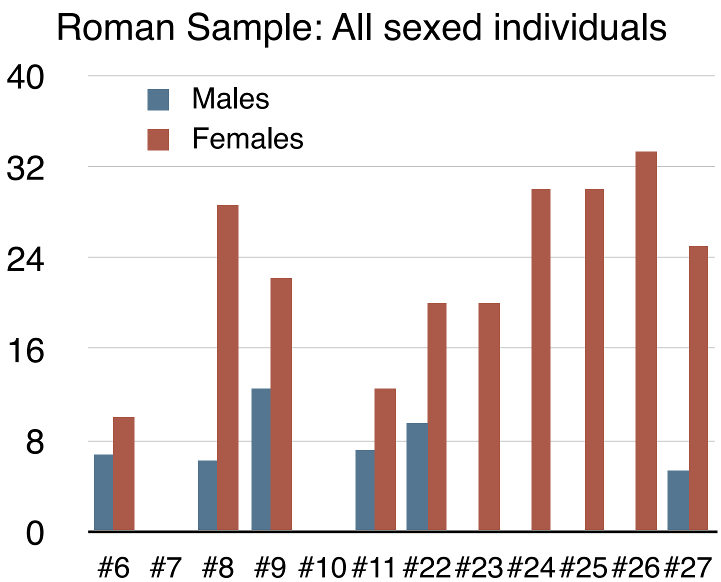

Figure 10.26: Frequency of linear enamel hypoplasia for the Roman sample, presented by tooth and sex. For detailed distribution and sample sizes, see table 10.36.

Prevalence by Sex -- Roman Sample

As above, the first test to be carried out on the Roman sample examined whether there was a difference in prevalence of linear enamel hypoplasia between all males and females in the Saite period sample. The test included both adult and post-pubescent juvenile individuals (i.e., individuals whose pelvic tri-radiate complex was fused and for whom sex assessment could be carried out).

To increase sample size, the categories denoting severity of hypoplasia (i.e., one vs. two or more hypoplasias) were collapsed to Absence/Presence for the analysis, and secure and probable sex assessments were combined. Pearson's chi-square tests and Yates' continuity corrections were carried out when the expected count in all cells exceeded 1 (Lewontin and Felsenstein 1965b). For subsamples with expected counts of less than one, only Fisher's exact test was carried out. Phi correlation coefficients were obtained for all teeth.

When prevalence was broken down by tooth and compared visually, Roman females displayed a higher frequency of hypoplasias than males for all teeth (Fig. 10.26). This pattern persisted when the teeth were pooled: only 3.7% of the teeth belonging to males (n=214) showed enamel defects, versus 20% of the teeth belonging to females (n=105).

Prevalence was also statistically compared by tooth (Table 10.36). Fisher's exact test was carried out for all teeth, and Pearson's chi-square test was carried out for the three teeth where expected counts were 1 or higher (#9, #22, and #25). Fisher's exact test showed statistically significant differences between the sexes for the left lower central incisor (#24; Fisher's (1, n=32), p = .024, *phi* = -0.477) and right lower lateral incisor (#26; Fisher's (1, n=31), p = .019, *phi* = -0.512), and both Fisher's exact test and Pearson's chi-square test showed a statistically significant result for the right lower central incisor (#25; x^2 (1, n=30) = 6.667, p = 0.01, Fisher's p = 0.03, *phi* = -0.471). In all three cases, the *phi* coefficient suggests a moderate negative correlation between sex and prevalence, indicating that Roman females were somewhat more likely than Roman males to have linear enamel hypoplasia on those teeth.

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Roman	All Males			All Females			Chi-square				Yates			Fisher's		Phi
Tooth	**Ab**	**Pr**	**% Affected**	**Ab**	**Pr**	**% Affected**	**df**	**x^2**	***p* -- x^2**	**p<0.05**	**Yates**	***p* -- Yates**	**p<0.05**	***p* -- Fisher's**	**p<0.05**	**Phi**
#6	14	1	6.7	9	1	10.0	1	-	-	-	-	-	-	1.000	No	-0.060
#7	13	0	0.0	6	0	0.0	1	-	-	-	-	-	-	-	-	-
#8	15	1	6.2	5	2	28.6	1	-	-	-	-	-	-	0.209	No	-0.305
#9	14	2	12.5	7	2	22.2	1	0.405	0.524	No	0.005	0.946	No	0.602	No	-0.127
#10	14	0	0.0	8	0	0.0	1	-	-	-	-	-	-	-	-	-
#11	13	1	7.1	7	1	12.5	1	-	-	-	-	-	-	1.000	No	-0.090
#22	19	2	9.5	8	2	20.0	1	0.662	0.416	No	0.058	0.810	No	0.577	No	-0.146
#23	22	0	0.0	8	2	20.0	1	-	-	-	-	-	-	0.091	No	-0.383
#24	22	0	0.0	7	3	30.0	1	-	-	-	-	-	-	0.024	**Yes**	-0.477
#25	20	0	0.0	7	3	30.0	1	6.667	0.010	**Yes**	3.750	0.053	No	0.030	**Yes**	-0.471
#26	22	0	0.0	6	3	33.3	1	-	-	-	-	-	-	0.019	**Yes**	-0.512
#27	18	1	5.3	6	2	25.0	1	-	-	-	-	-	-	0.201	No	-0.287

Table 10.36: Chi-square, Fisher's exact test and Phi correlation coefficients for the Roman sample, presented by tooth for males and females.

Both Pearson's chi-square and Fisher's exact test for independence were also carried out by individual, where linear enamel hypoplasia was scored as either absent or present for the entire dentition (Table 10.37). As above, dentitions were considered observable if eight or more of the twelve anterior teeth were observable. Dentitions with fewer than eight anterior teeth were omitted from the analysis. The score of present was given when one or more teeth displayed an enamel defect of one or more linear hypoplasias, regardless of the number of preserved teeth in the dentition.

All Males			All Females			Chi-square				Yates			Fisher's		Phi
Ab	**Pr**	**% Affected**	**Ab**	**Pr**	**% Affected**	**df**	**x^2**	***p* -- x^2**	**p<0.05**	**Yates**	***p* -- Yates**	**p<0.05**	***p* -- Fisher's**	**p<0.05**	**Value**
12	4	25.0	3	6	66.7	1	4.167	0.041	**Yes**	2.611	0.106	No	0.087	No	-0.408

Table 10.37: Prevalence of linear enamel hypoplasia in males and females from the Roman period.

When assessed by individual, 25% of the males (n=16) and 66.7% of the females (n=9) had linear enamel defects. Though the sample size is so small that any final conclusion must remain tentative, the results of the chi-square test was statistically significant: x^2 (1, n=25) = 4.167, *p* = .041, *phi* = -0.408), and the Fisher's exact p-value approached significance at *p* = .087. A negative phi coefficient of -0.408 indicates that females were moderately more likely to have enamel hypoplasias in the Roman sample.

Prevalence by Sex -- Adults in the Roman Sample

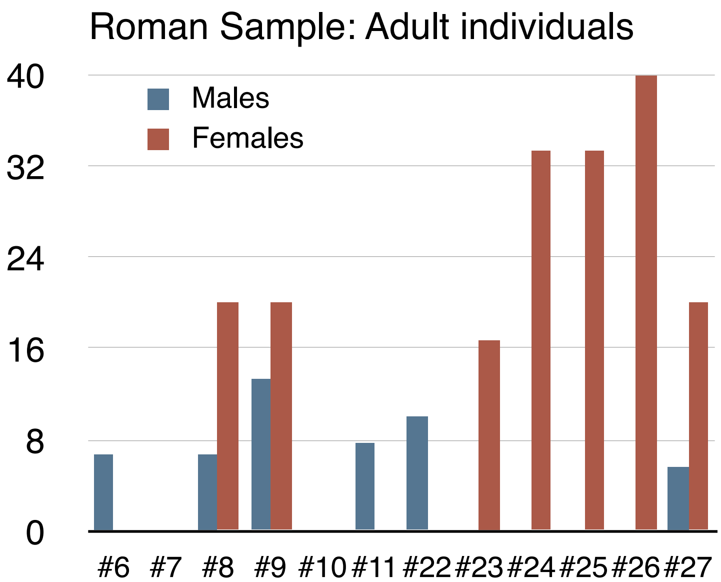

Figure 10.27: Frequency of linear enamel hypoplasia in Roman adults, presented by tooth and sex. For detailed distribution and sample sizes, see table 10.38.

To examine whether the combination of age and sex affected the prevalence of linear enamel hypoplasia, the Roman sample was further divided into adults and juveniles. First, statistical analysis was carried out on the adult subsample. To increase sample size, the adult age groups of Adultus (18-35 years); Maturus (35-50 years) and Senilis (50+ years) were combined.

When prevalence in adults was broken down by tooth, Roman females displayed a higher frequency of hypoplasias than males for all teeth, except for the upper canines (#6 and #11) and lower left canine (#22), for which no enamel hypoplasias were identified in the female cohort (Figure 10.27). When the teeth were pooled, females had a higher prevalence of linear enamel hypoplasia at 16.4% (n=61), compared to only 3.9% of males (n=204).

Roman	Adult Males			Adult Females			Fisher's		Phi
Tooth	Ab	Pr	%	Ab	Pr	%	*p* -- Fisher's	p<0.05	Phi
#6	14	1	6.7	6	0	0.0	1.000	No	0.141
#7	13	0	0.0	3	0	0.0	-	-	-
#8	14	1	6.7	4	1	20.0	0.447	No	-0.192
#9	13	2	13.3	4	1	20.0	1.000	No	-0.081
#10	13	0	0.0	4	0	0.0	-	-	-
#11	12	1	7.7	4	0	0.0	1.000	No	0.139
#22	18	2	10.0	6	0	0.0	1.000	No	**0.158**
#23	21	0	0.0	5	1	16.7	0.222	No	-0.367
#24	21	0	0.0	4	2	33.3	0.043	**Yes**	-0.529
#25	19	0	0.0	4	2	33.3	0.050	**Yes**	-0.525
#26	21	0	0.0	3	2	40.0	0.031	**Yes**	**-0.592**
#27	17	1	5.6	4	1	20.0	0.395	No	-0.211

Table 10.38: Chi-square, Fisher's exact test and Phi correlation coefficients for the Roman sample, presented by tooth for males and females.

Because of the small sample size for the Roman period, Pearson's chi-square test could not be carried out for the comparison of prevalence by tooth between males and females (Table 10.38). Fisher's exact test showed statistically significant differences between the sexes for both left and right lower central incisors (#24; Fisher's (1, n=27), *p* = .043, *phi* = -0.529; #25; Fisher's (1, n=25) *p* = 0.05, *phi* = -0.525) and right lower lateral incisor (#26; (1, n=23), *p* = .031, *phi* = -0.592). In all three cases, the *phi* coefficient suggests a strong negative correlation between sex and prevalence, indicating that Roman females were more likely than Roman males to have linear enamel hypoplasia on those teeth.

The same tests were carried out by individual, where linear enamel hypoplasia was scored as either absent or present for the entire dentition (Table 10.39). For an absent score, dentitions were considered observable if eight or more of the twelve anterior teeth were observable. Dentitions with fewer than eight anterior teeth were omitted from the analysis. The score of present was given when one or more teeth displayed an enamel defect of one or more

Adult Males			Adult Females			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x²	*p* -- x²	p<0.05	Yates	*p* -- Yates	p<0.05	*p* -- Fisher's	p<0.05	Value
11	4	26.7	2	3	60	1	1.832	0.176	No	0.659	0.417	No	0.290	No	-0..303

Table 10.39: Prevalence of linear enamel hypoplasia in males and females from the Roman period.

linear hypoplasias, regardless of the number of preserved teeth in the dentition.

When assessed by individual, 26.7% of the adult males (n=15) and 60% of the adult females (n=5) had linear enamel defects. Though this is a higher prevalence in females, the sample size was very small, and the difference was not statistically significant: x^2 (1, n=20) = 1.832, *p* = .176, *phi* = -0.303.

Prevalence by Sex -- Juveniles in the Roman Sample

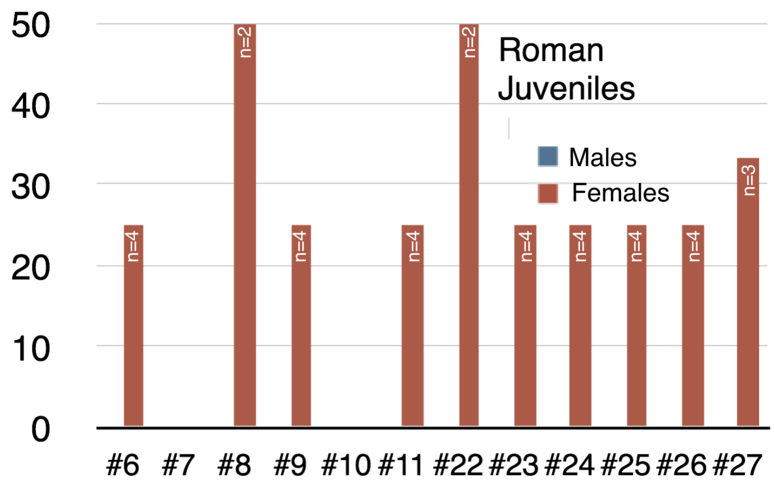

Figure 10.28: Frequency of linear enamel hypoplasia in the Roman juvenile sample, presented by tooth and sex.

As above, linear enamel defects were also compared between the sexes for post-pubescent individuals in the Juvenilis age group of the Roman sample (i.e., for those individuals where the pelvic tri-radiate complex was fused, and sex assessment could be carried out).

As evident from Fig. 10.28, there were no enamel defects in the juvenile male Roman subsample. Thus, when all teeth were pooled, 0% of the teeth belonging to males (n=10) had hypoplastic defects, versus 25% of those belonging to females (n=44). However, since there was only one male juvenile that could be assessed for sex in the Roman sample and only four females, the sample is too small to allow any conclusions to be drawn. Tentatively, it can perhaps be said that it appears juvenile females were somewhat more likely to

Juvenile Males			Juvenile Females			Fisher's			Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	*p* -- Fisher's	p<0.05	Value
1	0	0	1	3	75	1	0.40	No	--.612

Table 10.40: Prevalence of linear enamel hypoplasia in juvenile males and females from the Roman period.

have enamel hypoplasias than juvenile males, since three of the four sexed juvenile females had enamel defects, and the sole sexed male did not. Nevertheless, the difference was not statistically significant (Table 10.40). Because all of the teeth in the male Roman juvenile subsample originated from the same individual, who did not have linear enamel hypoplasia, statistical tests were not attempted by tooth due to the small sample size.

Again because there was only one juvenile male in the sample, linear enamel hypoplasia prevalence was not compared between juvenile and adult males in the Roman sample. However, despite the small sample size, tests for independence were performed for females in the sample (Table 10.41). Once more, results must be considered tentative at best due to the small sample size, but there were no significant differences between juvenile and adult females in the Roman sample.

Juvenile Females			Adult Females			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	*p* -- x^2	p<0.05	Yates	*p* -- Yates	p<0.05	*p* -- Fisher's	p<0.05	Value
1	3	75.0	2	3	60.0	1	0.225	0.635	**No**	0	1	**No**	1	**No**	-0.158

Table 10.41: Prevalence of linear enamel hypoplasia in juvenile and adult females from the Roman period.

Prevalence by Age -- Roman Sample

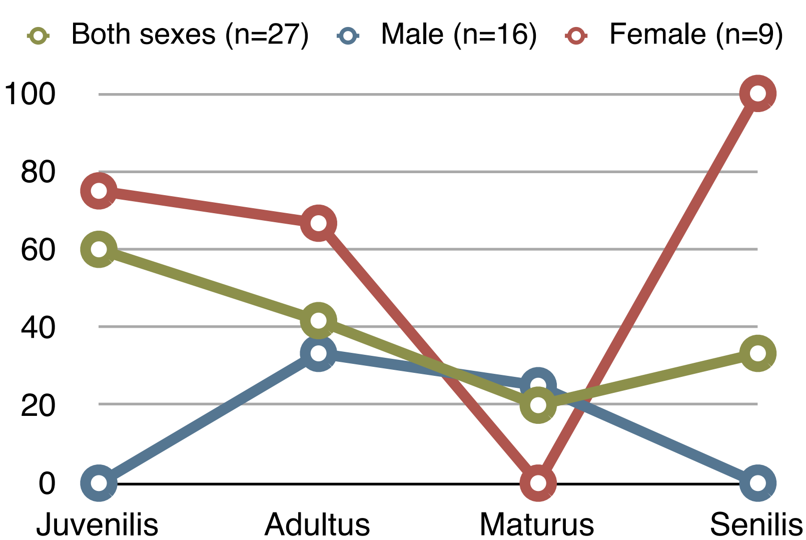

Figure 10.29: Frequency of linear enamel hypoplasia in the Roman sample, presented by age group and sex. For adjusted residuals, see table 10.42.

To examine whether age was a predictor for the prevalence of linear enamel hypoplasia across the entire Roman sample, the percentages of individuals displaying enamel hypoplasias were first plotted against age group. In the Roman sample, no teeth could be assessed for the Infant age group, and the Infans I and II groups were represented by only one individual each. These age groups were therefore omitted from the graph (Fig 10.29). As above, age groups were plotted not only by age group but also separated by sex. As shown by the graph, prevalence generally appears to decline by age, with a slight rise in the Senilis age group (50+ years) when both sexes are combined. However, when separated by sex, females have a higher prevalence of enamel defects in the Juvenilis (12-18 years), Adultus (18-35 years) and Senilis age groups, while males have a higher prevalence than

Roman	Sexes Combined				Males				Females			
Age Group	Ab	Pr	%	AR	Ab	Pr	%	AR	Ab	Pr	%	AR
Infans I	1	0	0.0	-0.8	-	-	-	-	-	-	-	-
Infans II	0	1	100.0	1.2	-	-	-	-	-	-	-	-
Juvenilis	2	3	60.0	1.0	1	0	0.0	-0.6	1	3	75.0	0.5
Adultus	7	5	41.7	-0.1	6	3	33.3	0.9	1	2	66.7	0.0
Maturus	4	1	20.0	-1.0	3	1	25.0	0.0	1	0	0.0	-1.5
Senilis	2	1	33.3	-0.3	2	0	0.0	-0.9	0	1	100.0	0.8
Totals	16	11	40.7	-	12	4	25.0	-	3	6	66.7	-

Table 10.42: Prevalence of LEH for the sexes combined, males and females of the Roman sample, with adjusted residuals (AR) for each age group.

females in the Maturus (35-50 years) group. These differences may be more due to the small sample size than any trends in prevalence, however.

Fisher's exact test was carried out on the prevalence by age group on a per individual basis for the sexes combined, and for males and females separately (Table 10.42). Because the matrix for both tests was larger than 2x2, adjusted residuals were also reported for all age groups, and Cramer's V coefficient was obtained rather than Phi for effect size. As shown in Table 10.42, 40.7% of the assessed[65] individuals (n=27) in the Roman sample had linear enamel hypoplasias on one or more teeth when the sexes were combined. When the sexes were separated, 25% of the males (n=16) had enamel defects, versus 66.7% of females (n=9). Fisher's exact test was performed to examine the differences in prevalence between age groups for either males, females or both sexes combined, but these were not statistically significant.

Prevalence was also assessed by tooth for all age groups with both sexes combined (Table 10.43). The highest prevalence rates were found in the Infans II age group (5-12 years), in which 66.7% of the teeth (n=12) had enamel hypoplasias, followed by the Juvenilis age group (12-18 years), in which 20.4% of the teeth (n=54) displayed enamel defects. Sample sizes per teeth were generally small, and chi-square tests were not possible; instead, Fisher's exact test was carried out for all teeth. The difference in prevalence between age groups was only statistically

[65] As before, linear enamel hypoplasia was scored as absent for dentitions with eight or more of the twelve anterior teeth observable and not showing evidence of enamel defects, and as present when one or more teeth in the dentition showed enamel defects, regardless of the number of observable teeth in the dentition.

significant for the upper right canine: Fisher's (4, n=26) = p = 0.022, Cramer's V = 0.659, with a strong[66] correlation between age and prevalence. The adjusted residuals for this tooth revealed that the prevalence in the Infans II age group had the highest impact on test values, with a positive AR value of 2.8, meaning that Infans II individuals were significantly (α=0.05 = 1.96) more likely to exhibit enamel defects on that tooth.

To investigate whether or not the presence of LEH had a negative impact on morbidity, an independent samples t-test was conducted to compare the average age-at-death for adult individuals with or without LEH. The test found no significant difference in age in the Roman sample (Absent = 34.231, SD = 12.87; Present = 34.286, SD 13.8710).

A second independent samples t-test was conducted to compare the average stature of adult individuals with and without enamel defects. However, since only one of the affected females also had the required measurements for stature assessment, the test was only conducted on males. The results showed that Roman males with LEH had an average stature of 159.8 cm (SD= 6.8), while males without LEH stood at an average height of 160.7 cm (SD=8.8), but the results were not statistically significant.

Roman	**Infans I**			**Infans II**			**Juvenilis**			**Adultus**			**Maturus**			**Senilis**			**Fisher's**			**Cr. V**
Tooth	**Ab**	**Pr**	**%**	**Ab**	**Pr**	**%**	**Ab**	**Pr**	**%**	**Ab**	**Pr**	**%**	**Ab**	**Pr**	**%**	**Ab**	**Pr**	**%**	***df***	***p -- F***	***P > 0.05***	**V**
#6	-	-	**-**	0	1	**100.0**	3	1	**25.0**	12	0	**0.0**	3	1	**25.0**	5	0	**0.0**	4	0.022	**Yes**	0.659
#7	2	0	**0.0**	1	0	**0.0**	3	0	**0.0**	8	0	**0.0**	5	0	**0.0**	3	0	**0.0**	-	-	-	-
#8	2	0	**0.0**	0	0	**0.0**	2	1	**33.3**	8	2	**20.0**	5	0	**0.0**	5	0	**0.0**	5	0.565	No	0.376
#9	2	0	**0.0**	-	-	**-**	4	1	**20.0**	7	3	**30.0**	6	0	**0.0**	4	0	**0.0**	4	0.620	No	0.386
#10	2	0	**0.0**	-	-	**-**	5	0	**0.0**	9	0	**0.0**	5	0	**0.0**	3	0	**0.0**	-	-	-	-
#11	-	-	**-**	1	1	**50.0**	4	1	**20.0**	10	1	**9.1**	5	0	**0.0**	1	0	**0.0**	4	0.511	No	0.398
#22	-	-	**-**	1	1	**50.0**	3	2	**40.0**	12	2	**14.3**	7	0	**0.0**	5	0	**0.0**	4	0.129	No	0.442
#23	1	0	**0.0**	0	1	**100.0**	4	1	**20.0**	12	1	**7.7**	8	0	**0.0**	6	0	**0.0**	5	0.109	No	0.608
#24	1	0	**0.0**	0	1	**100.0**	4	1	**20.0**	13	1	**7.1**	8	0	**0.0**	4	1	**20.0**	5	0.113	No	0.533
#25	1	0	**0.0**	0	1	**100.0**	4	1	**20.0**	12	1	**7.7**	7	0	**0.0**	4	1	**20.0**	5	0.153	No	0.528
#26	1	0	**0.0**	0	1	**100.0**	4	1	**20.0**	12	1	**7.7**	8	0	**0.0**	4	1	**20.0**	5	0.138	No	0.531
#27	-	-	**-**	1	1	**50.0**	3	1	**25.0**	12	1	**7.7**	7	0	**0.0**	2	1	**33.3**	4	0.151		0.420
Tot:	12	0		4	8		43	11		127	13		74	1		46	4					
N/%	12		**0.0**	12		**66.7**	54		**20.4**	140		**9.3**	75		**1.3**	50		**8.0**				

Table 10.43: Fisher's exact test and Cramer's V correlation coefficients for the Roman sample, presented by tooth across age groups.

[66] > 0.29, after Gravetter and Wallnau 2012:605

Prevalence by Age -- Younger Subadults

Since only one individual in the Infans I age group and none in the Infans I age group had enamel hypoplasias, no comparison was possible for the younger subadults in the Roman material.

Linear Enamel Hypoplasia -- Roman Period Summary

Differences between Males and Females

When all sexed individuals in the Roman sample were compared, enamel hypoplasias were more common in females. When the teeth were pooled, 20% of the teeth belonging to females (n=105) were affected, versus only 3.7% of the teeth belonging to males (n=214). When compared by individual, 66.7% of the females (n=9) in the sample had one or more tooth with hypoplasia, versus 25% of the males (n=16). The difference in prevalence between male and female individuals was statistically significant: x^2 (1, n=25) = 4.167, *p* = .041, *phi* = -0.408).

Chi-square tests by tooth for the sexed sample showed statistically significant differences between males and females for the left and right lower central incisor (#24; Fisher's (1, n=32), *p* = .024, *phi* = -0.477; #25; x^2 (1, n=30) = 6.667, *p* = 0.01, Fisher's *p* = 0.03, *phi* = -0.471), and right lower lateral incisor (#26; Fisher's (1, n=31), *p* = .019, *phi* = -0.512), with a higher prevalence in females for those teeth.

The same pattern persisted when adults (18-50+ years) alone were compared by sex: when the teeth were pooled, 16.4% of all pooled teeth belonging to adult females (n=61), versus only 3.9% of the teeth belonging to adult males (n=204) had linear enamel hypoplasia. When compared by individual, 60% of the adult females (n=5), and 26.7% of the adult males (n=15) were affected. Though this is still a higher prevalence in females than in males, the sample size was very small, and the difference was not statistically significant.

Fisher's exact test by tooth for adult males and females produced significant results for the same three teeth as in the full sexed subsample: #24; Fisher's (1, n=27), *p* = .043, *phi* = -0.529; #25; Fisher's (1, n=25) *p* = 0.05, *phi* = -0.525; #26; (1, n=23), *p* = .031, *phi* = -0.592), with *phi* coefficients suggesting a strong negative correlation between sex and prevalence, indicating that Roman females were more likely than Roman males to have enamel hypoplasias on those teeth.

The sample of sexed individuals in the Juvenilis (12-18 years) age group in the Roman sample was too small to allow any definite conclusions, with only one sexed male and four females. However, since the juvenile male did not have any enamel defects, while three of the four juvenile females did, it can perhaps be said that the observed prevalence in the juvenile sample does not contradict the trend in the adult sample. When the teeth were pooled, then, none of the teeth belonging to the juvenile male (n=10) had enamel hypoplasias, versus 25% of the teeth belonging to the juvenile females (n=44). When compared by individual, 75% of the juvenile females (n=4) had enamel hypoplasias, versus 60% of the adult females (n=5). The difference was not statistically significant.

Differences between Age Groups

When the full Roman subsample was considered, 42.3% of the assessed individuals (n=26) had linear enamel hypoplasia. Prevalence in the younger age groups could not be assessed since there were no developing permanent teeth available from the Infant (0-1 years) age group, and the Infans I (1-5 years) and Infans II (5-12 years) age groups were represented by only one individual each. For older individuals, there was a decline in the prevalence of linear enamel hypoplasias from the Juvenilis (12-18 Years) to the Maturus (35-50 years) age groups, but with a slight rise in the Senilis (50+ years) age group. However, the differences in prevalence by individual and age group were not statistically significant. When compared by tooth, however, there was a significant difference in prevalence between age groups for the upper right canine: #6: Fisher's (4, n=26) = p = 0.022. Adjusted residuals for the table showed that it was the Infans II age group that had the highest impact on test values (AR +2.8). However, with five or fewer individuals in each age group, no final conclusions about differences in distribution can be drawn for the Roman subsample.

10.3.2 Porotic Hyperostosis

In the Roman sample, 50 individuals could be assessed for porotic hyperostosis. Of these 50, three individuals (6%) exhibited the lesions. None of the observed lesions qualified as severe in the Roman period sample and with the exception of one Infans I individual with active lesions and one Senilis individual with mixed active and healed lesions, all individuals that had porotic hyperostosis presented with healed lesions. For that reason, and because of the small sample size, comparisons were only performed on a presence/absence score, and lesion activity was not taken into account in the analysis

Prevalence by Sex

When the sexes were compared, 8.3 % of the females (n=12) had porotic hyperostosis, versus 4% of the males (n=25). Though the prevalence was higher in females, the difference was not statistically significant (Table 10.44)

All Males			All Females			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
24	1	4.0	11	1	8.3	1	0.298	0.585	No	0.000	1.000	No	1.000	No	-0.090

Table 10.44: Prevalence of porotic hyperostosis among all males and females of the Roman sample.

The distribution changed very little when juveniles were omitted from the sexed sample: when compared for adult individuals only, 12.5% of the females (n=8) had porotic hyperostosis, versus 4.2% of the males (n=24). The small sample size only allowed for Fisher's exact test to be performed, and, again, the result was not statistically significant (Table 10.45).

Adult Males			Adult Females			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	*p* -- x^2	p<0.05	Yates	*p* -- Yates	p<0.05	*p* -- Fisher's	p<0.05	Value
23	1	4.2	7	1	12.5	1	-	-	-	-	-	-	0.444	No	--.149

Table 10.45: Prevalence of porotic hyperostosis among adult males and females of the Roman sample.

No comparison was carried out for the sexed juveniles in the sample since neither males or females in the juvenile group exhibited porotic lesions in the Roman period sample.

Prevalence by Age

Age Group	Ab	Pr	% Affected
Infant	2	0	0.0
Infans I	8	1	11.1
Infans II	2	0	0.0
Juvenilis	5	0	0.0
Adultus	13	1	7.1
Maturus	9	0	0.0
Senilis	8	1	11.1
Totals	**47**	**3**	**6.0**

Table 10.46: Prevalence of porotic hyperostosis across age groups of the Roman sample.

The distribution of porotic hyperostosis across age groups is given in Table 10.46. Again, only one child exhibited the lesion, but because of the extremely small sample, with only three cases of porotic hyperostosis in the Roman material, it is difficult to draw any conclusions from the distribution of lesions. Nevertheless, prevalence in the collapsed age groups Adult (18+) and Subadult (0-18) was still tested for independence (Table 10.45). When these two groups were compared, 5.6% of the subadults (n=18), and 6.2% of the adults (n=32) exhibited porotic lesions. Not surprisingly, considering the fairly similar proportion of individuals with lesions in the two groups, the difference was not statistically significant (Table 10.47)

Subadults			Adults			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	*p* -- x^2	p<0.05	Yates	*p* -- Yates	p<0.05	*p* -- Fisher's	p<0.05	Value
17	1	5.6	30	2	6.2	1	0.010	0.921	No	0.0	1.000	No	1.000	No	0.014

Table 10.47: Prevalence of porotic hyperostosis among subadults and adults of the Roman sample.

10.3.3 Cribra Orbitalia

As above, cribra orbitalia was for the Roman sample recorded for each individual exhibiting at least one observable orbit. In the Roman sample as a whole, cribra orbitalia was observed more frequently than porotic hyperostosis. Of a total of 40 individuals, 13 (32.5%) exhibited the lesion.

Prevalence by Sex

When all sexed individuals in the sample were compared (Table 10.48), the prevalence of cribra orbitalia was higher in females: 40% (n=10) versus 23.8% (n=21) in males. However, the difference was not statistically significant.

Males			Females			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
16	5	23.8	6	4	40.0	1	0.862	0.353	No	0.000	1.000	No	1.000	No	-0.167

Table 10.48: Prevalence of cribra orbitalia between all males and females of the Roman sample.

When only adult individuals were compared (Table 10.49), prevalence for both males and females declined somewhat, to 15% for males (n=19) and 14.3% for females (n=6). However, the difference was still not statistically significant.

Adult Males			Adult Females			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
16	3	15.0	5	1	14.3	1	0.654	0.721	No	0.000	1.000	No	1.000	No	0.156

Table 10.49: Prevalence of cribra orbitalia between adult males and females of the Roman sample.

If instead only juveniles were compared, prevalence rose to 100% for males (n=1) and 66.7% for females (n=3). However, because of the extremely small sample size, no statistical comparison was attempted.

Prevalence by Age

Age Group	Ab	Pr	% Affected
Infant	2	0	0.0
Infans I	2	3	60.0
Infans II	1	1	50.0
Juvenilis	1	3	75.0
Adultus	8	3	27.3
Maturus	7	1	12.5
Senilis	6	2	25.0
Totals	**27**	**13**	**32.5**

Table 10.50: Prevalence of cribra orbitalia across age groups of the Roman sample.

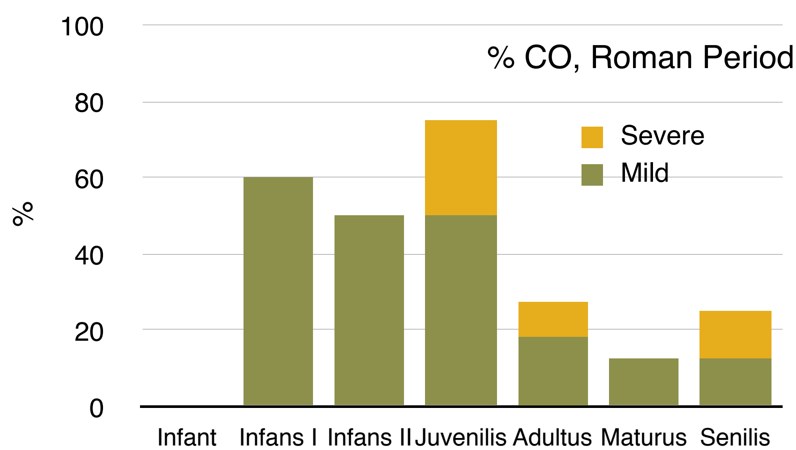

Figure 10.30: Severity of cribra orbitalia in the Roman sample

When compared by age group (Table 10.50 and Figure 10.30), the highest prevalence of cribra orbitalia was found in the Juvenilis age group (12-18 years), followed by the Infans I age group (1-5 years). However, the difference in prevalence between the age groups was not statistically significant. The majority of observed lesions were mild, and severe lesions were only recorded for one individual each in the Juvenilis, Maturus (18-35 years) and Senilis (50+ years) groups respectively.

During data collection, lesions were scored not only for severity but also for evidence of healing. As shown in Figure 10.31 and Table 10.51, the majority of lesions were active at the

Age Group	% Active	% Healed
Infant	0.0	0.0
Infans I	23.1	0.0
Infans II	7.7	0.0
Juvenilis	23.1	0.0
Adultus	15.4	7.7
Maturus	7.7	0.0
Senilis	7.7	7.7

Table 10.51: Percentage of active and healed lesions in the Roman sample

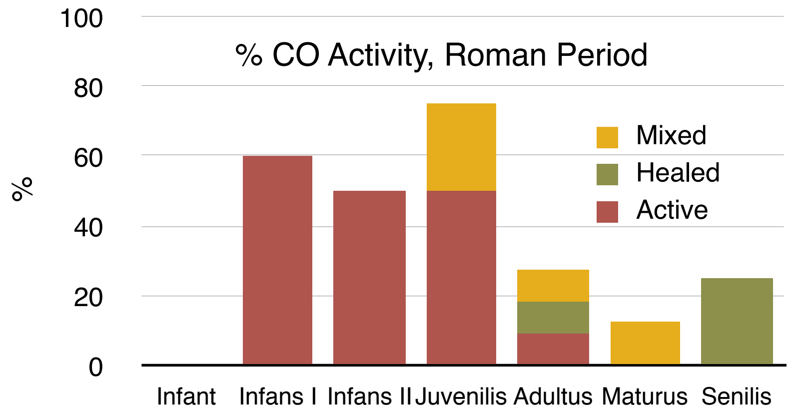

Figure 10.31: Distribution of lesion activity in the Roman period

time of death occurred in the younger age groups, while completely healed lesions occurred exclusively in the older age groups.

To increase sample size, age groups were collapsed and a comparison was performed on subadults (0-18 years) versus adults (18+ years) in the sample. When the age groups were pooled, 53.8% of subadults (n=13) versus 22.2% of adults (n=27) had cribra orbitalia. The difference was statistically significant for Pearson's chi-square test, but not for Yates' continuity correction or Fisher's exact test (Table 10.52).

Subadults			Adults			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
6	7	53.8	21	6	22.2	1	4.000	0.045	**Yes**	2.689	0.101	No	0.072	No	-0.316

Table 10.52: Prevalence of cribra orbitalia between subadults and adults of the Roman sample.

10.3.4 Osteoarthritis/Degenerative Joint Disease (DJD)

Synovial Joints

Males			Females			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
7	11	61.1	4	2	33.3	1	1.399	0.237	No	0.503	0.478	No	0.357	No	0.241

Table 10.53: Prevalence of osteoarthritis in males and females of the Roman sample.

In the Roman sample, 54.2% of observable individuals[67] (n=24) had osteoarthritic changes to at least one synovial joint. When broken down by sex, 33.3% of the females (n=6) had one or more

[67] Individuals in which all twelve synovial joints (shoulder, elbow, wrist, hip, knee and ankle, both left and wright sides) were observable but showed no evidence of osteoarthritic changes were marked as "Absent." Individuals in which at least one joint showed evidence of osteoarthritic changes were marked as present, regardless of the total number of observable joints.

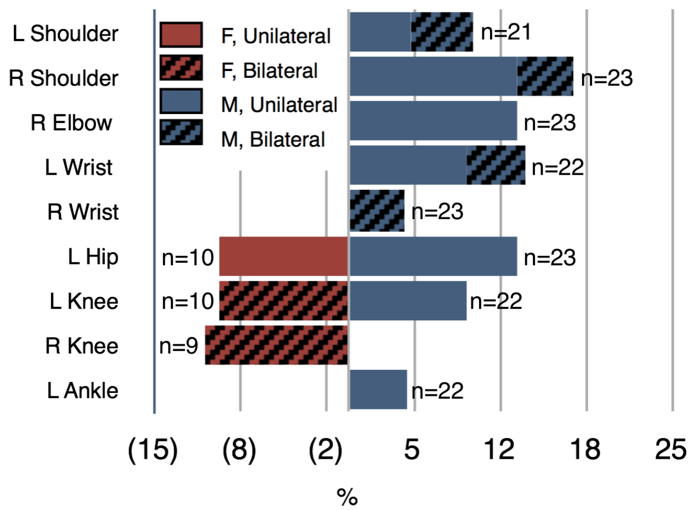

Figure 10.32: Frequency of DJD in the Roman sample by joint and sex. Bilateral occurrences are marked with diagonal lines.

arthritic joint, versus 61.1% of the males (n=18). The difference was not statistically significant (Table 10.53).

To increase sample size, scoring for severity was collapsed into absence/presence scores for all joints. When joints were assessed separately, osteoarthritic changes were found in the left (2/21, 9.5%) and right (1/23, 17.4%) shoulder, right elbow (3/23, 13%), left (3/22, 13.6%) and right (1/23, 4.3%) wrist, left hip (3/23, 13%) and knee (2/22, 9.1%) and left ankle (1/22, 4.5%) in the Roman males. Of these, one pair of shoulder joints and one pair of wrist joints had bilateral osteoarthritic changes. In the females, the left hip (1/10, 10%) and left (1/10, 10%) and right (1/9, 11.1%) knee were affected. The affected knees originated from the same individual (Figure 10.32). Perhaps not surprisingly, given the small sample size, the differences in prevalence between males and females were not statistically significant for any of the joints.

As expected, osteoarthritis became more common with age. In the Roman sample, 37.5% (n=8) of the individuals in the Adultus age group (18-35 years) had osteoarthritic changes to one or more joints, versus 62.5% (n=17) of the Maturus individuals (35-50 years) and 71.4% (n=8) of the Senilis individuals. The differences were not statistically significant, though the Cramer's V coefficient of .29 suggested a strong correlation between age and osteoarthritis.

Invertebral Joints

Among individuals in the Roman sample in which the entire spine was observable (n=34), 70.6% had osteoarthritic changes to either the cervical, thoracic or lumbar vertebrae. When broken down by sex, 75% of males (18/24) and 60% of females (6/10) were affected. The difference between the sexes was not statistically significant.

When the cervical, thoracic and lumbar spine were assessed separately, males consistently had more osteophytic growth on both cervical, thoracic and lumbar vertebrae. However, females had a much higher prevalence of severe changes to the cervical spine than males. In the thoracic spine, males had a slightly higher prevalence of severe cases of osteophytosis, while the reverse was true for the lumbar spine. In the latter two cases, however, the differences were very small. Overall, neither differences in severity or in prevalence between males and females of the Roman sample were statistically significant (Fig. 10.33 and Table 10.54).

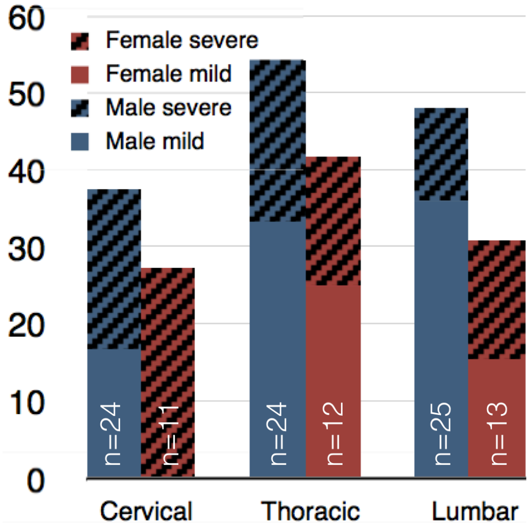

Figure 10.33: Comparison, in percent, of osteoarthritic changes in all males and females of the Roman sample.

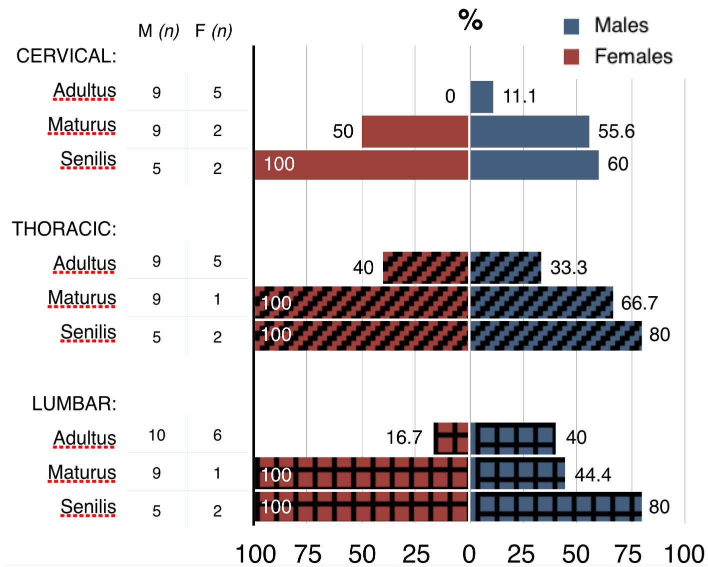

Figure 10.34: Distribution of degenerative joint disease of the spine across section, sex and age group (juveniles excluded), Roman sample

When divided by age and spinal section, osteophytosis became more common with age for both sexes and spinal sections. When both sexes were combined, the differences between the increase in osteophytosis with age was statistically significant for the cervical spine alone, though the chi-square value did approach significance for the thoracic and lumbar spine as well. When divided by sex, however, there were no significant differences in prevalence between age groups for males, and only for the cervical and lumbar spine in females (Figure 10.34 and Table 10.55).

	Males			Females			Chi-square				Yates			Fisher's		Phi
Roman	Ab	Pr	%	Ab	Pr	%	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
Cervical	15	9	37.5	8	3	27.3	1	0.350	0.554	No	0.043	0.835	No	0.709	No	0.100
Thoracic	11	13	54.2	7	5	41.7	1	0.500	0.480	No	0.125	0.724	No	0.725	No	0.118
Lumbar	13	12	48.0	9	4	30.8	1	1.042	0.307	No	0.455	0.500	No	0.490	No	0.166

Table 10.54: Distribution of degenerative joint disease in the spine in the Roman sample (all sexed individuals).

Roman		Adultus			Maturus			Senilis			Chi-square				Fisher's		Cramer's V
		Ab	Pr	%	Ab	Pr	%	Ab	Pr	%	df	x²	*p* -- x²	p<0.05	*p* -- Fisher's	p<0.05	Value
All	Cervical	13	1	7.1	5	6	54.5	2	5	71.4	2	10.306	0.006	**Yes**	0.039	**Yes**	0.568
	Thoracic	9	5	8.1	3	7	70.0	1	6	85.7	2	5.655	0.059	No	0.072	No	0.427
	Lumbar	11	5	31.2	5	5	50.0	1	6	85.7	2	5.796	0.055	No	0.063	No	0.419
Males	Cervical	8	1	11.1	4	5	55.6	2	3	60.0	2	4.900	0.086	No	0.093	No	0.462
	Thoracic	6	3	33.3	3	6	66.7	1	4	80.0	2	3.468	0.177	No	0.273	No	0.388
	Lumbar	6	4	40.0	5	4	44.4	1	4	80.0	2	2.311	0.315	No	0.439	No	0.310
Females	Cervical	5	0	0.0	1	1	50.0	0	2	100.0	2	-	-	-	0.048	**Yes**	0.866
	Thoracic	3	2	40.0	0	1	100.0	0	2	100.0	2	-	-	-	0.643	No	0.600
	Lumbar	5	1	16.7	0	1	100.0	0	2	100.0	2	-	-	-	0.048	**Yes**	0.791

Table 10.55: Distribution of degenerative joint disease of the spine across section, sex and age group (juveniles excluded), Roman sample

Schmorl's nodes

No females from the Roman period had Schmorl's nodes, but the condition occurred in 18.2% of observable males (n=22). Nevertheless, the sample size was so small (n=31) that the difference was still not statistically significant (Table 10.56).

Males			Females			Chi-square				Yates			Fisher's		Phi
Ab	Pr	% Affected	Ab	Pr	% Affected	df	x²	*p* -- x²	p<0.05	Yates	*p* -- Yates	p<0.05	*p* -- Fisher's	p<0.05	Value
18	4	18.2	9	0	0.0	1	1.879	0.170	No	0.609	0.435	No	0.295	No	0.246

Table 10.56: Prevalence of Schmorl's nodes in males and females of the Roman sample.

Further, in contrast to osteophytic growth, prevalence of Schmorl's nodes did not increase with age. Instead, it was individuals in the Adultus age group (18-35 years) that had the highest prevalence of Schmorl's nodes (2/8, 25%), followed by the Maturus (35-50 years) age group (2/9, 22.2%). There were no cases of Schmorl's nodes in the Senilis age group, and the differences between age groups were not statistically significant.

10.3.5 Trauma

Dislocations

No dislocations were identified in the Roman material.

Trauma -- Cranial by Skeletal Element

	Males			Females			Fisher's		Phi
Roman	Ab	Pr	%	Ab	Pr	%	*p* -- Fisher's	p<0.05	Value
Maxilla L	7	0	0	1	0	0	-	-	-
Maxilla R	7	0	0	1	0	0	-	-	-
Mandible L	14	0	0	2	0	0	-	-	-
Mandible R	10	0	0.0	4	0	0.0	-	-	-
Frontal L	6	0	0.0	2	0	0.0	-	-	-
Frontal R	8	1	11.1	2	0	0.0	1.000	No	0.149
Parietal L	4	0	0.0	1	0	0.0	-	-	-
Parietal R	3	0	0.0	1	0	0.0	-	-	-
Temporal L	8	0	0.0	2	0	0.0	-	-	-
Temporal R	8	0	0.0	3	0	0.0	-	-	-
Zygomatic L	7	0	0.0	3	0	0.0	-	-	-
Zygomatic R	5	0	0.0	3	0	0.0	-	-	-
Nasals	4	0	0.0	3	0	0.0	-	-	-
Occipital	4	0	0.0	2	0	0.0	-	-	-

Table 10.57: Cranial trauma in the Roman sample

No cranial trauma was identified in the subadults of the Roman sample, and only one (0.8%) of the 126 cranial elements assessed for the adult Roman population, a right frontal bone of a mature male, showed evidence of trauma (Table 10.57), in the form of a well healed small depression fracture of the supraorbital ridge, 0.5x1.2 cm in diameter. Because of the small sample size, only Fisher's exact test could be carried out on the Roman males and females, and the difference in prevalence was not statistically significant.

Trauma -- Long Bones

No fractures were identified in the subadult population of the Roman sample, and interphase comparisons were limited to sexed adults. Eight (1.7%) of the 466 skeletal elements assessed in the Roman population showed evidence of trauma. Fractures were slightly more common in males (6/304, 2%) than in females (2/162, 1.2%), though there were no statistically significant differences between the sexes (Table 10.58).

A brief description of the identified fractures can be seen in Table 10.59. The clavicle was the most commonly fractured bone, followed by the ulna. Two individuals in the Roman sample showed evidence of multiple trauma. Burial 375, a mature male, had healed simple fractures of the distal thirds of the left radius and ulna. This type of fracture is often associated with direct blows to the arm and is often referred to as a "parry" fracture (Galloway 1999:145). Burial 384, another mature male, had a healed elbow fracture involving both the left humerus and ulna. The humerus had a medial condylar fracture, with most of the medial portion of the distal epiphysis missing, and significant remodeling evident on the remaining epiphysis. The ulna was missing the olecranon, with remodeling and elongating of the coronoid process. A pseudo-arthrosis had formed between the coronoid process and the medial aspect of the capitulum. It is unclear how the fracture was sustained; this type of fracture can be caused by either a fall on an outstretched hand or by a direct blow to the elbow (Galloway 1999:128). This individual would likely have had only limited use of the left arm.

	Males			**Females**			**Fisher's**		**Phi**
Roman	**Ab**	**Pr**	**%**	**Ab**	**Pr**	**%**	***p* -- Fisher's**	**p<0.05**	**Value**
Clavicle L	26	0	0	12	1	7.7	0.333	No	-0.229
Clavicle R	24	1	4.0	13	1	7.1	1.000	No	-0.068
Humerus L	20	1	4.8	12	0	0	1.000	No	0.134
Humerus R	23	0	0	12	0	0	-	-	-
Radius L	20	1	4.8	13	0	0	1.000	No	0.137
Radius R	21	0	0	14	0	0	-	-	-
Ulna L	21	2	8.7	13	0	0	0.525	No	0.182
Ulna R	23	0	0	13	0	0	-	-	-
Femur L	23	0	0	12	0	0	-	-	-
Femur R	22	0	0	12	0	0	-	-	-
Tibia L	18	1	5.3	9	0	0	1.000	No	0.132
Tibia R	20	0	0	8	0	0	-	-	-
Fibula L	19	0	0	9	0	0	-	-	-
Fibula R	18	0	0	8	0	0	-	-	-

Table 10.58: Comparison of long bone fractures between sexes in the Roman sample

Burial	Sex	Bone	Description
295	M	Right Clavicle	Healed oblique fracture of clavicle, with callus formation and slight misalignment.
367	M	Left Tibia	Compression/depression fracture of medial aspect (fibular notch) of distal epiphysis.
370	F	Left Clavicle	Healed transverse fracture of clavicle.
375	M	Left Ulna	Healed simple fracture, distal third of shaft.
	M	Left Radius	Healed simple fracture, distal third of shaft.
384	M	Left Ulna	Elbow fracture: Olecranon missing, coronoid process remodeled and elongated.
	M	Left Humerus	Condylar fracture: medial condyle missing completely; pseudoarthrosis formed on medial aspect of capitulum.
388	F	Right Clavicle	Healed oblique fracture of clavicle.

Table 10.59: Description of long bone fractures in the Roman sample.

10.3.6 Periosteal New Bone Formation (PNB) and General Infection

Periosteal New Bone Formation -- Age Distribution

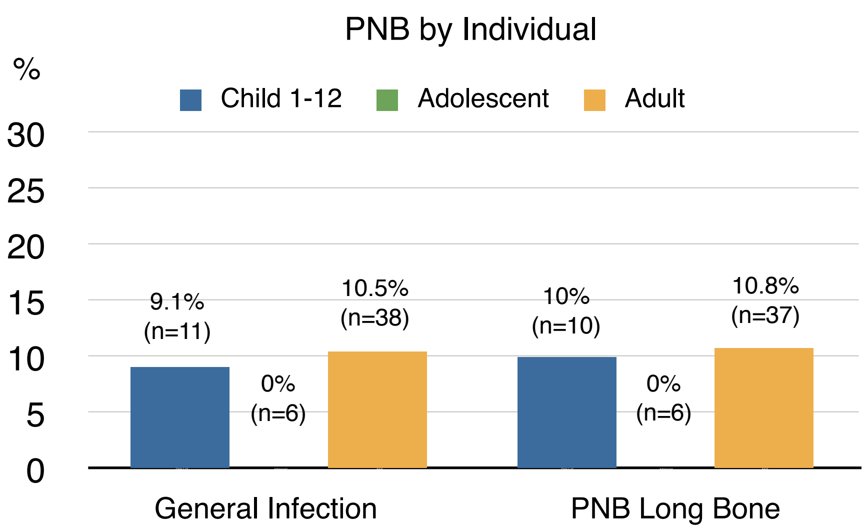

Figure 10.35: Distribution of PNB across age groups for the Roman sample.

Because of the small sample size, it was not possible to perform chi-square tests for independence by skeletal element compared by age group for the Roman sample, since the expected count was less than one in too many cells of the matrix. Further, there was no evidence of PNB in any individuals from the Infant (<1 year) age group in either the Saite or the Roman sample, and this group was therefore omitted from the analysis. Thus, statistical comparison of the distribution of PNB and general infection across age groups was carried out on a by individual basis only. Results showed that PNB -- both on the long bones and as markers for general infection -- occurred at a similar rate in children and adults, while it was completely absent in adolescents. (Figure 10.35). However, the differences between age groups when assessed by individual were not statistically significant.

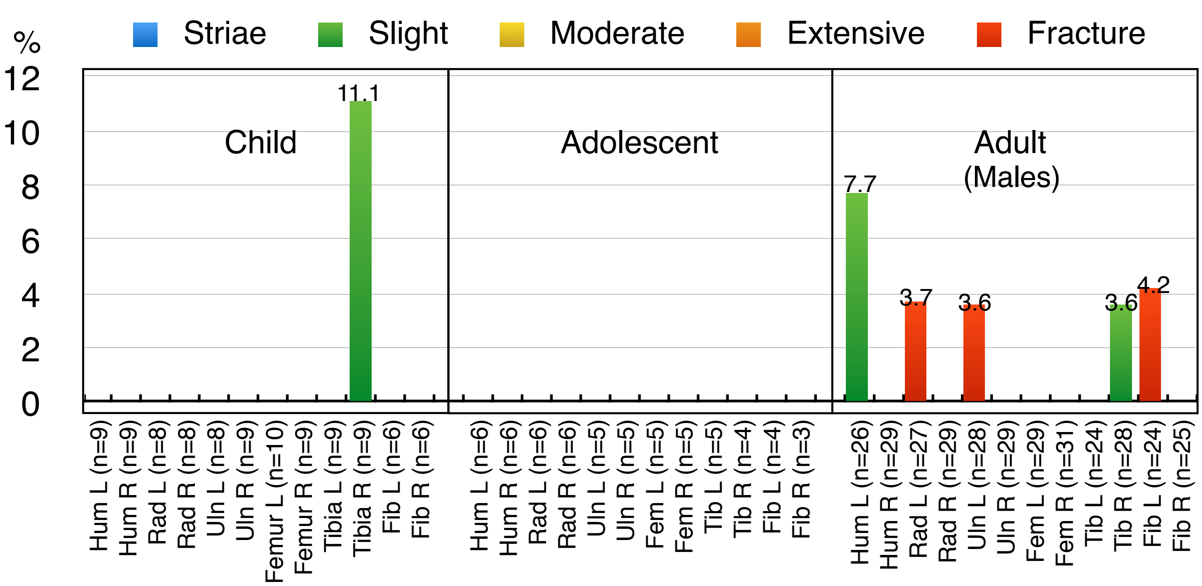

Figure 10.36: Age-distribution of PNB by skeletal element for the Roman sample

Though the sample size was too small for any statistical analysis of severity, the results are presented in chart form in Figure 10.36. As shown in the chart, PNB occurred most commonly in adults and was entirely absent in adolescents. It was also in the adult group that the only cases related to fractures were found. In the adult age group, the left humerus was the most commonly affected long bone, while in children PNB occurred only on the right tibia.

Periosteal New Bone Formation -- Comparison of Males and Females by Individual

When compared by individual, 10.3% of the Roman males (n=29) and 7.1% of the Roman females (n=14) showed evidence of general infection on bones other than the long bones. PNB of the long bones was entirely absent in Roman females (n=14), while 14.3% of Roman males (n=28) were affected. The differences were not statistically different for either case.

Periosteal New Bone Formation -- Comparison of Males and Females by Skeletal Element

Roman	Males			Females			Fisher's			Phi
Bone	Ab	Pr	%	Ab	Pr	%	df	*p* -- Fisher's	p<0.05	Phi
Humerus L	18	2	10.0	12	0	0.0	1	1.000	No	0.200
Humerus R	21	0	0.0	13	0	0.0	-	-	-	-
Radius L	20	1	4.8	12	0	0.0	1	1.000	No	0.134
Radius R	22	0	0.0	13	0	0.0	-	-	-	-
Ulna L	20	1	4.8	12	0	0.0	1	1.000	No	0.134
Ulna R	21	0	0.0	12	0	0.0	-	-	-	-
Femur L	22	0	0.0	12	0	0.0	-	-	-	-
Femur R	22	0	0.0	13	0	0.0	-	-	-	-
Tibia L	20	0	0.0	9	0	0.0	-	-	-	-
Tibia R	21	1	4.5	9	0	0.0	1	1.000	No	0.117
Fibula L	19	1	5.0	8	0	0.0	1	1.000	No	0.122
Fibula R	20	0	0.0	8	0	0.0	-	-	-	-

Table 10.60: Chi-Square comparisons by sex of PNB by skeletal element for the Roman sample.

Because of the small sample size, only Fisher's exact test could be carried out to compare prevalence of PNB by skeletal element for the Roman sample (Table 10.60). In contrast to the Saite population, where females had a higher rate of PNB than males, only males were affected in the Roman population. Nevertheless, the results were not statistically significant for any of the long bones. When severity was taken into account, all instances of PNB in the Roman sample was either slight or related to fractures (Figure 10.36).

10.3.7 Adult Stature Estimation

For the statistical analysis, stature was calculated based on the Raxter et al. (2008) formulae for Egyptian remains, using the left tibia whenever possible, though the right tibia was substituted when necessary. An independent samples t-test, equal variances assumed, was conducted to compare the stature between sexes in the Roman sample (Table 10.61). Not surprisingly, there was a significant difference between males (*M* = 161.6, *SD* = 6.28) and females (*M* = 154.5 *SD* =

5.97); t (23) = -2.055, p -- 0.05, two-tailed). The magnitude of the difference (mean difference = 6.995, 95% CI -14..03--0.045) was very large (Cohen's d = 1.14).

Roman Males			**Roman Females**			***t*-test for Equality of Means**					**95% CI**	
n	Mean	Std. Dev.	*n*	Mean	Std. Dev.	*t*	df	Sig. (2-tailed)	Mean Diff.	Std. Err. Diff.	Lower	Upper
21	161.6	6.28	4	154.5	5.97	-2.055	23	0.05	-6.995	3.403	-14.03	-0.045

Table 10.61: Independent sample t-test for difference in stature between males and females from the Roman sample.

10.4 Markers of Skeletal Stress: Interphase Comparison

10.4.1 Linear Enamel Hypoplasia

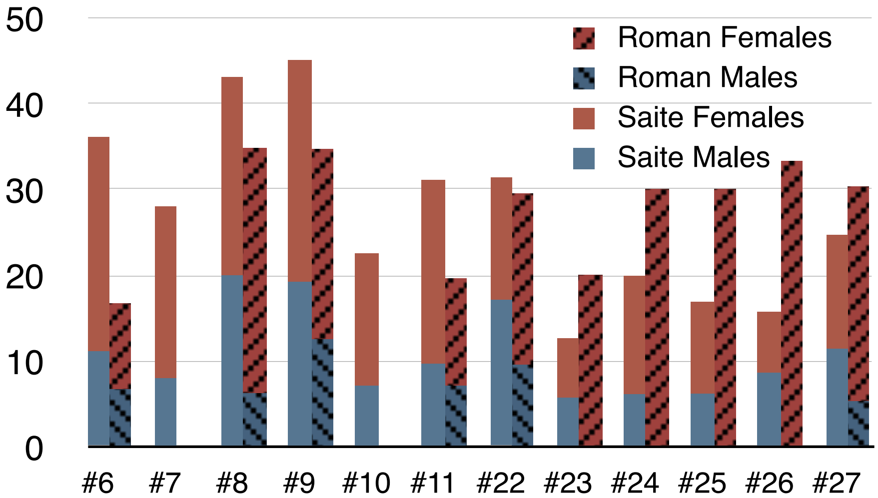

Figure 10.37: Interphase comparison of Linear Enamel Hypoplasia, by tooth, separated by sex. For sample sizes, see table 10.62 (males) and 10.63 (females).

When compared by individual, 33.9% of the Saite individuals with at least 8 of the 12 teeth evaluated (n=56) had Linear Enamel Hypoplasias. In the Roman population, 40% of the evaluated individuals (n=25) had hypoplasias on one or more teeth. When broken down by sex, 37.5% of the Saite females (n=24) versus 66.7% of the Roman females (n=9), while the difference was smaller in males: 31.2% of the Saite males had hypoplasias, versus 25% of the Roman males. However, though the difference between the females of the two phases may seem substantial, it was not statistically significant.

Males	Saite Males			Roman Males			Chi-square				Yates			Fisher's		Phi
Tooth	Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Phi
#6	24	3	11.1	14	1	6.7	1	0.221	0.638	No	0.000	1.000	No	1.000	No	-0.073
#7	23	2	8.0	13	0	0.0	1	1.098	0.295	No	0.080	0.778	No	0.538	No	-0.170
#8	20	5	20.0	15	1	6.2	1	1.476	0.224	No	0.581	0.446	No	0.376	No	-0.190
#9	21	5	19.2	14	2	12.5	1	0.323	0.570	No	0.020	0.887	No	0.690	No	-0.088
#10	26	2	7.1	14	0	0.0	1	1.050	0.306	No	0.066	0.798	No	0.545	No	-0.158
#11	28	3	9.7	13	1	7.1	1	0.077	0.782	No	0.000	1.000	No	1.000	No	-0.041
#22	29	6	17.1	19	2	9.5	1	0.622	0.430	No	0.156	0.693	No	0.696	No	-0.105
#23	33	2	5.7	22	0	0.0	1	1.303	0.254	No	0.162	0.688	No	0.518	No	-0.151
#24	31	2	6.1	22	0	0.0	1	1.384	0.239	No	0.195	0.659	No	0.511	No	-0.159
#25	30	2	6.2	20	0	0.0	1	1.300	0.254	No	0.159	0.690	No	0.517	No	-0.158
#26	32	3	8.6	22	0	0.0	1	1.990	0.158	No	0.643	0.423	No	0.276	No	-0.187
#27	31	4	11.4	18	1	5.3	1	0.557	0.455	No	0.065	0.799	No	0.646	No	-0.102

Table 10.62: Linear Enamel Hypoplasia by tooth for males, divided by phase.

When broken down by tooth, Saite males consistently had a higher prevalence of hypoplasia than Roman males, though there were no statistically significant differences between the phases for any of the teeth (Figure 10.37 and Table 10.62). In contrast, the female sample was more evenly distributed; Roman females had a higher prevalence of linear enamel hypoplasia for seven of the twelve teeth assessed, with hypoplasia more commonly occurring in Saite females in the remaining five teeth. However, statistically significant results were only obtained for the lower right lateral incisor (#26), for which linear enamel hypoplasias more often occurred in Roman females (Figure 10.37 and Table 10.63).

Females	**Saite Females**			**Roman Females**			**Chi-square**				**Yates**			**Fisher's**		**Phi**
Tooth	**Ab**	**Pr**	**% Affected**	**Ab**	**Pr**	**% Affected**	**df**	**x²**	***p* -- x²**	**p<0.05**	**Yates**	***p* -- Yates**	**p<0.05**	***p* -- Fisher's**	**p<0.05**	**Phi**
#6	18	6	25.0	9	1	10.0	1	0.971	0.324	No	0.271	0.603	No	0.644	No	-0.169
#7	20	5	20.0	6	0	0.0	1	-	-	-	-	-	-	0.553	No	-0.215
#8	20	6	23.1	5	2	28.6	1	0.091	0.763	No	0.000	1.000	No	1.000	No	0.052
#9	20	7	25.9	7	2	22.2	1	0.049	0.824	No	0.000	1.000	No	1.000	No	-0.037
#10	22	4	15.4	8	0	0.0	1	-	-	-	-	-	-	0.551	No	-0.203
#11	22	6	21.4	7	1	12.5	1	0.317	0.574	No	0.003	0.955	No	1.000	No	-0.094
#22	24	4	14.3	8	2	20.0	1	0.181	0.671	No	0.000	1.000	No	0.644	No	0.069
#23	27	2	6.9	8	2	20.0	1	1.387	0.239	No	0.329	0.566	No	0.267	No	0.189
#24	25	4	13.8	7	3	30.0	1	1.326	0.249	No	0.454	0.500	No	0.344	No	0.184
#25	25	3	10.7	7	3	30.0	1	2.061	0.151	No	0.866	0.352	No	0.310	No	0.233
#26	**26**	**2**	**7.1**	**6**	**3**	**33.3**	**1**	**3.997**	**0.046**	**Yes**	**2.070**	**0.150**	**No**	**0.081**	**No**	**0.329**
#27	26	4	13.3	6	2	25.0	1	0.647	0.421	No	0.067	0.796	No	0.587	No	0.130

Table 10.63: Linear Enamel Hypoplasia by tooth for females, divided by phase.

Prevalence by Age

	Saite			**Roman**			**Chi-square**				**Yates**			**Fisher's**		**Phi**
	Ab	**Pr**	**% Affected**	**Ab**	**Pr**	**% Affected**	**df**	**x²**	***p* -- x²**	**p<0.05**	**Yates**	***p* -- Yates**	**p<0.05**	***p* -- Fisher's**	**p<0.05**	**Value**
Juv	1	5	83.3	1	3	75.0	1	-	-	-	-	-	-	1.000	No	-0.102
Ad	14	4	22.2	2	3	60.0	1	2.638	0.104	**No**	1.155	0.282	No	0.142	No	0.339

Table 10.64: Comparison of LEH by individual between phases for juvenile and adult females.

Because of the small sample size of younger subadults as well as juvenile males in the Roman sample, no interphase comparison was carried out for those groups. However, since there was a significant difference in prevalence of linear enamel hypoplasia between juvenile and adult females in the Saite sample, and there were more juvenile females than younger subadults in the Roman sample, juvenile femaless were also compared between phases. Because of the small sample size, only Fisher's exact test could be carried out for juveniles in the sample. When compared by individual, there were no statistically significant differences between either juvenile or adult females from the two phases, though the Phi coefficient indicated a medium positive correlation for adult females, showing that linear enamel hypoplasia was more common in adult females from the Roman period (Table 10.64). Further, when broken down by tooth, there were also no statistically significant differences between the phases for any of the teeth in the juvenile group. However, when prevalence by tooth was compared by phase for adult females, Roman adult females were found to have a statistically significant higher prevalence of enamel hypoplasia on the right lower incisors (Table 10.65). In addition, the Phi coefficient for the left lower incisor indicates a moderate correlation between phase and prevalence for the left lower incisors as well, though the *p*-values for Fisher's exact test were not statistically significant.

Females	Saite Adults			Roman Adults			df	Fisher's		Phi
Tooth	Ab	Pr	% Affected	Ab	Pr	% Affected	df	*p* -- value	p<0.05	Phi
#6	18	3	15.8	6	0	0.0	1	0.554	No	-0.208
#7	18	2	10.0	3	0	0.0	1	1.000	No	-0.120
#8	18	3	14.3	4	1	20.0	1	1.000	No	0.062
#9	18	3	14.3	4	1	20.0	1	1.000	No	0.062
#10	18	2	10.0	4	0	0.0	1	1.000	No	-0.135
#11	19	3	13.6	4	0	0.0	1	1.000	No	-0.154
#22	21	1	4.5	6	0	0.0	1	1.000	No	-0.101
#23	23	0	0.0	5	1	16.7	1	0.207	No	0.370
#24	22	1	4.3	4	2	33.3	1	0.100	No	0.386
#25	**22**	**0**	**0.0**	**4**	**2**	**33.3**	**1**	**0.040**	**Yes**	**0.531**
#26	**22**	**0**	**0.0**	**3**	**2**	**40.0**	**1**	**0.028**	**Yes**	**0.593**
#27	23	1	4.2	4	1	20.0	1	0.320	No	0.236

Table 10.65: Linear Enamel Hypoplasia by tooth for adult females, divided by phase. Sample size was too small to allow for chi-square analysis, and only Fisher's exact test was carried out.

Linear Enamel Hypoplasia -- Interphase Comparison Summary

Differences between Saite and Roman Males and Females

When all sexed individuals in both the Saite and Roman sample were compared, enamel hypoplasias were more common in females. When compared by individual, 31.2% of the males (n=32) in the Saite sample and 25% of the males (n=16) in the Roman sample had one or more teeth with hypoplasia, versus 37.5% of the Saite females (n=24) and 66.7% of the Roman females (n=9). When the sexes were compared within temporal phase, there were no significant differences between male and female individuals in the Saite sample, but Roman females had a significantly higher prevalence of enamel hypoplasia than Roman males: x^2 (1, n=25) = 4.167, *p* = .041, *phi* = -0.408). Despite that, there were no significant differences in prevalence between the males and females of the two phases when compared by individual.

When the teeth were pooled for all sexed individuals, 16.2% of the teeth belonging to Saite females (n=328) and 20% of the teeth belonging to Roman females (n=105) were affected, versus only 10.6% of the teeth (n=367) belonging to Saite males and 3.7% of the teeth belonging to Roman males (n=214). Hypoplastic teeth occurred with statistically significant greater frequency in Saite than in Roman males: x^2 (1, n=581) = 8.630, *p* = .0033, *phi* = 0.12), but the difference in prevalence between Saite and Roman females was not significant.

When chi-square tests were carried out by tooth for all sexed individuals, there were no significant differences for any of the teeth between males of the two phases. When the females were compared, only the right lower lateral incisor showed any statistically significant difference in prevalence, with hypoplasias occurring more often in Roman females for that tooth: x^2 (1, n=37) = 3.997, *p* = .046, *phi* = -0.329).

Differences between Age Groups

Because of the small sample size of subadults in the Roman period, no intraphase comparison was carried out for the Infant, Infans I and Infans II age groups, or between juvenile males of the two phases. However, since there was statistically significant difference between juvenile and adult females in the Saite period sample when compared by individual, with juvenile females more commonly affected than adults (x^2 (1, n=24) = 7.170, *p* = 0.007, Yates = 4.800, *p* = 0.028, Fisher's *p* = 0.015, *phi* = -0.547), these two age groups were compared between phases as well. Because of the small sample size, only Fisher's exact test could be employed. There were no significant differences between the phases when adult females and subadult females were compared by individual. When comparison was carried out by tooth, however, Fisher's exact test by tooth for sexed adults showed statistically significant differences between Saite and Roman females for the right lower incisors (#25; Fisher's (1, n=28), *p* = .040, *phi* = 0.532; #26; Fisher's (1, n=27), *p* = 0.028, *phi* = 0.593), with a higher prevalence in Roman females for those teeth. There were no statistically significant differences between teeth of juvenile females from the two phases.

To investigate whether or not the presence of LEH had a negative impact on morbidity, an independent samples t-test was conducted to compare the average age-at-death for adult individuals with or without LEH. The test found no significant difference in age in the Roman sample (Absent = 34.231, SD = 12.87; Present = 34.286, SD 13.8710). In the Saite sample, however, individuals with at least one hypoplastic line had an average age-at-death significantly lower than those with no LEH at all (Absent = 35.047, SD = 12.16; Present 26.591, SD = 8.4048, p = 0.039).

A second independent samples t-test was conducted to compare the average stature of adult individuals with and without enamel defects. In the Saite sample, females with LEH averaged 152.7 cm in height (SD=8.4), while females without LEH averaged 154.2 cm (SD=3.2). Males with LEH averaged 163.3 cm (SD=5.9) in height, while males without LEH had an average height of 165.4 (SD=4.5). In the Roman period sample, the test could only be performed on males, since only one of the affected females also had the required measurements for stature assessment. The results showed that Roman males with LEH had an average stature of 159.8 cm (SD= 6.8), while males without LEH stood at an average height of 160.7 cm (SD=8.8). However, while the conducted tests all showed a shorter mean stature for individuals with enamel defects compared to those without, none of the tests were statistically significant.

10.4.2 Porotic Hyperostosis

When all assessed individuals were considered, 7.8% of the Saite individuals (n=116) and 6% of the Roman individuals (n=50) had porotic hyperostosis on the parietals. Females had a higher prevalence of the condition than males in both the Saite and the Roman sample, though the differences were not statistically significant in either phase. Because of the small sample size of assessed subadults in the Roman sample, no interphase comparison was carried out between the younger age groups Infant, Infans I and Infans II. Sexed individuals were compared across phases both by the juvenile and adult age groups and with both age groups combined. However, there were no significant differences between phases for either grouping (Table 10.66).

	Saite			Roman			Chi-square				Yates			Fisher's		Phi
	Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	*p* -- x^2	p<0.05	Yates	*p* -- Yates	p<0.05	*p* -- Fisher's	p<0.05	Value
All M	34	4	8.1	24	1	4.0	1	0.417	0.518	**No**	0.014	0.864	No	0.659	No	-0.082
Ad M	27	3	10.0	23	1	4.2	1	0.662	0.416	**No**	0.084	0.771	No	0.620	No	-0.111
Juv M	7	0	0.0	1	0	0.0	1	-	-	**-**	-	-	-	-	-	-
All F	26	5	16.1	11	1	8.3	1	0.438	0.508	**No**	0.029	0..864	No	0.659	No	-0.101
Ad F	21	4	16.0	7	1	12.5	1	0.058	0.810	**No**	0.000	1.000	No	1.000	No	-0.042
Juv F	5	1	16.7	4	0	0.0	1	-	-	**-**	-	-	-	1.000	No	-0.272

Table 10.66: Comparison of porotic hyperostosis by individual between phases for males and females.

10.4.3 Cribra Orbitalia

	Saite			Roman			Chi-square				Yates			Fisher's		Phi
	Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	*p* -- x^2	p<0.05	Yates	*p* -- Yates	p<0.05	*p* --	p<0.05	Value
Ad	43	7	14.0	21	6	22.2	1	0.845	0.358	**No**	0.360	0.548	No	0.361	No	0.105
Sub-Ad	28	19	40.4	6	7	53.8	1	0.747	0.387	**No**	0.300	0.584	No	0.529	No	0.112
M	25	7	21.9	16	5	23.8	1	0.027	0.869	**No**	0.000	1.000	No	1.000	No	0.023
F	24	6	20.0	6	4	40.0	1	1.600	0.206	**No**	0.711	0.399	No	0.232	No	0.200

Table 10.67: Comparison of cribra orbitalia between phases for adults and subadults, males and females.

In the Saite sample, 26.8% of observable individuals (n=97) had cribra orbitalia, compared to 32.5% of the observable individuals (n=40) in the Roman sample. The condition was more common in females in the Saite sample, but in males for the Roman sample, though the differences were not statistically significant in either phase. In both the Saite and the Roman sample, however, cribra orbitalia was more common in subadults than adults, and the differences were statistically significant in both periods. In both phases, active lesions were more common in younger age groups, while healed lesions occurred exclusively in older age groups.

Site	n	% CO SA	% CO AD	% CO Total	Comment	Reference
Upper Nubia, Tombos	83	42.8	4.3	10.8	Mixed Nubian and Egyptian population, New Kingdom to Third Intermediate Period	Buzon 2006
Kerma	306	23.1	13.3	13.7	Nubian population, Middle Kingdom-Second Intermediate period	Judd 2000, Buzon 2006
Lower Nubia, C-group	205	33.3	11.2	14.1	Nubian sample from 24 different cemeteries close to Egyptian border, c. 2000-1600 BCE. Now in Copenhagen.	Säve-Söderbergh 1989, Buzon 2006
Qurneh	172	38.5	14.4	16.3	Likely New Kingdom, probably from Theban elite tombs. Now in the Duckworth collection.	Buzon 2006
Saqqara (Tomb of Ptahemwia)	67	-	-	16.4	New Kingdom through Greco-Roman period	Raven et al. 2008
Qau	124	-	16.9	16.9	Mainly Old Kingdom, but series covers Protodynastic Period to the 30th Dynasty. Adults only. Now in the Duckworth collection.	Fujita and Adashi 2017
Shellal	154	50	18.9	20.1	The site is in Nubia, but the population was likely New Kingdom Egyptian settlers. Now in the Duckworth collection.	Smith and Jones 2008, Buzon 2006
Lower Nubia, Pharaonic	73	36.3	20.9	23.2	Likely Egyptian population, c. 1650-1350 BCE. Now in Copenhagen.	Säve-Söderbergh and Troy 1991, Buzon 2006
Memphis	25	25	24.7	24.8	Likely New Kingdom. Now in the Duckworth collection.	Buzon 2006
Giza, Wall of the Crow	**97**	**40.4**	**14.0**	**26.8**	**Saite Period**	**N/A**
Tell el Daba'a	41	48.1	-	26.8	Second Intermediate Period	Winkler and Wilfing 1991
Saqqara (Mastaba of Ptashepses)	142	44.8	10.7	26.8	Late through Roman period	Strouhal and Bareš 1993
Thebes West	273	-	-	29.2	Intrusive material from three Tombs of the Nobles. Likely Third Intermediate -- Greco-Roman Period	Nerlich et al. 2000
Giza, Wall of the Crow	**40**	**53.8**	**22.2**	**32.5**	**Roman Period**	**N/A**
Dakhleh, Kellis 2 (sample 2)	139	45	-	N/A	Subadults only, Early Christian period	Wheeler 2012
Dakhleh, Kellis 2 (sample 1)	143	58.8	51.7	55.9	Early Christian period	Fairgrieve and Molto 2000
Dakhleh, Ein Tirghi	153	100	71.5	78.4	Late through Roman periods	Fairgrieve and Molto 2000

Table 10.68: Prevalence rates of Cribra Orbitalia among subadults (SA), adults (AD) and sample as a whole (Total) in Egyptian and Nubian skeletal materials.

For the interphase comparison, prevalence of cribra orbitalia was compared between adults and subadults of the two phases, as well as for males and females. There were no statistically significant differences between any of the groups (Table 10.67).

To assess how prevalence of cribra orbitalia in the Giza sample compared with rates reported from other sites in the region, the percentage of affected individuals in the full Giza sample, as well as the percentage of Giza adults and subadults (separated by phase), were collated with the percentages from other published materials (Table 10.68).

However, though all publications reported the total number of individuals assessed, as well as the percentages of affected adults versus subadults, only a few stated the actual number of individuals in each age group. For that reason, comparisons could only be carried out on the full samples. Further, the Dakhleh sample published by Wheeler (2012) and the Qau sample published by Fujita and Adashi (2017) were omitted from the statistical analysis, since these samples included only subadults and adults, respectively.

Since it was immediately apparent that prevalence of cribra orbitalia was lower in Nubian materials and extremely high in the Dakhleh Oasis, the sites were first compared by region: Nubia, Egyptian Nile Valley, and Oasis. Not surprisingly, the results were statistically significant: x^2 (2, n=1974) = 300.387, p = < .0001, *phi* = .390, with samples in Nubia (15.6%, AR= -9.9) and the Nile Valley (24.9%, AR= -2.2) exhibiting a lower prevalence than expected, and samples from the Dakhleh oasis a much higher rate instead (67.6%, AR= +16.8). When samples from only the Egyptian Nile Valley were compared, the differences were still statistically significant: x^2 (7, n=857) = 14.040, p = .05, *phi* = .128, with the material from Qurneh showing a significantly lower prevalence than expected (AR= -2.9), and the material from Thebes West a significantly higher rate (AR= +2.1). In the Giza material, both the Saite (AR= +0.5) and Roman (AR= 1.1) samples exhibited a somewhat higher than expected rate, though the differences were not statistically significant for either phase.

To explore potential temporal trends, the Egyptian Nile Valley samples were also ordered by period. Again, samples published by Wheeler and Fujita and Adashi were omitted, as was the sample from the tomb of Ptahemwia, since it contained material from multiple time periods. When ordered from earliest to latest, the sample from the Second Intermediate Period (c. 1650-1550 BCE) had a prevalence rate of 26.8%, whereafter the percentage of affected individuals decreased to 17.3% in the New Kingdom (c. 1550-1069 BCE), only to increase to 28.1% again in the Late Period (664-332 BCE), and to 32.5% in the Roman period (30 BCE-395 CE). The results were statistically significant x^2 (3, n=790) = 9.950, p = .019, *phi* = .112, with the New Kingdom sample exhibiting a significantly lower prevalence rate than expected (AR= -3.1).

The results were still significant whhen all three regions (Nubia, Egyptian Nile Valley, and Oasis) were included: x^2 (5, n=1834) = 292.082, p = < .0001, *phi* = .399, with lower than expected levels of cribra orbitalia in the Middle (AR= -8.3) and New Kingdom (AR= -5.8) samples, and a higher than expected prevalence in the Roman (AR= +13.4) and Christian/ Byzantine (AR= +7.8) materials.

10.4.4 Osteoarthritis/Degenerative Joint Disease (DJD)

Synovial Joints

In the Saite sample, 23.1% of observable individuals (n=52) had osteoarthritic changes to at least one synovial joint, compared to 54.2% of the Roman individuals (n=24). Degenerative joint disease (DJD) was more common in males than females in both samples, though the differences

	Saite			Roman			Chi-square				Yates			Fisher's		Phi
	Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
All	40	12	23.1	11	13	54.2	1	7.190	0.007	**Yes**	5.851	0.016	Yes	0.010	**Yes**	0.308
M	21	8	27.6	7	11	61.1	1	5.183	0.023	**Yes**	3.885	0.049	Yes	0.034	**Yes**	0.332
F	19	4	17.4	4	2	33.3	1	0.737	0.391	No	0.086	0.770	No	0.575	No	0.159

Table 10.69: Comparison of DJD of synovial joints by individual between phases for males, females, and the sexes combined.

between the sexes were not statistically significant for either phase. In both samples, the condition became more common with age. DJD was compared between the sexes from both phases, as well as between the samples with sexes combined. Roman individuals were found to have a significantly higher prevalence of DJD by individual when the sexes were combined, and when only males were compared. There was no significant difference in prevalence between Saite and Roman females (Table 10.69).

Invertebral Joints

In the Saite population, 59.7% of the individuals for which the entire spine was observable (n=62) had osteoarthritic changes to either the cervical, thoracic or lumbar spine, while in the Roman population 70.6% of observable individuals (n=34) were afflicted. When broken down by sex, the condition was more common in males than in females in both phases, though the difference was not statistically significant in either phase.

	Saite			Roman			Chi-square				Yates			Fisher's		Phi
	Ab	Pr	% Affected	Ab	Pr	% Affected	df	x^2	p -- x^2	p<0.05	Yates	p -- Yates	p<0.05	p -- Fisher's	p<0.05	Value
All	25	37	59.7	10	24	70.6	1	1.128	0.288	No	0.707	0.401	No	0.376	No	0.108
M	12	20	62.5	6	18	75.0	1	0.982	0.322	No	0.493	0.483	No	0.394	No	0.132
F	13	17	73.9	4	6	60.0	1	0.034	0.853	No	0.000	1.000	No	1.000	No	0.029

Table 10.70: Comparison of DJD of the spine by individual between phases for males, females, and the sexes combined.

When compared by phase, osteoarthritic changes of the spine were more common in the Roman material, and also more common in Roman males than in Saite males. For females, the highest prevalence instead occurred in the Saite population. However, none of the differences between the phases were statistically significant (Table 10.70)

Schmorl's nodes

Schmorl's nodes did not occur in any observable females in either the Saite (n=26) or the Roman (n=9) sample. However, 16.1% of observable Saite males (n=31), and 18.2% of the Roman males (n=22) had the condition. The difference between males of the two phases was not statistically significant.

10.4.5 Trauma

Cranial Trauma by Skeletal Element -- Interphase comparison

	Saite			Roman			Fisher's			Phi
	Ab	Pr	%	Ab	Pr	%	df	*p* -- Fisher's	p<0.05	Value
Maxilla L	13	0	0	7	0	0	-	-	-	-
Maxilla R	13	1	7.1	7	0	0	1	1.000	No	-0.158
Mandible L	28	1	3.4	14	0	0	1	1.000	No	-0.107
Mandible R	24	0	0.0	10	0	0.0	1	--	--	--
Frontal L	15	2	11.8	16	0	0.0	1	1.000	No	-0.183
Frontal R	17	1	5.6	8	1	11.1	1	1.000	No	0.100
Parietal L	10	1	9.1	4	0	0.0	1	1.000	No	-0.161
Parietal R	12	0	0.0	3	0	0.0	-	-	-	-
Temporal L	22	0	0.0	8	0	0.0	-	-	-	-
Temporal R	16	0	0.0	8	0	0.0	-	-	-	-
Zygomatic L	12	0	0.0	7	0	0.0	-	-	-	-
Zygomatic R	7	0	0.0	5	0	0.0	-	-	-	-
Nasals	9	0	0.0	4	0	0.0	-	-	-	-
Occipital	13	0	0.0	4	0	0.0	-	-	-	-

Table 10.71: Interphase comparison of cranial trauma, not separated by sex.

Because of the small sample size, only Fisher's exact test could be carried out for the interphase comparison of cranial trauma. Cranial trauma was more common in the Saite sample, with only one incidence in the Roman sample: a healed depressed fracture of the right superciliary arch. However, the sample size was small, and there were no statistically significant differences between the phases (Table 10.71). Similarly, there were no statistically significant differences between Saite and Roman males, or Saite and Roman females.

Long Bone Trauma by Skeletal Element -- Interphase comparison

As with the comparison of cranial trauma, the small sample size precluded any tests for independence other than Fisher's exact test for the interphase comparison of fractures of long bones. Not surprisingly, since there were no statistically significant differences between males and females in either phase, and the overall number of fractures was low, there were no statistically significant differences between males and females of the two phases either (Table 10.72).

	Saite			Roman			Fisher's			Phi
Males	Ab	Pr	%	Ab	Pr	%	df	*p* -- value	p<0.05	Value
Clavicle L	33	0	0.0	26	0	0.0	-	-	-	-
Clavicle R	35	0	0.0	24	1	4.0	1	0.417	No	0.154
Humerus L	35	0	0.0	20	1	4.8	1	0.375	No	0.174
Humerus R	37	1	2.6	23	0	0.0	1	1.000	No	0.047
Radius L	33	0	0.0	21	1	4.5	1	0.400	No	0.167
Radius R	38	0	0.0	21	0	0.0	-	-	-	-
Ulna L	36	1	2.7	21	2	8.7	1	0.552	No	0.134
Ulna R	37	0	0.0	23	0	0.0	-	-	-	-
Femur L	38	0	0.0	23	0	0.0	-	-	-	-
Femur R	40	0	0.0	22	0	0.0	1	-	-	-
Tibia L	36	1	2.7	18	1	5.3	1	1.000	No	0.065
Tibia R	37	0	0.0	20	0	0.0	-	-	-	-
Fibula L	36	0	0.0	19	0	0.0	-	-	-	-
Fibula R	36	0	0.0	18	0	0.0	-			

	Saite			Roman			Fisher's			Phi
Females	Ab	Pr	%	Ab	Pr	%	df	*p* -- value	p<0.05	Value
Clavicle L	32	0	0.0	12	1	7.7	1	0.289	No	0.237
Clavicle R	30	0	0.0	13	1	7.1	1	0.318	No	0.223
Humerus L	32	0	0.0	12	0	0.0	-	-	-	-
Humerus R	32	0	0.0	12	0	0.0	-	-	-	-
Radius L	30	1	3.2	13	0	0.0	1	1.000	No	-0.1
Radius R	30	0	0.0	14	0	0.0	-	-	-	-
Ulna L	29	1	3.3	13	0	0.0	1	1.000	No	-0.1
Ulna R	31	1	3.1	13	0	0.0	1	1.000	No	-0.1
Femur L	30	1	3.2	12	0	0.0	1	1.000	No	-0.1
Femur R	30	2	6.2	12	0	0.0	1	1.000	No	-0.13
Tibia L	27	0	0.0	9	0	0.0	-	-	-	-
Tibia R	27	1	3.6	8	0	0.0	1	1.000	No	-0.09
Fibula L	27	0	0.0	9	0	0.0	-	-	-	-
Fibula R	28	0	0.0	8	0	0.0	-	-	-	-

Table 10.72: Comparison of fracture prevalence between Saite and Roman males (left) and females (right).

10.4.6 Periosteal New Bone Formation (PNB) and General Infection

Periosteal New Bone Formation -- Age Distribution

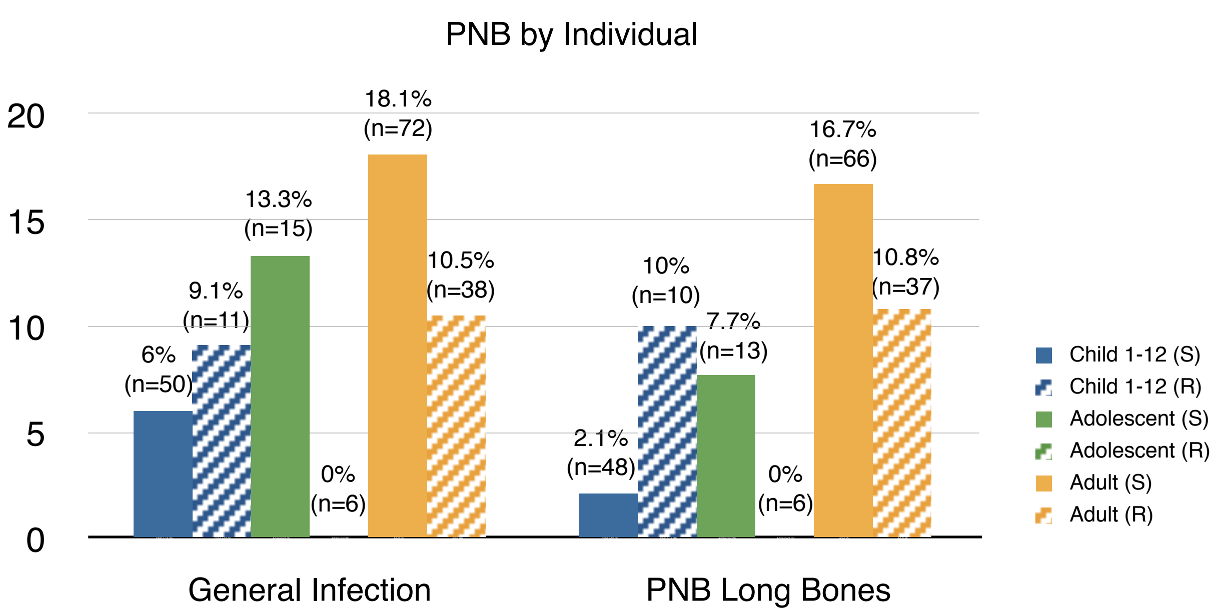

Figure 10.38: Comparison of general infections and PNB of the long bones between age groups of the two phases.

When compared by individual, both general infections and PNB of the long bones were more common in Roman than Saite children, while the reverse was true for adults. Among adolescents, only Saite individuals were affected; evidence of both general infection and PNB of the long bones was entirely absent in the Roman sample (Figure 10.38). However, none of these differences were statistically significant. Because of the small sample size, it was not possible to perform chi-square tests for independence by skeletal element compared by age group, since the expected count was less than one in too many cells of the matrix. Further, there was no evidence of PNB in any individuals from the Infant (<1 year) age group in either the Saite or the Roman sample, and this group was therefore omitted from the analysis. Thus, statistical comparison of the distribution of PNB and general infection across age groups was carried out on a by individual basis only.

Though the sample size was too small for any statistical analysis of severity by skeletal element, the results are presented in chart form in Figure 10.39. As shown in the chart, PNB occurred most commonly in adults in both the Saite and the Roman period. It was also in the adult groups from both phases that the only cases related to fractures were found. Moderate to severe cases of PNB were identified only in the Saite period sample and then localized to the lower legs. The Saite population also had more cases unrelated to trauma, whereas a larger percentage of the Roman cases were fracture related.

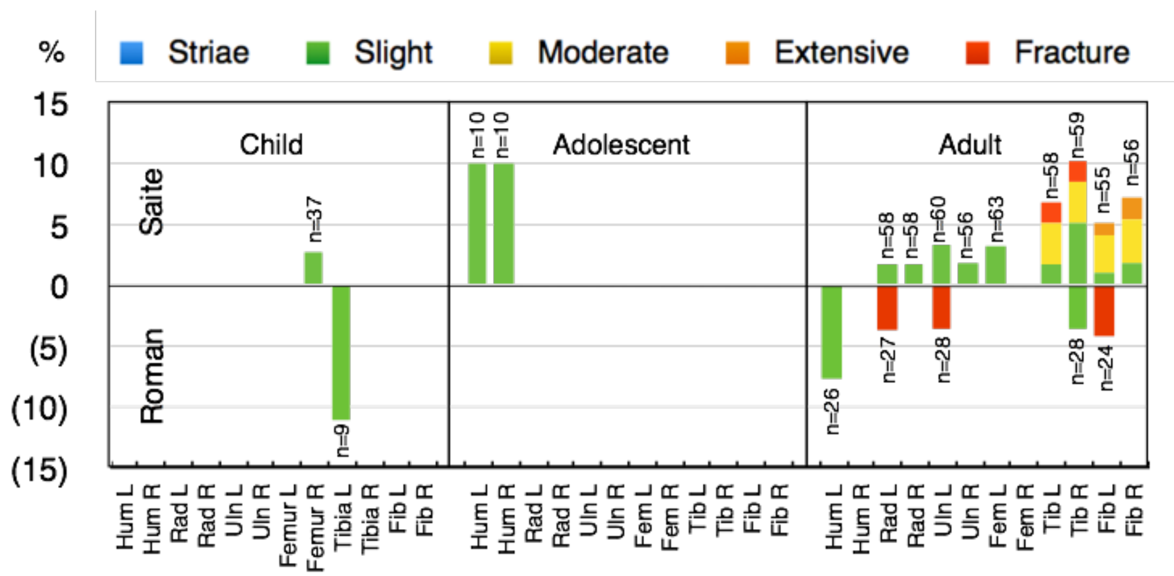

Figure 10.39: Age-distribution of PNB by skeletal element, comparison by phase and age

Periosteal New Bone Formation -- Comparison of Males and Females by Individual

When compared by individual, 11.9 % of the Saite males (n=42) and 10.3% of the Roman males (n=29) showed evidence of general infection on bones other than the long bones. For females, the difference was greater: 26.5% of the Saite females (n=34) versus only 7.1% of Roman females (n=14). However, the difference in prevalence was not statistically significant for either sex.

When PNB of the long bones was compared by individual, 10.8% of Saite males (n=37) were affected, versus 14.3% of males from the Roman period (n=28). Among females, 25% of individuals from the Saite period (n=32) had the condition, while it was entirely absent in Roman females (n=14). The difference was statistically significant for females only: x^2 (1, n=46) = 4.237, *p* = 0.04, *phi* = -0.303.

Periosteal New Bone Formation on Long Bones -- Comparison of Males and Females by Skeletal Element

Males	Saite			Roman			Chi-square				Yates			Fisher's		Phi
Bone	Ab	Pr	%	Ab	Pr	%	df	x^2	*p* -- x^2	p<0.05	Yates	*p* -- Yates	p<0.05	*p* -- Fisher's	p<0.05	Phi
Humerus L	35	1	2.8	18	2	10.0	1	1.32	0.250	No	0.282	0.596	No	0.288	No	0.154
Humerus R	35	1	2.8	21	0	0.0	1	-	-	-	-	-	-	1.000	No	-0.102
Radius L	37	0	0.0	20	1	4.8	1	-	-	-	-	-	-	0.362	No	0.176
Radius R	37	0	0.0	22	0	0.0	-	-	-	-	-	-	-	-	-	-
Ulna L	37	0	0.0	20	1	4.8	1	-	-	-	-	-	-	0.362	No	0.176
Ulna R	35	0	0.0	21	0	0.0	-	-	-	-	-	-	-	-	-	-
Femur L	40	0	0.0	22	0	0.0	-	-	-	-	-	-	-	-	-	-
Femur R	40	0	0.0	22	0	0.0	-	-	-	-	-	-	-	-	-	-
Tibia L	33	2	5.7	20	0	0.0	1	-	-	-	-	-	-	0.529	No	-0.147
Tibia R	34	1	2.9	21	1	4.5	1	-	-	-	-	-	-	1.000	No	0.045
Fibula L	33	1	2.9	19	1	5.0	1	-	-	-	-	-	-	1.000	No	0.053
Fibula R	34	0	0.0	20	0	0.0	-	-	-	-	-	-	-	-	-	-

Table 10.73: Comparison of prevalence by skeletal elements between males from the two phases.

When all skeletal elements were pooled, PNB occurred on 1.4% of long bones from the Saite male sample (n=436) and 2.8% of long bones from the Roman male sample (n=252). Among females, 6.2% of the long bones belonging to Saite individuals (n=356) were affected, compared to none from the Roman period. The difference in prevalence between Saite and Roman females was statistically significant: x^2 (1, n=511) = 8.6063, *p* = 0.003, *phi* = -0.1327.

When separated by skeletal element, however, there were no statistically significant differences between either males or females from the two phases for any of the bones. Because of the small sample size, chi-square tests for independence could be carried out only for the left humerus among males of the full sample, and for the right tibia among females. For the remaining skeletal elements, Fisher's exact test was used instead (Tables 10.73 and 10.74).

Females	Saite			Roman			Chi-square				Yates			Fisher's		Phi
Bone	Ab	Pr	%	Ab	Pr	%	df	x^2	*p* -- x^2	p<0.05	Yates	*p* -- Yates	p<0.05	*p* -- Fisher's	p<0.05	Phi
Humerus L	30	0	0.0	12	0	0.0	-	-	-	-	-	-	-	-	-	-
Humerus R	30	1	3.2	13	0	0.0	1	-	-	-	-	-	-	1.000	No	-0.099
Radius L	29	1	3.3	12	0	0.0	1	-	-	-	-	-	-	1.000	No	-0.099
Radius R	30	1	3.2	13	0	0.0	1	-	-	-	-	-	-	1.000	No	-0.099
Ulna L	28	2	6.7	12	0	0.0	1	-	-	-	-	-	-	1.000	No	-0.141
Ulna R	29	1	3.3	12	0	0.0	1	-	-	-	-	-	-	1.000	No	-0.099
Femur L	30	1	3.2	12	0	0.0	1	-	-	-	-	-	-	1.000	No	-0.096
Femur R	31	0	0.0	13	0	0.0	-	-	-	-	-	-	-	-	-	-
Tibia L	27	2	6.9	9	0	0.0	1	-	-	-	-	-	-	1.000	No	-0.131
Tibia R	24	5	17.2	9	0	0.0	1	1.79	0.181	No	0.596	0.440	No	0.312	No	-0.217
Fibula L	23	4	14.8	8	0	0.0	1	-	-	-	-	-	-	0.553	No	-0.196
Fibula R	23	4	14.8	8	0	0.0	1	-	-	-	-	-	-	0.553	No	-0.196

Table 10.74: Comparison of prevalence by skeletal elements between females from the two phases.

Sample	Activity	Mean survival time	95% CI	Mantel-Cox x^2	*p*-value
Saite sample, all ages	Absent	16.1	13.3-18.9	9.484	0.002
	Active	31.7	22-4-41.02		
	Healed	37.6	26-5-48.6		

Table 10.75: Significant results of the Kaplan-Meier survival analysis

To investigate whether or not lesion activity affected mortality, a Kaplan–Meier survival analysis with a log-rank test using pooled data on point estimates of age and periosteal lesion activity was conducted. The test was carried out both on adults in the sample, separated by phase and sex, and on all age-groups separated by phase alone. There were no significant differences among adults in either the Saite or Roman periods, whether separated by phase alone, or by phase and sex in combination. When younger age groups were included in the analysis, there was a significant difference in survival for the Saite period alone. However, while individuals with healed lesions indeed had a higher average age-at-death than those with active lesions, the lowest average age-at-death was found among individuals with no periosteal lesions at all (Table 10.75)

10.4.7 Adult Stature Estimation

For the statistical analysis, stature was calculated based on the Raxter et al. (2008) formulae for Egyptian remains, using the left tibia whenever possible, though the right tibia was substituted when necessary. Independent samples t-tests, equal variances assumed, were conducted to compare the stature between sexes in the two phases (Table 10.76 and 10.77). There was no significant difference between Saite and Roman females. However, the difference in stature between Saite (M = 165.3, SD = 4.98) and Roman (M = 161.6, SD = 6.28) males was significant: t (48) = 2.307, p -- 0.025, two-tailed). The magnitude of the difference (mean difference = 3.674, 95% CI 0.472-6.88) was moderate (Cohen's d = 0.648).

Saite Females			Roman Females			*t*-test for Equality of Means					95% CI	
n	Mean	Std. Dev.	*n*	Mean	Std. Dev.	*t*	df	Sig. (2-tailed)	Mean Diff.	Std. Err. Diff.	Lower	Upper
25	153.6	5.55	4	154.5	5.97	-0.348	27	0.730	-1.05	3.015	-7.23	5.137

Table 10.76: Independent sample t-test for difference in stature between females of the two phases.

Saite Males			Roman Males			*t*-test for Equality of Means					95% CI	
n	Mean	Std. Dev.	*n*	Mean	Std. Dev.	*t*	df	Sig. (2-tailed)	Mean Diff.	Std. Err. Diff.	Lower	Upper
29	165.3	4.98	21	161.6	6.28	2.307	48	0.025	3.674	1.593	0.472	6.88

Table 10.77: Independent sample t-test for difference in stature between males of the two phases.

To investigate how the mean stature of the Giza population compared to the stature of other Egyptian populations, mean stature was compared to the results reported by Raxter (2011: 124) on samples ranging in date from the Predynastic through the Roman-Byzantine period (Table 10.78 and Figure 10.40). Aside from being the largest published study on Egyptian body proportions, the Raxter study was chosen as comparative data because stature was calculated using the Raxter et al. (2008) formulae utilized for the Giza sample. Though the raw data was not provided for the comparative samples, the results of the Shapiro-Wilk test for normality (Raxter 2011: Appendices IV and V) and Levene's test for equality of variances were (Raxter 2011: Appendices VII and IX), showing that the data did not violate the assumptions required for a one-way analysis of variances (ANOVA). These two tests were also performed on the Giza samples, showing that variances were homogeneous.

	MALES			FEMALES			SDS	
PERIOD/SITES	**n**	**Mean**	**SD**	**n**	**Mean**	**SD**	**Score**	**%**
Predynastic (Abydos, El-Amrah, Gebelein, Hierakonpolis, Keneh, Mesaeed, Naqada)	255	166.2	5.4	356	155.9	4.9	1.07	6.6
Old Kingdom (Giza, Meidum)	129	166.9	5.5	90	154.6	4.6	1.08	8.0
Middle Kingdom (Gebelein, Lisht, Sheikh Farag)	23	163.3	4.9	21	152.3	4.3	1.07	7.2
New Kingdom (Amarna, Lisht)	24	164.0	5.2	38	152.7	5.1	1.07	7.4
Saite (Giza, present study)	29	165.3	5.0	25	153.6	5.6	1.08	7.6
Roman (Giza, present study)	21	161.6	6.3	4	154.5	6.0	1.05	4.6
Roman/Byzantine (El-Hesa, Kharga, Luxor)	37	161.1	4.4	16	150.8	6.4	1.07	6.8

Table 10.78: Samples used in comparative analysis of stature. With the exception of the samples from the present study (Saite and Roman Giza), Data taken from Raxter 2011.

A one-way between-groups ANOVA with post-hoc tests was then conducted on all groups separated by sex, including Saite and Roman Giza, using an online calculator (http://statpages.info/anova1sm.html) permitting the use of summary data. The results were statistically significant at the $p < .05$ level for both males (F [6, 511] = 9.2, p = .001) and females (F [6, 543] = 6.8, p = .001). Post-hoc comparisons using the Tukey HSD test indicated that the mean stature

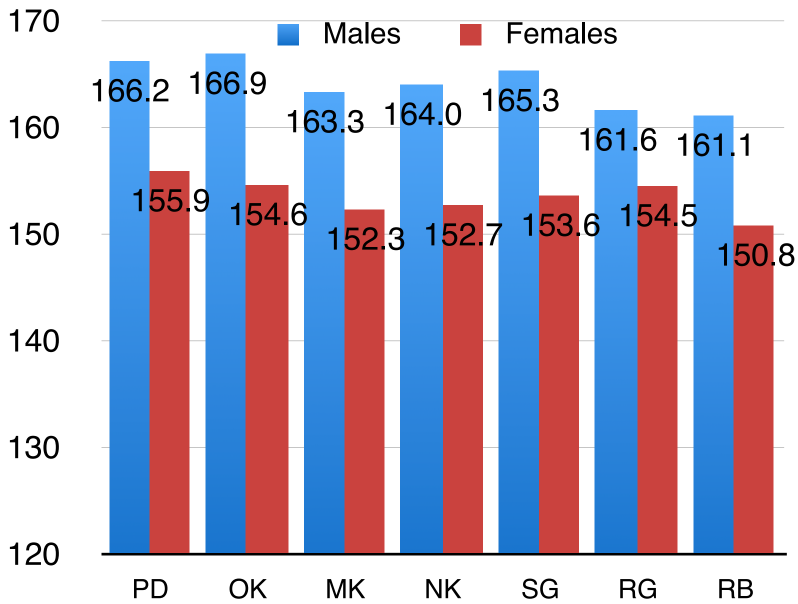

Figure 10.40: Mean stature of males and females from the Predynastic (PD; n=611)), Old Kingdom (OK; n=219), Middle Kingdom (MK; n=44), New Kingdom (NK; n=62) and Roman/Byzantine (RB; n=53) periods (after Raxter 2011), as well as Saite and Roman period Giza (SG; n=54 and RG; n=25, present study)

of both Predynastic and Old Kingdom males was significantly different from that of Roman males from Giza and Roman-Byzantine males. The mean stature of Old Kingdom males was also significantly different from that of Middle Kingdom males. Finally, the mean stature of Saite males from Giza was significantly different from Roman-Byzantine males.

Among females, the Tukey test indicated that the mean stature of Predynastic females was significantly different from the mean stature of Middle Kingdom, New Kingdom, and Roman-Byzantine females.

The comparative data was also used to calculate sexual dimorphism in stature (SDS = male height/female height), both as a raw score (Pawłowski 2003) and percent. The results show that males were between 4.6% to 8% taller than females in the Egyptian samples (Table 10.78).

10.5 Mortuary Treatment: The Saite Burials

10.5.1 Burial Position

Because of the small sample size in some of the groups, no chi-square analysis could be carried out to compare burial positions, hand or feet placement among age groups. Fisher's test was also unavailable since the matrices were larger than 2x2. The distribution across age and sex is instead provided in graphic form below, without any tests for statistical significance. For the comparison of body, hand and feet position, age groups were collapsed to Infant (<1 year), Child (1-12 years), Adolescent (12-18 years) and Adult, (18+ years). For comparison between the sexes, all sexed individuals were included.

Body Position by Age

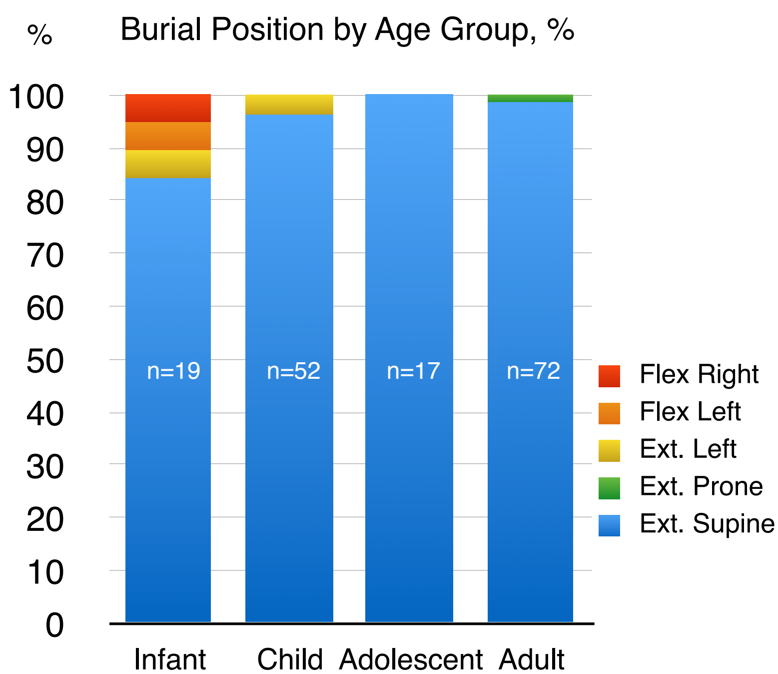

Figure 10.41: Variation in burial position in the Saite sample

As can be seen in Figure 10.41, the vast majority of Saite individuals for whom burial position could be determined (n=160) were buried supine, in an extended position. The greatest variety was found among infants, whose burials included one individual each (equaling 5.3% of the total number of infants, 19 individuals) buried extended on the left side, or loosely flexed lying on either the left or right side respectively. Two individuals in the Children 2-12 age group (3.8% of the total number of children, 52 individuals) was also found buried extended on the left side. All adolescents (n=17) were buried extended on their back, while one adult male (1.4% of the total number of 72 adults) was also found buried in a prone extended position.

Body Position by Sex

Of the 44 males and 37 females in the Saite sample, only one, a male lying face down inside his coffin, was not buried extended, face up. However, the coffin belonging to this individual was right side up, so quite likely those who buried this individual would have been unaware of the position of the body inside, and did not intend for him to be buried in a prone position.

Hand Placement by Age

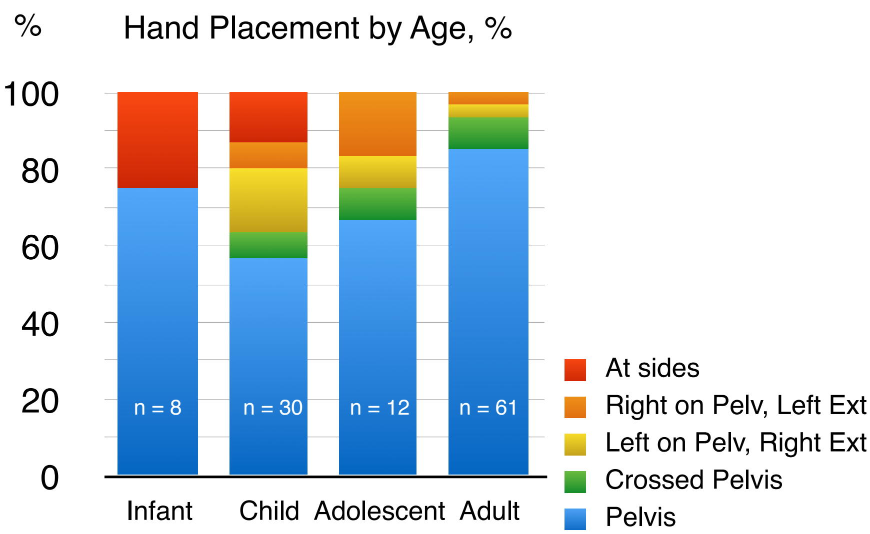

Figure 10.42: Hand placement by age in the Saite sample.

Hand placement was more variable than burial position. Though the majority of individuals were buried with their hands resting parallel on the pubic bone (74.8%, or 83 of 111 individuals), both children, adolescents, and adults sometimes had their hands crossed over the pelvis or one hand on pelvis and the other extended. In the Saite sample, only infants and children were buried with their arms and hands extended at their sides, but this arm and hand placement did not occur in either adolescents or adults (Fig. 10.42).

Hand Placement by Sex

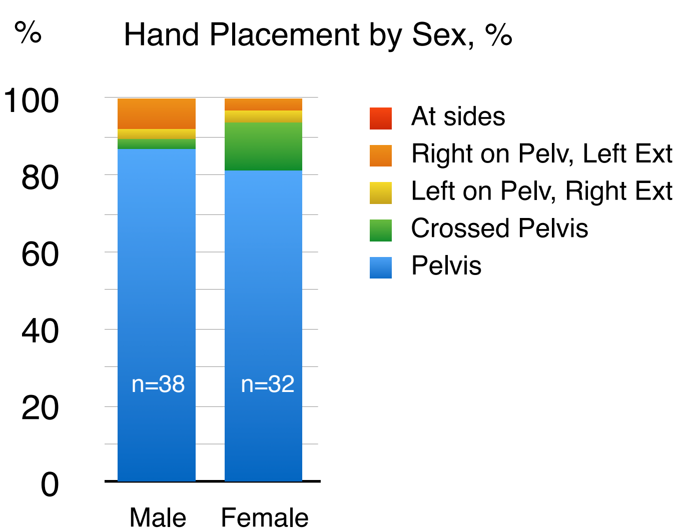

Figure 10.43: Hand placement by sex in the Saite sample.

Among the 38 males and 32 females for whom hand position could be determined, the vast majority had their hands places parallel on the pelvis. No sexed individuals were buried with the hands extended along the sides. Slightly more females than males (four versus one) had their hands crossed on pelvis (Fig. 10.43).

10.5.2 Coffins

Coffins by Age

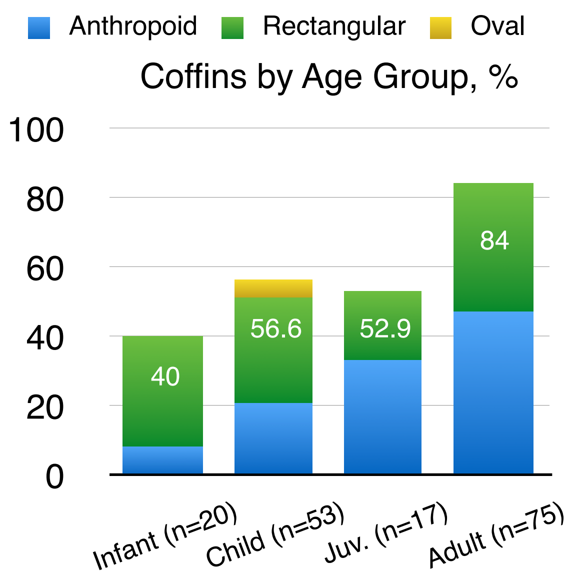

Figure 10.44: Coffins by age group and shape in the Saite sample, in %.

In the Saite sample, 110 of 165 individuals (66.7%) were equipped with a burial receptacle. They were most common among adults, but over half of all children and adolescents, as well as 40% of the infants also had coffins (Fig. 10.44). The difference in proportion with coffin by age was statistically significant: x^2 (3, n=165) = 20.397, *p* = 0.000, *phi* = 0.352. Adjusted residuals showed that the greatest impact on the chi-square results stemmed from a lower number than expected among infants who had coffins (AR= -2.7), while a higher number of adults were equipped with a receptacle (AR= +4.3). The type of coffins changed with age, however. Anthropomorphic coffins were uncommon among infants and young children, while they made up more than half of the receptacles among adolescents and adults. Instead, many infants and young children were buried in simple rectangular boxes without any traces of paint, and without lids. Among the eight infants from the Saite period, only one coffin was painted and of anthropomorphic shape. Among children under the age of twelve (n=29), twelve coffins were plain, fourteen were painted, two were made of wood, and one receptacle consisted of a surround built from granite stones. Among adolescents (n=9), all coffins were plastered and painted, and among adults (n=63) 52 coffins (82.5%) were painted while only eleven were plain.

Coffins by Sex

Among sexed individuals in the Saite sample (n=81), the majority were equipped with coffins (80.2%), and the distribution of coffins was fairly even between the sexes: 37 of 44 males (84.1%) and 28 of 37 females (75.7%) were equipped with coffins Fig. 10.45). The difference in coffin distribution was not statistically significant. Coffins among males and females were either rectangular or anthropomorphic, with the proportion of anthropomorphic coffins slightly higher among females (65.2% versus 53.1%). However, the difference in this distribution was not statistically significant either.

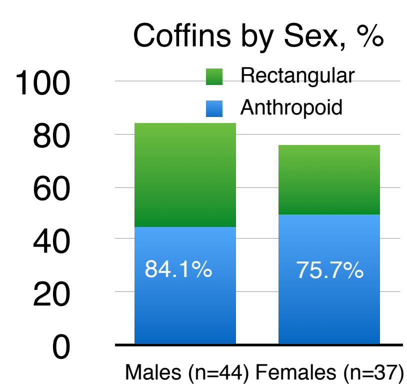

Figure 10.45: Coffins by sex and shape in the Saite sample, in %.

10.5.3 Items

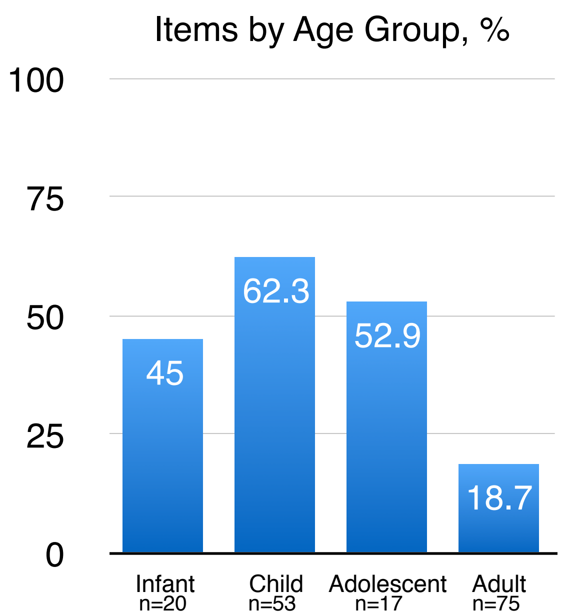

Figure 10.46: Percentage of individuals with burial items by age group.

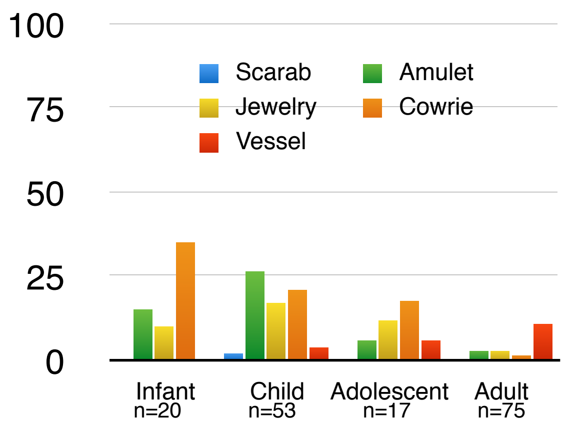

Figure 10.47: Type of burial item, in %, by age group.

Items were more common among younger individuals than adults in the Saite sample (Figure 10.46). The difference in proportion of items by age was statistically significant: x^2 (3, n=165) = 26.677, *p* = 0.000, *phi* = 0.402. Adjusted residuals showed that the greatest impact on the chi-square results stemmed from a lower number than expected among adults with items (AR= -5), while a higher number of children than expected were buried with grave goods (AR= +4.1). In addition, infants, children, and adolescents were more commonly interred with multiple items, while adults more often were buried with a single item.

There was also some variation in the type of items that occurred with each age group (Figure 10.47). Cowrie shells were significantly more common (x^2 (3, n=165) = 20.271, *p* = 0.000, *phi* = 0.351) among infants (AR=3.0) than adults (AR=-4.1), while amulets were significantly more common (x^2 (3, n=165) = 17.237, *p* = 0.001, *phi* = 0.323) among children (AR=+3.9) than adults (AR=-3.4). Jewelry was also significantly more common (x^2 (3, n=165) = 7.905, *p* = 0.048, *phi* = 0.219) in children (AR=+2.4) than adults (AR=-2.6). In contrast, ceramic vessels were more common among adults (AR=+1.9) than among children (AR=-1.0) and infants (AR=-1.3). However, this difference was not statistically significant. Further, the only scarab in the Saite material was found in the grave of a small child (approximately two years +/- 8 months), but since this was the only amulet of this kind, no statistical analysis was possible.

When compared by sex, Saite females were more commonly equipped with burial goods than Saite males. When all sexed individuals were compared (i.e., including sexed adolescents), 29.7% of females (n=37) versus 22.7% of males (n=44) were buried with at least one item. This pattern persisted when adults only were compared by sex: 25.8% (n=31) of the adult females had one or more burial item, compared to only 16.2% of adult males (n=37). However, these differences were not statistically significant. Similarly, there were no significant differences between the sexes when item types were analyzed separately, though amulets were more common among females when all sexed individuals were compared to the point of approaching significance (x^2 (1, n=81) = 3.705, p = 0.054, *phi* = -0.214).

10.6 Mortuary Treatment: The Roman Burials

10.6.1 Burial Position

As with the Saite burials, the small sample size precluded the use of chi-square analysis to compare burial positions, hand or feet placement among age groups. Fisher's test was also unavailable since the matrices were larger than 2x2. The distribution across age and sex is instead provided in graphic form below, without any tests for statistical significance. For the comparison of body, hand and feet position, age groups were collapsed to Infant (<1 year), Child (1-12 years), Adolescent (12-18 years) and Adult, (18+ years). For comparison between the sexes, all sexed individuals were included.

Body Position by Age

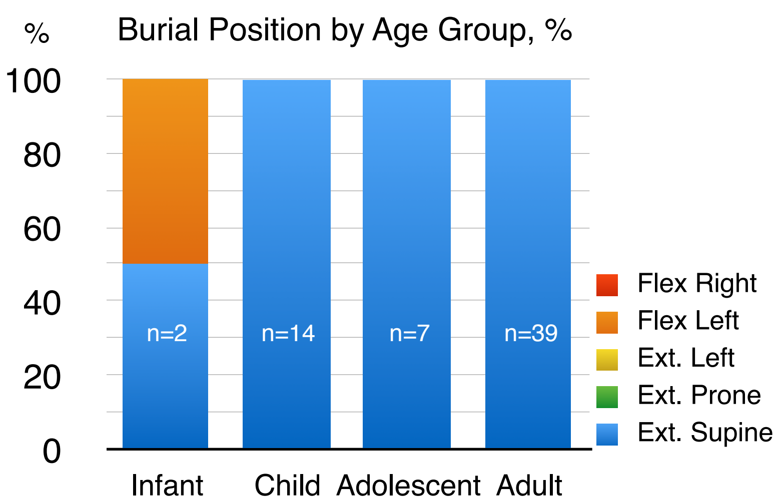

Figure 10.48: Variation in burial position in the Roman sample

In the Roman sample (n=62), only one individual, an infant, was buried loosely flexed, lying on the left side. All remaining burials were buried supine, in an extended position. The greatest variety was found among infants, whose burials included one individual each buried extended on the left side or loosely flexed lying on either the left or right side respectively. Two individuals in the Children 2-12 age group (3.8% of the total number of children, 52 individuals) was also found buried extended on the left side. All adolescents (n=17) were buried extended on their back, while one adult male (1.4% of the total number of 72 adults) was also found buried in a prone extended position (Fig. 10.48).

Body Position by Sex

In the Roman sample, all sexed individuals for whom burial position could be determined (n= 45), all 16 females and 29 males were buried were buried in an extended supine position.

Hand Placement by Age

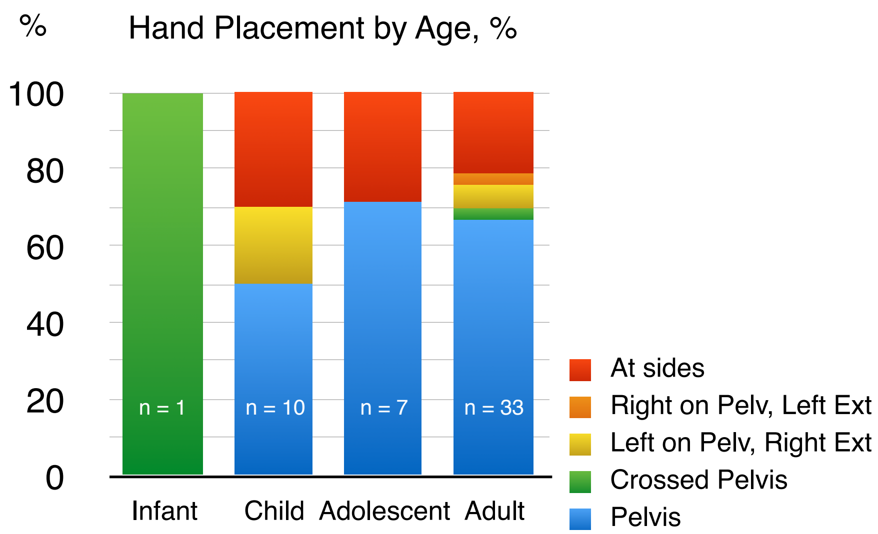

Figure 10.49: Hand placement by age in the Saite sample.

Hand placement in the Roman sample differed somewhat from the Saite sample. Though the majority of individuals were still buried with their hands resting parallel on the pubic bone (62.7%, or 32 of 51 individuals), both children, adolescents, and adults sometimes had their hands at their sides, something that only occurred in infants and children in the Saite period. The only infant in the Roman sample for whom hand position could be determined was buried with the hands crossed over the pelvis (Fig. 10.49).

Hand Placement by Sex

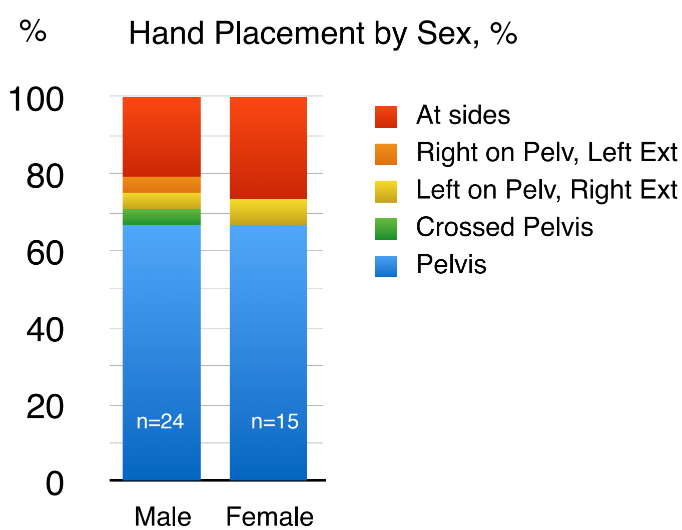

Figure 10.50: Hand placement by sex in the Saite sample.

The most noticable difference in hand placement between the Saite and Roman samples was that Roman adults sometimes were buried with their hands extended by the sides rather than placed on the body. Of the 24 males and 15 females for whom hand placement could be determined, five males (20.8%) and four females (26.7%) were buried in this position. However, the majority of individuals were still buried with their hands resting parallel on the pelvis (Fig. 10.50).

10.6.2 Coffins

Coffins by Age

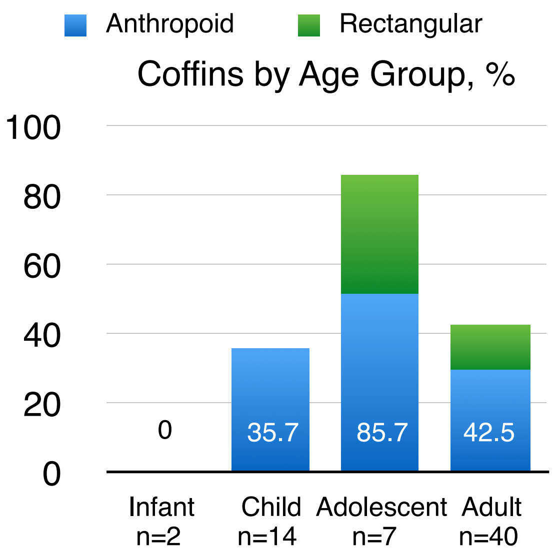

Figure 10.51: Coffins by age group and shape in the Saite sample, in %.

In the Roman sample, 28 of 63 individuals (44.4 %) were equipped with a burial receptacle. They were most common among adolescents, but over two-thirds of the children and adults also had coffins. No infants were buried in a receptacle in the Roman sample. The sample size was not large enough to allow for a chi-square test, and because the matrix was larger than 2x2, Fisher's exact test was also unavailable. However, the distribution of coffins across age groups is presented in graphic form in figure 10.51. The majority of the coffins were anthropomorphic in shape. Among children, all individuals with receptacles were buried in anthropomorphic coffins, while over half of the coffins associated with adolescents (60%) and more than two-thirds of those associated with adults (69.2%) were anthropomorphic. Among children under the age of twelve (n=5), three coffins were plain, and two were painted. Among adolescents (n=6), all but one coffin were plastered and painted, and among adults (n=17) 15 coffins (88.2%) were painted, while only two were plain.

Coffins by Sex

Among sexed individuals in the Roman sample (n=46), the distribution of coffins was also fairly even, though a lower percentage of the total number of individuals were equipped with coffins compared to the Saite sample (22 of 46, 47.8%): 14 of 30 males (46.7 %) and 8 of 16 females (50 %) were buried in a receptacle (Fig. 10.52). The difference in coffin distribution was not statistically significant. Coffins among males and females were either rectangular or anthropomorphic, with the proportion of anthropomorphic coffins identical between males and females, 66.7%. The difference in coffin shape was not statistically significant.

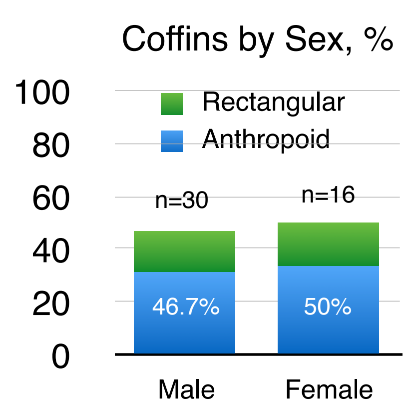

Figure 10.52: Coffins by sex and shape in the Saite sample, in %.

10.6.3 Items

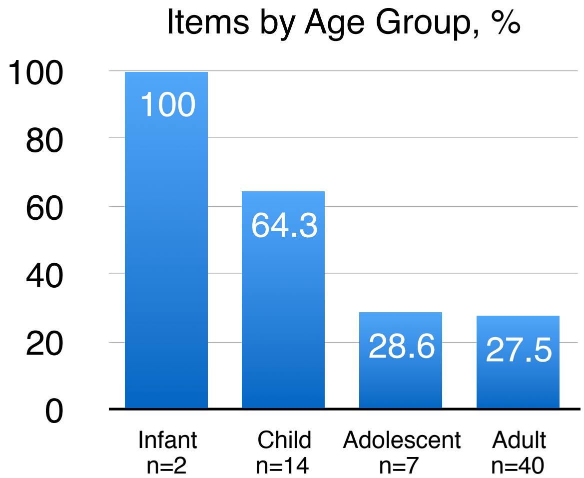

Figure 10.53: Percentage of individuals with burial items by age group.

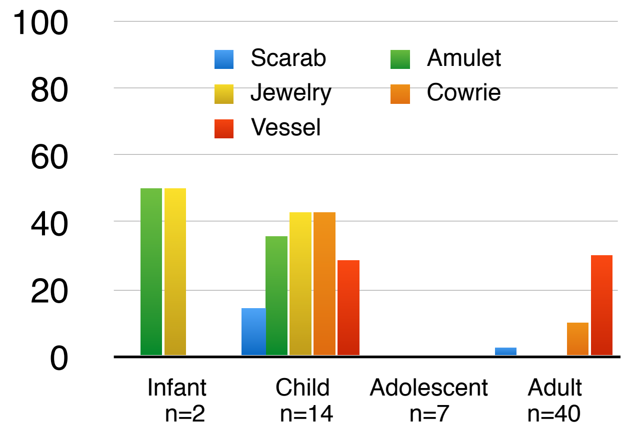

Figure 10.54: Type of burial item, in %, by age group.

Again, items were more common among younger individuals in the Roman sample (Fig. 10.53). The difference in proportion of items by age was statistically significant: x^2 (3, n=63) = 9.495, *p* = 0.023, *phi* = 0.388. However, this is with the caveat that one cell (Infant/Present) in the 4x2 matrix had an expected value of only 0.8 Adjusted residuals showed that the greatest impact on the chi-square results stemmed from a lower number than expected among adults with items (AR=-2.3), while a higher number of children than expected were buried with grave goods (AR= +2.3). In addition, infants, children, and adolescents were more commonly interred with multiple items, while adults more often were buried with a single item.

There was also some variation in the type of items that occurred with each age group (Fig. 10.54). Cowrie shells were significantly more common (x^2 (3, n=63) = 10.365, *p* = 0.016, *phi* = 0.406) among children (AR=+3.1) than adults (AR=--1.7). However, as with the comparison of all item groups, one cell in the 4x2 matrix (Infant/Present) had an expected count of only 0.3, and the results must, therefore, be seen as tentative. Similarly, when amulets were compared by age group, the same cell in the matrix had an expected value of only 0.2. Keeping in mind that the results of the chi-square analysis are provisional, amulets were significantly (x^2 (3, n=63) = 19.895, *p* = 0.000, *phi* = 0.562) more common among children (AR=+3.8) than adults (AR=-3.4). Jewelry was also more common among children (AR=+4.3) and infants (AR= +1.8) than among adults (AR=_3.7) and adolescents (AR=-1.0). However, two of the cells in the 4x2 matrix had expected values of less than 1, and no chi-square analysis was therefore possible. There were no significant differences in scarab or vessel distribution across age groups.

When compared by sex, Roman males were more commonly equipped with burial goods than Roman females. When all sexed individuals were compared (i.e., including sexed adolescents), 33.3% of males (n=30) versus 18.8% of females (n=16) were buried with at least one item. This pattern was strengthened when adults only were compared by sex: 34.5% (n=29) of the adult males had one or more burial item, compared to only 10% of adult females (n=10).

However, these differences were not statistically significant. Similarly, there were no significant differences between the sexes when item types were analyzed separately.

10.7 Mortuary Treatment: Interphase Comparison

10.7.1 Burial Position

Body Position

In both the Saite and the Roman sample, the vast majority of individuals were buried in an extended supine position. There was slightly more variety in the Saite sample (n=160), where three infants and two children were buried on their side, and one adult male was buried in a prone position inside the coffin. However, in the latter example, the coffin was intact, and the prone burial position was most likely unintentional. In contrast, only one individual in the Roman sample (n=63), an infant, was buried lying on the side, while all remaining individuals were interred on their back in an extended position.

Hand Placement

In both the Saite and Roman samples, hand placement was more variable than body position. In both periods, the majority of individuals were buried with their hands resting parallel on the pubic bone. In the Saite period, 25.2% of the observable individuals (n=111) had their hands placed either crossed over the pelvis, one hand on pelvis and the other extended, or both hands extended along the sides of the body. In the Roman sample, 37.3% of the observable individuals (n=51) were buried with their hands in one of these positions, and not resting parallel on the pubic bone. However, in the Saite sample, only infants and children were buried with their hands extended along the sides, while in the Roman sample this hand placement occurred in all age groups except infants. Among sexed individuals, 20.8% of the Roman males (n=24) and 26.7% of the Roman females (n=15) were buried with their hands along the sides, while in the Saite sample none of the sexed individuals were buried with this hand placement.

10.7.2 Coffins

Among Saite individuals (n=165), 66.7% were equipped with a burial receptacle, while among Roman individuals (n=63) the percentage was lower, and only 44.4% were interred in coffins. This difference was statistically significant: (x^2 (1, n=228) = 9.4235, p = 0.0214, *phi* = 0.20). In the Saite period, anthropomorphic coffins were uncommon among infants and young children, while they made up more than half of the receptacles among adolescents and adults. Anthropomorphic coffins made up more than half of the coffin total for adolescents and adults in the Roman period as well, but in contrast to the Saite period, none of the Roman infants were buried in a receptacle, while among children, all coffins were anthropomorphic in shape.

Though the difference in coffin distribution between the sexes was not statistically significant for either period, Saite males were significantly more likely to be buried in a coffin than Roman males (x^2 (1, n=74) = 11.6631, p = 0.0006, *phi* = 0.40). Coffins were also more common among Saite females (28/37, 75.7%) than among Roman females (8/16, 50%). However, the difference in coffin distribution between Saite and Roman females was not statistically significant.

10.7.3 Items

In both the Saite and the Roman period, burial goods were significantly more common among younger individuals than adults. In the Saite sample, cowrie shells were significantly more common among infants than adults, while amulets and jewelry were significantly more common among children than adults. In the Roman sample, both cowrie shells and amulets were significantly more common among children than adults. Item types were also more similar across age groups in the Saite period than in the Roman period, though this was not statistically measurable. Amulets, jewelry, and cowrie shells occurred in all age groups in the Saite period, and vessels in all age groups except infants. In contrast, none of the Roman adults or adolescents were equipped with either amulets or jewelry, there were no cowrie shells among Roman infants, and vessels occurred only among children and adults. The only item type found with Roman adolescents was beads, though in one case they consisted of an entire bead-net dress, found with an adolescent female.

When compared by sex, females were more commonly equipped with grave goods than males in the Saite population, while the opposite was true among Roman individuals, where grave goods were more common among males. However, the difference in item distribution between the sexes was not statistically significant for either period. Similarly, there were no statistically significant differences between Saite and Roman males, or between Saite and Roman females, when the sexes were compared across phases.

10.8 Summary of Statistical Analyses

As outlined in Chapter Seven, the goals of this research is to identify temporal or sex-based differences in the prevalence of markers of skeletal stress in the Wall of the Crow skeletal sample, as well as to investigate whether differential treatment of different societal groups is observable in cemetery organization within or between phases of the Wall of the Crow site. In the previous sections of this chapter, the results of the statistical analyses of demographic patterns, markers of skeletal stress, and mortuary treatment were presented in full. What follows is a summary of the statistically significant results of the analyses as they pertain to each of the hypotheses tested in this dissertation.

10.8.1 Summary of Significant Results Pertaining to Research Hypothesis 1

Research Hypothesis 1: The Roman skeletal sample from the Wall of the Crow cemetery will exhibit higher frequencies of physiological stress indicators than the Saite sample.

Statistically significant results pertaining to Hypothesis 1 are summarized in table 10.79 below. Implications of the results are discussed in detail in Chapters Twelve and Thirteen.

Indicator	Groups compared	Significant Result ($p < 0.05$)	Supports Hypothesis 1?
LEH	All sexed individuals, Saite vs. Roman males	Hypoplastic teeth occurred with significantly greater frequency in Saite males than in Roman males when all teeth where pooled.	Yes
LEH	All sexed individuals, Saite vs. Roman females	When prevalence was compared by tooth, linear enamel hypoplasia occurred more frequently on the lower right lateral incisor among Roman females than Saite females	Yes
LEH	Adult individuals (18+ years), Saite vs. Roman females	When prevalence was compared by tooth, linear enamel hypoplasia occurred more frequently on both right lateral incisors among Roman females than Saite females	Yes
CO	All individuals, adults vs. subadults of both phases.	Cribra Orbitalia was significantly more common in subadults than adults in both the Saite and Roman samples.	Neutral
DJD (Synovial Joints)	Adult individuals (18+ years), Saite vs. Roman males	DJD of the synovial joints were significantly more common in Roman males than Saite males. Because of this, it was also more common in the Roman population as a whole.	Yes

PNB (Long Bones)	All sexed individuals, Saite vs. Roman females	PNB of the long bones was significantly more common among Saite than Roman females, both compared by individual and when all skeletal elements were pooled.	No
PNB (Long Bones)	All individuals, adults vs. Subadults, Saite sample	PNB of the long bones was significantly more common among subadults than adults in the Saite sample	Neutral
PNB (General Infection)	All individuals, adults vs. Subadults, Saite sample	PNB of any bone other than the long bones was significantly more common among subadults than adults in the Saite sample	Neutral
Stature	Adult individuals (18+ years), Saite vs. Roman males	Saite males were significantly taller than Roman males.	Yes
Stature	Adult individuals (18+ years)	Sexual Dimorphism in Stature (SDS) was significantly smaller in the Roman period.	Yes

Table 10.79: Summary of statistically significant results pertaining to Hypothesis 1.

10.8.2 Summary of Significant Results Pertaining to Research Hypothesis 2

Research Hypothesis 2: Prevalence rates of skeletal indicators of stress associated with infection and nutritional stress will be higher among females in both the Saite and Roman periods, while prevalence rates of degenerative joint disease will be higher in males. When compared by phase, Roman females will have higher rates of skeletal indicators of stress than Saite females.

Statistically significant results pertaining to Hypothesis 2 are summarized in table 10.80 below. Implications of the results are discussed in detail in Chapters Twelve and Thirteen.

Indicator	Groups compared	Significant Result ($p < 0.05$)	Supports Hypothesis 2?
LEH	Post-pubescent juveniles, Saite males vs. Saite females	When prevalence was compared by tooth, linear enamel hypoplasia occurred more frequently on the right upper canine and left lower central incisor among Saite juvenile females than Saite juvenile males.	Yes
LEH	All sexed individuals, Saite juvenile females vs. Saite adult females.	When prevalence was compared by individual, Saite juvenile females were significantly more likely to have hypoplastic defects than Saite adult females.	Neutral

LEH	All sexed individuals, Roman females vs. Roman males	Roman females were significantly more likely to have linear enamel hypoplasia on the left lower central incisor and both lower right incisors when compared by tooth. Results were also statistically significant when compared by individual.	Yes
Schmorl's nodes	Adult individuals (18+ years), Saite males vs. Saite females.	Schmorl's nodes were present in Saite males but entirely absent in females. The difference was statistically significant.	Yes
PNB (Long Bones)	All sexed individuals, Saite males vs. Saite females.	PNB of the long bones was significantly more common among Saite females than males when all skeletal elements were pooled. When compared by skeletal element, PNB occurred significantly more often among Saite females than Saite males on the right Tibia and Fibula.	Yes
PNB (Long Bones)	All sexed individuals, Saite vs. Roman females	PNB of the long bones was significantly more common among Saite than Roman females, both compared by individual and when all skeletal elements were pooled.	No

Table 10.80: Summary of statistically significant results pertaining to Hypothesis 2.

10.8.3 Summary of Significant Results Pertaining to Research Hypothesis 3

Research Hypothesis 3: The Wall of the Crow Cemetery will be organized by recognizable societal groups (i.e., age and/or sex) in both the Saite and the Roman period. The distribution of grave goods will differ between men, women, and children of both phases.

Statistically significant results pertaining to Hypothesis 3 are summarized in table 10.81 below. Implications of the results are discussed in detail in Chapters Twelve and Thirteen.

Indicator	Groups compared	Significant Result ($p < 0.05$)	Supports Hypothesis 3?
Coffins	All individuals, Saite vs. Roman burials	Coffins were significantly more common in the Saite period burials.	Neutral
Coffins	All sexed males, Saite vs. Roman burials	Coffins were significantly more common among Saite males than Roman males.	Neutral
Items (General)	All individuals, Saite sample, comparison of age groups	Items were significantly more common among subadults than adults in the Saite sample	Yes

Items (General)	All individuals, Roman sample, comparison of age groups	Items were significantly more common among subadults than adults in the Roman sample	Yes
Items (Cowrie shells)	All individuals, Saite sample, comparison of age groups	Cowrie shells were significantly more common among infants than adults	Yes
Items (Amulets and Jewelry)	All individuals, Saite sample, comparison of age groups	Amulets and jewelry were significantly more common among children (1-12 years) than among adults.	Yes
Items (Cowrie shells and amulets)	All individuals, Roman sample, comparison of age groups	Cowrie shells and amulets were significantly more common among children than among adults.	Yes

Table 10.81: Summary of statistically significant results pertaining to Hypothesis 3.

CHAPTER 11:
THE SPECIAL CHILD: CHILDREN AND DEATH ON THE GIZA PLATEAU

11.1 Children in Archaeology

Children are often described as being 'invisible' in the archaeological record (Baxter 2000:4-6; Lewis 2007:3; Sofaer Deverenski 1994). At a cemetery site, however, their physical remains are identifiable (Baxter 2005:93; Perry 2006). While still problematic, because child burials offer a glimpse of how children were perceived in death rather than in life (Mizoguchi 2000), the remains of the youngest nevertheless have the potential to add to our understanding of the place of children in ancient societies. At the Wall of the Crow Cemetery, a closer examination of the burials of children reveals some subtle but intriguing differences that may elucidate not only variability in the quality of life but also changes in funerary beliefs from the Saite to the Roman period. At Giza, both Roman and Saite children were interred with more grave goods than the adults in each sample, but the mortuary treatment of the Saite burials, in particular, suggests special precautions were taken to ensure a safe transition to the afterlife for children of this phase. This is not altogether surprising since children are often found interred in a manner different from adults in archaeological contexts -- in their own cemeteries, a separate section of a cemetery, or buried under the floors of houses or in abandoned settlements (Lewis 2007:31; Scott 1999:107; Kamp 2001). This chapter examines the variation in mortuary treatment across time afforded to children buried in the Wall of the Crow Cemetery in order to investigate changing attitudes toward premature death in the Giza population.

Roughly two-thirds of the child burials at the Wall of the Crow Cemetery (73 individuals) can be dated to the Twenty-Fifth to Twenty-Sixth (Saite) Dynasty, and a smaller sample of 16 child burials date to the early Roman period, e.g., first to second century CE. These 89 burials make up 39% of the securely dated Wall of the Crow sample. Though this number may seem high, children are usually assumed to be under-represented in archaeological samples from pre-industrial societies if the proportion of non-adults is less than 30% (Lewis 2007: 22; Schofield and Wrigley 1979). Indeed, the reported number of children from several other Egyptian cemeteries, such as those at Mirgissa (Baines and Lacovara 2002), Gurob, Matmar and Moustagedda (Robins 1994-5) and Kellis 2 in the Dakhleh Oasis (Wheeler et al. 2011) far exceeds the Wall of the Crow material and approaches 50 or even 60%.

11.2 Children in Ancient Egypt

In the western world today, the death of a child is seen as unnatural, a catastrophic event from which the bereaved parents may never recover. However, in many third world countries, where access to modern medicine, clean water, and sanitary conditions is scarce, high child mortality is something that communities still experience. This was likely the case in ancient Egypt as well, as in any pre-modern society, and thus we can probably assume that mortuary practices associated with the death of the very youngest were a fairly common occurrence in ancient Egyptian communities. Precisely how the ancient mourners dealt with this reality, we cannot know, but numerous textual sources tell us that children were highly valued in Ancient Egypt. They were needed to ensure the continuation of the family, and to keep the memory of their parents and grandparents alive (Feucht 1995:52-53). In addition, parents relied on their children to care for them in their old age, and to make sure they received a proper burial (Huebner 2013:163; Janssen and Janssen 2007:131-132).

The Instruction of Any tells us that "Happy the man whose people are many – He is saluted on account of his progeny" (transl. Lichtheim 1976:136). The many surviving magico-medical papyri concerned with curing infertility and protecting young children and pregnant and nursing mothers from harm is further testament to the importance of the family in ancient Egyptian society (Pinch 1994:122-123; Robins 1993:85-86), and petitions in the form of letters or inscribed figurines urging dead relatives to grant children to childless couples are also known (Robins 1993:76-77; Robins 1996; Wente 1990:213). Children were named at birth (Janssen and Janssen 2007:13), and appear to have been considered individuals from an early age. A child was recognized as a living being already in the womb (Feucht 2001), and examples of neonates and even fetuses buried with grave goods (Meskell 1994) or in elaborate coffins (Spieser 2008) suggest that even the very youngest were thought to need provisions in the afterlife. In later periods, tomb inscriptions and stelae with texts written in the voices of dead children (but presumably commissioned and paid for by their parents) lament their shortened time in this world and their premature deaths. On an Abydene stela from the Saite period, the girl Isenkhebe tells us:

> *"I was driven from childhood too early! /Turned away from my house as a youngster. Before I had my fill in it! /The dark, a child 's terror, engulfed me / While the breast was in my mouth!"*

Small children were considered innocent, pure and free of sin. Plutarch tells us that because of their purity, children were considered to be closer to the gods, and therefore possess prophetic gifts (Feucht 1995:374-376). Papyrus Insinger states that man spends ten years as a child, before understanding death and life, and another ten "acquiring the work of instruction by which he will be able to live" (transl. Lichtheim 1980:199), suggesting that childhood and adolescence lasted for an extended period, at least for the male members of society.

Children were doubtless economically valuable to their parents as well. In tomb paintings, children of both sexes are shown helping with sowing, plowing, and harvest. Boys are further often shown assisting in the care of animals in the field, picking grapes and pressing them, and accompanying their fathers to work (Feucht 1995:307-315), while girls are depicted helping their mothers in the house, taking care of poultry and small livestock, and caring for younger siblings (Feucht 1995:336-337). An Eighteenth Dynasty letter from the scribe Ahmose to his superior Tey (pLouvre 3230), wherein he relays complaints from a mother that her daughter is being made to work too hard, may imply that parents could rent their children out for labor (Feucht 1995:341-342; Wente 1990:92).

Phillippe Ariès suggested in his seminal work on the history of childhood (1962) that high childhood mortality in a society would lead to delayed attachment to children, and a view of the youngest as not yet fully formed persons. The assumption of a correlation between high mortality rates and a lack of emotional investment in children was echoed by contemporary researchers, such as David Heer (1968) and Lloyd DeMause (1974), and is even cited in more recent anthropological studies (Scheper-Hughes 1993). As we have seen, this does not seem to have been the case in Egypt, despite the perils of early childhood throughout Egyptian history.

11.3 Spatial Organization

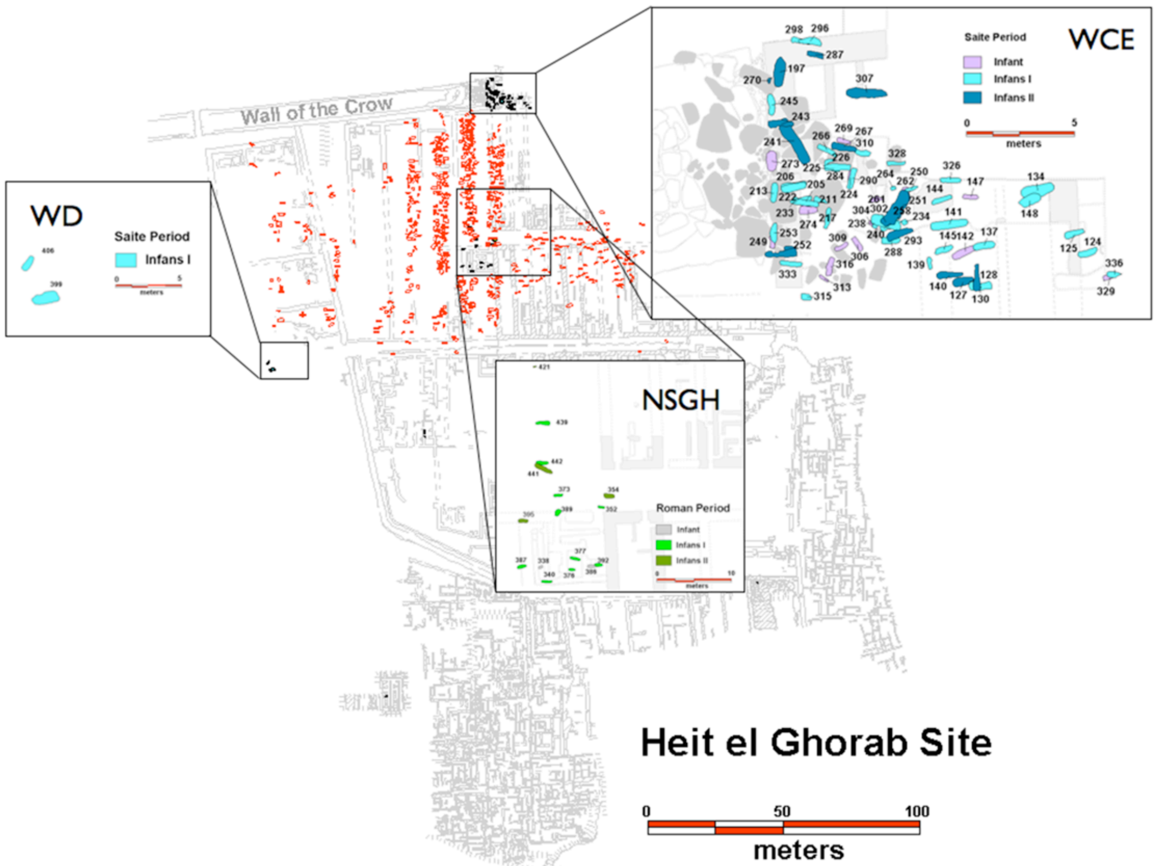

Figure 11.1: Spatial distribution of subadult burials

The most striking difference between the two different periods is the locations chosen for the burials. In the Saite period, the Wall of the Crow was the main unifying feature for children buried in the cemetery. In the Roman period, there do not seem to have been any attempts at segregating the non-adults from the adult burials in the cemetery.

The majority of the Saite period burials were concentrated around the eastern end of the Wall of the Crow (area WCE: see Figure 11.1) in the northeastern part of the concession, with a smaller group excavated in the western outskirts of the site, in an area designated the “Western Dump” (WD). Most of the Roman period burials were also in the northeastern parts of the site;

not directly by the Wall of the Crow, however, but further south, in an area known as the North Street Gate House (NSGH), or spread out in a larger area between the eastern end of the Wall of the Crow and NSGH. Thus, it appears that the use of the area as a burial ground started in the Twenty-Fifth Dynasty adjacent to the Wall of the Crow, and spread south during the Roman period. The Saite and Roman use of the site was limited to its northern half, and bounded by what is known as "Main Street", a paved Old Kingdom access road transecting the site from west to east, suggesting that the road may have been in use, or was at least visible, during this period.

During the Saite period, the Wall of the Crow appears to have had a special significance regarding children. Though adults were buried in the shadow of the massive wall as well, non-adults make up over half of the Wall of the Crow Saite sample, and only two non-adult burials were found elsewhere on the site. Secondary cemeteries, i.e., burials clustered around earlier extant monuments, are not unusual in the later periods of Egyptian history (cf. Giddy 1992; Janot, et al. 2001; Jeffreys and Strouhal 1980; Strouhal and Bareš 1993; Ziegler 2012), and given the high visibility of the imposing wall in the Giza landscape, it is not surprising that it was chosen as a mortuary monument of sorts. However, the high proportion of non-adult burials around it invites speculation. It is possible that the wall was simply seen as offering additional protection for the youngest on the treacherous journey to the hereafter. Similar sentiments are known from Roman Britain and Italy, where the practice of burying infants around the walls of large buildings rather than in communal cemeteries is well attested (Scott 1999:115-117; Watts 1989), and from Mediaeval Europe, where small children were often buried under the eaves-drip of churches, in the hopes that the 'sanctified' water dripping off the roof of the church would offer special protection (Blair 2005:471, n.201; Buckberry 2007). Another explanation for the high number of child burials around the east end of the Wall of the Crow could be that it was associated with fecundity and by extension childbirth and small children. In modern Egypt, ancient monuments are often thought to have fertility granting powers, and contemporary women frequently use pharaonic temples, statues, or tombs in fertility rites when they wish to conceive. These rituals can take several forms, such as rubbing, licking, dust collecting or circumambulation (Hansen 2006:189-193). At the Wall of the Crow today, local women urinate on a survey marker on top of the wall's eastern end when they wish to become pregnant. Evidence of similar practices during the pharaonic period is known from Amarna, Memphis, Philae and Dendera (Hansen 2006:188), and it is possible that the association between the Wall of the Crow and fertility/childbirth survives from ancient times.

In the Roman period, the specific connection between the eastern end of the Wall of the Crow and small children appears to have disappeared, as the Roman non-adult burials are interspersed with adults across a larger area further south on the site. There is no discernible difference between the location of child burials and those of adults from the period.

11.4 Coffins

At the Wall of the Crow cemetery as a whole, slightly less than half of the non-adult burials were equipped with coffins. The coffins were invariably very poorly preserved, as they were generally made of unfired plastered and painted finely levigated mud, or wood, which did not hold up well to the repeated flooding of the site. There was some variation between the different periods: just over half of the Saite burials but only slightly less than a third of the Roman burials had coffins.

There was also some differentiation between age groups. In the Saite period, the likelihood of receiving a coffin appears to have increased with age. Conversely, in the Roman period, the majority of the coffins were found with the Infans I individuals, while none were found with the Infants, and only a third of the Infant II individuals were buried in a receptacle (Figure 11.2). The type of coffin also varied with age and between periods. In the Roman period, all but one of the coffins given to non-adults were anthropomorphic, painted mud-coffins, while many of the younger non-adults in the Saite sample were buried in simpler receptacles. In the youngest, Infant, age-group from the Saite period, only one of the coffins was painted and anthropomorphic in shape, while the remaining burial receptacles were simple rectangular boxes with no evidence of lids, most often preserved only as a faint outline of darker mud with inclusions of wood fragments in the fill of the burial. Similar square wooden boxes used specifically for the burials of children have been reported by Petrie (1923:36) in Lahun, Brunton (1948:80) in Matmar, and Craig Patch (2007) in Abydos, all from Third Intermediate Period cemeteries, and are also known from earlier sites, such as New Kingdom Deir el Medineh (Bruyere 1937:14; Meskell 1994). Though the type of wood used for the boxes at the Wall of the Crow Cemetery could not be determined due to the poor preservation, other examples of boxes utilized for child burials were often made of sycamore, a type of wood widespread throughout Egypt, which by virtue of its red color invoked the sun. The sycamore's association with both Nut and Hathor may have rendered the boxes suitable for use as funerary receptacles (Spieser 2007). These simple containers also accounted for approximately half of the Saite receptacles in the middle, Infans I, age group, notably with the youngest individuals of that age group, while the remaining preserved receptacles were painted anthropomorphic or rectangular mudcoffins.

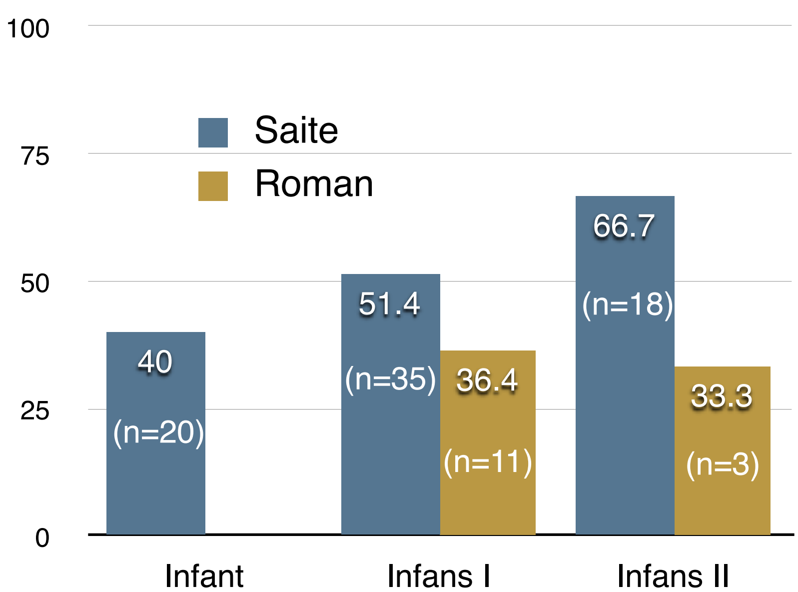

Figure 11.2: Distribution of coffins across age groups, in %

11.5 Burial Goods

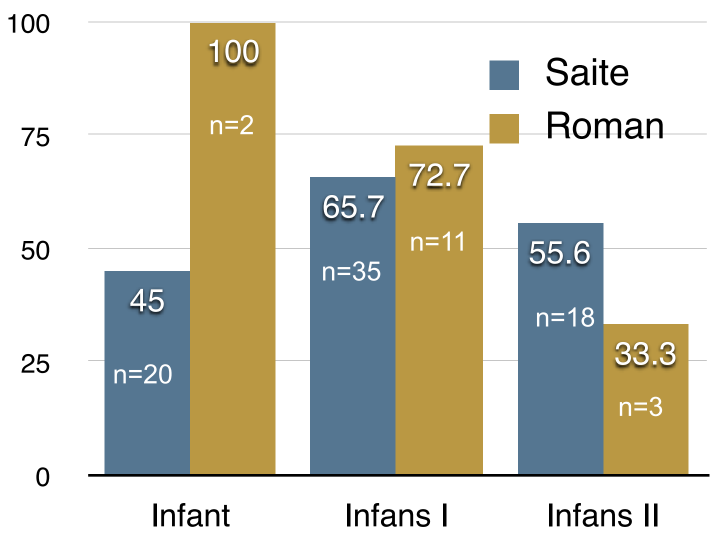

Figure 11.3: Distribution of burial goods across age groups

At the Anubeion cemetery, Giddy (1992; 43) noted that of the 36 burials that had some form of burial goods, 27 were non-adult interments. That the majority of small finds (amulets, jewelry, beads, shell and the like) were associated with non-adults is also reported from the Late Period necropolis around the mastaba of Akhethetep in Saqqara (Ziegler 2012), and from the Third Intermediate Period cemeteries in Abydos (Craig Patch 2007) and Matmar (Brunton 1948:79-85). The Wall of the Crow Cemetery shows a similar pattern. Just over a third of the full burial sample was afforded grave goods, but children to a much higher rate than adults and juveniles (Table 11.1). In addition, the children's graves also contained a higher number of objects per burial, while objects in adult and juvenile burials most commonly were limited to a single bead or amulet per grave. Sixty-five percent of the Saite non-adult burials (42/73) and almost seventy percent (11/16) of the Roman non-adult burials had objects included in their graves.

When divided by age-group, objects became less common with age in the Roman sample, while in the Saite period they were most common in the Infans I age group, and less so in the graves of Infants and older individuals (Fig. 11.3). Giddy (1992) theorizes that burial items in the Anubeion cemetery may have been provided to non-adults as compensation for a lack of burial receptacle, as burials without items were more likely to be equipped with a painted anthropomorphic coffin. This pattern may hold true for the Roman period burials in the Wall of the Crow sample, where less than half of the burials with objects also had a coffin, but only three of the 16 non-adult burials had neither coffin nor burial items. In the Saite period, burial objects may have been provided in lieu of a coffin for the very youngest, as only a third of the Infant burials with objects also had a burial receptacle.

The types of burial goods also differed between age groups and periods (Figure 11.4). Vessels were more common in the Roman sample, where a quarter of the non-adult burials included ceramics, compared to only 2.7% from the Saite period. Amphorae, juglets and cooking pots made up the bulk of the Roman ceramics, while pilgrim flasks were more common in the Saite burials. The only painted pottery (two jars with painted polychrome post-firing decoration) also derived from the Saite period (Laemmel 2010).

Of the burials with objects, 10% of the Saite Infants, 17.1% of the Infans I group and 16.7% of the Infans II group included some form of jewelry, such as metal earrings, bracelets, anklets, pendants or bead necklaces. Earrings were generally of the hoop variety, in the Saite period often with one or more beads of semiprecious stones such as carnelian, and most Saite graves where jewelry was found included more than one item. In addition to earrings, which during the Saite period occurred in pairs, and were often adorned with one or more carnelian beads, there were also bracelets, anklets, metal pendants, or bead necklaces.

Table 11.1: Distribution of Coffins, Vessels and Objects								
A: Saite Period								
Age Group	**Total**	**With Coffin**	**Coffin Types**	**With Objeccts**	**Object Types**	**With Vessels**	**With Objects + Coffin**	**Without Objects + Coffin**
Infant	20	8	Simple box (7), Painted Anthropoid (1)	9	Beads, Cowries (31), Earring (1), Bracelet (1), Simple Wdjat eyes (3)	0	3	6
Infans I	35	18	Simple box (10) Painted anthropoid or Rectangular (6) Other/Undet (2)	23	Beads, Cowries (49), Earrings (10), Bracelets (3), Anklets (2), pendants (2), Bead necklace (1), Wdjat eyes (11), Bes amulets (4), Nut-sow (1), Bastet (1), Lotus bud (1), Scarab (1)	2	13	7
Infans II	18	12	Painted anthropoid or rectangular (8), Plain anthropoid or rectangular (4)	10	Beads, Cowries(11), Earrings (2), Bracelet (1), Wdjat eyes (3), Nut-sow (1), Hathor - cow (1)	0	8	4
Juvenilis	17	9	Painted anthropoid or rectangular	9	Beads (occasional), Cowries (6), Wdjat eyes (2)	1	6	5
Adult	75	63	Painted anthropoid or rectangular	14	Beads (occasional), Cowrie (1), Wdjat eyes (2)	8	12	10
Totals (Saite)	**165**	**110**		**65**		**11**	**42**	**32**
B: Roman Period								
Age Group	**Total**	**With Coffin**	**Coffin Types**	**With Objeccts**	**Object Types**	**With Vessels**	**With Objects + Coffin**	**without Objects + Coffin**
Infant	2	0	N/A	2	Beads (occasional), Earring (1),Bracelet (1), Wdjat eyes (2)	0	0	0
Infans I	11	4	Painted anthropoid or rectangular (3), Plain anthropoid (1)	8	Beads Cowries (33), Earrings (4),Bracelet (1), Wdjat eyes (6), Nut-sow (1) Horus falcon (1), Axe-shaped amulet (1) Scarabs (2)	2	3	2
Infans II	3	1	Painted anthropoid or rectangular (1)	1	Beads (occasional)	2	0	1
Juvenilis	7	6	Painted anthropoid or rectangular (5), Plain anthropoid (1)	2	Beads (occasional), Cowries (2), Scarab (1)	0	1	0
Audult	40	16	Painted anthropoid or rectangular (14), Plain anthropoid (1)	11	Beads (occasional), Cowries (17),Wdjat eye (1)	12	3	15
Totals (Roman)	**63**	**27**		**24**		**16**	**7**	**18**

Table 11.1: Distribution of burial goods across age groups.

In the Roman period, no more than one metal jewelry item was found per grave, and in all but one instance, these were single hoop earrings with no beads attached. Jewelry was found in one of the two Roman Infant burials and in five of the 11 Roman Infans I burials. None of the older individuals in the Roman Infans II age group were equipped with any jewelry.

The jewelry, though simple, was fairly sturdy, and was most likely not manufactured strictly for burial, but also worn in life. It is possible that the jewelry also had amuletic functions; the ear, in particular, appears to have been considered susceptible to demon attack (Pinch 1994:112), perhaps explaining the large number of earrings found in the graves. The use of carnelian in some of the jewelry may have enhanced its effectiveness, as the red stone had solar connotations and was associated with energy and power (Andrews 1994:102; Murock Hussein 2010).

Another common find in both Roman and Saite non-adult burials were cowrie shells. In many cases, several shells were found at either wrists or ankles, likely originally strung together to form a bracelet or anklet. Cowrie shells were found in 35% of the Saite Infant burials, 25.7% of the Infans I graves, and 11.1% of the Infans II group. In the Roman period burials, no cowrie shells were found in the Infant or Infant II graves, but over half (54.5%) of the Infans I graves graves included one or more shell beads. Because of their resemblance to female genitalia, these shells were also seen as fertility symbols and were from the Middle Kingdom onwards often strung together and worn as a protective girdle, particularly during pregnancy (Andrews 1994:42; Capel and Markoe 1996:85). There is no evidence for such girdles at the Wall of the Crow cemetery, however, as most of the shells were found around the neck, wrists, or ankles of their owners, sometimes combined with other beads, and most likely originally threaded as necklaces, bracelets, or anklets.

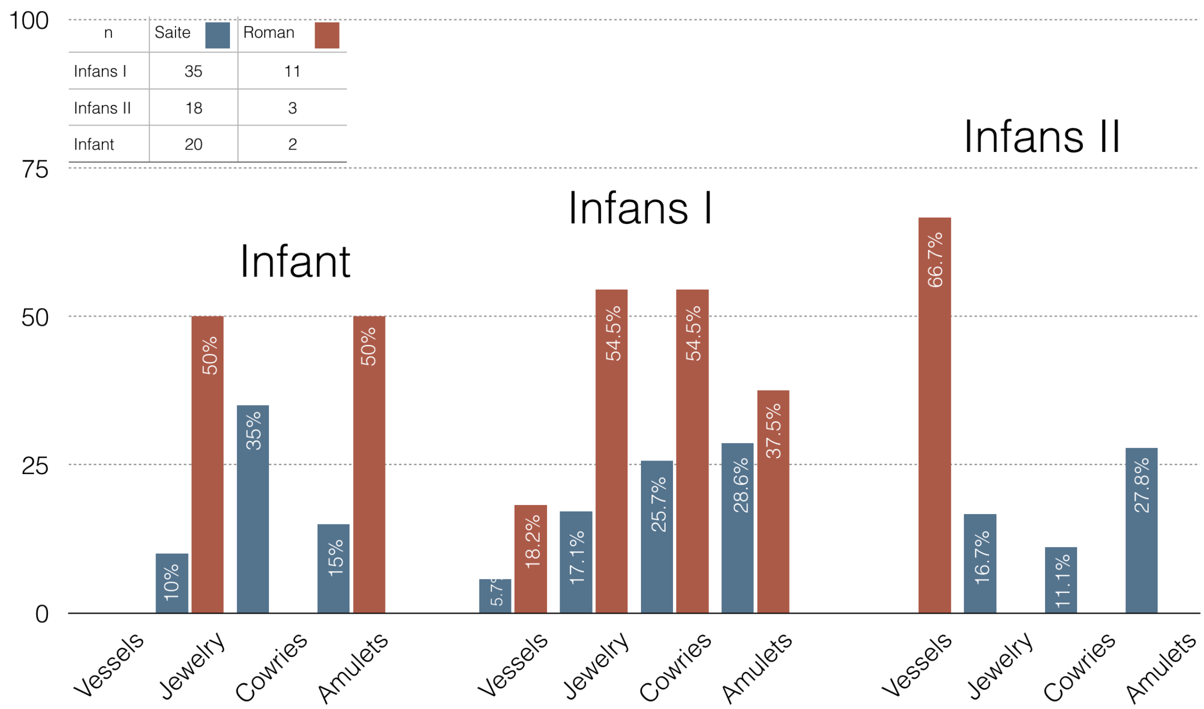

Figure 11.4: Object types by age group and phase, in percent per age group

Amulets were found in graves from both periods, and were most often found in the neck region, but also commonly at one or both wrists. Most of the amulets had loops or piercings for suspension and were probably originally attached around the neck or wrist on a string. Magical papyri sometimes prescribe that amulets should be applied specifically to the neck, which appears to have been perceived as a point of particular vulnerability to the Egyptians (Pinch 1994:111-112).

There were noticeable differences in distribution across age groups and in terms of amulet types. In the Saite period, in particular, amulets included in the graves often had connotations of fertility or a connection to motherhood and childbirth. The by far most common amulet type in the Saite period was the Horus or wedjat eye amulet. These amulets occurred as molded or incised amulets in faience, as flat circular beads with serrated edges decorated with up to four mirrored stylized wedjat eyes on one side, and also as simpler, eye-shaped beads made of either faience or various stones, and as faience plaques, sometimes with multicolored glaze and quite elaborate. This amulet is generally thought to represent the (left) lunar eye of Horus, which was injured by Seth but restored to health by Thoth (Andrews 1994:42; Andrews 2011), but can also, especially in later periods, represent the pacified (right) solar Eye of Ra from the myth of the destruction of mankind (Griffiths 1958; Rosso 2003; Andrews 2011). Both left and right eyes were represented in the Wall of the Crow material, presumably bestowing both the healing power of the 'sound eye' of Horus and the more apotropaic and protective powers of the Eye of Ra on its wearers (Pinch 1994:109-110). Moreover, the wedjat-eye could also function as a substitute for food offerings, and had great restorative and regenerative powers. In the Osiris myth, Horus offered his healed eye to Osiris, who came back to life after devouring it. (Andrews 1994:43; Andrews 2011)

A finely carved lapis lazuli lotus bud may have referred to the primeval lotus, from which the infant sun god was born at the beginning of time, and would also have general connotations of youth and rebirth (Gerisch 1996; Pinch 1994:109). Lapis lazuli, the blue color of which symbolized the night sky, was a common material for amulets in the Late Period, and the name for the stone in Egyptian, *khesbed*, was during this time taken as a synonym for the words 'joy' and 'delight' (Andrews 1994:102). Lapis was also closely associated with Horus (Murock Hussein 2010).

Further, three Saite Infans I burials contained Bes amulets, sometimes multiple examples. These were all very similar, made of faience with a light-green glaze, depicting the feather-crowned god in frontal position with bent legs and his arms clasped over his abdomen. This dwarf-like god with leonine features was primarily a household god, concerned mainly with the protection of women and children, particularly during the vulnerable time of pregnancy and childbirth (Dasen 1993:68). In conjunction with the hippopotamus goddess Taweret, Bes was also seen as a protector of young children past the newborn stage, as evidenced by the depiction of the two gods on furniture made for royal children (Dasen 1993:73). In addition, Bes was a powerful protector during other liminal stages of life and death, such as sleeping, when both men and women were thought to be more susceptible to disease, and when demons could attack through nightmares, and during the period between death and rebirth (Kaiser 2003:30-32). Closely associated with Bes (Robins 1993:83) and also a goddess of divine motherhood, childbirth, sexuality, and fertility, was Hathor, the cow goddess (Wilkinson 2003:140). A bronze amulet of a cow with a solar disc between its horns, likely representing Hathor, was found in one of the Saite burials, and a scarab found in one of the graves from the same period was decorated with an incised bovine which could represent the same goddess. The scarab itself would have represented the newborn sun god Khepri, regeneration, and resurrection (Andrews 1994:50-51; Ikram 2003:97-99). Also known as a bestower of fertility and associated with motherhood and pregnancy was the cat-goddess Bastet (Wilkinson 2003). A small faience amulet of a seated cat, found in one of the Infans I burials, was probably intended to elicit the protection of this goddess.

A final example of an amulet associated with divine motherhood and fecundity is the goddess Nut as a sow, found in three of the Saite burials. This type of amulet is known from the

Third Intermediate Period onwards, and although the identification of the sky goddess as a sow may seem farfetched at first, the association was probably made because female pigs were known to eat their young, just as Nut swallowed the sun each evening before giving birth to him again at dawn (Andrews 1994). A faience crocodile, likely representing Sobek, would have had apotropaic powers, as well as an association with rebirth, as the crocodile lived in the primordial waters (Andrews 1994:37). Also, faience, like other green and blue materials, denoted resurrection and rebirth, and thus faience amulets would have had significance derived from the material as well as from what they depicted (Ikram 2003:97).

In the burials of the Roman period, none of the Infant II age group individuals, but 50% of the Infants and slightly less than half of the Infans I group individuals (45.5%) had been equipped with amulets. However, in the Roman period sample, there was much less variation in amulet types, wedjat-eyes being by far the most common amulet, occurring as molded or incised amulets in faience, and as composite beads. In the Infans I age group, one Roman burial contained an axe-shaped amulet made of faience, probably originally strung and worn around the neck, and an amulet with a suspension loop at the top depicting the goddess Nut as a sow. A further Roman burial in the same age group contained a single scarab amulet, and another contained a scarab and a finely made blue faience Horus falcon amulet with a double crown on its head, suggesting that it was associated with Horus as the hero of the Osiris myth and the conqueror of Seth, a connotation which would have offered particular protection against chaos and other threatening forces. (Andrews 1994:28).

As exemplified by the single Nut amulet and scarabs found in this phase, amulets associated with motherhood, childbirth, and fertility were not entirely abandoned in the Roman period. However, the emphasis appears to have been on apotropaic protection rather than fecundity, perhaps reflecting shifting eschatological beliefs as well as the changing role of women in Egyptian society. Further, a comparison of the distribution of grave good types across age groups reveals that while the types of objects found in the graves of Saite children did not change much with age, the contents of the Roman graves were much more variable (Table 11.1). The Roman Infans I graves contained examples of all four grave good types (vessels, jewelry, cowries, and amulets), and at a higher rate than the Saite burials from any age group. However, the Roman Infant and Infans II burials were complete opposites: Infant graves contained jewelry and amulets, but no vessels or cowries, while the Infans II burials contained vessels only (Figure 11.4).

11.6 Death, Regeneration and New Life

In pharaonic Egypt, the concept of creative fertility, i.e., the ability to create new life, was predominantly male. The earth, which in many other cultures, including our own, is seen as female, was personified by a male god, Geb, as was the river Nile in the form of Hapi. During inundation, the river was also associated with the primeval waters of creation, which were ungendered. Thus, when the waters receded, and new life emerged, the creative power lay in the male (Roth 2000; Zandee 1992). In the Heliopolitan creation myth, the self-engendered god Atum created his son Shu, representing air, and daughter Tefnut, who represented moisture, by masturbation, or alternatively by spitting or sneezing (Lesko 1991:92). Nevertheless, the linking of creative fertility and procreation with the male gender did not automatically mean that females were unnecessary for the reproductive process. Roth (2000; but cf. Robins 1996) has argued that the role of the female principle in Egyptian worldview was to incite male creative fertility and that this role was by no means passive. The sky goddess Nut, arched naked over her brother-husband Geb, stimulated his creation of new life by sexually arousing him, as did the hand of Atum, which was seen as feminine. However, the onus of physical creation rested with the male, while the female acted merely as an incubator of the already formed offspring, as well as a nurturer both before and after birth.

These concepts of male virility and self-creation also carried over in the mortuary sphere. After death, the deceased was syncretized with Osiris, the king of the dead, who had recreated himself after having been murdered and dismembered by his brother Seth. Isis, Osiris's sister-wife, aided in this process by re-assembling his body parts, and also acted as the vessel through which their son Horus was nurtured through pregnancy, but it was Osiris's masculine potency that brought him back to life (Cooney 2008; 2010). Another important concept in the process of rebirth was the solar cycle, which was also symbolically envisioned in sexual terms. The solar deity, during his cyclical journey across the firmament in the day, and through the netherworld at night, reconceived himself through a complicated relationship with the sky goddess Nut: impregnating her at dusk, and being born by her again every morning. Thus, the goddess is both mother and consort to the sun god, who essentially becomes his own father (McCarthy 2008; Robins 1993:17).

In funerary imagery, the deceased was associated with both Osiris and the solar deity, thus able to recreate himself. This process was likely aided by depictions of the wife of the deceased, or in her absence, nude fertility figurines often referred to as "concubine figurines" (Roth 1999; Roth 2000). Hence, the regenerative process appears to have been more applicable to males than females (McCarthy 2002), but as burial equipment and mortuary texts were generally the same for men and women, the process of rebirth itself appears to have been identical for both sexes (Roth 2000). A woman, like a man, was associated with Osiris and the solar deity after death, requiring a certain amount of gender fluidity (Cooney 2010; McCarthy 2008; but see Smith 2009 pp 7-9 for a somewhat opposing view). In her tomb, where images of her husband were often excluded (Roth 1999), she fulfilled the roles of not only her own husband but also of her own wife and mother (Cooney 2010; Roth 2000), consequently adapting the male focus of regeneration to fit a woman's needs. How this scheme would have functioned in terms of the death of children is difficult to ascertain, as there are so few tombs and monuments dedicated specifically to children prior to the Late Period (Harrington 2007). However, New Kingdom examples of gilded and decorated mummiform child coffins from royal and elite tombs, where young children or even fetuses were sometimes buried with their parents, suggest that identification with Osiris and the solar cycle was the ideal, even for the very youngest (Spieser 2008).

One of the later chapters in the Book of the Dead, chapter 164, which was probably composed towards the end of the Ramesside period or during the Third Intermediate period, includes a magical spell meant to be recited over a dual-gendered divinity, described as a female with a phallus. Cooney (2010) interprets this as the beginning of a trend where the female principle was combined with the male in the process of rebirth, as opposed to excluded. This increasing combination of male and female identities in death can perhaps also be seen in the modification of divine associations of the dead during the later periods of Egyptian history. Though Osiris, and the ability to associate with the god during the transfiguration to the afterlife, remained of paramount importance in funerary religion, women were increasingly associated with Hathor for their transition to the afterlife. While the deceased in earlier periods were referred to as 'The Osiris N', women were from approximately 400 BCE onwards increasingly referred to as 'The Osiris-Hathor N' or even 'The Hathor N' alone, and by the end of the Ptolemaic period and throughout the Roman period, the Hathor pre-fix had become standard (Riggs 2002; 2005:45; Riggs and Stadler 2003; Roth 2000). Though Hathor was not an original actor in the Osiris myth, she was in addition to being associated with sexuality, motherhood, and childbirth also known as "The Mistress of the West" and seen as a guardian of cemeteries and the dead (Robins 1996). This association with the funerary realm is perhaps why she was described as 'the perfect sister of Osiris' in her Ptolemaic temple at Dendera (Riggs 2005:45), effectively becoming the female counterpart of the male god. In her study of Roman burial practices, Riggs (2005: 47-48) interprets this change in iconography as a result of a more personalized approach to the afterlife, made possible by the 'near-deification' of the deceased, and a reflection of a need to emphasize the gender role the deceased would have had in life. Fecundity and reproduction were still important aspects of resurrection, but were now more centered on the binary pairing of male and female than before, perhaps reflecting the changing social roles of men and women in the Ptolemaic and Roman periods (Riggs 2005:41), or Greek influence ascribing women a larger role in the formation of new life (Roth 2000).

In comparison to previous periods, more funerary monuments and equipment were also made specifically for women and girls (Riggs 2005:41), who regardless of age were commonly depicted as sexually mature and fertile in their funerary imagery. Even very young girls are often portrayed with a woman's breasts and pronounced pubic triangles, imbuing the deceased with the potential of conception and birth that she had not yet reached in life (Riggs 2005:34; Spieser 2008). The simulated aging applied to boys as well, who were often depicted with facial hair and jewelry normally reserved for adults on their coffins and cartonnages (Spieser 2008). It should be noted, however, that the funerary iconography of children is not systematic. In some cases, the dead child is identified with Harpocrates (Corcoran 1995:74; Riggs 2005:231), and other examples of coffins for newborns in the shape and image of other divinities rather than the deceased proper—Bes, Ptah-Sokar-Osiris, and Osiris—would have placed the child in direct contact with the god (Spieser 2008). It is possible that the depiction of children as older than their age was meant to artificially prolong a life cut short so that it could be completed in the afterlife (Spieser 2008), but more likely the practice probably reflects necessary adaptations of a transition to the afterlife generally tailored to adults.

11.7 Children at Giza

When considering the differential treatment of infants and older non-adults at the Wall of the Crow cemetery, it is important to remember that they all represent instances of deliberate burial, which would have taken some effort on the part of the living who buried them. The care taken in providing a safe passage to the afterlife is also suggestive of the importance of children in the community, particularly as the act of burial is also an act of remembrance. As we have seen, children were cherished in Ancient Egyptian society, and moreover embodied the hopes of their parents for continuation of the family and security in old age. Even with knowledge of the perils of infancy, evident from the many spells and magical implements intended for the protection of children, surely the loss of the object of such high expectations would be felt. Further, a child represents birth, regeneration, and new life such that when juxtaposed with death, the young dead essentially embody the dichotomy of life and death in and of themselves. This symbolism is apt to be at least part of the reason for the regularity of differential burial of children across time and space in many cultures and was likely not lost on the Ancient Egyptians either.

Burials from the Saite and Roman periods were iconographically very similar, and would have been impossible to distinguish from each other were it not for the pottery associated with some of the graves, which by extension enabled more burials to be dated on the basis of stratigraphic relationships. The differences between the two temporal groups are more one of degrees than definite demarcations and only became noticeable when the material was analyzed as a whole.

Birth, rebirth, and death were always strongly linked in Ancient Egyptian funerary beliefs (Roth 1992). Both seeds and the dead were placed in the earth, in order to engender new life (Roth 2000). Hence, it is not surprising that many of the burials included objects associated with fertility, childbirth, and motherhood. In addition, children would by virtue of their shorter lifespan also have been closer to the event of their birth than adults, and still dependent on their mothers at the time of their death, which may also have influenced the higher incidence of such objects in the graves of the youngest. Because of their tender age, children may have been viewed as needing additional protection on the perilous journey to the afterlife. However, the burials of the Saite period appear to have had a stronger connection to fertility, birth, and motherhood than their Roman counterparts, both in the choice of their location with the association of the Wall of the Crow and in the types of objects included in their graves.

In contrast, the Roman burials were more similar to adult burials except for the higher incidence of amulets—they received the same type of coffins, and their burials were not clustered in an area mainly reserved for children. Moreover, with the exception of a single amulet, representing Nut as a sow (a motif that was found in several of the Saite burials), the amulets from the Roman period non-adult burials (wedjat-eyes and scarabs) were mainly types that occur in adult burials as well, albeit at a lower rate. Thus, though the differences in burial treatment of children between the two periods are subtle, there appears to be a definite move from distinct areas of the cemetery and typical non-adult grave goods in the Saite period, towards funerary equipment more closely approximating that of adults in the Roman period, save for a higher number of protective amulets in the burials of children.

It is possible that the explanation for the temporal differences in funerary equipment can be sought in the eschatological beliefs of the Saite and Roman periods respectively. Granted, our knowledge of religious and liturgical beliefs from all periods is drawn mainly from examples belonging to the elite, but the basic concepts of death, rebirth, and regeneration were likely known to Egyptians of all levels of society, including the non-elite population that buried their dead in the shadow of the Wall of the Crow.

As we have seen, the mechanisms for rebirth in the pharaonic period were based on concepts of male virility and potency and required considerable adaptation in order to be applicable to women. It stands to reason, then, that if transition to the afterlife was complicated for adult women, it may have been even more difficult for children, whose gender roles may not have been fully formed at the time of their death. The deposition of Saite period children around the Wall of the Crow, which by virtue of its shape could have been seen as a phallic symbol, may have been intended to aid in the acquisition of mature sexual potential for those who had not yet reached this stage in life. The inclusion in the graves of objects and amulets with connotations of fertility, motherhood, and childbirth may have served a similar function. Additionally, if the boxes used for the very youngest Saite children were indeed originally made of sycamore wood, they may have afforded yet another layer of protection invoking the protection of the goddesses Nut and Hathor, both associated with motherhood, fertility, and safeguarding of the dead. This final layer of protection may not have been necessary for older non-adults closer to sexual maturity, explaining why anthropomorphic coffins became more common with age.

With the increase in individualization of death and the afterlife occurring in the Roman period, external implements of fertility and sexuality may have become less important. There is no visible difference between the burials of old and young in the Roman Wall of the Crow material. Instead, children appear to have been represented in death as the adults they had not yet become in life, with the same types of funerary equipment as older members of society. While fertility and fecundity were still important in the funerary realm, this "artificial maturation" of the youngest may have rendered specific symbols of fertility, motherhood, and childbirth unnecessary, as the potential for sexual capability would have been integrated with the mature representation of the deceased. However, the higher number of apotropaic amulets included in non-adult graves may indicate that children were still seen as in need of additional protection on their journey to the afterlife.

As the Giza population did not include any written records with their burials, it is difficult to ascertain to what extent this interpretation approximates their reality. However, the care afforded in death to even the very youngest members of their community shows us that their children were important social actors in their own right. From newborn to pre-adolescent, they all had the right to hope for a continuation after death and a chance at eternal life.

PART IV: INTERPRETATION

CHAPTER 12: DISCUSSION

The goal of this dissertation was to provide a thorough treatment of archaeological material stemming from a period and segment of society that has been largely neglected by Egyptologists until recently. More specifically, I wanted to investigate the extent to which sociopolitical changes from the Saite to Roman periods of Egyptian history affected the lives of a non-elite population from the Memphite region. Not only did I expect to find evidence in the skeletal material for a decline in living conditions from the Saite to the Roman period, but I expected this to be particularly evident among women, whom historical data suggest were more marginalized during the Roman period than during the earlier Saite period. Finally, I was interested in how a likely non-literate population would have internalized the fairly extensive developments in funerary rituals effected by the literate elite from the Saite to the Roman period, and how and whether these adaptations were age- or sex-specific. I set out to accomplish these goals by using a multidimensional bioarchaeological approach that considered evidence of skeletal stress in combination with archaeological and historical data. What follows is a re-examination and interpretation of the results of the skeletal and mortuary analysis of the Wall of the Crow material presented in Chapters Ten and Eleven, against the backdrop of the historical, textual and archaeological evidence reviewed in Chapters Two, Five and Six. I begin by considering from whence the Wall of the Crow Cemetery population was drawn, after which I provide an overview of what historical and archaeological sources tell us about living conditions for the non-elite in Egypt in general, and in the Saite and Roman periods in particular. I then review the general implications of the results from the Wall of the Crow study, before turning to the statistically significant results relevant to the hypotheses presented in Chapter Seven.

12.1 Reconstructing Life from Death

12.1.1 Who was Buried in the Shadow of the Wall of the Crow?

To reiterate briefly, the Wall of the Crow cemetery lies just south of the massive Old Kingdom wall which has given the site its name, and which prior to the Saite period most likely marked the division of the sacral and secular areas of the Giza Plateau. The location of the cemetery on low ground, coupled with the fact that several more richly furnished burials have been found on the slope above it,[68] implies that the Wall of the Crow cemetery did not serve the most affluent members of society. Nevertheless, finds in the general vicinity of stelae denoting necropolis areas under choachyte control (Petrie 1907:29) suggest that access to the cemetery probably required permission from these necropolis workers. Thus, a grave in the cemetery likely required some kind of remuneration paid to the choachytes responsible for the area. Further, the inclusion of both coffins and smaller grave goods in many of the graves show that the population burying

[68] The area west of the Wall of the Crow cemetery is currently under excavation by the Egyptian Ministry of Antiquities, and the results are as of yet unpublished. Several inhumation burials have been found and excavated immediately above the Wall of the Crow cemetery; those seen by the author invariably more richly furnished, with better quality coffins and more grave goods, than their Wall of the Crow counterparts.

their dead in the cemetery had sufficient means to divert at least some of their assets toward funerary arrangements. In addition, several of the burials show evidence of post-mortem manipulation and traces of wrapping, and it seems likely that at least a cursory attempt at mummification -- which would have come at a cost -- was fairly common. Hence, while the Wall of the Crow population certainly can be described as "non-elite," they were not destitute.

The types of grave goods included in the graves were decidedly Egyptian in nature in both the Saite and Roman phases of cemetery use, and surprisingly uniform. There is no evidence of the Hellenistic influences characteristic of funeral receptacles of elite Egyptians of the Roman period and were it not for the pottery the graves would have been very difficult to date. Further, the coffins themselves were made mainly of mud, with limited wood and textile reinforcements, and would likely have been difficult to transport over longer distances. With this in mind, it seems likely that the Wall of the Crow population was native Egyptian and relatively local.

Though we can surmise from the humble nature of their burials and the location of the cemetery that they probably belonged on the lower rungs on the status scale, and likely hailed from the general vicinity of Giza, the paucity of their burials means that archaeological data tell us very little about how they lived. This is unusual because to a large extent we owe our knowledge of the daily life of the ancient Egyptians to their tombs. Many well-equipped final dwellings were filled to the brim not only with items manufactured specifically for funerary use but also with everyday items as well as decorations, texts and models shining light on every conceivable aspect of Egyptian society. Paradoxically, however, the remains that are the most informative of everyday life of the Wall of the Crow population are not the items they chose to accompany them to the afterlife, but rather their bones.

Nevertheless, while human remains are incredibly informative, and the only direct link to past populations, they do not, for example, tell us where the cemetery population lived. Thus, exactly which communities the Wall of the Crow cemetery served is unclear. Textual sources tell of one small village, ***wḥyt R3-sṯ3w,*** better known by its Greek name Bousiris, at the base of the Giza plateau in the approximate location of the modern village of Naslet Batran (Zivie-Coche 1976: 218-219, 295). This village existed as early as the New Kingdom and was inhabited well into the Roman period. Pliny, in his description of the pyramids, mentions that the villagers of Bousiris were "used to climbing these pyramids," presumably to entertain the 'tourists' frequenting the plateau, perhaps similar to the dragomans of the Nineteenth century (Pliny 1962:61). Several stelae commissioned by the inhabitants were found in the Sphinx temenos. One, dating to the reign of Nero, details how the villagers of Bousiris had cleared the Sphinx of sand (Zivie-Coche 2002:108). While this may have been partly motivated by religious piety, it probably had pragmatic reasons as well, since tourists and pilgrims to the Sphinx area would have had to pass through the village to reach the plateau proper, which likely benefitted the villagers economically (Zivie-Coche 2002:99-100).

Probably connected to this village -- perhaps even a central feature of it -- was a temple dedicated to Osiris, in his role as part of the Giza-specific triad that gained importance toward the end of the New Kingdom: Isis, as Mistress-of-the-Pyramids, the Sphinx, as Hr-m-Akhet or Horus-in-the-Horizon, and finally Osiris, as The Lord of Ro-Setau (Zivie-Coche 1991: 94).

Figure 12.1: Remains of the temple of Osiris, Lord of Rosetau, at the Al Alya cemetery in Nazlet Batran.

This temple, originally built by Ramesses II, was excavated at the modern El Alya cemetery in Nazlet Batran by an SCA/MSA team under supervision of A. Moussa in 1982 (Abdel Aal 1999). Unfortunately, the results have never been published, and a large part of the area initially excavated was covered by government housing following the initial exploration, though the remains of the temple proper are still visible (Figure 12.1). During follow-up excavations in 1987-88, Hawass and colleagues found the remains of houses in connection with the temple, which they interpreted as housing for the priests. The houses were dated to the New Kingdom based on their proximity to the temple and architectural remains found in adjacent sondages. However, Hawass himself complained that the 1982 excavations were "not carried out scientifically" (Hawass 2000), and it is possible that the initial explorations uncovered remains from later periods as well, but that these remains were simply discarded.

Certainly, a temple dedicated to this incarnation of Osiris was still in use in the area in the Saite period, based on the stelae dating to this period found in the vicinity of the South Mound by Petrie (1907:29) which mention the names of choachytes attached to the temple. The stelae mention what appear to be family members in charge of particular areas of the necropolis, and state the good Egyptian names of the choachytes (e.g., Petosiris, Ankh-apis, Khent-hotep), and the fact that they belonged to "the house of Osiris, Lord of Rosetau." Interestingly, but perhaps not surprisingly, since undertaking appears to have been a family business, one of the choachytes, Ta-min, daughter of Khent-hotep, was a woman. Thus, we know that there existed a community of necropolis workers and that they were attached to the temple affiliated with the village of Bousiris. It is likely that other inhabitants of the village would use their local undertakers to secure a plot in the cemetery, and most probably many of the burials at the Wall of the Crow cemetery belong to villagers of Bousiris.

There is, however, a problem of numbers. The burial survey carried out at the Wall of the Crow Cemetery in 2005 suggested that the small area between Main Street and the Wall of the Crow proper alone may contain close to 9000 burials. Considering that burials are visible (and have been excavated) in other areas of the site as well, the cemetery probably contains well over 10,000 bodies. Moreover, the AERA concession is not the only area on the Giza plateau dotted with poorer inhumations: Petrie (1907; 26), for example, excavated a sizeable Saite period cemetery at the Southern Mound of Giza, close to the Wall of the Crow. His fairly scant notes tell us that he shipped 1400 complete skulls to London, presumably disposing of the rest of the skeletons and the ones with fragmented crania. Considering that only one of the nearly 500 burials at the Wall of the Crow was found with a complete skull, this probably means that the skeletons simply disposed of by Petrie numbered in the thousands. The extensive Saite cemetery recently undergoing excavation by the Egyptian Supreme Council/Ministry of Antiquities (SCA/MSA) in the South Field and on both sides of the Gebel Gibli, adjacent to the AERA concession, may be the continuation of the necropolis pilfered by Petrie, and probably contains hundreds if not thousands of additional bodies. Further, Reisner removed a large number of later burials and other material while clearing the large mastaba field on the plateau proper, referring to the remains as "the usual Saiti-Roman rubbish" (Zivie-Coche 1991: 188). From photographic evidence, Roth (1995: 38) surmised that Reisner and his crew removed, without recording, approximately seven meters of later remains across their excavation area while clearing the large mastaba field. Most likely, the bulk of these later remains consisted of what Reisner in his notes referred to as "the usual bodies," and given the size of the excavation area, this suggests a staggering number of Late through Roman period burials were removed from the plateau proper as well, with little or no recording.

If we assume that Wall of the Crow cemetery housed around 10,000 bodies and that the cemeteries around the South Mound and on the plateau proper were similarly dense, we are looking at at least 30,000 burials on the plateau, even with a conservative estimate. With a period of use from the late Twenty-Fifth Dynasty through the early Roman period (c. 700 BCE-200AD), this would mean that a cemetery of this magnitude would have required a village with a constant population of about 1200-1500 people, given a life expectancy at birth of between 20-25 years.[69] This may not seem a large population today, but for an Egyptian village, it was quite substantial. Granted, the size of Egyptian villages ranged from one-donkey towns to almost city-size settlements like Karanis in the Fayum, which at times had over 3000 inhabitants. However, the median size of an Egyptian village in the Roman period was about 650 people (Alston and Alston 1997).

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[69] Population size can be estimated by the formula P=1000N/MT, where P is the population size, N the number of individuals in the cemetery sample, M the crude mortality rate and T the number of years the cemetery was in use. (Ubelaker 1978; 140). The life expectancy at birth of the Giza sample was between 20-25 years; figures from Roman census records produce similar numbers (Bagnall and Frier, 1994).

It seems, then, that Bousiris was the not the only community served by the Giza necropolis. Perhaps the increased popularity of the Giza plateau as a pilgrimage destination and burial place in the Saite period drew people from afar to make it their final resting place -- this is definitely true of some of the elite tomb owners on the plateau, some of whom hailed from places as far away as Tanis and even Libya. If the identification of the Shetayet of Rosetau as the Lower Egyptian equivalent to the Osiris tomb in Abydos is correct (Edwards 1986), perhaps burial at Giza constituted a final act of pilgrimage for individuals whose home base was elsewhere. Nevertheless, Egyptians were, as a rule, reluctant travelers, in life as in death. Given the importance placed on the continuation of the funerary cult after death, situating ones' final resting place too far away from the relatives expected to tend to the cult would have been impractical. Thus, the most likely explanation of the Late Period and Roman cemetery population at Giza is that it was mainly drawn from the surrounding areas. However, given the large number of burials on the plateau and the lack of evidence for villages other than Bousiris in its immediate vicinity, these surrounding areas may have stretched as far as Memphis and possibly Letopolis. Giza could have been a pragmatic choice for a burial plot, as the growing population of Memphis may well have started to fill the Memphite necropolis in Saqqara, or it could have constituted a religious choice for those wanting to associate themselves with the Giza triad in death, particularly its patriarch Osiris, Lord of Rosetau.

12.1.2 Lifestyles of the Poor and Anonymous

Throughout its long history, Egypt was an agrarian economy, and the vast majority of the population worked in food production (Wilkinson 2001). Given the humble nature of the Wall of the Crow burials, the males of the cemetery population were most likely either tenant farmers or agricultural workers or perhaps engaged in craft production or construction (Kadish 1996). In census records from Roman Egypt, most villagers stated their occupation as "farmer." Other titles included a village doctor, a stonemason, a quarry worker, and a family of necropolis workers (Bagnall and Frier 1994:72). As mentioned above, we know of at least a few families of choachytes affiliated with the Osiris temple in Bousiris in the Saite period, who likely also resided in the village. Though there are no choachyte stelae preserved from the Roman period, there is no reason to think that the profession disappeared. Given the increase in access to funerary treatment during the Roman period to those further down the status scale, undertaking most likely remained a profitable business. The business of death would have employed others not directly involved with the bodies or funerary rites themselves, such as coffin makers, potters, and other craftsmen. Further, the steady influx of pilgrims and visitors to the Sphinx area probably also fueled private enterprise, since the visitors would have had to be fed and perhaps housed, as well as being prospective buyers of the various kinds of votive gifts unearthed around the Sphinx temenos, which were likely manufactured in its vicinity.

Members of the general population were also regularly conscripted for state labor, such as road maintenance or work on canals and the irrigation system. Women rarely worked outside the home but would have been involved in food production and other domestic tasks related to the household (Roth 2001). Either way, a typical workday for both men and women would probably have involved a fair amount of physical labor (Caminos 1997, Valbelle 1997). Evidence from human remains dating to both the pharaonic and Roman periods also suggest a physically demanding lifestyle, since osteoarthritis is by far the most commonly reported pathological condition in skeletal remains, even among fairly young individuals (Dunand et al. 1992a, Lichtenberg 1998, Janot et al. 2001a, Kaczmarek 2003, Dunand et al. 2005a, Ibrahim et al. 2008, Kaczmarek 2008, Marshall et al. 2013).

If we assume that the bulk of the cemetery population was drawn from Bousiris and perhaps other nearby villages rather than from the more distant urban area of Memphis, their physical living conditions would have changed little from the Saite to the Roman period. The rural population would have lived in compact villages dotted in a landscape emptier than what we see today, likely located on higher ground to escape the floods of the yearly inundation, and organized around the household as the primary social and economic unit (Eyre 1999). The houses would have been small and cramped, dusty because of the proximity to the desert, and probably smoky as well since food was cooked over an open hearth (Frood 2010). Water was likely collected from a communal well in the center of the village, and there were no sewage or sanitary installations (Spence 2015). Animals were kept in close proximity to the living quarters,and would have drawn flies and other vermin (Caminos 1997).

The fertility of the Nile valley meant that Egyptians were at less risk of starvation than many other ancient populations. Texts detailing food rations of laborers paint a relatively positive picture, at least in terms of volume, with even the lowliest workers receiving enough grain rations to feed a family of four (Miller 1991). The many depictions of offerings in tombs show a veritable cornucopia of different food items from both the plant and animal kingdom. As with many other aspects of Egyptian society, however, our sources are heavily skewed towards the elite, and the diet of the average Egyptian would likely have been less varied. Bread and beer were the staples of the Egyptian diet throughout history, for both rich and poor. Beef would have been available on a frequent basis only to the elite, though the poor may have occasionally received meat of sacrificed animals, including cattle, during feasts and festivals. For people of moderate wealth, mutton and pork would have been available, either from the slaughter of their own small livestock, or purchased from temple surplus. Poultry and fish, which could be obtained by hunting and fishing, would have been available to all but the very poorest. For the majority of the population, however, the primary sources of protein protein were legumes, eggs, and cheese (Ikram 2001). Accordingly, stable isotope studies of human remains spanning the entirety of Egyptian history indicate an ovo-lacto-vegetarian diet based mainly around C3 plants, that changed very little over time (Thompson et al. 2005, Touzeau et al. 2014). Isotope analysis carried out on human remains from the Dakhleh Oasis dating to the Roman/Byzantine period suggests gendered differences in diet, with males consuming more protein, whereas women subsisted on more carbohydrates (Dupras 1999:246). Most likely, men would have had better access to protein, since they worked outside the home and would have had a better chance of obtaining additional sources of food as remuneration.

While we know far less about the bulk of the Egyptian population than about the literate elite, both documentary and archaeological evidence suggest that the average Egyptian had a relatively short lifespan. Based on Roman period census returns from Egypt, Bagnall and Frier (1994:90) calculated a life expectancy at birth of 20-25 years for women, and of 38.3 years for those who survived to age five. The corresponding life expectancy for men was 22-25 years at birth, and 40.6 years for those that survived to age 5 (Bagnall and Frier 1994:102). These numbers correspond reasonably well with the demographic profile of many skeletal assemblages from Egypt (e.g., Strouhal and Bareš 1993, Buzon 2006, Kaczmarek 2008, Williams 2008, Ziegler 2013), as the majority of adult burials generally belong to young- to middle adults.

Though exact cause of death is often difficult to ascertain from skeletal remains, we know a great deal more about the diseases that plagued the Egyptians than many other ancient populations. Medical and magical papyri tell of treatment for numerous ailments, including eye problems and skin diseases; heart ailments; headaches; traumatic injuries; respiratory ailments; fevers; parasitic infections, gastrointestinal problems, and stings and bites (Nunn 2001). Direct evidence is also available from human remains, since pathogen DNA of both the malaria-causing parasite *Plasmodium falciparum* (Nerlich et al. 2008) and *Mycobacterium tuberculosis* (Nerlich et al. 1997; Zink et al. 2004; 2007) has been extracted from human mummies, along with evidence for the parasite causing Schistosomiasis (Barakat 2013) and Guinea-, round- and tapeworm (Nunn 2002:70). Non-parasitic environmentally related conditions, such as sand pneumoconiosis and kidney stones are also known (Walker et al. 1987, Sandison and Tapp 1998, Nunn 2001, Aufderheide 2003:469-470). Most pervasive, however, were probably common infections such as dysentery, diarrhea, and other gastric disorders that have not left any traces in the archaeological record.

As in any pre-modern society, child mortality was undoubtedly also high. A proportion of 30 or even 40 percent is often cited as the percentage against which underrepresentation of children should be measured in archaeological samples (Goodman and Armelagos 1989, Lewis 2007; 22, Waldron 2007; 35). The proportion of subadults in some skeletal series from Egypt and Nubia, such as those from Mirgissa (Baines and Lacovara 2002), Gurob, Matmar and Moustagedda (Robins 1994-5) and Kellis 2 in the Dakhleh Oasis (Wheeler et al. 2011) far exceeds the expected number and approaches 50 or even 60%.

12.1.3 Changes in Living Conditions from the Saite to the Roman Period

The previous section was a general overview of what life could have been like for the Egyptian non-elite, and drew from evidence unequally distributed through time and space. Farming, however, was one of the more conservative and slow-changing pursuits of the Egyptians, and most likely the daily chores of the average Egyptian changed little between the Saite and the Roman period. Nevertheless, historical sources suggest living conditions for the poorer classes of society deteriorated quite substantially following the Roman conquest, especially for native Egyptians.

Whereas the Memphite region was an important administrative and religious district under the Saite kings (O'Connor 1983), it saw significant decline under the Romans in favor of the coastal town of Alexandria (Markovič 2015). The temples, during the Saite period a node of private enterprise even for women and those of relatively modest means, decreased in importance under the Romans (Thompson 1990, Capponi 2010, Donker Van Heel 2012, 2014). This change in fortunes for the nearby metropolis of Memphis would likely have been felt even by the more rural Giza population since the economic downturn would have meant less opportunity for trading agricultural products, as well as for paid work outside of the village communities.

Egypt had long been a protectorate of Rome, even before Augustus' conquest, since the later Ptolemaic rulers all needed Rome's assistance to control their increasingly oppositional subjects (Vandorpe 2010). Their suspicion of the Egyptian populace thus peaked, the Romans instituted what can essentially be called apartheid policies following their formal takeover of the country (Lewis 1983:19). Native Egyptians were excluded from both administration and all but the lowest level of the army, meaning that the possibilities of upward mobility previously available to hard-working Egyptians had come to an abrupt end (Capponi 2010). For women, in particular, the Roman conquest meant a significant reduction of civil rights. While the Ptolemies had retained the Egyptian legal system alongside the Greek, meaning that both Egyptian and Greek women could conduct legal affairs without the supervision of a guardian, the Romans no longer recognized the validity of demotic contracts, putting an end to the legal independence of both Egyptian and Greek women (Vandorpe and Waebens 2010).

The Romans also increased the tax burden, not only by raising taxes proper but also through the increased efficiency with which they were collected (Lewis 1983:160).Furthermore, the state relied on the populace for corvée labor, such as the maintenance of canals and dikes (Manning 2003:49). Taken together, the Roman requirements often proved too much for able-bodied subjects, who frequently went on strike or fled their homes to avoid taxes (Kehoe 2010).

Not surprisingly, the segregationist policies of the Romans led to widespread resentment among the native Egyptians, resulting in numerous revolts against Roman rule, particularly in the 1st and 2nd centuries CE. Texts from the period paint a picture of a country in distress, with damage to fields and villages and shortage of food and labor (Capponi 2010). Also, the second half of the 2nd century CE also witnessed the effects of a major disease outbreak, the Antonine Plague. The outbreak, probably of smallpox, had a devastating effect on the country. Entire villages were depopulated, and the population may have been decimated by as much as ten percent (van Minnen 2000).

Thus, while the Saite population lived during relatively stable and prosperous times, the early to mid-Roman population existed during a period characterized by increasing oppression and segregation, heavy taxation and forced labor, several violent uprisings, and a major epidemic. In addition, the abandonment of the Egyptian legal system in favor of Greek and Roman legal traditions significantly reduced the status of women in the Roman period.

12.1.4 The Wall of the Crow Population and Quality of Life

Demographic Profiles

	Saite		Roman	
	(n)	%	(n)	%
Infans	20	12.1	2	3.2
Infans I	35	21.2	11	17.5
Infans II	18	10.9	3	4.8
Juvenilis	17	10.3	7	11.1
Adultus	33	20.0	17	27.0
Maturus	24	14.5	12	19.0
Senilis	11	6.7	10	15.9
Adult	7	4.2	1	1.6
Total	165		63	

Table12.1: Age distribution of the Wall of the Crow sample

The shape of the mortality curves for the Saite and Roman populations are similar, although there are some differences in the proportion of the various age groups (Fig. 12.2). Slightly more than half (115/228, or 50.4%) of the individuals recovered from the Wall of the Crow cemetery had reached adulthood at the time of death, though proportions differed between the phases; among individuals from the Saite period, 45.4% belonged to the age-group Adultus or above, whereas among Roman individuals a full 63.5% were 18 or older when they died.

In both phases, individuals under the age of twelve make up a substantial proportion of the sample: 44.2% in the Saite period, and 25.4% in the Roman phase (Table 12.1). Infants appear to be underrepresented in both phases, with only 12.1% of Saite individuals and a mere 3.2% of Roman individuals belonging to this age group, suggesting that the very youngest were buried outside of the cemetery.

The majority of immature individuals from both phases fall into the Infans I age category (1-5 years of age), which may correspond to the risks associated with the weaning process (in Egypt this concluded around age three) (Dupras et al. 2001, Dupras and Tocheri 2007). Individuals who survived early childhood appear to have had a better chance of surviving into adulthood, as there is a decrease in the number of individuals in the Infans II and Juvenilis age group compared to the Infans I group. Leaving aside momentarily the underrepresentation of infants in the Wall of the Crow material, the mortality curves for both the Saite and the Roman sample are consistent with those of a pre-industrial society with low life expectancy: mortality was high in early childhood, fell after approximately five years of age, and stayed relatively low through the teenage years. There was another peak in mortality among young to middle adults, but relatively few individuals who died as mature or old adults

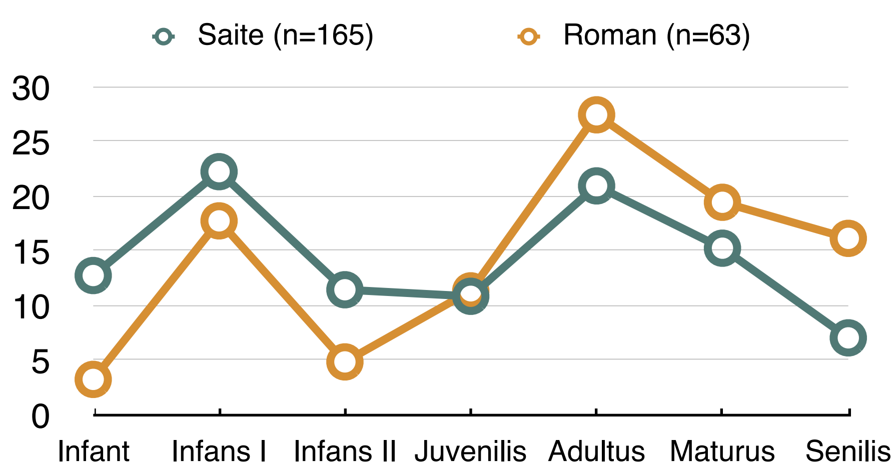

Figure 12.2: Mortality curves, in percent, of the two phases.

(Scheidel 2009). Thus, there is nothing to suggest that living conditions were any harsher at Giza compared to other areas in either the Saite or Roman period, based on the proportions of age groups alone.

Sex assessment was carried out for a total of 127 individuals, 81 from the Saite phase, and 46 from the Roman phase (Fig 12.3). This number also includes twenty post-pubescent juveniles; thirteen from the Saite sample and seven from the Roman sample. Males outnumbered females in all age groups and in both phases, except in the Senilis group from the Saite phase. Thus, the sex ratio[70] was higher than expected in both temporal phases; 119 in the Saite material, and 188 in the Roman material. Based on census records, Bagnall and Frier have estimated an average sex ratio of 108 for Roman Egypt, though the numbers varied substantially by location. In metropolitan areas, the sex ratio was substantially higher, at 144.7, while in villages it could be as low as 86.1, probably due to the practice of *anachoresis,* where men subject to the poll-tax left their villages of origin to escape tax liability and corvée labor (Bagnall and Frier 1994: 91-96; Kehoe 2010).

To what extent, if at all, the numbers reported in the Roman census records reflect the demography of the Saite period is difficult to ascertain since there are no similar records from earlier periods. Most likely, there were probably cases of villagers leaving their homes to seek economic opportunities elsewhere even before the Roman conquest. Still, historical sources do not refer to a de-population of villages as a problem before then, whereas many Roman period sources discuss the issue, often in the form of petitions for tax-relief from affected villages. Since *anachoresis* was so widespread, the state often had to officially intervene. The emperor Caracalla, for example, ordered all native Egyptians to leave Alexandria and return to their villages to perform their civic duties (Kehoe 2010). Thus, it would probably be unwise to extrapolate the Roman numbers for villages and metropolitan areas to the Saite period. Moreover, there is the added issue of the nature of our sources, since the Roman census was carried out on a live population, while a cemetery population by definition represents only non-survivors. Nevertheless, if we assume that the average sex ratio of 108 calculated from the Roman census records does reflect the composition of the living population of Roman Egypt, it is clear that the Wall of the Crow cemetery population does not. Females are underrepresented in both temporal samples, and in the Roman phase to the extreme. If we assume that the Wall of the Crow cemetery population was drawn from surrounding villages, then this shortfall of women is somewhat surprising, especially in light of what we know about poll-tax evasion practices during the Roman period. However, the shortfall of females is not the only anomaly in the skeletal sample.

If the Wall of the Crow sample represented the anticipated mortality curve for a pre-modern population, we would expect to see a high number of infants as well as females of child-bearing age (Goodman and Armelagos 1989, Strouhal and Forman 1992). This is not the case for either phase. In the Saite sample, males outnumber females in all groups but the Senilis age group [71] (Fig. 12.2). High female mortality in itself is perhaps not surprising, since it most likely

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[70] The number of males per 100 females.

[71] Further, a sex-ratio of 108, as calculated by Bagnall and Frier (1994), is still within the margin of error for the Saite sample sex-ratio of 119, which at z=1.96 lies between 77-187.

was tied mainly to the dangers of childbirth; women who survived their child-bearing years could live just as long or even longer as the males in the population (Harer 1993). Also as anticipated, the number of immature individuals is fairly high. However, the number of infants is still lower than expected (Table 12.1). Based on archaeological evidence from sites elsewhere in Egypt, very young children were often buried within settlements (Arnold 1996, Gobeil 2009, Kopp et al. 2011) or in dedicated cemeteries of their own (Bruyere 1937:11-15, Meskell 1994, Górka and Rzepka 2011). It is possible that this was also the case at Giza, at least in the Saite period, particularly since the burials of older Saite children -- with only one exception -- were restricted to a specific area around the eastern end of the Wall of the Crow. Another possibility, since the underrepresentation of females in the Saite sample appears to involve mainly younger women, is that infants and women that died in childbirth were buried together in a separate and as yet un-excavated section of the cemetery. The Saite material from the Wall of the Crow included a sole double burial of a female and child (Burial 399), and the child, in this case, was 3-5 years of age and not perinatal. However, other sites in Egypt and Nubia have yielded double burials that have been interpreted as mother-and-child interments (Filer 1998). Given the importance placed on reproduction and childbirth in Egyptian society, it is certainly feasible that neonates and the mothers that birthed them were afforded special treatment in death, as birth and rebirth were always strongly linked in the Egyptian imagination. Perhaps the association between women and fertility lessened with advancing age, allowing mature females to be buried in the general cemetery to a larger extent than younger women.

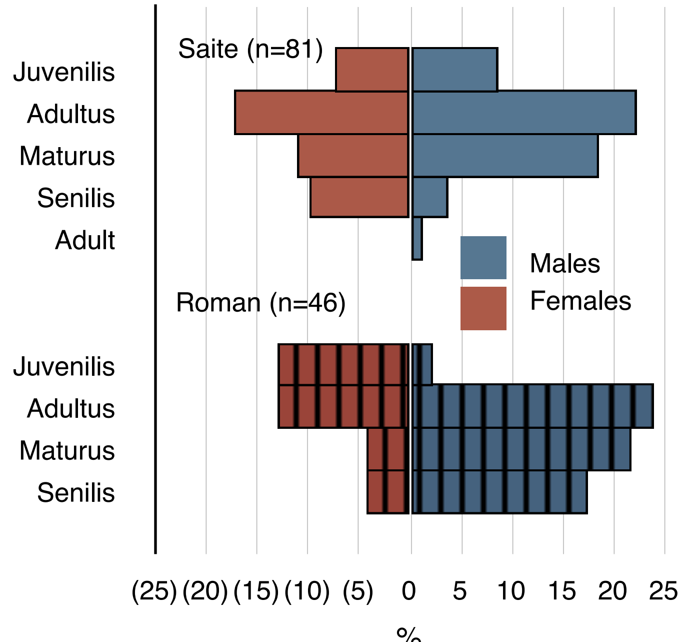

Figure 12.3: Comparison of sex assessment between the Saite and Roman materials broken down by age-group.

In the Roman sample, the lack of infants and females is even more marked (Table 12.1), but in contrast to the Saite sample, the most apparent underrepresentation occurs in the Maturus and Senilis age-groups, while females outnumber males among juveniles (Fig. 12.3). It is tempting to see this pattern as a reflection of the decline in the status of women following the Roman conquest (as posited in Hypothesis 2), i.e., suggesting that Roman females on average died younger than Roman males and that fewer females than males survived to mature age in the Roman period. However, with a sample this small, which given the meager number of infants and underrepresentation of females is so clearly affected by differential recovery, it is precarious to draw any reliable conclusions.

Overall, the evidence for skeletal stress in both the Saite and Roman samples paints a picture of a population for which both hard work and poor nutrition were commonplace. Degenerative joint disease (DJD) was common among adults in both phases, though significantly more so in the Roman period: 81.8% of observable adult individuals in the Roman sample and 70.2% of their Saite counterparts had osteoarthritic changes to either synovial joints or spine, suggesting cumulative and repetitive physical activity (Larsen 2015).

In both samples, males were more commonly affected than females. This alone may not necessarily suggest that males were carrying out more physically demanding activities than women, since a recent review of the aetiology of osteoarthritis has shown that prevalence differences between the sexes are often the result of hormone levels, body size and anatomy, rather than activity (Weiss and Jurmain 2007). However, Schmorl's nodes, which have been shown in modern clinical studies to occur more commonly in individuals that place great stress on their lower spines (Waldron 1987:45), occurred only in males in both temporal phases. Taken together, this likely points to a lifestyle more physically demanding for men than for women, which also fits neatly with the historical narrative of life in Egypt during both the pharaonic and Roman periods. There are also some interesting differences in the specific joints affected. Whereas both sexes in the Saite sample and males in the Roman sample were affected by DJD in both upper and lower body joints, the condition was limited to the hip and knee among Roman women, perhaps suggesting a change in gendered labor division from the Saite to the Roman period.

Other indicators also imply less than ideal living conditions for the Giza population, particularly during childhood. For example, 38% of the Saite individuals and 40.7% of the Roman individuals with preserved dentitions had at least one hypoplastic line, suggesting they experienced a period of significant stress during childhood. In modern populations from industrialized countries, the prevalence rate of linear enamel hypoplasia (LEH) rarely exceeds ten percent (Cutress and Suckling 1982). Studies conducted on populations with known low socio-economic status or on populations from developing countries typically report higher prevalence rates, ranging from 30-90% (Goodman et al. 1987, Goodman and Rose 1991, Lukacs et al. 2001). Similarly, studies on archaeological materials frequently find LEH in over 50% of the study populations (Goodman and Armelagos 1988, Lovell and Whyte 1999, King et al. 2005, Šlaus 2008). Based on a study of 941 individuals from cemeteries in Egypt and Nubia covering the Predynastic through Christian periods, Hillson (1979) suggests that a 40% prevalence rate should be considered more or less standard in archaeological samples from the region, likely reflecting common nutritional deficiencies and high disease loads. Thus, from the populational prevalence rate alone, it does not appear as if the Giza population was subjected to more stress than other known Egyptian samples, though the generally common occurrence of LEH in both temporal groups suggests that living conditions were not ideal in either the Saite or the Roman period.

As discussed in Chapter Four, the validity of interpreting LEH as a simple marker of populational stress has been called into question (Wood et al. 1992) with the suggestion that high

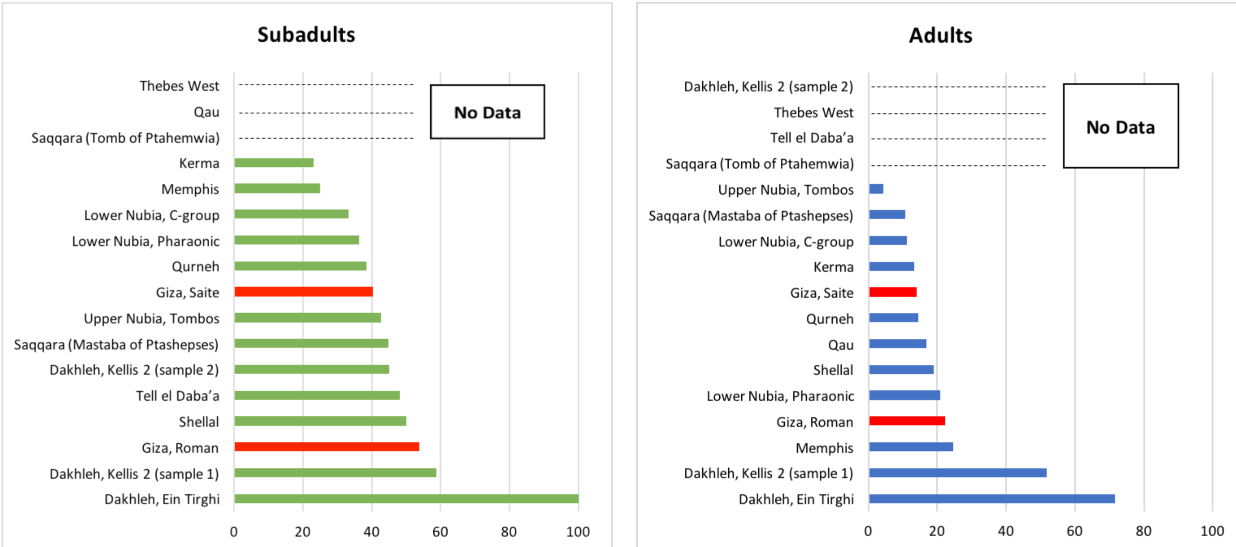

Figure 12.4: Comparison of percentages of subadult and adult individuals exhibiting orbital lesions between Saite and Roman Giza samples (in red) and other published samples from Egypt and Nubia. For sample sizes see table 12.2 below.

Site	n	Reference
Upper Nubia, Tombos	83	Buzon 2006
Kerma	306	Judd 2000, Buzon 2006
Lower Nubia, C-group	205	Säve-Söderbergh 1989, Buzon 2006
Qurneh	172	Buzon 2006
Saqqara (Tomb of Ptahemwia)	67	Raven et al. 2008
Qau	124	Fujita and Adashi 2017
Shellal	154	Smith and Jones 2008, Buzon 2006
Lower Nubia, Pharaonic	73	Säve-Söderbergh and Troy 1991, Buzon 2006
Memphis	25	Buzon 2006
Giza, Wall of the Crow (Saite)	**97**	**N/A**
Tell el Daba'a	41	Winkler and Wilfing 1991
Saqqara (Mastaba of Ptashepses)	142	Strouhal and Bareš 1993
Thebes West	273	Nerlich et al. 2000
Giza, Wall of the Crow (Roman)	**40**	**N/A**
Dakhleh, Kellis 2 (sample 2)	139	Wheeler 2012
Dakhleh, Kellis 2 (sample 1)	143	Fairgrieve and Molto 2000
Dakhleh, Ein Tirghi	153	Fairgrieve and Molto 2000

Table 12.2: Sample sizes of Giza material (observed individuals) and comparative samples used for the graphs in figures 12.4 and 12.5.

prevalence rates of enamel defects may reflect resilience and biological fitness in a population, rather than elevated morbidity. This stands in opposition to the many studies indicating that elevated stress levels during infancy and childhood may have long-term negative consequences for both health and mortality (e.g. Barker and Osmond 1986, Goodman 1996, Humphrey and King 2000, Cameron and Demerath 2002, Armelagos et al. 2009). In the Giza sample, enamel defects were more common among subadults than adults in both the Saite and Roman periods, though the difference was only statistically significant for the Saite period. Similarly, the mean age-at-death of Saite adults was significantly lower among individuals with LEH compared to individuals without lesions, suggesting that childhood stress did indeed have a negative impact on both mortality and longevity in the Wall of the Crow population, at least in the Saite period.

Another stress marker often used as an indicator of elevated levels of childhood stress is cribra orbitalia, a condition that presents as areas of porous and thickened bone on the orbital roofs. The aetiology of the condition is unclear. Long considered a sign of iron-deficiency anemia, recent research suggests that the lesions are more likely bony responses to megaloblastic and hemolytic anemia, triggered by (for example) poor nutrition, vitamin deficiencies, parasite infestation, infectious disease, weanling diarrhea or metabolic or blood disorders (Wapler et al. 2004, Brickley and Ives 2008, Walker et al. 2009).

In the Wall of the Crow population, 26.8% of the Saite population and 32.5% of the Roman sample exhibited the lesion. The condition was significantly more common among subadults in both the Saite and Roman samples, with 40.4% and 53.8% affected, compared to 14% and 22.2% among adults, respectively (Figure 12.4). In comparison with other published skeletal samples from the region, the prevalence is moderate to high. For the Roman period in particular, only the Dakhleh samples had higher percentages of affected subadult individuals, while among adults the material from Memphis also had a higher rate. When the full samples were considered (Fig. 12.5), again only the Dakhleh samples exhibited a higher percentage of lesions than the Giza Roman sample, while the percentage in the Giza Saite sample was also surpassed by that of the Thebes West material.

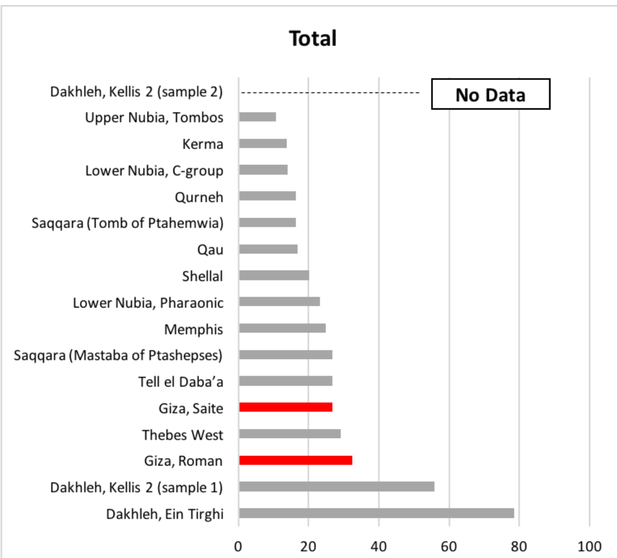

Figure 12.5: Comparison of percentages of individuals (all age groups combined) with orbital lesions between Giza samples (in red) and other published samples. For sample sizes see table 12.2 above.

Because percentages of cribra orbitalia by age and sex were inconsistently reported in the published samples, statistical comparison of prevalence rates could only be carried out on the full samples (n=1974). Samples were compared by region, site, and time period. As was readily apparent from the raw data, cribra orbitalia was significantly less common in the Nubian materials, and conversely significantly higher in the oasis samples. When only Egyptian Nile valley samples (n=790) were compared, the sample from Qurneh was shown to have a significantly lower prevalence rate than expected, and the Thebes West material a significantly higher rate. Rates for the Giza material were slightly higher than expected in both the Saite and Roman periods, though the differences were not statistically significant for either phase. Temporal differences among Egyptian Nile Valley samples were also statistically significant, with New Kingdom materials exhibiting a lower prevalence rate than those from both earlier and later periods (Fig. 12.6). When all three regions (Nubia, Egyptian Nile Valley, and Oasis) were included, significantly lower levels of cribra orbitalia than expected were found in the Middle and New Kingdom samples, while the opposite was true for the Roman and Christian/Byzantine materials (Fig. 12.7).

Although the comparison of cribra orbitalia rates in the Wall of the Crow sample with those of other published materials did not show that the prevalence at Giza was unusually high in either the Saite or Roman periods, the results are still valuable for what they may reveal about the so-called "osteological paradox" discussed in Chapter Four. One of the issues brought up by Wood and colleagues (1992) in their landmark study, and even earlier by Ortner (1991), was that since skeletal lesions take time to develop, those who survived long enough for an underlying condition to leave marks on their bones may, in fact, have been relatively healthy, compared to those who contracted the same condition, but succumbed too rapidly for skeletal lesions to form. More importantly, individuals in the latter group would be impossible to differentiate from individuals who completely escaped the condition in question. Thus, a lesion-free skeletal material may or may not represent a healthy population, while high levels of skeletal stress markers may simply reflect a population with a good immune response, rather than a population under stress. However, while the above interpretation may theoretically be correct, contextual data, both archaeological and historical, suggest that this is not the case here.

Of the comparative samples, only one, the material from Qurneh, was designated as originating from an elite tomb context. This material was also that with the lowest rate of cribra orbitalia among the Egyptian Nile Valley samples. Thus, the group most likely to have enjoyed access to adequate nutrition and medical care was also the group with the lowest prevalence of orbital lesions. Similarly, when the samples were compared temporally, materials dated to the Middle and New Kingdoms, periods known from historical sources to have been relatively stable and prosperous, had the lowest rates of orbital lesions, while prevalence of cribra orbitalia appears to have increased during times of social unrest and political instability. Although the low prevalence in the Qurneh sample, which dated to the New Kingdom, definitely impacted the distribution of lesions in the Egyptian Nile Valley samples, the pattern persisted when all comparative samples were compared by period as

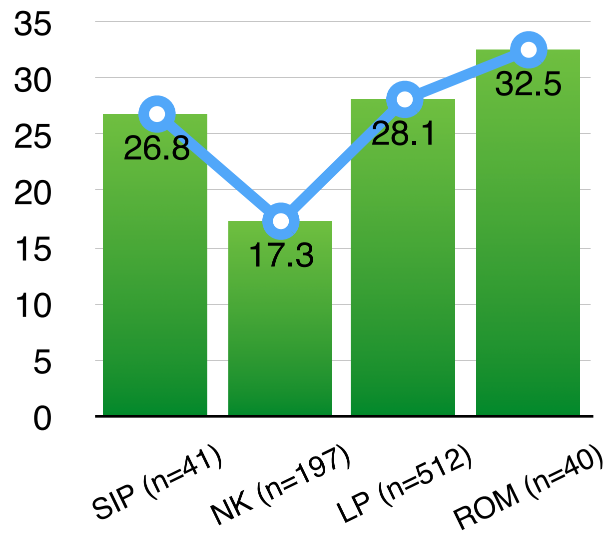

Figure 12.6: Prevalence rates, in percent, of cribra orbitalia in published Egyptian Nile Valley samples from the Second Intermediate Period (SIP), New Kingdom (NK), Late Period (LP) and Roman period (ROM)

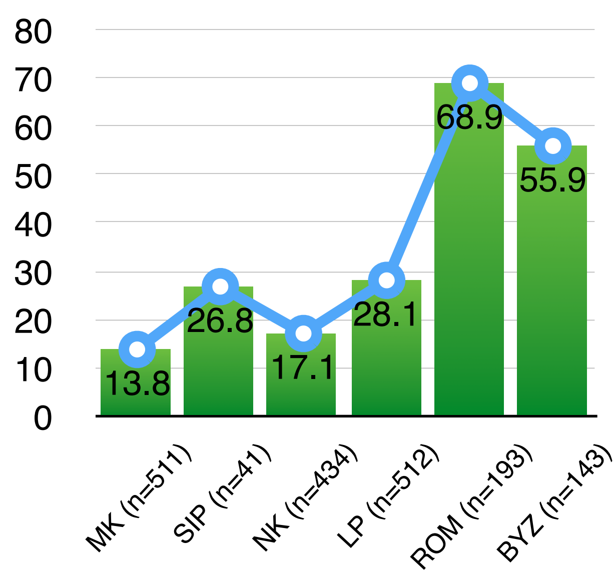

Figure 12.7: Prevalence rates, in percent, of cribra orbitalia in published Egyptian and Nubian samples from the Middle Kingdom (MK), Second Intermediate Period (SIP), New Kingdom (NK), Late Period (LP) Roman (ROM) and Christian (BYZ) periods.

well. Again, then, the dispersal of orbital lesions would correspond with contextual data if high prevalence implied a population under stress, and directly contradict the historical narrative if it did not.

An age-structured approach also suggests that the traditional interpretation of skeletal stress is appropriate at Giza. Not only were orbital lesions significantly more common among subadults, but healed lesions occurred exclusively among adults in both phases, while lesions among younger individuals were predominantly active at the time of death, or to a lesser extent mixed. This suggests that children affected by the stressors that cause cribra orbitalia often did not survive, and underscores the supposition that children were especially vulnerable in the Giza population. In the Saite period, the majority of cases occurred in the Infans I age group (children between 1 to 5 years of age), where 55% of individuals exhibited the lesion. Similar patterns have been noted in several of the other samples and are not specific to Giza. It has been suggested that the peak in prevalence among younger children may be related to weaning, which we know from both historical and archaeological sources was generally completed around age three (Fairgrieve and Molto 2000, Dupras et al. 2001, Buzon 2006, Wheeler 2009, 2012b).

In the Roman period sample, the prevalence among younger children was similarly high, with 60% of the individuals in the Infans I age group affected, all exhibiting active lesions. However, in the Roman period population, the prevalence among juveniles (12-18 years of age) was even higher, at 75%. Saite period juveniles were also commonly affected, with a prevalence rate of 50%. In addition, the majority of severe cases occurred in the Juvenilis age group in both the Saite and Roman periods.

If weanling stress seems a reasonable interpretation of the high percentage of young children with cribra orbitalia, the similarly high rate among juveniles is harder to explain. If the lesions had occurred predominantly among females, it would have been tempting to correlate the condition with the pressure of early pregnancy, since textual sources tell us that Egyptian women could (and often did) marry as early as age twelve, and often had their first child soon after (Bagnall and Frier 1994:111). However, in the Saite period, the lesions are evenly distributed among males and females, and in the Roman period, the sole juvenile male also exhibits the lesion, compared to 66.7% of the juvenile females. It is, of course, possible that the age of (male) emancipation, which at least in the Roman period was reached at age 14, exerted similar pressure on boys as early marriage did on girls. Either way, it appears that early childhood and adolescence were both stressful times for the Wall of the Crow population.

In the Saite sample, 7.8% of the assessed individuals (those with at least one complete parietal bone) were affected by porotic hyperostosis, while the corresponding number in the Roman sample was 6%. Since these vault porosities often co-occur with cribra orbitalia (Palkovich 1987), this prevalence rate may seem low. However, similarly low rates or even the complete absence of the condition have been reported in studies of other skeletal samples from the Nile Valley, even in samples where cribra orbitalia was common (Strouhal and Bareš 1993, Buzon 2006, Buzon and Judd 2008, Kemp et al. 2013). This lends support to the recent suggestion that the aetiology of the two conditions may be less similar than previously thought (Walker et al. 2009, Larsen 2015:30-35).

Fully active lesions occurred only in the Infans I age group in both temporal samples, and only one young adult in the Saite sample and a mature adult in the Roman sample presented with mixed (i.e., partially remodeled) lesions, suggesting that children in the population were particularly vulnerable to environmental stress. Again, this pattern is not unique to Giza, and many authors argue that vault porosities are generally acquired during childhood (e.g. Stuart-Macadam 1985, Walker 1986, Palkovich 1987, Walker et al. 2009, Larsen 2015:41). Further, in both the Saite and Roman periods, porotic hyperostosis was more common among females than males. Though the differences were not statistically significant in the Giza sample, a higher prevalence of porotic hyperostosis among females than males may reflect (or at least not contradict) harsher conditions for females during childhood (Larsen 2015:38).

Although the use of periosteal new bone formation (PNB) as a marker of nonspecific stress has recently been called into question (Weston 2012), several studies have shown an association between periosteal lesions and elevated risk of mortality (Lallo et al. 1978, Grauer 1993, Usher 2000, DeWitte and Wood 2008, Bullock Kreger 2010, Novak and Šlaus 2010, DeWitte 2014, Marklein et al. 2016). Thus, high frequencies of the condition are still commonly interpreted as a sign of poor community health (Goodman and Martin 2002, Larsen 2015:88-92), often by linking it to increased population density, intensification of agriculture, and unsanitary living conditions (Armelagos et al. 1991, Larsen 2015:88). Studies on archaeological populations often report high prevalence of the condition; commonly over 20% of the individuals in a sample exhibit periosteal lesions, and in some cases as many as 84% (Lallo et al. 1978, Grauer 1993, Boocock et al. 1995, Boylston and Roberts 1996, DeWitte 2014).

In the Giza Saite sample, 14.7% of the observed individuals (n=156) showed evidence of periosteal new bone formation on any bone, compared to 15.8% of the Roman individuals. The lesions were more common among adults than subadults: in the Saite population, 23.6% of adult individuals (n=72) exhibited periosteal lesions, compared to only 7.1% of subadults (n=84), while in the Roman population 17.9% of adult individuals and 11.1% of subadults were affected.

PNB (on any skeletal element) was more common among females (29.4%, n=32) than males (21.4%, n=37) in the Saite sample, while the reverse was true for the Roman sample, where 17.2% of males (n=28) were affected, but only 13.3% of females (n=14). When periosteal lesions were separated based on location, this pattern remained: both PNB on the long bones and PNB on any other bone excluding the long bones were significantly more common among adults than subadults in the Saite sample. Though the lesions were also more common among adults in the Roman sample, the difference was not statistically significant.

PNB on the long bones was also more common among females than males in the Saite sample (25% vs. 10.8%), while the opposite held true for the Roman sample, where the lesions were entirely absent among females, but occurred in 14.3% of the Roman males. Roman females did show evidence of general infection, with 7.1% of individuals exhibiting periosteal lesions on bones other than the long bones, compared to 10.3% of Roman males. In the Saite population, evidence of general infection was still more common among females (26.5%) than males (11.9%).

Based on what historical and archaeological sources tell us about living conditions of the non-elite in Saite and Roman period Egypt, higher frequencies of periosteal lesions would perhaps be expected in the Giza sample. However, several studies involving skeletal samples from the region also report similarly low occurrences. In the skeletal material from the Ptahshepses mastaba at Abusir, a cemetery close to Giza both temporally and geographically, only 6.3% of individuals (n=159) were affected (9.1% of males, and 2.8% of females), with no evidence of periosteal lesions among subadults (Strouhal and Bareš 1993:110). In a sample from the South Tombs at Amarna, dating to the New Kingdom, only 8% of adult individuals (n=53) were affected (Rose 2006). In a sample from Wadi Halfa, Sudan, dating to the X-group period (c. 350-550 CE), only 12% of individuals exhibited PNB (Armelagos et al. 1981). Finally, in a Roman period sample from the Dakhleh Oasis, none of the adults showed any evidence of infection, although it was commonly encountered among subadults (Cook et al. 1989). Considering that other markers of skeletal stress were common in these materials, the low rate of periosteal lesions is somewhat surprising.

It has been suggested that the scant evidence of infections in Nubian and Egyptian materials is due to the buffering effect of naturally occurring broad-spectrum antibiotics, stemming primarily from a side-effect of the fermentation process used in beer-production (Bassett et al. 1980, Mills 1992, Armelagos 2000). Indeed, thin sections of bone from both Nubia and Egypt showed a pattern of fluorescence indicative of tetracycline labeling, suggesting that these populations were exposed to tetracycline-containing materials during life (Bassett et al. 1980, Cook et al. 1989, Nelson et al. 2010). If tetracycline-laced beer did, in fact, serve as a prophylactic antibiotic, this may explain the apparent low rate of infection in skeletal materials from the region, considering the prominence of beer in the Egyptian diet (Samuel 2000).

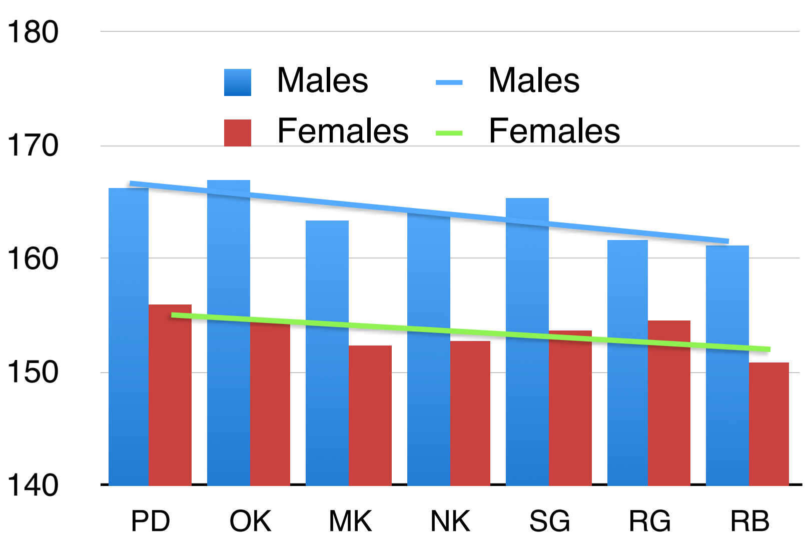

Figure 12.8: Mean stature of males and females from the Predynastic (PD; n=611)), Old Kingdom (OK; n=219), Middle Kingdom (MK; n=44), New Kingdom (NK; n=62) and Roman/Byzantine (RB; n=53) periods (after Raxter 2011), as well as Saite and Roman period Giza (SG; n=54 and RG; n=25, present study), with trend lines.

Although stature is primarily determined by genotype, extrinsic factors also play a part in human growth (Jantz and Jantz 1999, Stinson 2012). Several studies have shown that malnutrition, high disease loads and low socio-economic status correlate with shorter average stature in a population (Steckel 1995, Cavelaars et al. 2000, Schweich and Knüsel 2003, Komlos and Baur 2004, Kemkes-Grottenthaler 2005, Raxter 2011:22-25). It has also been suggested that females are better buffered against environmental factors affecting growth than males (Stinson 1985, Jantz and Jantz 1999, Vercellotti et al. 2011), meaning that suboptimal living conditions would affect males more than females and thus may result in reduced sexual dimorphism in stature (Greulich 1951, Tobias 1975). However, this hypothesis has been incompletely tested and is also complicated by the fact that males may have had preferential access to better nutrition in socially stratified populations (Stinson 1985, Zakrzewski 2003, Raxter 2011:88). Nevertheless, variation in stature over time is another aspect that can be potentially informative regarding changes in living conditions in past populations.

Recent studies on body proportions have reported a general decline in stature over time in Egyptian populations (Zakrzewski 2003, Raxter 2011), and when the Giza population was compared to other regional samples, this trend still persisted. However, Saite males were taller than all but Predynastic and Old Kingdom males, while Roman females were taller than all but Predynastic and Old Kingdom females (Fig. 12.8). When males and females in the Giza material were compared by phase, the difference in stature was statistically significant only between males.

In modern populations, sexual dimorphism in stature (SDS = male height/female height) ranges from approximately 1.04 to 1.10 (Stini 1975, Alexander et al. 1979, Holden and Mace 1999, Pawłowski 2003), meaning that males are between 4-10% taller than females. In the archaeological samples under consideration, SDS scores ranged from 1.05 to 1.08, i.e., males were between 4.6% to 8% taller than females in the same samples (Fig. 12.9). Not surprisingly, sexual dimorphism was greatest in the two samples that also had the tallest average stature among males, namely the Old Kingdom (8%) and Saite (7.6%) samples. Interestingly, the by far smallest difference in height between the sexes was found in the Roman sample from Giza, where males were merely 4.6% taller than females from the same group (Fig.12.9). Thus, if a reduction in height and sexual dimorphism in stature is indeed related to disadvantageous living conditions and malnutrition, the differences in stature and SDS between the phases may suggest a decline in the standard of living among the Giza population from the Saite to the Roman period.

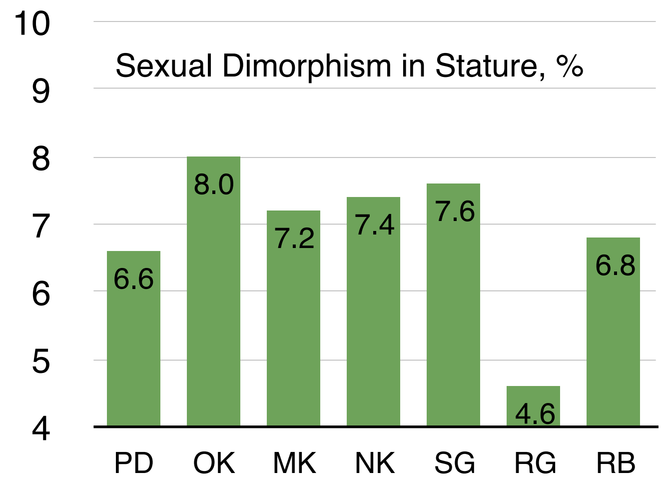

Figure 12.9: Sexual dimorphism in stature, in percent, in samples from the Predynastic (PD; n=611)), Old Kingdom (OK; n=219), Middle Kingdom (MK; n=44), New Kingdom (NK; n=62) and Roman/Byzantine (RB; n=53) periods (after Raxter 2011), as well as Saite and Roman period Giza (SG; n=54 and RG; n=25, present study).

Skeletal trauma is not a stress marker in the general sense, but the type and distribution of traumatic lesions can still be informative of socio-cultural, behavioral and environmental aspects of lifestyles in the past. Trauma in archaeological materials has been used to investigate not only patterns of conflict and warfare, but also ritualized and structural violence, human sacrifice, domestic abuse, and changes in subsistence and settlement patterns (Smith and Jones 1908, Burrell et al. 1986, Walker 1989, van Gerven et al. 1995, Walker 1997, Judd 2000, 2002, 2004, 2006, Buzon and Richman 2007, Buzon and Judd 2008, Erfan et al. 2009, Klaus 2012, Montgomery and Perry 2012, Tung 2012, e.g. Arkush and Tung 2013, Wheeler et al. 2013, Martin and Harrod 2015).

Cranial trauma, in particular, has often been used by bioarchaeologists as an indicator of interpersonal violence in a population (Walker 1997, Kilgore and Jurmain 1998, Harrod et al.

2012). In the Giza material, at least four individuals, three Saite males, and one Roman male sustained injuries to the head. However, because of the poor preservation of the Giza crania, cranial trauma prevalence was calculated by skeletal element rather than by individual. When broken down by bone, 2.6% of the Saite period cranial elements observed and 0.8% of the Roman period cranial bones showed evidence of either ante- or perimortem trauma (Table 12.3).

In both phases, cranial trauma was more common among males, though the differences were not statistically significant. Other studies on Egyptian and Nubian skeletal samples report higher rates of cranial trauma. Erfan and colleagues (2009), for example, reported a cranial trauma rate (per individual) of 19.4% in a sample from the Bahariya Oasis dating to the Greco-Roman period and concluded that Roman imperial rule was a period of social unrest in the peripheral area of the oasis. Baxarias (2007) reported a cranial trauma rate of 13.5%, also by individual, in a Late to Roman intrusive period material from the tomb of Mentuemhat in Thebes. Bentley (1999) reported a cranial trauma rate of 10.5% in a skeletal material from the Teti Cemetery in Saqqara, dating mainly to the New Kingdom. In reports on earlier materials, the numbers are somewhat lower: Cranial trauma rate in an Old to Middle Kingdom material from Dahshur was only 2.2% (Alexanian et al. 2008), and in a material from Elephantine, dating to the Old Kingdom through First Intermediate period, cranial trauma was reported as affecting 3.7% of the observed individuals (Raue et al. 2004). Outside of the Egyptian Nile Valley, high rates of cranial trauma (11.2% of individuals) has also been reported from Middle Kingdom through Second Intermediate Period materials from Kerma (Judd 2004) and Dongola (Judd 2006; 22.9% of individuals) in the Sudan. The distribution of trauma at these two sites were interpreted by Judd as stemming from elevated levels of interpersonal violence, during an era of aggressive Egyptian military campaigns to the region. At New Kingdom Tombos, however, cranial trauma rates were much lower, at only 1.4%, suggesting a more peaceful co-existence between Nubians and Egyptians during this time (Buzon and Richman 2007).

	Cranial			**Long Bones**		
	Absent	**Present**	**%**	**Absent**	**Present**	**%**
Saite Males	202	6	2.9	507	3	0.6
Saite Females	167	4	2.3	415	7	1.7
Saite Total	**369**	**10**	**2.6**	**922**	**10**	**1.1**
Roman Males	95	1	1.0	299	6	2.0
Roman Females	30	0	0	160	2	1.2
Roman Total	**125**	**1**	**0.8**	**459**	**8**	**1.7**
Giza Total	**494**	**11**	**2.2**	**1381**	**18**	**1.3**

Table 12.3: Distribution of traumatic lesions in skeletal elements from the Saite and Roman period Wall of the Crow samples.

Because so many of the skulls at Giza were partial only, it is difficult to directly compare the prevalence rate at Giza with the above counts, which were calculated on complete crania. However, by dividing the number of observed traumatic lesions with the total number of individuals in the sample (subadults excluded), we can estimate the *minimum* trauma rate in the Giza sample, and see that at least 3.9% of the Giza individuals had suffered antemortem trauma to the skull. If perimortem lesions were taken into account, the frequency was as high as 9.1% among Saite males (Table 12.4). Thus, while frequencies were higher in the Egyptian New Kingdom through Roman period samples as well as at Kerma and Dongola, cranial trauma rates at Giza was, in fact, higher than those reported from both Dahshur, Elephantine, and Tombos.

CRANIAL TRAUMA BY INDIVIDUAL							
Cohort	N	Ante		Peri		Total Cran	
		n	%	n	%	n	%
Saite Males	44	3	6.8	1	2.3	4	9.1
Saite Females	37	1	2.7	2	5.4	3	8.1
Saite Total	**81**	**4**	**4.9**	**3**	**3.7**	**7**	**8.6**
Roman Males	30	1	3.3	-	-	1	3.3
Roman Females	16	-	-	-	-	-	-
Roman Total	**46**	**1**	**2.2**	**-**	**-**	**1**	**2.2**
Giza Total	**127**	**5**	**3.9**	**3**	**2.4**	**8**	**6.3**

Table 12.4: Estimated trauma rates by individual for the Giza sample. Percentages are shown for antemortem and perimortem lesions separately, and with the two combined.

In contrast to the traumatic lesions encountered in cranial bones, where only one injury showed evidence of significant healing, all long bone fractures in the Giza material were well healed at the time of death. In total, 1.1% of the Saite bones examined, and 1.7% of the Roman bones had fractures. In the Saite period, long bone fractures were more common among women (1.7% versus 0.6%) while the opposite was true in the Roman period (males 2% and females 1.2%). The differences were not statistically significant. The majority of the fractures appear to have been accidental in nature.

In the Saite material, one female individual had a Colles' fracture of the distal radius, in combination with a broken and remodeled ulnar styloid process. The latter ulnar fracture was noted in two further females without radial involvement, and in a male from whom the distal radius was not recovered. This type of fracture most commonly occurs as a result of a fall on to the outstretched hand (McQueen 2014). Another Saite male had a healed comminuted fracture of the right humeral shaft. Humeral shaft fractures can be the result of a direct blow to the arm but are more commonly caused by falls (Galloway 2013, Garnavos 2014). A younger man had a comminuted fracture of the distal third of the tibial shaft, which other than a large callus and periosteal reaction had healed well. Finally, an older woman exhibited a fracture of the distal femoral shaft along with a fracture of the proximal shaft of the tibia. This type of ipsilateral injury, fancifully known as a "floating knee" (Blake and McBryde 1975), is relatively uncommon and is today most commonly associated with high-velocity motor vehicle accidents (Hegazy 2011) but it can also result from falls from great height (Liu et al. 2015). Even with modern medical care, the complication rate associated with floating knee injuries is high, and internal fixation (using nails or plates) of both bones is usually recommended as treatment. Common complications include infection, nonunion, malunion, and stiffness of the knee, which can lead to functional impairment (Muñoz Vives et al. 2016). Interestingly, both of this woman's fractures healed well, with slight distraction of the femur the only complication, likely causing a limp. It is possible that the fracture was sustained in childhood, and that one or both of the fractures were partial.

In the Roman remains as well, the observed fractures were most likely due to accidents. Two males and one female had suffered broken clavicles. These fractures usually result from falls directly on the involved shoulder (Galloway 2013, McKee 2014). A mature male had a fracture of the distal third of the shaft of the left radius and ulna, with extensive callus formation on both bones. Another mature male had a depression/compression fracture in the fibular notch of the left tibia, with accompanying extensive periosteal reaction of the distal fibula, possibly as the result of an ankle sprain (White and Bugler 2014). Finally, one young man had a severe elbow fracture which healed poorly: the medial epicondyle on his left humerus was missing, and a new articular facet had formed on the medial aspect of the capitulum. On the left ulna, the olecranon was missing, and the coronoid process remodeled (Fig. 12.10). The proximal radius was not preserved, but the fracture likely involved the radial head as well. This type of avulsion fracture commonly arises from a fall onto the outstretched hand, causing the elbow to be forced into varus position. Direct blows to the elbow may also produce these fractures, though it is rare (Galloway 2013). The pseudoarthrosis and lack of atrophy suggest this individual still had use of his arm, but most likely the injury would have caused a functional impairment.

Figure 12.10: The left distal humerus and proximal ulna of burial 384.

Since very few published studies on Egyptian materials report trauma rates of the long bones separately, it is hard to get an overview of the average rate of traumatic injuries to the limbs. However, Dabbs and colleagues report a limb trauma rate by individual of 18% from Amarna as well as high rates of trauma to the axial skeleton, which they interpreted as a sign of heavy workloads and dangerous working conditions involving the building of the new capital city of Akhetaten (Dabbs et al. 2015). Similar numbers are reported from Kerma, where 17.9% of examined individuals had suffered trauma to the arms or legs, and at Dongola, the numbers were even higher, with 30.9% of individuals affected (Judd 2004; 2006). Judd interpreted the high number of ulnar fractures as evidence of elevated interpersonal violence in the Kerma and Dongola communities, and the higher prevalence of lower limb trauma at Dongola as a result of their rural farming lifestyle. At the New Kingdom site of Tombos, limb fractures were much less common at only 2.2% of individuals, and also indicative of accidental rather than defensive injuries. The decrease in trauma at Tombos was interpreted as a reflection of the more peaceful administration of Nubia by the Egyptians in the New Kingdom compared to the earlier Kerma period (Buzon and Richman 2007).

Again, direct comparisons with the above counts of trauma are difficult, since due to the generally poor preservation of the Giza material and the high level of post-depositional damage to the graves, trauma rates were reported by skeletal element rather than by individual. However,

LONG BONE TRAUMA			
Cohort	N	Limb	
		n	%
Saite Males	44	3	6.8
Saite Females	37	4	10.8
Saite Total	**81**	**7**	**8.6**
Roman Males	30	4	13.3
Roman Females	16	2	12.5
Roman Total	**46**	**6**	**13.0**
Giza Total	**127**	**13**	**10.2**

Table 12.5: minimum long bone trauma rates at Giza. N = number of individuals in sample, n = number of individuals with traumatic lesions to the long bones (including the clavicle).

by dividing the number of individuals with at least one traumatic lesion with the total number of individuals in the sample, we can arrive at an estimate of minimum trauma rates for the long bones as well (Table 12.5). This calculation shows that at least 8.6% of the Saite individuals and 13% of the Roman individuals had sustained traumatic injuries to the limbs before death. Though this is still a lower percentage than at Amarna, Kerma, and Dongola, it is more than three times as high as at Tombos.

Elemental counts were also provided by Judd (2004; 2006) and Buzon and Richman (2007) for Kerma, Dongola, and Tombos, and when these numbers were compared to the Giza data, the difference in prevalence was smaller. At Kerma, 1.2% of cranial segments (26/2225) and 2.4% (48/2029) of the long bones showed evidence of trauma, while at Dongola, 1.8% of cranial segments (8/456), and 5.6% (27/484) of the long bones observed were affected (Judd 2004; 2006). From Tombos, no elemental counts were provided for the crania, but 2.6% (19/823) of the long bones had healed fractures.

When calculated this way, trauma prevalence at the Nubian sites is not so different from Giza, where 2.2% of the cranial elements showed evidence of trauma, and 1.3% long bones had healed fractures. In fact, while long bone fractures were still significantly more common at Kerma (p=0.03) and Dongola (p=<.0001) than they were at Giza, there were no significant differences between long bone fracture rate at Giza and Tombos, and no significant differences in cranial trauma between any of the sites, when calculations were made by element rather than individual. Moreover, the actual trauma prevalence at Giza was likely higher than detected, given the poor preservation of the material, the crania in particular. In a cross-cultural study involving over 2300 crania, for example, Walker (1997) reported that nasal fractures were the most common cranial injuries, followed by trauma to the frontal and parietals. In the Giza sample, however, only 25 of the 228 individuals had nasal bones sufficiently preserved for observation. Similarly, only 45 frontal and 43 parietal bones (22 left and 21 right) were complete enough to examine. Nevertheless, the distribution of trauma in the Giza sample allows us to draw some tentative conclusions.

First, it seems likely that the Saite and to some extent the Roman populations experienced intermittent interpersonal violence. Four individuals, three Saite males, and one Roman male, had sustained injuries to the cranial vault or face before death. In the cases of the Roman male and one of the Saite males, the injuries were well healed at the time of death. In the remaining two cases, both from the Saite phase, healing had only just begun, and the trauma probably caused the death of these two individuals. Still, the frequency of cranial trauma was much lower at Giza than at other contemporary or near-contemporary sites like Roman period Bahariya and Late to Roman period Thebes. However, while the Roman period saw an upswing in agricultural output for Bahariya, the oasis was also at the empire's edge, with a large Roman military presence (Jackson 2002:233-238, Kaper 2012), and it is certainly possible that many of those buried in the Roman period cemeteries at Bahariya had previously served in the Roman army. Similarly, Thebes saw its fair share of political instability and revolts during both the Late and Greco-Roman periods, due to its proximity to the Nubian border, as well as its inhabitants' general adversity to foreign rule (Lajtar 2012). In comparison, the Memphite region was relatively politically stable in both the Saite and Roman periods. Thus, if political unrest and foreign rule is indeed a predictor of elevated levels of interpersonal violence as suggested by Judd (2004; 2006) and Erfan et al. (2009), lower frequencies at Giza compared to Bahariya and Thebes would be consistent with the historical narrative of the Saite and Roman periods.

Second, it is possible that the Giza population experienced an increase in workload from the Saite to the Roman period, and that there was a change in the labor division between the sexes as well. Most likely, the Giza population lived a rural lifestyle, engaging in agricultural activities involving both farming and animal husbandry. These activities would have meant elevated risks of nonfatal injuries stemming from the proximity to large animals and operation of farming equipment (Cogbill and Busch 1985, Cogbill et al. 1991, Mock et al. 1999, Stewart et al. 2013). The majority of the fractures in both the Saite and Roman samples were of types most commonly associated with accidental injuries. However, the prevalence of long bone trauma was higher in the Roman population than the Saite population both when measured by individual and by skeletal element. While the difference was not statistically significant in either case, the rise in accidental trauma may suggest that the Roman population experienced an increase in workloads involving physical labor. This would be consistent with the historical narrative, which tells us that the Roman overlords not only raised taxes (Lewis 1983: 160) but also had a higher demand for unpaid corvée labor on behalf of the state (Manning 2003:49). Also, there was a change in the distribution of fractures over time. In the Saite period, females experienced a higher rate of limb trauma than males, while in the Roman period the opposite was true. Again, the differences were not statistically significant, and the sample size is small. However, if this picture does reflect the actual distribution in the sample, it may suggest a change in labor division between males and females from the Saite to the Roman period, with Saite females partaking in activities that put them more at risk for accidental trauma than Roman females.

Finally, the proper alignment of even very complicated fractures in the Saite sample, coupled with the lack of evidence of major infection, may suggest that at least the Saite population had access to medical care. We know that Egyptian doctors were no strangers to fractures, since the Edwin Smith Surgical Papyrus, dating to c. 1600 BCE, details their care. This text, now at the New York Academy of Medicine Library, was likely written as a reference work for Egyptian physicians, with recommendations for treatment (Allen 2005:70-71). It contains forty-eight cases, four of which deals with long bone fractures. Reduction and traction iareprescribed: "Then you lay him out, with something folded between his shoulder blades. You have to pull his arms to lengthen his upper arms, until that break falls into its place" (Allen 2005:95). The papyrus also recommends using splints after setting the fracture, and several examples of such splints have been found in tombs, in cases where the outcome was not ideal. In at least one of the cases, the splints were still stained by the blood and pus from the open compound fracture it was protecting (Smith 1908c).

12.1.4 The Wall of the Crow Population and 'Quality of Death'

The pared-down nature of the burial assemblages accompanying the dead in the Wall of the Crow Cemetery limits the utility of a traditional quantitative analysis of the burial goods. However, the organization of the cemetery, as well as differences in the way the dead were equipped, can still be informative with regard to changes in eschatological beliefs from the Saite to Roman periods. Amongst the elite, changes in mortuary treatment from the Saite to the Roman period were quite dramatic (Grajetzki 2003). The findings from the Wall of the Crow material, however, suggest that the adaptations to evolving funerary beliefs amongst the non-elite were more subtle. In particular, there is no evidence of explicit Hellenistic influence in the material culture from the Wall of the Crow Cemetery, such as the more naturalistic depictions of the dead prevalent in more elite contexts. This is not to say that funerary behavior did not change at all; just that the changes were perhaps not as immediately apparent.

The most noticeable change in funerary behavior over time in the Giza material was the location of the graves, particularly those belonging to children. During the Saite period, the western end of the Wall of the Crow appears to have been of special importance particularly for younger age groups: all but two of the Saite subadult burials were located directly adjacent to it. By the Roman period, the association between the wall and the very youngest appears to have waned, and children were instead interred alongside adults throughout the cemetery. Moreover, there was much more variation in both coffin and amulet type among Saite children, while the burial assemblages of Roman children were instead more similar to those of adults, albeit more commonly equipped with amulets. Further, the amulets found with Saite children were to a much greater extent associated with fertility, motherhood, and childbirth (e.g., depicting Bes, Hathor, Nut or Bastet) compared to the emphasis on apotropaic protection in the Roman period. Thus, though the differences in burial treatment of children between the two periods are subtle, there appears to be a definite move from distinct areas of the cemetery and typical non-adult grave goods provided for Saite children, towards funerary equipment more closely approximating that of adults, save for a higher number of protective amulets, in the burials of Roman children.

There is also a notable difference in the distribution of coffins between the phases. First and foremost, coffins were generally more common in the Saite period than in the Roman period, and it is tempting to see this change in burial equipment as a reflection of the supposedly harder times befallen the Roman population. Most likely, however, the lower number of coffins is a reflection of the overall scaling back of burial equipment that began much earlier. By the end of the Ptolemaic period, the emphasis of the burial équipage was the mummified body proper, and anthropomorphic coffins had largely given way to elaborately patterned wrappings even among the elite, often topped with intricately decorated cartonnages and masks combining Egyptian and Hellenistic visual styles (Riggs 2005:29). While no cartonnages or masks in were preserved in the Roman material, the position of many of the uncoffined bodies within the graves suggest that they were indeed tightly wrapped before burial, and in some of the burials fragments of linen still adhered to the bones. It is possible that many of the Roman bodies were in fact also equipped with masks made from linen or perhaps papyrus, which due to the poor preservation of organics at the Wall of the Crow site have left no traces in the archaeological record.

Figure 12.11: A mask with a winged headdress from the Saite period (Burial 303, left), and a more archaizing mask from the Roman period (Burial 372, right).

The Roman mud coffins, however, show little evidence of Hellenistic influence. If anything, they are rather archaizing in style. Whereas the Saite coffins came in a variety of different decorative schemes and shapes, solid or multi-colored, with or without decorative collars, registers, and columns, with a variety of mask and wig colors, and sometimes with winged head-dresses accentuated by a scarab at the center, the Roman coffins were positively dreary in comparison (Figure 12.11). Decorations of the coffin body disappeared almost entirely, and instead of the fanciful winged headdresses, the masks were instead often surrounded by simple striped wigs or headdresses. However, the later coffins are not wholly devoid of Roman influences though they occur in combination with traditionally Egyptian features: the Roman coffin masks, for example, are invariably red, a color scheme that gained enormous importance during the Roman period, but that was drawn from the solar imagery of traditional Egyptian funerary iconography. Further, it is possible that the overwhelmingly Egyptian flavor of the Roman material at Giza is merely an artifact of preservation. Textual evidence suggests that Roman Egyptians could choose to convey a traditional Egyptian identity in death, as several demotic wills from the Roman period detailing the writer's wishes for a "native Egyptian" burial are known from other sites (Riggs 2010b). Presumably, such a burial would favor a more traditional visual language, rather than an emphasis on Greco-Roman style. It could be, then, that what we see in the Giza material are simply the sturdier examples of such traditional burials, while more Romanized burial equipment, in the form of elaborate wrappings or lightweight cartonnage masks, did not survive. This also makes the distinction between burials with and without coffins more complicated, since linen was expensive, and an expertly wrapped body-covering may have been just as costly as a coffin. Thus, the higher number of coffin-less burials in the Roman period need not be the result of economic decline but merely represent different choices regarding the deceased's desired representation in death.

The final distinction between Saite and Roman burials can be seen in the different types and modes of deposition of pottery. Imported and decorated prestige vessels were found only in Saite burials, but the Roman assemblages consisted mainly of juglets, cooking pots and dishes (Tavares and Laemmel 2011). Also, the Saite pottery was generally found intact and in association with the body, whereas the Roman pottery assemblages appear to have been broken before they were deposited above the body or coffin, at the top of the burial fill. Finally, the Saite material included several deposits of intact cylindrical storage jars, either deposited within the burial at the foot-end of the grave, or in larger caches in the cemetery. Parallels to these cylindrical jars have been found containing embalming refuse in Saite period tombs in the Assasif in Thebes (Budka 2014). The composition of the assemblages suggests that the pottery associated with the burials served different purposes in the Saite and Roman periods, as burial goods and embalming caches in the Saite period, and as components of a funerary meal or other cultic activity in the Roman period. This fits with what we know from both archaeological and textual sources, which tell us that while the funerary meal was an essential component of the mortuary ritual throughout Egyptian history, this feast was during the Saite period often enacted away from the physical place of burial (Budka 2014). In contrast, written sources from the Roman period tell us that the funerary banquet was enacted either at the tomb proper or in a location not far away (Riggs 2010). Thus, the different composition and modes of deposit of the pottery assemblages form an additional example of Roman influence on burial traditions that may not be immediately apparent.

12. 2 Discussion of Statistically Significant Results

What follows is a discussion of the statistically significant results of the analyses as they pertain to each of the hypotheses tested in this dissertation.

12.2.1 Discussion of Significant Results Pertaining to Research Hypothesis 1

The humble nature of the Wall of the Crow graves, the distinctively Egyptian burial practices, and textual evidence emphasizing the importance of being buried close to home all suggest that the Wall of the Crow Cemetery population was non-elite, and most likely local and native Egyptian, throughout the duration of use of the cemetery. Despite these similarities between the Saite and Roman phases, however, the two populations lived in two very different socio-political climates. The Saite period, at least in the Memphite area, was relatively stable and prosperous, whereas the early to mid-Roman period was characterized by increasing oppression and segregation of the native Egyptian population, heavy taxation and forced labor, several violent uprisings, and a major epidemic. Thus, the first research question to be addressed is whether or not the levels of skeletal stress in the Wall of the Crow skeletal sample suggest that the sociopolitical changes caused by the Roman conquest negatively affected living conditions among the cemetery population. This research question was translated into a testable hypothesis as follows:

<u>Research Hypothesis 1:</u>[72] *The Roman skeletal sample from the Wall of the Crow cemetery will exhibit higher frequencies of physiological stress indicators than the Saite sample.*

Overall, the significant results of the statistical tests on the Wall of the Crow skeletal material support Research Hypothesis 1 and argue in favor of the rejection of the corresponding null-hypothesis, though not as decisively as expected. Degenerative joint disease of synovial joints was significantly more common in Roman than Saite males, suggesting higher levels of physical labor in the Roman period. This is consistent with the increased workloads that would have resulted from the rise in taxation and higher demand for corvée labor that historical sources tell us were both features of the Roman period.

Additionally, Saite males were significantly taller than Roman males, and Sexual Dimorphism in Stature (SDS) was significantly smaller in the Roman period. This suggests that Saite males escaped high disease loads to a greater extent than males of the Roman period and/or were provided enough nutrition during childhood to allow them to get closer to their genetic growth potential, while the Roman males were not as healthy or well nourished, and may have experienced stunted growth. This conclusion is also supported by the significantly higher prevalence of linear enamel hypoplasia among Roman males compared to Saite males when all teeth were pooled, and among Roman females compared to Saite females on the lower right incisors.

Only one stress marker was significantly more common in the Saite than in the Roman period: periosteal new bone formation of the long bones among females. This implies that Saite females were at higher risk of infection than their Roman counterparts, and may indicate that the difference in living conditions between the Saite and Roman periods were not as pronounced as historical sources suggest.

Finally, both cribra orbitalia and periosteal bone formation were significantly more common among subadults than adults in both the Saite and Roman periods. While these results neither support nor contradict Research Hypothesis 1, they suggest that living conditions at Giza were disadvantageous during both the Saite and Roman periods, at least during childhood.

12.2.2 Discussion of Significant Results Pertaining to Research Hypothesis 2

In both the Saite and Roman periods, Egyptian society was strongly patriarchal, with gender-specific labor division. Among the non-elite, agricultural work was generally the responsibility of the men, while women cared for the household. Outside of the home, many areas of occupation, some of which likely involving foodstuffs as remuneration, appear to have been reserved exclusively for males. It would therefore be a reasonable expectation to find a higher

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[72] $H_0 1$: The Roman skeletal sample will exhibit less or equal frequencies of physiological stress compared to the Saite sample.

prevalence of activity-related stress markers in males than in females of both phases, whereas evidence for nutritional stress would instead be stronger among females.

Further, the abandonment of the Egyptian legal system in favor of Greek and Roman legal traditions most likely meant a decline in both legal and economic independence of women of the Roman period compared to earlier periods. Higher levels of skeletal stress in Roman females compared to Saite females would be consistent with that expectation.

Research Hypothesis 2:[73] **a)** *Prevalence rates of skeletal indicators of stress associated with infection and nutritional stress will be higher among females in both the Saite and Roman periods, while prevalence rates of degenerative joint disease will be higher in males.* **b)** *When compared by phase, Roman females will have higher rates of skeletal indicators of stress than Saite females.*

The results of the statistical analysis pertaining to Research Hypothesis 2 were mixed. While the significant results generally supported Research Hypothesis 2a and argued in favor of the rejection of the corresponding null-hypothesis, though again not as decisively as expected, Research Hypothesis 2b was not supported, and $H_0$2b could not be rejected.

Linear enamel hypoplasia was significantly more common among Roman females than Roman males when compared by individual. The condition was also significantly more common on the right upper canine and lower central incisor among Saite juvenile females compared to juvenile males and adult females from the same phase. In addition, periosteal new bone formation was significantly more common among Saite females than among Saite males. Further, Schmorl's nodes occurred only among males in both phases, and this difference was statistically significant in the Saite population. This suggests that males likely engaged in heavier physical labor than females and that females experienced higher levels of stress during childhood. The significantly higher prevalence of periosteal new bone formation among Saite females than males further indicates that females in the Saite period may have been more susceptible to infection than males. Taken together, the results pertaining to Research Hypothesis 2a does support a gendered labor division, and higher elevated stress among females, particularly during childhood.

In contrast, the only stress marker that differed significantly among females was periosteal new bone formation of the long bones, which was more common among Saite than Roman females. Thus, the expectation that the decline in women's legal status in the Roman period would be reflected in the levels of skeletal stress was not met.

12.2.3 Summary of Significant Results Pertaining to Research Hypothesis 3

The final research question posed to the Wall of the Crow material was whether or not differential treatment of men, women, or children was evidenced by the location of the graves

[73] $H_0$2a: Prevalence rates of skeletal indicators of stress in females will be equal or lower to those of males in both phases, while rates of degenerative joint disease will be equal or higher among females compared to males. $H_0$2b: When compared by phase, Roman females will have lower or equal rates of skeletal indicators of stress than Saite females.

within the cemetery or by disparities in the grave goods provided for the deceased. This was formulated as a hypothesis as follows:

Research Hypothesis 3:[74] *The Wall of the Crow Cemetery will be organized by recognizable societal groups (i.e., age and/or sex) in both the Saite and the Roman period. The distribution of grave goods will differ between men, women, and children of both phases.*

Although the spatial organization of the Wall of the Crow Cemetery was not statistically measurable, the significant differences in the distribution of grave goods among adults and subadults argue in favor of rejecting the null hypothesis and for acceptance of Research Hypothesis 3. Nevertheless, while children were indeed afforded different burial treatment than adults in both phases, the expectation of gender-based differences was not met. Rather, the distribution of grave goods between males and females was surprisingly equitable in both the Saite and Roman periods. In contrast, cowrie shells were significantly more common among infants than adults, and amulets and jewelry more common among children than adults in the Saite period. In the Roman period, both cowrie shells and amulets were more common among children than adults. Consequently, items were generally more common among subadults than adults in both periods.

Finally, coffins were significantly more common in the Saite than Roman population, as well as among Saite males compared to Roman males. However, as discussed above (Section 12.1.4), this may have more to do with changes in burial preferences over time than with economic necessity.

[74] [74] $H_0$3: No societal groupings (i.e., based on age and/or sex) will be discernible in the organization of the Wall of the Crow cemetery. The distribution of gravegoods will be equal between men, women and children in both phases.

CHAPTER 13: CONCLUSIONS

This dissertation has employed a multidimensional bioarchaeological approach that considers evidence of skeletal stress in conjunction with archaeological and historical data in order to examine the effects of socio-political changes resulting from the Roman conquest of Egypt on a non-elite population from Giza. Here, I present the conclusions of this research, as well as their broader implications for future studies focusing on Late Period and Roman Egypt. Lastly, I address the limitations of the study and suggest possible avenues of future research.

13.1 Contributions of the Current Study

Perhaps the most obvious contribution of this study is that it deals with a subset of the Egyptian population that has been largely ignored by scholars since the dawn of Egyptology. To some extent, this oversight is understandable, given that the richness of the archaeological and textual remains of the privileged has created an overrepresentation of elites in the Egyptian historical and archaeological record. In effect, Egyptology's preoccupation with 'shiny things' has created an illusion of familiarity, when in reality our knowledge of the daily life and living conditions of the vast majority of the population -- those on the lower end of the status scale -- is very limited.

In addition to the preoccupation with Egyptian 'one-percenters,' traditional research has also generally concentrated on the history of Egypt during its era as an ancient superpower. The Late Period is often seen as a period of decline, and the Graeco-Roman period is often viewed as the purview of Classicists rather than Egyptologists. However, the people who buried their dead in the Wall of the Crow cemetery were not members of the elite, nor did they live during any of the periods that have traditionally been the focus of Egyptological research. By and large, the voices of the segment of the population to which the Wall of the Crow population belonged have stayed silent.

Although they may not have left much behind in the way of written sources, these people left us something even more informative, their bones. Skeletal material as a source of information on health, living conditions and social organization has traditionally been underutilized in Egyptian archaeology, though this is slowly beginning to change. Nevertheless, studies that combine bioarchaeological, historical, and textual sources are still scarce. Thus, the most significant contribution of this study is that it makes explicit the benefit of a contextual bioarchaeological analysis of both skeletal and Egyptological material to the current understanding of life and death among the non-elite in Saite and Roman Egypt.

In addition, some of the findings of this study may have implications for the interpretation of skeletal markers of stress in light of the "osteological paradox." The average age-at-death of individuals with linear enamel hypoplasia, for example, was significantly lower among individuals who exhibited the lesions compared to those who did not. This suggests that skeletal stress during childhood negatively impacted longevity and mortality. Similarly, among children, all porotic lesions of both the cranial vault and orbital roof were either active or mixed at the time of death, whereas healed lesions occurred only in adults. This implies that children experiencing elevated stress levels often did not survive.

Moreover, when rates of cribra orbitalia were compared between Giza and other regional samples, the samples consisting of members of the elite (who presumably would have been the ones most likely to enjoy access to adequate nutrition and medical care) also had the lowest prevalence of orbital lesions. Similarly, when the samples were compared temporally, materials dated to periods known from historical sources as relatively stable and prosperous were also the ones with the lowest rates of orbital lesions, while prevalence appears to have increased during times of social unrest and political instability. Hence, the dispersal of orbital lesions would correspond with contextual data if high prevalence implied a population under stress, and directly contradict the historical narrative if it did not. Taken together, the evidence from Giza suggests that at least in Egypt, a traditional interpretation of skeletal stress markers, (i.e., bad skeletons indicate bad health) is appropriate.

Lastly, a significant portion of the time taken up by this research project was devoted to the creation of a standardized database that allowed for the integration of skeletal and contextual data. The details of the database build are provided in Appendix X of this dissertation, and the database template can be obtained by contacting the author, who hopes that it may be of use to other researchers. In addition, by simplifying the use of a standardized recording system (mainly based on the recommendations in Standards and OsteoWare), particularly in Egypt, the database has the potential to facilitate comparisons between materials which today is somewhat hampered by the different standards of recording employed by bioarchaeologists working there.

13.2 Skeletal Stress and the Roman Conquest

The first aim of this study was to examine whether the Roman conquest really did have as detrimental an effect on the non-elite population of Egypt as suggested by historical sources. It was concluded that the Roman population did indeed exhibit higher incidences of skeletal stress markers, indicating a likely increase in physical labor and a decline in living conditions from the Saite to the Roman period, consistent with the historical narrative.

Statistically significant indicators included a higher rate of degenerative joint disease among Roman males, coupled with lesser sexual dimorphism in stature and higher levels of linear enamel hypoplasia, and taller stature among Saite males. The generally -- though not statistically -- higher levels of invertebral disc disease, cribra orbitalia, periosteal new bone formation and accidental trauma among the Roman population further strengthened this conclusion. Also, the well-set fractures seen in the Saite population may suggest an access to medical care that the Roman population lacked.

However, it was also concluded that the adverse effects of the Roman takeover may not have been as far reaching as the textual sources suggest. While the Saite population does appear to have had better access to adequate nutrition, and perhaps a slightly less physically demanding lifestyle than the Roman population, the mortality curves of the two populations were very similar, with many deaths occurring in childhood and adolescence. Additionally, cribra orbitalia was more or less equally common among children in both populations, and linear enamel hypoplasia occurred extensively in the Saite population as well. This suggests that children were particularly vulnerable in both the Saite and Roman periods, and likely reflects relatively stark living conditions in both the Saite and Roman periods. Thus, while the Roman conquest likely added to the vicissitudes of the Giza population, their circumstances during the Saite period were far from ideal.

In terms of the historical narrative of the Roman conquest, the results of the Wall of the Crow study can be interpreted in several ways. First, it is of course possible that the negative aspects of the Roman conquest have been exaggerated in the historical record. A perhaps more likely interpretation, however, is that the socio-political changes effected by the Romans were more impactful among the middle-class urban population than among the already disadvantaged inhabitants of the Memphite countryside.

13.3 Women's Status and Roman Law

The second research question posed to the Giza material asked whether gender-based labor divisions and the advantageous position of males in both the Saite and Roman periods would be detectable in the skeletal material, as well as whether the decline in the legal status of women instigated by the Romans would be reflected in the physical remains of the Wall of the Crow population. It was concluded that while the higher levels of degenerative joint disease among males and the elevated rate of skeletal stress markers among women did support a gender division in labor and a more disadvantageous childhood and adolescence for females in both the Saite and Roman periods, there was no statistically significant evidence for a decline in living conditions specifically among women following the Roman conquest.

However, if the non-significant results are taken into account, there may be some suggestion of a curtailment of the social and economic role of women in the Roman period. First, while degenerative joint disease affected both upper and lower limbs of both women and men in the Saite period, and men in the Roman period, arthritic changes were limited to the knee and hip joints of Roman women. Further, while trauma was overall more common in the Roman than the Saite population, long bone trauma was more common in females in the Saite period, but in males in the Roman period. It is possible that this reflects a more physically active role of Saite women, perhaps taking a larger part in agricultural activities, compared to a more restrictive and domestic role during the Roman period.

While the historical record is clear on the question of diminished legal autonomy for Egyptian women under the Romans, the results of the Wall of the Crow analysis suggest that the decline in the status of women under the Romans may again have been less impactful among the non-elite than the middle class. The higher levels of skeletal stress markers in Saite women than Saite males may also suggest that legal status had little or no impact on women's physical well being among the non-elite.

13.4 The Gods of Old and Roman Influence

The third and final research question centered on the organization of the cemetery in terms of age- or sex-based societal groups. It was concluded that while children did indeed receive differential treatment compared to adults, with significantly higher levels of burial goods in both periods, there was little or no difference in the burial treatment of men and women in either period.

However, it was also concluded that the minimalist nature of the Wall of the Crow burial assemblages limited the utility of traditional quantitative analysis in terms of changes in funerary behavior over time. Nevertheless, a more holistic approach did reveal subtle but definite developments in eschatological beliefs, as well as Hellenistic influences. Most importantly, Saite period beliefs appear to have been focused on community, fecundity, and fertility as central mechanisms for rebirth, while individualism was a more important theme in the Roman period. These themes are visible not only in the treatment of the children but also in more tangible ways, such as the composition of the burial assemblages. Whereas food offerings from the Saite period appear to have been communal in nature, for example, pottery deposits from the Roman period instead most likely reflect the remnants of individual funerary meals for the diseased. Interestingly, the very paucity of the Wall of the Crow material exemplifies not only the extent to which funerary rituals could be subverted and substituted without losing their effectiveness but also the extent to which this most likely illiterate population was able to internalize the fairly substantial developments in funerary rituals effected by the literate elite.

13.5 Limitations of the Current Study

By far the most serious limitation of the current study is the small sample size. However, this is a problem the Wall of the Crow study shares with the majority of archaeological assemblages. Indeed, 228 individuals is a relatively respectable sample as archaeological assemblages go, but most statisticians would probably say that such a small sample size limits the usefulness of the conclusions. The small sample size became especially evident while investigating variables with more than two values, such as severity or activity of cribra orbitalia for example. When the material was further subdivided into smaller groups according to age or sex, this limitation became even more apparent. For that reason, the majority of the analysis was carried out on an Absent/Present basis, and with distinctions originally available in the material such as narrower age groups collapsed into sometimes as few as two groups. While combining the groups added to the number of tests that could be carried out, it limited the ways in which, for example, an age-structured approach could be carried out.

Moreover, the cemetery excavations were not the primary focus of the AERA excavations, which led to an emphasis on excavation over analysis, with insufficient time in the laboratory. For that reason, time constraints limited the acquisition of data which would otherwise have been collected, such as the exact distances of enamel defects from the CEJ, for example.

Finally, the attempts to compare the Giza material with similar materials from the region was hampered by the great variety of recording methods employed in the study of Egyptian skeletal materials. Further study of comparative materials using the same recording system have the potential to significantly enhance the findings from Giza.

13.5 Recommendations for Future Research

The avenue of research that would have the most immediate benefit to the current study is the inclusion of additional excavated burials to the Giza database to increase sample size. While these burials were initially excluded because they were not datable at the time, insights gleaned from the analysis of mortuary assemblages in the current study may aid in dating further burials by stylistic means.

Further, a future study that focused on more detailed data collection from the Giza dentitions, particularly in terms of more exact age estimates for the formation of enamel defects, would be beneficial for an age-structured approach.

Finally, the macroscopic method used for the skeletal analysis in this dissertation has left some questions unanswered, such as whether the Wall of the Crow cemetery population was local or composed of individuals from areas further afield. Stable isotope analysis could provide the answer to this and other questions, such as the nature of the diet of the Giza population, and the age of weaning in Giza children. While the current antiquities' laws do not allow for samples to be removed from Egypt, it is my hope that the technology will become available in-country in the not-to-distant future.

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APPENDICES

APPENDIX I: BURIAL CATALOGUE

Burial: 115

Date Opened: 2/28/2001 **Area:** WCES **Square:** 4.Z6 **Excavator:** KK **Phase:** Roman **MNI:** 1

Cut: 2827 **Fill:** 2826 **Grave shape:** Rectangular **Grave type:** Simple, sand-filled pit **Dimensions:** 167 x 46 cm

Earlier than: **ΔTop:** 17.02 **Context Description:** LP burial cutting 116 and 117. Mudcap with roman pottery

Later than: 116 **ΔBottom:** 16.31

Coffin: No Coffin

Skeleton (P): **7956** **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 20-25

Stature: 162.082 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 22

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

Sand has seeped into medullar cavities and cracked the bones when they dried. The body was "squeezed" into a slightly too small burialpit, and is lying slightly on its left side with head cocked towards the left shoulder. Epiphyses in poor condition.

PATHOLOGIES:

Vertebral Lipping *Caries*

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
2826	Votive Vessel	Votive vessel	1	N
01a-73 /2429	Bead	Faience bead	1	Y
Obj.No?	Other	pearl	1	Y

Burial: 120

Date Opened: 3/15/2001 **Area:** WCE **Square:** 2.C8 **Excavator:** KK **Phase:** Saite **MNI:** 1

Cut: 3493 **Fill:** 3489 **Grave shape:** Other **Grave type:** Other **Dimensions:** 193 x 56.4 cm

Earlier than: **ΔTop:** 16.77000 **Context Description:** LP burial dug into large deposit of granite dust at E end of WOTC. Alongside but not cutting or cut by any other burials.

Later than: **ΔBottom:** 16.57999

Coffin: 3488

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 180 x 40

Description:

Skeleton (P): 7961

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 36-42

Stature: 162.12 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing north

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 104

Notes: Possible fractures on skull

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Very poor preservation. The soil is wet and the bones are extensively cracked, some are reduced to bonestains.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
01a-82	Other	pearl	1	N

Burial: 121

Date Opened: 3/15/2001 **Area:** WCE **Square:** 2.C8 **Excavator:** KK **Phase:** Saite **MNI:** 1

Cut: 3492 **Fill:** 3491 **Grave shape:** Other **Grave type:** Other **Dimensions:** 197 x 44 cm

Earlier than: **ΔTop:** 16.70000 **Context Description:** Late period burial dug into a large deposit of granite dust at the end of the WOTC.

Later than: **ΔBottom:** 16.53000

Coffin: 3490

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 184 x 38

Description: Not much remains of the mask proper, but it seems to have been painted red on a yellow background. The right side of the wig lappets is preserved and it has blue stripes on a yellow background with a black and red checkerboard pattern at the end.

Skeleton (P): 7962

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 25-35

Stature: 152.88 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Other

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 112

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

A large circular hole through the proximal femur, aligned with trochanter minor. Probably caused by a stake. Pelvis and lower arms fragmented, ossa membri inferioris in better condition, possibly because of coffincollapse on midsection.

PATHOLOGIES:

Vertebral Osteophytes *Caries*

OBJECTS: No objects associated with this burial

Burial: 122

Date Opened: 3/19/2001 **Area:** WCE **Square:** 2.C8 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3494 **Fill:** 3495 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 159 x 48 cm

Earlier than: **ΔTop:** 16.62000 **Context Description:** Late Period burial dug into granite dust, overlying Old Kingdom floor

Later than: **ΔBottom:** 16.37000

Coffin: No Coffin

Skeleton (P): 7963 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F? **Age Group:** Juvenilis **Age:** 15-18

Stature: 148.83 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 119

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Insectactivity in soil around skull. Poor preservation. Skull fractured postmortem. Very poor preservation. Epiphyses, ribcage, veretebrae and hands nearly obliterated. Almost nothing remains of pelvis.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 123

Date Opened: 3/20/2001 **Area:** WCE **Square:** 2.C8 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3496 **Fill:** 3497 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 198 x 42 cm

Earlier than: **ΔTop:** 16.51000 **Context Description:** Late Period dug into granite dust at east end of WOTC

Later than: **ΔBottom:** 16.27000

Coffin: No Coffin

Skeleton (P): 7964 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 17-24

Stature: 160.806 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 115

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

Skeleton fairly well preserved, apart from the ends of the long bones. Bones are a reddish brown colour with areas of very dark, almost black stains. Black staining of sacrum. Organic stains? Skull well preserved, a lighter brown with greyish surface, almost shiny.

PATHOLOGIES:

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
01a-83 /2431	Bead	Faience bead		Y

APPENDIX I: BURIAL CATALOGUE

Burial: 124

Date Opened: 3/19/2001 **Area:** WCE **Square:** 2.C8 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3498 **Fill:** 3499 **Grave shape:** Other **Grave type:** Other **Dimensions:** 94 x 30 cm

Earlier than: **ΔTop:** 16.50399 **Context Description:** Child burial with a stone surround, and a large block of granite above it, perhaps to protect it from intercutting?

Later than: **ΔBottom:** 16.29899

Coffin: 3505

Shape: Oval **Type:** Other **Dimensions:** x

Description: The feature 3505 referes to a stone surround around the burial, and not an actual coffin. The pit was surrounded by stones (granite) of about the same size, and with a bigger boulder at a higher elevation, which seems to have been covered by sand, i.e. it does not appear to be a grave marker (see sketch of profile).

Skeleton (P): 7965

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 2-4

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 110

Notes: F# 3505 refers to a construction of granite stones around the burial, no coffin.

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

The skull was caved in, but all the bones were there, inside the skull cavity.The left side of the body was not preserved, nor were the hands and the feet. No epiphyses remain. Bones were a yellowish gray colour.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
01a-81 /2432	Earring	Jewelry	1	N
Obj.No?	Other	pearl	1	N

Burial: 125

Date Opened: 3/20/2001 **Area:** WCE **Square:** 2.C8 **Excavator:** KK **Phase:** Saite **MNI:** 1

Cut: 3506 **Fill:** 3507 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 92 x 33 cm

Earlier than: 120 **ΔTop:** 16.63999 **Context Description:** Child burial underlying coffin of 120.

Later than: **ΔBottom:** 16.5

Coffin: No Coffin

Skeleton (P): 7966

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 2-4

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 108

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

Skull fairly well preserved, postcranial skeleton fragmented. Bones are a yellowish brown colour, and cranium has dark brown flecks on it. The bones are smaller than they should be according to the denal analysis. Also, grave not 100% excavated because of orders to keep section intact.

PATHOLOGIES:

Cribra Orbitalia

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
01a-84 /2436	Bead	Faience bead	1	N
01a-85 /01a-85	Amulet	Sobek	1	N

Burial: 126

Date Opened: 3/25/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3528 **Fill:** 3529 **Grave shape:** Other **Grave type:** Other **Dimensions:** 186 x 63 cm

Earlier than: 127 **ΔTop:** 17.05999 **Context Description:** Late Period burial close to Wall of the Crow

Later than: **ΔBottom:** 16.82999

Coffin: 3527

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 159 x 43

Description: Mask very poorly preserved. Originally molded in mud - small flecks of red color preserved.

Skeleton (P): 7967

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M? **Age Group:** Juvenilis **Age:** 16-18

Stature: 164.37 cm, +/- 3.218 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 94

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 10 **Preservation:** Fair

Notes:

Skeleton truncated by burial 127, most of right tibia and left foot missing. Skull fragmented after being uncovered. Bones are a reddish brown colour with spots of white.

PATHOLOGIES:

Periostosis *Caries*

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
01a-88 /2437	Bead	Faience bead	1	Y
2001-4	Other	pearl	1	Y

Burial: 127

Date Opened: 3/27/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3532 **Fill:** 3533 **Grave shape:** Other **Grave type:** Other **Dimensions:** 101 x 39 cm

Earlier than: 130 **ΔTop:** 16.84000 **Context Description:** Truncated burial at end of Wall of the Crow

Later than: 126 **ΔBottom:** 16.69000

Coffin: 3534

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 30 x 90

Description: The area of the coffin where the mask would be has collapsed, so it was not possible to see if there had been one originally.

Skeleton (P): 7968

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 7-9

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Left hand on pelvis/femur, right extended

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 94

Notes:

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 25 **Preservation:** Extremely Poor

Notes:

Skull is crushed, and right side of ribcage as well, which became slightly disarticulated while digging because of its fragmentary state. Left femur is missing and everything below the knees.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
01a-98 /01a-98	Amulet	Nut - sow	1	N

Burial: 128

Date Opened: 3/25/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3530 **Fill:** 3531 **Grave shape:** Other **Grave type:** Other **Dimensions:** 125 x 33 cm

Earlier than: **ΔTop:** 16.82999 **Context Description:** Late Period grave in loose sand, very shallow and has been trampled. Overlying other burials.

Later than: 130 **ΔBottom:** 16.77000

Coffin: No Coffin

Skeleton (P): 7969 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 5-14

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 180

Notes:

TAPHONOMY:

Truncated: Modern **Disarti. %:** 20 **Preservation:** Poor

Notes:

Skull and arms not recovered. No sign of truncating graves around 128 though, so maybe the missing bones went when the area was cleared, since the grave was very shallow and in loose sand. Upper body suncracked, ossa membri inferioris dark reddish brown with spots of dark brown.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

APPENDIX I: BURIAL CATALOGUE

Burial: 129

Date Opened: 4/1/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3536 **Fill:** 3537 **Grave shape:** Other **Grave type:** Other **Dimensions:** 210 x 59 cm

Earlier than: **ΔTop:** 17.20999 **Context Description:**

Later than: **ΔBottom:** 16.87000

Coffin: 3535

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 177 x 33

Description:

Skeleton (P): 7970 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 24-30

Stature: 167.57 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Other

Hand Placement: Hands on pelvis/femur

Feet Placement: Feet crossed, right over left

Burial Orientation (Head W of N,°): 350

Notes: Todd 18-24. Dental Wear 25-35.

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Good

Notes:

Fairly good prservation. Bones a light reddish brown.

PATHOLOGIES:

Porotic Hyperostosis *Enamel Hypoplasia*
Calculus

OBJECTS: No objects associated with this burial

Burial: 130

Date Opened: 4/2/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3557 **Fill:** 3558 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 104 x 41.5 cm

Earlier than: 128 **ΔTop:** 16.68000 **Context Description:** Late Period burial in SE corner of square just at the edge of granite dust layer. Cut into by the overlying burial (128) and cutting 127.

Later than: 127 **ΔBottom:** 16.48999

Coffin: No Coffin

Skeleton (P): 7971 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 2-3

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Other

Hand Placement: Hands on pelvis/femur

Feet Placement: Feet crossed, left over right

Burial Orientation (Head W of N,°): 92

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 25 **Preservation:** Poor

Notes:

Secondary remains in fill, probably from burial 127 which was cut by 130. Poor preservation, left upper body not preserved. Long bones fractured postmortem. Bones are a light yellowish gray.

Burial truncated in antiquity, left upper limb, left ribcage, all thoracic and lumbar vertebrae missing.

PATHOLOGIES:

Cribra Orbitalia *Abscess*

OBJECTS: No objects associated with this burial

Burial: 131

Date Opened: 4/1/2001 **Area:** WCE **Square:** 2.C8 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3559 **Fill:** 3560 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 211 x 57 cm

Earlier than: 121 **ΔTop:** 16.75 **Context Description:**

Later than: **ΔBottom:** 16.47999

Coffin: 3561

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 187 x 38

Description: Almost nothing remains of coffin other than a faint outline in the sand.

Skeleton (P): 7972

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 35-40

Stature: 169.926 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Feet crossed, left over right

Burial Orientation (Head W of N,°): 121

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 10 **Preservation:** Fair

Notes:

Clawmarks from dogs on skull, because a dog dug away the mask, unfortunately before it was photoed. Coxae sin turned towards center of body and caput femoris pointing up.

PATHOLOGIES:

Vertebral Osteophytes

OBJECTS: No objects associated with this burial

Burial: 133

Date Opened: 4/3/2001 **Area:** WCE **Square:** 2.C8 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3518 **Fill:** 3519 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 178 x 58 cm

Earlier than: 124 **ΔTop:** 16.94000 **Context Description:** LP burial cut into granite dust, overlying OK wall. Coffin cut by 124.

Later than: **ΔBottom:** 16.65999

Coffin: 3556

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 147 x 39

Description: The mask has traces of red and white and black, and you can still see the outline of the right eye. It is poorly preserved. The wig has collapsed, but there are traces of white and red.

Skeleton (P): 7973

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 35-45

Stature: 163.1452 cm, +/- 4.218 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 109

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Poor

Notes:

Hexagonal mudcoffin. Coffin and Skeleton truncated by burial 124, feet of skeleton missing. Skeleton very badly preserved, long bones fragmented and joints not preserved. Skull fractured postmortem.

PATHOLOGIES:

Porosity

OBJECTS: No objects associated with this burial

Burial: 134

Date Opened: 4/3/2001 **Area:** WCE **Square:** 2.C8 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3564 **Fill:** 3565 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 156.5 x 60.1 cm

Earlier than: **ΔTop:** 16.97999 **Context Description:** Child burial cut into granite dust layer close to WOTC

Later than: **ΔBottom:** 16.76000

Coffin: 3566

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 128 x 31

Description: Mask has yellow background, eyes and eybrows painted in black. Mask still in place, rest of coffin has caved in.

Skeleton (P): 7974

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 4-8

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 101

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

With the exception of vertebrae, pelvis, joints, hands and sacrum, a fairly well preserved skeleton. Bones are a medium dark reddish brown.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
01a-126	/01a-126	Amulet	Wdjat incised	1	N
01a-102	/2438	Bead	Faience bead	2	N
01a-103	/01a-103	Amulet	Nut - sow	1	N
01a	/see desc	Bead	Faience bead	1	N
01a	/see desc	Bead	Faience bead	1	N
01a-109c	/2439c	Bead	Faience bead	2	N
01a	/see desc	Bead	Faience bead	1	N
01a	/see desc	Bead	Glass bead	1	N
01a-127c	/see desc	Bead	Faience bead	1	N
01a	/2440d	Bead	Faience bead	7	N
01a	/see desc	Bead	Faience bead	1	N

Burial: 135

Date Opened: 4/3/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3553 **Fill:** 3554 **Grave shape:** Rectangular **Grave type:** Simple, sand-filled pit **Dimensions:** 243 x 65 cm

Earlier than: **ΔTop:** 17.28000 **Context Description:** A Late Period mudcoffin burial cutting two other burials in NW corner of square

Later than: 136, **ΔBottom:** 16.87000

Coffin: 3569

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 191.5 x 47

Description: The wig is very elaborate with checkerboard pattern at the bottom of the lappets, but the mask is collapsed.

Skeleton (P): 7975

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 20-25

Stature: 145.65 cm, +/- cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 94

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

Insectactivity on skull and longbones. Coffin is very much bigger vthan skeleton, and the body has slipped down towards the footend of the coffin. The bones are a reddish brown with darker brown areas. Left coxae and arms fairly well preserved, the rest of the skeleton cracked and fragile.

PATHOLOGIES:

Calculus

OBJECTS: No objects associated with this burial

Burial: 136

Date Opened: 4/3/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3570 **Fill:** 3571 **Grave shape:** **Grave type:** Simple, sand-filled pit **Dimensions:** x cm

Earlier than: 135 **ΔTop:** 17.12000 **Context Description:** Disturbed burial. Only a femur and a fibula remain.

Later than: **ΔBottom:** 17.05999

Coffin: 3572

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** x

Description:

Skeleton (P): 7976 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Not Applicable

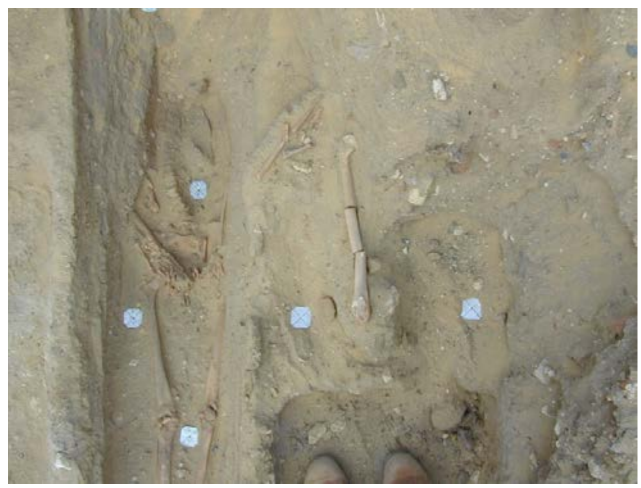
Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:



TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:** Poor

Notes:

A fragmented femur and fibula with traces of coffin. Coffin seems to have been roughly E-W oriented, but is almost obliterated, so it is difficult to tell. Aside from the fragmentation the bones are in good condition. Medium reddish brown bones.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 137

Date Opened: 4/2/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3573 **Fill:** 3574 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 104 x 34 cm

Earlier than: **ΔTop:** 17.09 **Context Description:** Childburial extending from E baulk of 2C7 close to WCE

Later than: **ΔBottom:** 16.91

Coffin: No Coffin

Skeleton (P): 7977 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 3-5

Stature: Not calculated

Burial Position: Other

Head Orientation: Anterior up and chin on chest

Hand Placement: Both hands extended at sides

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 99

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

The skeleton is lying in a dorsal position with legs slightly bent. The feet and the right upper body are not preserved. The whole postcranial skeleton is very badly preserved, the skull is in slightly better condition.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

APPENDIX I: BURIAL CATALOGUE

Burial: 138

Date Opened: 4/3/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3575 **Fill:** 3576 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 177 x 47 cm

Earlier than: **ΔTop:** 16.98999 **Context Description:** Latre Period burial cut into granite dust close to WOTC

Later than: 150 **ΔBottom:** 16.62999

Coffin: 3577

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 43 x 44

Description: Only head end remains of coffin. Mask is badly preserved, but appears to have had a wig and a white base coat of paint.

Skeleton (P): 7978

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Maturus **Age:** 35-45

Stature: 142.83 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Feet crossed, right over left

Burial Orientation (Head W of N,°): 97

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Shape of coffin not attainable, only traces left around skull. Skeleton overall poor preservation. Jaw has become disarticulated and fallen down towards neck. Exactly parallell to Burial 141. Intentional?

PATHOLOGIES:

Vertebral Osteophytes

Caries

Abscess

OBJECTS: No objects associated with this burial

Burial: 139

Date Opened: 4/3/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3578 **Fill:** 3579 **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 57 x 20.8 cm

Earlier than: 140 **ΔTop:** 17.06 **Context Description:** Late Period child burial in loose sand close to WOTC.

Later than: **ΔBottom:** 16.87

Coffin: No Coffin

Skeleton (P): 7979 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** .665-1.335

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 10

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 10 **Preservation:** Extremely Poor

Notes:

Skeleton completely crushed - in loose sand right where everyone have been walking. Lower legs truncated by Burial 140. Bones very brittle.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
01a-101 /2442	Cowrie Shell	Cowrie	3	N
01a-100 /2441a	Bead	Glass bead	1	N
01a /2441b	Cowrie Shell	Cowrie	4	N

Burial: 140

Date Opened: 4/5/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 2

Cut: 3580 **Fill:** 3581 **Grave shape:** **Grave type:** **Dimensions:** 122 x 31.5 cm

Earlier than: **ΔTop:** 16.96999 **Context Description:** Late Period child burial close to WOTC

Later than: **ΔBottom:** 16.62000

Coffin: No Coffin

Skeleton (P): 7980 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 4-8

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Skeleton was initially fairly well preserved, but public right of way to the site caused extensive damage, and only a few measurments could be taken. The skeleton was trampled by a funerary procession, whose members walked right on top of it.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
01a	/01a-116a	Amulet	Wdjat incised	1	N
01a	/01a-116b	Amulet	Hathor - cow	1	N

Skeleton (S): 8569 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:** Good

Notes:

A left cuboid bone from an adult in fill of child burial 140.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 141

Date Opened: 4/3/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3582 **Fill:** 3583 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 173 x 38.2 cm

Earlier than: **ΔTop:** 16.86000 **Context Description:** Late Period child burial close to WOTC.

Later than: **ΔBottom:** 16.56999

Coffin: 3584

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 136 x 32

Description: No mask visible. Coffin is rectangular tapering towards foot end, with a wider head end.

Skeleton (P): 7981

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 2-4

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Both hands extended at sides

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 99

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Good

Notes:

Good presevation of the bone. Light yellowish brown in colour. Skeleton is laid out, legs parallell but not touching, and arms along sides but not touching.

PATHOLOGIES:

Cribra Orbitalia

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
01a-119 /01a-119	Earring	Jewelry	1	N
01a-120 /2445	Earring	Jewelry	1	N
01a-106 /2443	Cowrie Shell	Cowrie	4	N
01a-107 /2444	Bead	Faience bead	2	N

Burial: 142

Date Opened: 4/3/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3585 **Fill:** 3586 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 131 x 33 cm

Earlier than: **ΔTop:** 16.91 **Context Description:** Child burial near wOTC

Later than: **ΔBottom:** 16.74

Coffin: 3587

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 116 x 25

Description: The coffin is cracked and badly preserved, but finely shaped. Nothing remains of mask, but traces of yellow base color on coffin.

Skeleton (P): 7982

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** .5-1

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Both hands extended at sides

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 106

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

Underlying burial 137, but not dug through ot or truncated by it. Body has slipped down towards footend of coffin. Skull fractured extensively postmortem. Bones not well preserved, and reduced to bonestains in places, or simply not preserved at all, like the hands and the feet.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
01a-118 /2447	Earring	Jewelry	1	N
01a-104 /2446	Cowrie Shell	Cowrie	1	N
01a-105 /01a-105	Amulet	Wdjat bead	1	N

Burial: 143

Date Opened: 4/4/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3588 **Fill:** 3589 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 149 x 38 cm

Earlier than: 145 **ΔTop:** 16.94 **Context Description:**

Later than: 297, **ΔBottom:** 16.77

Coffin: No Coffin

Skeleton (P): 7983 **No Skeleton In Grave:**

DESCRIPTION:

Sex: F? **Age Group:** Maturus **Age:** 35-45

Stature: 144.72 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 72

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Truncated by childburial 145. Skull fairly well preserved, but postcranial skeleton reduced to bonestains in places, particularly joints. Bones are a light orange-brown color, with dark brown areas on long bones.

PATHOLOGIES:

Vertebral Osteophytes *Abscess*

OBJECTS: No objects associated with this burial

Burial: 144

Date Opened: 4/4/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3591 **Fill:** 3592 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 98 x 23.5 cm

Earlier than: 135 **ΔTop:** 17.14 **Context Description:** Adult burial with displaced neurocranium

Later than: **ΔBottom:** 16.84

Coffin: No Coffin

Skeleton (P): 7984 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 4-8

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 104

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 10 **Preservation:** Poor

Notes:

The skull of this burial was disturbed and in fill of burial 135, which it was cut by. Poor preservation except for long bones, which are in fairly good shape. Bones are a medium brown with darker brown areas.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 145

Date Opened: 4/5/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3593 **Fill:** 3594 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 88.2 x 29.4 cm

Earlier than: **ΔTop:** 16.97 **Context Description:** Child burial close to WOTC, truncating feet of burial 143.

Later than: 143 **ΔBottom:** 16.69

Coffin: No Coffin

Skeleton (P): 7985 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 1-2

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 108

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 3 **Preservation:** Poor

Notes:

Skeleton in poor condition. Skull fragmented, holding together because of the sand inside it. Some bones reduced to bonestains or missing alltogether. Left side of ribcage and cervical vertebrae better preserved than the rest of the body.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 146

Date Opened: 4/5/2001 **Area:** WCE **Square:** 2.C8 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3595 **Fill:** 3596 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 182 x 46.6 cm

Earlier than: **ΔTop:** 16.93 **Context Description:** Adult burial cut through granite dust about 20 cm above mudmelt.

Later than: 148 **ΔBottom:** 16.61

Coffin: No Coffin

Skeleton (P): 7986

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 18-25

Stature: 166.42 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 104

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Good

Notes:

Skeleton is in fairly good condition. Bones are a dark reddish brown. Left hand on pelvis/femur, right hand on pubis.

PATHOLOGIES:

Porotic Hyperostosis

Enamel Hypoplasia
Caries

Enamel hypoplasias on Canini
Porotic Hyperostosis on parietals and occipital (healing)
Caries on M1 inf dx

OBJECTS: No objects associated with this burial

Burial: 147

Date Opened: 4/6/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3598 **Fill:** 3597 **Grave shape:** Oval **Grave type:** Simple, mud-filled grave **Dimensions:** 72.7 x 20.5 cm

Earlier than: **ΔTop:** 16.74 **Context Description:** Childburial overlying burial 160 close to WOTC

Later than: 160 **ΔBottom:** 16.56

Coffin: No Coffin

Skeleton (P): 7987 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** 0.5-1

Stature: Not calculated

Burial Position: Loosely flexed, lying on right side

Head Orientation: Anterior up and chin on chest

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 86

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 20 **Preservation:** Extremely Poor

Notes:

Very poor preservation. Skull completely crushed and not much of the postcranial skeleton remaining. Bones are a light yellowish brown and very fragmentary.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 148

Date Opened: 4/6/2001 **Area:** WCE **Square:** 2.C8 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3599 **Fill:** 3600 **Grave shape:** Oval **Grave type:** Simple, mud-filled grave **Dimensions:** 97 x 49 cm

Earlier than: 146 **ΔTop:** 16.66 **Context Description:** Childburial close to WOTC underlying burial 146.

Later than: **ΔBottom:** 16.41

Coffin: No Coffin

Skeleton (P): 7988 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 1-2

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing north

Hand Placement: Right hand on pelvis/femur, left extended

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 117

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 5 **Preservation:** Extremely Poor

Notes:

Skull and some of the ribs in fair condition, the rest of the skeleton poorly preserved. No epiphyses preserved. Some bones completely gone, not even bonestains.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
01a-122 /2448	Cowrie Shell	Cowrie	1	N
01a-123 /2449	Bead	Faience bead	2	N
01a-124 /2450	Bead	Bead	1	N

Burial: 149

Date Opened: 4/6/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 3601 **Fill:** 3602 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 161 x 56.3 cm

Earlier than: **ΔTop:** 16.59 **Context Description:** Juvenile burial overlying burial 150 near WOTC.

Later than: 150 **ΔBottom:** 16.42

Coffin: No Coffin

Skeleton (P): 7989 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F? **Age Group:** Juvenilis **Age:** 12-15

Stature: 143.43 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands crossed on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 20

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 2 **Preservation:** Good

Notes:

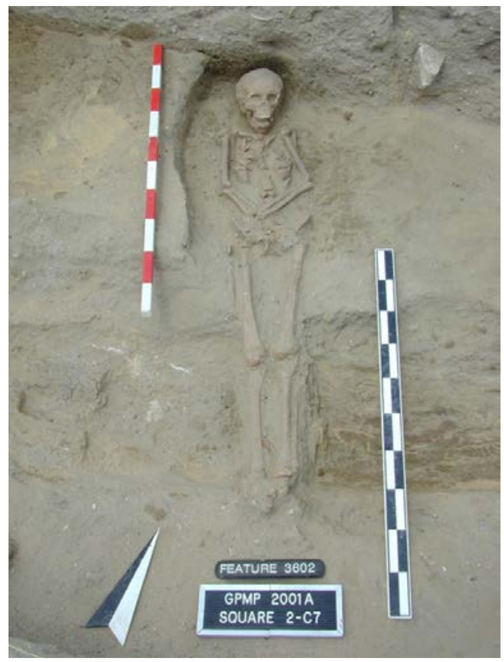
Bones well preserved but damp. Spine and pelvis in worse condition than the rest of the body. Feet disturbed.

PATHOLOGIES:

Cribra Orbitalia

Enamel Hypoplasia

Caries



OBJECTS: No objects associated with this burial

Burial: 150

Date Opened: 4/7/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** KK **Phase:** Saite **MNI:** 2

Cut: 3603 **Fill:** 3605 **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 207 x 64.6 cm

Earlier than: 149 **ΔTop:** 16.61 **Context Description:** Cut through mudmelt and underlying burial 149.

Later than: 161 **ΔBottom:** 16.2

Coffin: 3604

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 190 x 50

Description: Coffin with fragmensts of blue, yellow and red paint on wig and mask. Too damaged to see pattern, but possibly representing vertical bands. Lower portion of coffin appears to have been painted entirely red, but too poorly preserved to be sure.

Skeleton (P): 7990

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 35-55

Stature: 163.40 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 102

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

Bones are a dark brown colour with spots of yellow, and were fairly damp at the time of excavation. Bones in comparatively good condition. "Bubbles" on frontale, similar to sunblisters on a painted surface, diam. 1-2 mm. All teeth in maxilla cracked.

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Schmorl's nodes
Porosity
Caries
Trauma or Dislocation

Caries on both lower first molars
Schmorl's on Ve Ce 5 and 6, Ve Lu 5, and Sacrum.
Slight lipping and osteophytic growth on Ve Th 7-12
Arthritic mandibular condyle (dx).
Crush fracture (healed) on one Ph Manus distal (III)
Porosity on humeral head (dx)
Lytic lesion on endosteal surface of occipital.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?

Skeleton (S): 8586

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Adultus **Age:** 18-44

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Sec adult Ph I in fill.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?

APPENDIX I: BURIAL CATALOGUE

Burial: 158

Date Opened: 4/15/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** LB **Phase:** Saite **MNI:** 1

Cut: 3634 **Fill:** 3635 **Grave shape:** Other **Grave type:** Other **Dimensions:** 213 x 60 cm

Earlier than: 141 **ΔTop:** 16.29 **Context Description:** Dug into granitedust 3456 and possibly from overlying sandlayer 3455. Underlies burial 141. Cut through floor 3640, cut through tefla surface

Later than: **ΔBottom:** 15.94

Coffin: 3643

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 55 x 27

Description: Traces of coffin remained only over the chest - blue painted mud.

Skeleton (P): 7994 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M? **Age Group:** Adultus **Age:** 18-25

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Other

Hand Placement: Hands on pelvis/femur

Feet Placement: Both feet pointing left

Burial Orientation (Head W of N,°): 100

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Badly preserved skeleton. Possible water erosion. Upper arms, ribs, knees and other joints missing. Spine reduced to bonestains.

OBJECTS: No objects associated with this burial

PATHOLOGIES:

Periostosis

Periodontal disease
Calculus
Osteochondral lesion on basis of hallucial phalanx dx - osteochondritis dissecans? See Kinoshita et al 1998 Foot Ankle Int

Slight general alveolar resorption
Mild to moderate calculus on all preserved incisors
PNB on dx tibial shaft
Osteochondral lesion on basis of hallucial phalanx I dx

Burial: 160

Date Opened: 4/17/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** LB **Phase:** Saite **MNI:** 2

Cut: 3638 **Fill:** 3639 **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 207 x 72 cm

Earlier than: 147 **ΔTop:** 16.37

Later than: **ΔBottom:** 16.28

Context Description: Dug deep into granite dust layer 3456, possibly from sandlayer 3455 that overlies 3456. Cut through tefla surface 3625 and floor 3640. Underlies

Coffin: 3644

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 192 x 50

Description: Mask gone, but wig lappets and chest section showed traces of horizontal bands on lappets and pattern in blue, yellow and red on white background. Wig also had black detail. Lower chest/abdomen: painted yellow with black Anubis. Anubis facing south. Also, extensive amount of fabric found on coffin as well as on skeleton. Macros taken.

Skeleton (P): 7996

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 25-35

Stature: 164.634 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 110

Notes: Coffin with Anubis. Fabric preserved on skeleton, from shroud?

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Good

Notes:

Fabric adhering to both coffin and body: On foffin between upper legs, on chest and right shoulder; on skeleton on cheek , clavicle and lumbar and lower thoracic vertebrae.

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Schmorl's nodes
Lipping
Eburnation
Porosity
Abscess
Congenital Disorder
Trauma or Dislocation
Lytic lesion on caput femoris dx

M1 sin inf: abscess on buccal side.
Arthritis: Fused phalanges pedis
Arthritis: Porotic changes and irregular surface on facies lunatum, left innominate

Osteophytes and lipping: Ve Thor 1-7 (two fragments). Also assymetric corpus on two Ve Th.

Schmorls: Ve Ce 7, Ve Th 12, Two Ve Th 1-7, Ve Lu 1.
Congenital disorder - Scoliosis: Curvature of the spine, lower Thoracic spine.
Trauma: Healed fracture on an intermediate phalanx manus, with myositits ossificans.
Other: Lytic leasion on caput femoris dx.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
1601	Other	pearl	1	Y

Skeleton (S): 8780 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary acromion in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

APPENDIX I: BURIAL CATALOGUE

Burial: 161

Date Opened: 4/19/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** LB **Phase:** Saite **MNI:** 1

Cut: 3647 **Fill:** 3637 **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 169 x 49 cm

Earlier than: 150, **ΔTop:** 16.62000 **Context Description:** Cut into granite dust layer 3456, possibly from overlaying sand layer 3455. Cut by burials 162 and 150.

Later than: 163 **ΔBottom:** 16.12999

Coffin: 3647

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 170 x 44

Description:

Skeleton (P): 7997 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 35-45

Stature: 168.34 cm, +/- 3.218 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Other

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 110

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 10 **Preservation:** Fair

Notes:

Burial cut and truncated by other burials #150, 162 . Skull warped. Vertebrae, pelvis and ribcage very poorly preserved, long bones better.

PATHOLOGIES:

Vertebral Osteophytes	*Trauma or Dislocation*
Vertebral Lipping	
Lipping	*Osteophytic growth on cervical, thoracic and lumbar vertebrae. Lipping and porosity on left femoral head. Sharp force trauma to the skull, occipital and frontal, with evidence of healing.*
Porosity	

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
3624	Votive Vessel	Votive vessel	1	N
	Other	vessel fill	1	N

Burial: 162

Date Opened: 4/21/2001 **Area:** WCE **Square:** 2.C7 **Excavator:** LB **Phase:** Saite **MNI:** 1

Cut: 3648 **Fill:** 3649 **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 54 x 16 cm

Earlier than: 150 **ΔTop:** **Context Description:** Cut into burial 161, cut and almost obliterated by burial 150.

Later than: 161 **ΔBottom:**

Coffin: No Coffin

Skeleton (P): 7998 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 110

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:** Good

Notes:

The only part that remains of this burial is a right tibia, missing it's distal epiphysis. The burial was primary, however; just almost obliterated by burial 150.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 163

Date Opened: 4/21/2001 **Area:** WCE **Square:** 2.C8 **Excavator:** LB **Phase:** Saite **MNI:** 1

Cut: 3650 **Fill:** 3651 **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 72 x 22 cm

Earlier than: 161 **ΔTop:** 16.33 **Context Description:** Cut through granite dust and possibly sandlayer, largely destroyed by 161. Might be same as 162.

Later than: **ΔBottom:** 16.29

Coffin: No Coffin

Skeleton (P): 7999 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 100 **Preservation:** Fair

Notes:

Good preservation, allthough completely disturbed. All that remains is 2 costae, ulna sin and a tibia (side?)

PATHOLOGIES: None Noted

No digital photos available for this burial

OBJECTS: No objects associated with this burial

Burial: 168

Date Opened: 5/4/2001 **Area:** WCE **Square:** 2.C5 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: 4506 **Fill:** 4507 **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 175.4 x 43 cm

Earlier than: **ΔTop:** 19.11000 **Context Description:** Found under upper tumble layer WOC (4500) dug into sand 4511 overlying lower tumble layer 4509. Maybe younger than the LP burials.

Later than: **ΔBottom:**

Coffin: No Coffin

Skeleton (P): 8002 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F **Age Group:** Senilis **Age:** 50-74

Stature: 155.9048 cm, +/- 2.511 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Other

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 340

Notes: Found under upper tumble layer 4500 dug into sand 4511. Given the state of preservation and the unusual burial position this burial could be younger than the LP burials.

No digital photos available for this burial

TAPHONOMY:

Truncated: Modern **Disarti. %:** 10 **Preservation:** Good

Notes:

Skeleton was in principal complete, but we lost its feet and lower part of the left fibula and tibia because the WOTC block were removed with loader and the burial got slightly damaged in the process.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
	Other	leather	1	N
	Other	leather	1	N
	Other	leather	1	N
	Other	leather	1	N

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Lipping
Eburnation
Porosity

Enamel Hypoplasia
Caries

Osteophyte formation on all cervical vertebrae, Th 1-3, and Lu 2-5.
Caries on 1 and 20. LEH on 20, and 24-29
Extensive eburnation on both knees, with associated arthritic changes on prox fibula right.
Abnormal button-like bone formation on medial lateral condyle, femur dx.

Burial: 169

Date Opened: 5/14/2001 **Area:** WCE **Square:** 2.C6 **Excavator:** **Phase:** Saite **MNI:** 1

Cut: 4113 **Fill:** 4114 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 182 x 53.8 cm

Earlier than: **ΔTop:** 17.23 **Context Description:** Dug into granite dust at + 4m to the east of the Wall of the Crow.

Later than: 261 **ΔBottom:**

Coffin: 4115

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 49 x 180

Description: Coffin is brown to yellowish brown. Some yellow pigment found on left side of coffin, otherwise no paint preserved. Well preserved mud mask with fine facial features and a wig. Coffin has melted down on skeleton, and the very eastern part of the coffin has eroded away.

Skeleton (P): 8003

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Maturus **Age:** 45-50

Stature: 155.39 cm, +/- 2.517 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 2 **Preservation:** Fair

Notes:

The skeleton had remnants of what appeared to be cloth. The fabric was very thick in places, up to 0.8 cm. It was black and oily-looking,m possibly covered in resin? The cloth was preserved at left knee, under left shoulder, right elbow, lumbar vertebrae and between the knees. Possibly remnants of a shroud.

PATHOLOGIES:

Vertebral Osteophytes

OBJECTS: No objects associated with this burial

APPENDIX I: BURIAL CATALOGUE

Burial: 183

Date Opened: 2/19/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** TB **Phase:** Saite **MNI:** 1

Cut: 5883 **Fill:** 5882 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 122 x 72 cm

Earlier than: **ΔTop:** 17.46999 **Context Description:** Truncated upper body with coffin, ca 6-7m E of WOTC.

Later than: **ΔBottom:** 17.28000

Coffin: 5884

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 103 x 96

Description: Traces of yellow paint. The coffin seems to have paint on top of the lid, but not underneath. The bottom of the coffin is also unpainted.

Skeleton (P): 8017

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 33-45

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 90

Notes: the coffin seems to have paint on top of the lid, but not underneath. The bottom of the coffin is also unpainted.

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 60 **Preservation:** Extremely Poor

Notes:

The whole grave truncated above waist, lower arms also missing. Might have also suffered some damage by stones falling from WOTC.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 191

Date Opened: 1/21/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** TB **Phase:** Saite **MNI:** 5

Cut: 5892 **Fill:** 5893 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 178 x 48 cm

Earlier than: 208 **ΔTop:** 17.53000 **Context Description:** LP burial near wotc, cut by other burial (208)

Later than: **ΔBottom:** 17.46999

Coffin: 5894

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 176 x 48

Description:

Skeleton (P): 8025

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Senilis **Age:** 60-74

Stature: 158.28 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 130

Notes: Coffin also had lapis-colored paint on it. No Munsell number for that color. Coffin is painted on outside bottom, not made in situ. Sandfill inbetween mudlayers on coffin.

TAPHONOMY:

Truncated: No **Disarti. %:** 3 **Preservation:** Good

Notes:

The feet had disarticulated in a heap, sin and dx mixed together. Sternum still preserved as well as a piece of the hyoid bone. Large post mortem cut in frontal. From mummification?

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Lipping
Periodontal disease
Trauma or Dislocation

OBJECTS: No objects associated with this burial

APPENDIX I: BURIAL CATALOGUE

Skeleton (S): 8796 | **No Skeleton In Grave:** ☐

DESCRIPTION:
Sex: ? **Age Group:** Infant **Age:** 0-1
Stature: Not calculated
Burial Position: Not Applicable
Head Orientation: Not applicable
Hand Placement: Not applicable
Feet Placement: Not applicable
Burial Orientation (Head W of N,°):
Notes:

TAPHONOMY:
Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**
Notes:
Secondary infant bones in fill, individual 1.

PATHOLOGIES: None Noted

No digital photos available for this burial

OBJECTS: No objects associated with this burial

Skeleton (S): 8573 | **No Skeleton In Grave:** ☐

DESCRIPTION:
Sex: ? **Age Group:** Adult **Age:** 18-79
Stature: Not calculated
Burial Position: Not Applicable
Head Orientation: Not applicable
Hand Placement: Not applicable
Feet Placement: Not applicable
Burial Orientation (Head W of N,°):
Notes:

TAPHONOMY:
Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**
Notes:
Secondary adult bones in fill.

PATHOLOGIES: None Noted

No digital photos available for this burial

OBJECTS: No objects associated with this burial

APPENDIX I: BURIAL CATALOGUE

Skeleton (S): 8797 **No Skeleton In Grave:** ☐

DESCRIPTION:
Sex: ? **Age Group:** Infant **Age:** 0-1
Stature: Not calculated
Burial Position: Not Applicable
Head Orientation: Not applicable
Hand Placement: Not applicable
Feet Placement: Not applicable
Burial Orientation (Head W of N,°):
Notes:

No digital photos available for this burial

TAPHONOMY:
Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**
Notes:
Secondary infant bones in fill, individual 2.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Skeleton (S): 8587 **No Skeleton In Grave:** ☐

DESCRIPTION:
Sex: ? **Age Group:** Juvenilis **Age:** 10-24
Stature: Not calculated
Burial Position: Not Applicable
Head Orientation: Not applicable
Hand Placement: Not applicable
Feet Placement: Not applicable
Burial Orientation (Head W of N,°):
Notes:

No digital photos available for this burial

TAPHONOMY:
Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**
Notes:
Secondary juvenile teeth in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 192

Date Opened: 1/22/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 5897 **Fill:** 5896 **Grave shape:** **Grave type:** Simple, sand-filled pit **Dimensions:** 191 x 47.1 cm

Earlier than: **ΔTop:** 17.59000 **Context Description:** LP burial at E end of WOTC, ca 40 cm SE of burial 191.

Later than: 220 **ΔBottom:** 17.32999

Coffin: 5898

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 178 x 25

Description:

Skeleton (P): 8026 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 18-20

Stature: 159.63 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 275

Notes: Munsell of coffin was not taken, maybe because no color remained.

TAPHONOMY:

Truncated: Modern **Disarti. %:** 3 **Preservation:** Fair

Notes:

Cranium has been truncated, probably when square was cleaned. Facial bones and parts of frontale missing. Bones are in fairly good condition, except for joints and cranium.

PATHOLOGIES:

Enamel Hypoplasia
Calculus

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-46 /2459	Bead	Faience bead	2	N

Burial: 197

Date Opened: 1/23/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** TB **Phase:** Saite **MNI:** 2

Cut: 5902 **Fill:** 5901 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 135 x 50.8 cm

Earlier than: 271 **ΔTop:** 17.91 **Context Description:** Truncated burial, cutting 178 and 200 at WCE

Later than: 178,200 **ΔBottom:** 17.65

Coffin: 5903

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** 35 x 13.3

Description:

Skeleton (P): 8031

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 5-14

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 0

Notes: Coffinshape undetermined. Check orientation.

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 15 **Preservation:** Extremely Poor

Notes:

Feet mixed together. Burial truncated, upper half of skeleton missing, except for left humerus and radius and ulna, a fragmented scapula, and some ribs.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-44 /2460	Bead	Faience bead	1	N
02-45 /2461	Bead	Stone bead	1	N
02-17 /17	Earring	Jewelry	1	N

APPENDIX I: BURIAL CATALOGUE

Skeleton (S): 8574

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-44

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary bones in fill

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 198

Date Opened: 1/24/2002 **Area:** WCE **Square:** 2.C5 **Excavator:** GV **Phase:** Saite **MNI:** 1

Cut: 5904 **Fill:** 5905 **Grave shape:** Other **Grave type:** Other **Dimensions:** x cm

Earlier than: 213 **ΔTop:** 17.60 **Context Description:** LP burial near wotc. Disturbed. Drawn on plan. No photos taken.

Later than: **ΔBottom:** 17.52

Coffin: 5906

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** x

Description: Only a corner of a coffin (head-end) remains. Outside of coffin was painted white, no pattern or mask visible.

Skeleton (P): 8032

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 0

Notes: check matrix. Check bones existant. Check teeth

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:** Extremely Poor

Notes:

Very disturbed burial - recorded as primary since the corner of the coffin remained. Only a fragmented occipital and a M1 sup remained.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 202

Date Opened: 1/2/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** ED **Phase:** Saite **MNI:** 1

Cut: 5916 **Fill:** 5917 **Grave shape:** Other **Grave type:** Other **Dimensions:** 71.3 x 29 cm

Earlier than: **ΔTop:** 17.13 **Context Description:** East end of WOTC

Later than: 210 **ΔBottom:** 17.06

Coffin: No Coffin

Skeleton (P): 8034 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** .25-.75

Stature: Not calculated

Burial Position: Loosely flexed, lying on left side

Head Orientation: Crown of skull west, facing north

Hand Placement: Hands on pelvis/femur

Feet Placement: Both feet pointing right

Burial Orientation (Head W of N,°): 135

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: Modern **Disarti. %:** 5 **Preservation:** Poor

Notes:

Femurs and kneecaps missing. Arms and claviculaes fairly well preserved, the rest of the skeleton very fragmented and poorly preserved.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 203

Date Opened: 1/30/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** JOK **Phase:** Saite **MNI:** 1

Cut: 5918 **Fill:** 5919 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 224 x 57 cm

Earlier than: **ΔTop:** 17.70000 **Context Description:** Burial situated about 70 cm from the bottom end of burial 191.

Later than: **ΔBottom:** 17.09000

Coffin: 5923

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 187 x 45

Description: Mask painted red with black eyes and eyebrows

Skeleton (P): 8035

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 35-50

Stature: 170.384 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes: incisura supraorbitalia, nonmetric trait.

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

An intact skeleton, but during removal it got fragmented. Bones were damp, and a dark red-brown color with areas of very dark brown.

PATHOLOGIES:

Periostosis *Caries*

OBJECTS: No objects associated with this burial

APPENDIX I: BURIAL CATALOGUE

Burial: 205

Date Opened: 1/27/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** TW **Phase:** Saite **MNI:** 2

Cut: 5924 **Fill:** 5926 **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 128 x 32.3 cm

Earlier than: 211, **ΔTop:** 17.23 **Context Description:** Child burial at WCE, with several burial items (vessel, necklace, bracelet earring and beads)

Later than: 174 **ΔBottom:** 17.08

Coffin: 5925

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 110 x 26

Description: Only traces remain of coffin; no evidence of lid, just rectangular outline around skeleton.

Skeleton (P): 8036 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 3.665-6.335

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement:

Feet Placement: Both feet pointing right

Burial Orientation (Head W of N,°): 78

Notes: sec bones in fill?

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 5 **Preservation:** Fair

Notes:

Slight disarticulation due to burial position, discoloration of rad/ulna because of metal-bracelet. Recently (square cleaning) truncated cranium. Old postmortem(?) damage on lower limbs. Skeleton lies extended, but the torso is slightly turned, so that the upper part of the skeleton as well as the cranium is lying on its side. The mandibula is disarticulated from the cranium. The pelvis is also slightly turned.

Textile fragments adhered to the bronze bracelet found at right hand.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
5911		Votive Vessel	Votive vessel	1	N
02-37	/2470	Bead	Faience bead	?	N
02-28	/2462	Bracelet	Faience bead	1	N
02-29	/2463	Bracelet	Stone bead	1	N
02-30	/2464	Bracelet	Faience bead	1	N
02-31	/2465	Bracelet	Faience bead	1	N
02-32	/2466	Bracelet	Glass bead	1	N
02-33	/2467	Bracelet	Faience bead	1	N
02-34	/2468	Bracelet	Faience bead	1	N
02-36	/02-36	Amulet	Wdjat composite	1	N
02-38	/2471	Bead	Faience bead	41	N
02-35	/2469	Bracelet	Imitation cowrie	1	N
02-41a	/2474a	Bead	Faience bead	1	N
02-41b	/2474b	Bead	Faience bead	1	N
02-40	/2473	Bracelet	Jewelry	1	N
02-39	/2472	Bead	Faience bead	1	N
02-192	/02-192	Bead	Faience bead	1	N
02-193	/02-193	Bead	Glass bead	1	N
02-194	/02-194	Earring	Jewelry	1	N

APPENDIX I: BURIAL CATALOGUE

Skeleton (S): 8575 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Undet. **Age:** -

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary bones in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 206

Date Opened: 1/27/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 5928 **Fill:** 5927 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 112 x 39 cm

Earlier than: 172, **ΔTop:** 17.4 **Context Description:** Child burial E of WOTC, N of Burial 205

Later than: **ΔBottom:** 17.13

Coffin: 5929

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 103 x 29

Description: Only traces remaain of coffin, rectangualr outine around body. No sign of lid.

Skeleton (P): 8037

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 3-4

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Other

Hand Placement: Other

Feet Placement: Other

Burial Orientation (Head W of N,°): 170

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 10 **Preservation:** Fair

Notes:

The bones of the skull and the right humerus were a light gray colour, and look like thay have been exposed at some point, with extensive fragmentation to follow. The rest of this child skeleton was in very good condition, a light red brown colour with no darker areas.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
02-23	/2477	Cowrie Shell	Cowrie	2	N
02-26	/2480	Anklet	Jewelry	1	N
02-27	/2481	Anklet	Jewelry	1	N
02-24	/2478	Cowrie Shell	Cowrie	11	N
02-22	/2476	Other	Jewelry	1	N
02-20	/2475	Bead	metal bead	1	N
02-21	/02-21	Amulet	Wdjat composite	1	N
02-25	/2479	Pendant	Jewelry	1	N

Burial: 207

Date Opened: 2/2/2002 **Area:** WCE **Square:** 2.C5 **Excavator:** TW **Phase:** Saite **MNI:** 3

Cut: 5931 **Fill:** 5948 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 246 x 56 cm

Earlier than: **ΔTop:** 17.27

Later than: 218, **ΔBottom:** 17.18

Context Description: This burial first appeared to be a double burial, as it was directly above another burial (218, adult male). However, this burial was interred after

Coffin: No Coffin

Skeleton (P): 8038 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F? **Age Group:** Juvenilis **Age:** 12-15

Stature: 142.62 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 180

Notes: A coffin was mistakenly thought to belong to this burial and was given F#5949. It turned out to belong to underlying burial 218 instead, and the feature number has been cancelled.

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 15 **Preservation:** Good

Notes:

This burial was first thought to be a double burial. It shares a cut with burial 218, but as it turned out 218 is later than 207, and was actually disturbed by this burial. Some secondary bones were found directly on top of 207, and probably belong to burial 218. The bones are a dark reddish brown with darker patches. Skull a light gray, due to exposure. Skull was also trowel damaged when this area was cleaned.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-42 /2482	Bead	Faience bead	1	Y

PATHOLOGIES:

Cribra Orbitalia *Enamel Hypoplasia*
Porotic Hyperostosis *Caries*

APPENDIX I: BURIAL CATALOGUE

Skeleton (S): 8589 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Juvenilis **Age:** 10-24

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary cranialbones from juvenile individual.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Skeleton (S): 8588 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-44

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary radius, clavicula, scapula and manus bones in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 208

Date Opened: 1/28/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 5933 **Fill:** 5932 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 187 x 40.6 cm

Earlier than: **ΔTop:** 17.38 **Context Description:**

Later than: 191 **ΔBottom:** 17.16

Coffin: 5934

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 167 x 44

Description: Only traces remain of coffin, very badly preserved, but there were patches of red, yellow and royal blue on the sides of the coffin.

Skeleton (P): 8039

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 25-30

Stature: 166.68 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 100

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: Modern **Disarti. %:** 0 **Preservation:** Good

Notes:

Skeleton was well preserved. Bones were a dark red brown with no darker areas. Skull was a light gray, due to exposure. Right hand was curled over proximal femur, left hand rested on pubis. Feet were damaged when burial 191 (which was earlier) was excavated. Lower right armbones are less well preserved.

OBJECTS: No objects associated with this burial

PATHOLOGIES:

Cribra Orbitalia *Caries*

APPENDIX I: BURIAL CATALOGUE

Burial: 215

Date Opened: 2/2/2002 **Area:** WCE **Square:** 2.C5 **Excavator:** TB **Phase:** Saite **MNI:** 2

Cut: 5957 **Fill:** 5956 **Grave shape:** Rectangular **Grave type:** Simple, sand-filled pit **Dimensions:** 202 x 61.3 cm

Earlier than: 213, **ΔTop:** 17.2

Later than: 274 **ΔBottom:** 17.01

Context Description: Adult burial close to WOTC north of burial 207 and south of burial 222. Painted vessel on top of fill (F#5911) similar to that found on top of adjacent child burial 205 (F#5930). Likley buried at the same time as 205.

Coffin: 5955

Shape: Other **Type:** Painted/plastered mudcoffin **Dimensions:** 191 x 45

Description: Coffin was rounded at head-end and rectangular at footend. Traces of black and red color on coffin body, no mask preserved.

Skeleton (P): 8045

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 25-35

Stature: 154.5 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: Modern **Disarti. %:** 0 **Preservation:** Fair

Notes:

Skeleton a reddish brown with no darker patches. Skull trowel damaged while cleaning the square, and a lighter yellowish gray colour due to exposure. Bones in good condition, sternum and vertebrae still preserved. Hands extended, parallell, on the pubic bone.

PATHOLOGIES:

Vertebral Lipping

Calculus

Femoral anteversion of right leg

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
5930	Votive Vessel	Votive vessel	1	N
02-78 /2486	Bead	Stone bead	1	Y

Skeleton (S): 8590

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Undet. **Age:** -

Stature: Not calculated

Burial Position:

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement:

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary skull fragments, tooth and coxae in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 217

Date Opened: 2/2/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** ED **Phase:** Saite **MNI:** 1

Cut: 5966 **Fill:** 5965 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 89.9 x 26.7 cm

Earlier than: **ΔTop:** 17.14 **Context Description:** Child burial cutting top part of burial 212

Later than: **ΔBottom:** 17.00

Coffin: No Coffin

Skeleton (P): 8047 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 2-4

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Left hand on pelvis/femur, right extended

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 348

Notes:

TAPHONOMY:

Truncated: Modern **Disarti. %:** 0 **Preservation:** Fair

Notes:

Skull damaged, possibly from the cleaning of the square. Bones were damp at the time of excavation, and a dark reddish colour with dark brown patches. However, none of the bones were reduced to bonestaines, and preservation was comparatively good. The grave went in to the section, and the cut should have been visible there, but instead tip lines in the granite dust were sealing the burial until almost immediately above skeleton. Original burial matrix eroded and redeposited?

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
02-64a	/02-64a	Amulet	Other	1	N
02-64b	/2487b	Bead	Bead	1	N
02-65	/2488	Bead	Bead	1	N
02-66	/2489	Bead	Glass bead	1	N
02-67	/2490	Bead	Faience bead	2	N

Burial: 218

Date Opened: 2/3/2002 **Area:** WCE **Square:** 2.C5 **Excavator:** TB **Phase:** Saite **MNI:** 1

Cut: 5963 **Fill:** 5962 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 201 x 49 cm

Earlier than: 207 **ΔTop:** 17.18 **Context Description:** Adult male directly underlying adult female (B207) in the opposite direction, alongside th eastern face of WOTC.

Later than: **ΔBottom:** 17.0

Coffin: 5964

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 198 x 49

Description: Only traces remain of coffin along right side of body. Some patches of yellow paint are visible. No lid, mask or pattern.

Skeleton (P): 8048

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 19-23

Stature: 167.82 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Other

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 0

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 2 **Preservation:** Good

Notes:

Insect activity on skull. Skull flattened towards the sagittal plane on dexter side. Mandibula and maxilla fragmented. Left scapula, humerus and radius truncated by overlying burial 207. Bones a dark reddish brown with darker patches. Large cut in proximal left tibia - likley postmortem - no healing, but nt a new cut. Could have happened during mummification or when the grace was truncated by the overlying burial.

PATHOLOGIES:

Vertebral Lipping
Cribra Orbitalia
Porotic Hyperostosis
Caries

OBJECTS: No objects associated with this burial

Burial: 219

Date Opened: 2/4/2002 **Area:** WCE **Square:** 2.E6 **Excavator:** GV **Phase:** Saite **MNI:** 1

Cut: 5968 **Fill:** 5969 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 191 x 50 cm

Earlier than: **ΔTop:** 17.23 **Context Description:** Adult burial near WOTC

Later than: **ΔBottom:** 17.1

Coffin: 5970

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** 178 x 32

Description: Only traces remain of coffin around lower body. The hard black substance covering the neck, face and chest could be a resin covered shroud. No color or mask preserved from coffin.

Skeleton (P): 8049

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 35-45

Stature: 170.17 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Other

Burial Orientation (Head W of N,°): 105

Notes:

TAPHONOMY:

Truncated: Modern **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Bones in very poor condition, falls to dust when touched. Skull and feet trowel damaged from initial cleaning of the square. Vertebrae flattened anterior-posterior. Black organic looking matter on sacrum and vertebrae, and over the left side of the cranium and the left shoulder. Possibly remnants of shroud covered in resin? Hard grayish mud feature inside thorax. Seepage stain? Skull fragmented/truncated, probably from recent activities on the surface. Feetbones are also missing. Bones are a whitish yellow with black patches.

OBJECTS: No objects associated with this burial

PATHOLOGIES:

Vertebral Lipping
Lipping
Porosity

Femoral anteversion, bilateral

Burial: 220

Date Opened: 2/5/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** TB **Phase:** Saite **MNI:** 1

Cut: 6014 **Fill:** 6015 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 149 x 46 cm

Earlier than: 290, **ΔTop:** 17.33 **Context Description:** Child burial near WOTC, overlying burial 192

Later than: 192, **ΔBottom:** 17.04

Coffin: No Coffin

Skeleton (P): 8050 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 11-12

Stature: 136.95 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Not applicable

Feet Placement: Both feet pointing right

Burial Orientation (Head W of N,°): 180

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 10 **Preservation:** Poor

Notes:

The burial has been disturbed by burial 192, which was directly over it. Both the arms are missing. Legs are highly fragmented, and the bones are a reddish brown with dark brown spots. The bones of the torso are better preserved, and have a lighter reddish brown colour, with no darker areas. The skull is completely fragmented.

PATHOLOGIES:

Enamel Hypoplasia

OBJECTS: No objects associated with this burial

APPENDIX I: BURIAL CATALOGUE

Burial: 221

Date Opened: 2/6/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** TB **Phase:** Saite **MNI:** 1

Cut: 6102 **Fill:** 6101 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 186 x 66.3 cm

Earlier than: 210, **ΔTop:** 17.16 **Context Description:** Adult burial near WOTC

Later than: 202 **ΔBottom:** 16.86

Coffin: No Coffin

Skeleton (P): 8051 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 35-55

Stature: 163.86 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing north

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 86

Notes: Todd 44-50, Suchey-brooks 45 +/- 10.

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

Bones damp at the time of excavation and a dark brown colour. "Lower" parts of body more poorly preserved, possibly due to groundwater levels? Crown of skull slightly fragmented because of cracking due to exposure.

PATHOLOGIES:

Vertebral Lipping
Periostosis

Caries
Abscess
Calculus
Periodontal disease
Trauma or Dislocation
Perforation on calcanei, bilateral

Healed fracture on humerus dx
Infection on scapula dx, Margo Lateralis.
healed fracture on scaphoid sin.
Porosity around aditory meatus sin
Lipping on lumber vertebrae
Caries and abscess on C sup sin
Caries on P2, M1, and M2 dx
Calculus on incisors
Perforation of both calcanei - non-metric trait?
periosteal reaction on fibula sin

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
6101	/AW59735	Votive Vessel	Votive vessel	1	N
02-121	/2491	Bead	Faience bead	1	

Burial: 222

Date Opened: 2/6/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** JOK **Phase:** Saite **MNI:** 1

Cut: 6103 **Fill:** 6104 **Grave shape:** **Grave type:** **Dimensions:** 98 x 33 cm

Earlier than: 172 **ΔTop:** 17.19000 **Context Description:** Child burial at E end of WOTC dug into mud wall, just north of burial 206.

Later than: 230 **ΔBottom:** 16.95000

Coffin: 6105

Shape: Subrectangular **Type:** Mudcoffin, plain **Dimensions:** 95 x 32

Description: Nothing remains of coffin lid, just a mud outline.

Skeleton (P): 8052

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 3-5

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Left hand on pelvis/femur, right extended

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 97

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

A fairly well preserved child skeleton, but skull highly fragmented. Lower legs dug into Old Kingdom ashy deposit, which has colored the bones a very dark brown in that area. The rest of the skeleton is a medium reddish brown color. Some limestones are lining the cut. They are quite large, ca 20x10 cm. Possibly put there on purpose to protect the grave from being truncated? Proximal parts of ulnae and radii missing.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-125 /2492	Bead	Faience bead	1	N
02-126 /2493	Bead	Glass bead	4	N
02-127 /2494	Bead	Faience bead	2	N

Burial: 224

Date Opened: 2/2/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 6106 **Fill:** 6107 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 61 x 20.8 cm

Earlier than: 220, **ΔTop:** 17.06 **Context Description:** Very disturbed and shallow infant burial.

Later than: 290 **ΔBottom:** 16.997

Coffin: 6108

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 64 x 20

Description: Only traces remain of coffin

Skeleton (P): 8054

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** 0.5-1

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 0

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 95 **Preservation:** Poor

Notes:

Very fragmented infant burial, disturbed.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 225

Date Opened: 7/2/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** GV **Phase:** Saite **MNI:** 1

Cut: 6109 **Fill:** 6110 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 69 x 26 cm

Earlier than: **ΔTop:** 17.19899 **Context Description:** Child burial close to WOTC

Later than: 276, **ΔBottom:** 17.04000

Coffin: 6111

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** 51 x 27

Description: Only traces of an oval mud outline around cranium remains of coffin. No traces of decoration or lid.

Skeleton (P): 8055

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** .665-1.335

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 114

Notes:

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 0 **Preservation:** Poor

Notes:

Bones a medium reddish brown. Skeleton truncated above knees by unknown activities. Bones damp at the time of excavation. Cranium, arms and pelvis fairly well preserved, thorax and femurs poorly preserved.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
	Other	Other		
02-114 /2495	Cowrie Shell	Cowrie	1	N

Burial: 226

Date Opened: 2/7/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** GV **Phase:** Saite **MNI:** 1

Cut: 6113 **Fill:** 6112 **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 52 x 20 cm

Earlier than: **ΔTop:** 17.14999 **Context Description:** Truncated child burial (by burial 191), only lower legs remain.

Later than: **ΔBottom:** 17.12999

Coffin: 6114

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** x

Description: Only traces of coffin, no trace of decoration.

Skeleton (P): 8056

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** 0.25-0.75

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 124

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 5 **Preservation:** Poor

Notes:

Child burial truncated at pelvis by burial 191. Only right leg and left femur remain, as well as the disarticulated manus bones, which presumably lay on pelvis, femur originally. Bones very fragile and a light reddish brown colour.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-118 /2496	Cowrie Shell	Cowrie	1	N

Burial: 227

Date Opened: 2/10/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** TB **Phase:** Saite **MNI:** 1

Cut: 6115 **Fill:** 6110 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 194 x 43 cm

Earlier than: 221 **ΔTop:** 16.86 **Context Description:** Adult burial directly underlying burial 221

Later than: **ΔBottom:** 16.79

Coffin: No Coffin

Skeleton (P): 8057 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 18-21

Stature: 155.31 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes: One of few adults with burial items.

TAPHONOMY:

Truncated: No **Disarti. %:** 2 **Preservation:** Good

Notes:

Tibia has longitudinal cracking. Bones were damp at the time of excavation, and were a dark brown colour. Skeleton in slightly tilted laterally, towards the left, so that the right arm is resting on pubis, slightly bent, and the left arm is more or less extended, with the hand on the proximal femur. The mandibula has become disarticulated and fallen down on the cervical vertebrae. Some fracturing of the facial bones.

PATHOLOGIES:

Lipping
Porosity

Enamel Hypoplasia
Caries

Osteophytic growth on 3 distal phalanges pedis sin
Raised ridge/lipping on caput femoris sin
Porosity/infection around fovea capitis sin
Porotic area below glenoid cavity on margo lateralis, scapula sin
Cavities in teeth 1, 2, 18 and 31

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
02-103	/2497	Bead	Imitation cowrie	9	N
02-104	/2499	Bead	Glass bead	1	N
02-105	/2498	Bead	Glass bead	1	N
02-106	/02-106	Amulet	Wdjat incised	1	N

Burial: 230

Date Opened: 2/11/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 6123 **Fill:** 6122 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 193 x 44 cm

Earlier than: 222, **ΔTop:** 17.38 **Context Description:** Adult burial close to WOTC

Later than: 301 **ΔBottom:** 16.96

Coffin: 6124

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 202 x 44

Description: Only traces of coffin remain, though some yellow colour was preserved on the inside wall of the coffin in the sw corner (head-end) , and on the outside of the coffin wall in the ne corner (foot-end). No mask preserved, but a hard clay substance on top of cranium may be remnants of a mask, sampled, bag# 2516.

Skeleton (P): 8060

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 35-45

Stature: 167.64 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Other

Hand Placement: Other

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 5

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Fair

Notes:

Skeleton has been truncated by 2 graves, 222 and 206. Cranium shows traces of insect activity. Coxae , manus, radius, ulna and femur sin are missing. Otherwise the skeleton is comparatively well preserved. Right hand on pelvis, left is missing. Skeleton is oriented along the east end of WOTC, with the crown of the skull north, chin on chest, face slightly to the west.

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Schmorl's nodes

Enamel Hypoplasia
Caries
Calculus

Caries on M2 sup dx, occlusal. Cranial anterior excessive bone formation on Vert Thor 11, slight osteophytic growth on Thoracicae 8-12. LEH on inferior canines, and dx superior canine

OBJECTS: No objects associated with this burial

Burial: 231

Date Opened: 2/12/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** TW **Phase:** Saite **MNI:** 1

Cut: 6126 **Fill:** 6125 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 207 x 45 cm

Earlier than: 226, **ΔTop:** 17.17 **Context Description:** Adult burial near WOTC

Later than: 284, **ΔBottom:** 16.82

Coffin: 6127

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 193 x 42.7

Description: Poorly preserved, red small mask with molded features, yellow headdress on red and blue background.

Skeleton (P): 8061

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 21-35

Stature: 162.72 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 282

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 3 **Preservation:** Good

Notes:

The skeleton was comparatively well preserved. The left ulna was slightly out of place, the mandibula had disarticulated and fallen down on the cervical vertebrae. The humeri were somewhat crushed. The left phalanges pedis were missing, even though the coffin was intact and the rest of the skeleton was in good condition. There was a sternal foramen and metopic suture. The bones were a medium reddish brown.

PATHOLOGIES:

Vertebral Lipping
Schmorl's nodes

Scmorl's nodes on Ve Th 6, osteophytic growth on Ve Th 7. Porosity and osteophytic growth on Ve Lu 4 and 5 Metopic suture and sternal foramen (non-metric traits).

OBJECTS: No objects associated with this burial

Burial: 232

Date Opened: 2/12/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 6129 **Fill:** 6128 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 190 x 47 cm

Earlier than: 227 **ΔTop:** 17.07 **Context Description:** Adult burial near WOTC, cut by 227 in the north.

Later than: 212 **ΔBottom:** 16.62

Coffin: 6130

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 179 x 41

Description: Fragmentary mask, with lots of color preserved. Red face, wig is blue with white and darker red pattern on yellow bottom. Remnants of what appears to be a recumbent Anubis in black on yellow bottom on chest.

Skeleton (P): 8062

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 40-50

Stature: 157.58 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Feet crossed, left over right

Burial Orientation (Head W of N,°): 78

Notes: From Johnny's notes: Fused phalanges Int-Dist on pedis sin.
Eburnation and porosity on Mt I and Ph prox.

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Good

Notes:

The footend of the burial was dug into an ashy deposit, and the bones of the legs were discoloured. The skeleton was comparatively well preserved, but the bones were damp at the time of excavation. There was some longitudinal postmortem fracturing to the tibiae.

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Lipping
Eburnation
Porosity
Periostosis

Enamel Hypoplasia
Wedging and boneloss in Ve Th 12 and Ve Lu 1

Slight wedging (anterior) of Ve Th 12 and Ve Lu 1
Lipping and osteophytic growth on Ve Lu 1-5
Porosity around endplates and on corpus on Ve Th 2-5
Eburnation and porosity on distal hallucial phalanx dx
Two fused medial and distal phalanges pedis sin
Enamel hypoplasia on upper incisors
PNB on tibia sin

OBJECTS: No objects associated with this burial

Burial: 233

Date Opened: 2/12/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** ED **Phase:** Saite **MNI:** 1

Cut: 6132 **Fill:** 6131 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 112 x 35 cm

Earlier than: 205, **ΔTop:** 17.12 **Context Description:** Badly preserved child burial near WOTC

Later than: **ΔBottom:** 16.99

Coffin: No Coffin

Skeleton (P): 8063 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 3.665-6.335

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 100

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 10 **Preservation:** Extremely Poor

Notes:

Truncated by burials 205 and 215. Only the lower legs, a part of mandibula, and left humerus remain. Burial was dug into a damp, ashy deposit and the bones are a dark red brown.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 234

Date Opened: 2/12/2002 **Area:** WCE **Square:** 2.C7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 6134 **Fill:** 6135 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 34 x 29 cm

Earlier than: **ΔTop:** 16.98 **Context Description:** Childburial in collapsed baulk of 2C7.

Later than: 244, **ΔBottom:** 16.79

Coffin: No Coffin

Skeleton (P): 8064 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 3-5

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: Unknown **Disarti. %:** **Preservation:** Extremely Poor

Notes:

The burial was lying in a slope, in collapsed baulk of 2.C7. It had been truncated, but since this area was dug last season by other archaeologists than the author it is difficult to tell if by other burials or from modern activities. Bones are a dark red brown, facial bones fragmented.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

APPENDIX I: BURIAL CATALOGUE

Burial: 235

Date Opened: 2/13/2002 **Area:** WCE **Square:** 2.E5 **Excavator:** JOK **Phase:** Roman **MNI:** 1

Cut: 6136 **Fill:** 6137 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 187 x 61.5 cm

Earlier than: 242, **ΔTop:** 18.10000

Later than: **ΔBottom:** 17.02799

Context Description: Late Period burial immediately adjacent to northern face of WOTC, eastern end of the wall (see sketch on burial form).

Coffin: 6138

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 168 x

Description: Coffin was painted red and black, but very poorly preserved.

Skeleton (P): 8065

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Maturus **Age:** 45-50

Stature: 153.518 cm, +/- 2.517 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 5 **Preservation:** Poor

Notes:

Burial 235 had been truncated by 242, 263, 254, and further damaged by stones falling from the WOTC, which the skeleton was oriented alongside. The bones were a yellowish white, and the skull had dark spots. The lower limbs were extensively weathered, dry and fragmented.

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping

Caries
Abscess

Maxillary sinusitis

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
	Other			Y
	Other			Y
	Other			Y

Burial: 238

Date Opened: 2/16/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 6142 **Fill:** 6143 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 113 x 42 cm

Earlier than: 248 **ΔTop:** 17.18 **Context Description:** Child burial in east section of 2C6 sondage. Dug into disturbed mudbrick deposit and truncated just above coxae.

Later than: 302, **ΔBottom:** 17.64

Coffin: No Coffin

Skeleton (P): 8166 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 1.335-2.665

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 127

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** **Preservation:**

Notes:

The bones were dry and fragmented and in very poor condition. The skeleton had been truncated above the waist and many bones were missing. Skull is trowel damaged from earlier cleaning of the square.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-100 /2501	Cowrie Shell	Cowrie	1	N
02-101 /02-101	Amulet	Wdjat composite	1	N
02-102 /2500	Bead	Stone bead	1	N

Burial: 240

Date Opened: 2/16/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 6144 **Fill:** 6145 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 110 x 43 cm

Earlier than: 258, **ΔTop:** **Context Description:** Truncated child burial near WOTC

Later than: 294, **ΔBottom:** 17.04000

Coffin: 6146

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 85 x 36.8

Description: Error in ts - no elevations for this coffin.
Small mudmask with no paint preserved, save for some white around the mouth and reddish black around the eyes. A cornerpin went through the left cheek - new damage.

Skeleton (P): 8067

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 3-5

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 110

Notes: Ts error when taking elevations on coffin.

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 15 **Preservation:** Extremely Poor

Notes:

The skeleton has been truncated across the torso. Only cranium, costae, and left humerus and proximal part of ulna remain. Skull is fragmented and in poor condition. The body had slipped down in the coffin.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
02-92	/02-92	Amulet	Bes	1	N
02-93	/02-93	Amulet	Bes	1	N
02-94	/02-94	Amulet	Wdjat incised	1	N
02-95	/02-95	Amulet	Wdjat incised	1	N

Burial: 241

Date Opened: 2/12/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** TW **Phase:** Saite **MNI:** 1

Cut: 6147 **Fill:** 6148 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 235 x 54 cm

Earlier than: 243 **ΔTop:** **Context Description:** Coffin much too large for the child inside

Later than: 301, **ΔBottom:** 17.06999

Coffin: 6149

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 211 x 53.9

Description: Very badly preserved, caved in. Coffin much too large for the child inside.

Skeleton (P): 8068

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 4-8

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 30

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: No **Disarti. %:** 5 **Preservation:** Poor

Notes:

Skeleton is crushed due to overburden pressure. There was some insect activity on the proximal part of tibia dx. The skull was a yellowish gray, the rest of the skeleton was a light reddish brown. Perforation on proximal tibia dx, likely taphonomical, insect activity. Insect activity on corpus vert.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-449 /02-449	Bead	Faience bead	1	N
02-195 /2502	Cowrie Shell	Cowrie	6	N

PATHOLOGIES:

Cribra Orbitalia

Enamel Hypoplasia

Enamel hypoplasias on maxillary unerupted teeth (P1 dx) 5, (C dx) 6 and 8 (I1 dx). Cribra orbitalia.

Burial: 242

Date Opened: 2/17/2002 **Area:** WCE **Square:** 2.E5 **Excavator:** GV **Phase:** Roman **MNI:** 1

Cut: 6150 **Fill:** 6151 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 210 x 56 cm

Earlier than: 235 **ΔTop:** 17.87000 **Context Description:** Late Period burial along north face of WOTC, eastern end.

Later than: **ΔBottom:** 17.48999

Coffin: 6152

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 177 x 45

Description: Traces of red color on mask, but very fragmented, not possible to distinguish patterns.

Skeleton (P): 8069

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 33-45

Stature: 162.532 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

The bones of the upper body were a whitish yellow colour, and extensively weathered. Sacrum was reduced to bonestains, and there was a dark discoloration of the soil around the bones from pelvis down. Ossa membri inferioris were a dark red brown, except for the feet, which also were a whitish yellow colour.

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Lipping
Porosity
Abscess
Porosity on frontal, likely taphonomic.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
6151	Votive Vessel	Votive vessel	1	N

Burial: 243

Date Opened: 2/17/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** TW **Phase:** Saite **MNI:** 1

Cut: 6153 **Fill:** 6154 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 123 x 30 cm

Earlier than: **ΔTop:** 17.66 **Context Description:**

Later than: 241 **ΔBottom:** 17.31

Coffin: 6155

Shape: Oval **Type:** Mudcoffin, plain **Dimensions:** 22 x 105

Description: Coffin very poorly preserved, merely outline. No color left.

Skeleton (P): 8070

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 4-8

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing north

Hand Placement: Left hand on pelvis/femur, right extended

Feet Placement: Both feet pointing left

Burial Orientation (Head W of N,°): 272

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

Crushed femora and tibiae post-mortem (ground pressure). Skull is also flattened and warped.

PATHOLOGIES:

Enamel Hypoplasia

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-196 /2503	Bracelet		1	N

Burial: 245

Date Opened: 3/6/2002 **Area:** WCE **Square:** 2.D5 **Excavator:** TW **Phase:** Saite **MNI:** 1

Cut: 6232 **Fill:** 6233 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 90 x 29 cm

Earlier than: **ΔTop:** 17.74

Later than: **ΔBottom:** 17.51

Context Description: Child burial alongside WOTC (up against east face), sunk into Old Kingdom mudbrick wall. Not cutting or cut by any other burials.

Coffin: No Coffin

Skeleton (P): 8074 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** .75-1

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 0

Notes:

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 10 **Preservation:** Extremely Poor

Notes:

Very poorly preserved skeleton. Hands, feet and cranium missing. Bones weathered, only covered by a thin layer of sand.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-197 /2505	Bead	Bead	2	N
02-197a /02-197a	Cowrie Shell	Cowrie	2	N
02-197b /02-197b	Bead	Imitation cowrie	1	N
02-197c /02-197c	Bead	Faience bead	1	N

Burial: 246

Date Opened: 2/18/2002 **Area:** WCE **Square:** 2.E5 **Excavator:** TB **Phase:** Saite **MNI:** 1

Cut: 6162 **Fill:** 6161 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 188 x 54 cm

Earlier than: **ΔTop:** 17.77 **Context Description:** Adult burial at NE corner of WOTC

Later than: 292 **ΔBottom:** 17.45

Coffin: No Coffin

Skeleton (P): 8075 **No Skeleton In Grave:**

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 18-23

Stature: 168.33 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Right hand on pelvis/femur, left extended

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

Bones are a yellowish gray with black/dark brown spots. Ossa membri inferioris are darker than the rest of the skeleton, light brown with black spots. Upper body looks like it has been weathered quite extensively, between stage 3 and 4 in Standards. Longitudinal fracturing of tibiae.

PATHOLOGIES:

Enamel Hypoplasia

LEH on all incisors

OBJECTS: No objects associated with this burial

Burial: 247

Date Opened: 2/18/2002 **Area:** WCE **Square:** 2.E5 **Excavator:** JOK **Phase:** Saite **MNI:** 1

Cut: 6159 **Fill:** 6160 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 165 x 46 cm

Earlier than: **ΔTop:** 17.57999 **Context Description:** LP burial near NE corner of WOTC

Later than: **ΔBottom:** 17.26000

Coffin: No Coffin

Skeleton (P): 8076

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M? **Age Group:** Juvenilis **Age:** 12-18

Stature: 147.408 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Right hand on pelvis/femur, left extended

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 88

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

Upper part of skeleton looks weathered. Bones are a light brown colour with darker areas. Ossa membri inferioris are better preserved. Extensive cracking.

PATHOLOGIES:

Enamel Hypoplasia

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
6168	Votive Vessel	Votive vessel	1	N

Burial: 248

Date Opened: 2/18/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** PN **Phase:** Saite **MNI:** 5

Cut: 6164 **Fill:** 6165 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 200 x 71 cm

Earlier than: 244 **ΔTop:** 16.78 **Context Description:** Adult burial near WOTC. Also contains 4 secondary individuals originally listed as "Bur 244".

Later than: 251 **ΔBottom:** 16.66

Coffin: 6163

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 181 x 44

Description: Finely molded mask. Nose is quite clear, mask colour is blue, red and yellow. Coffin is much too large for the juvenile inside.

Skeleton (P): 8077

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Juvenilis **Age:** 12-17

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Not applicable

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 108

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Coffin was much too big for the skeleton, and the skeleton has slipped down towards the foot end. There is a dark discoloration in the soil around the body, maybe seepage stains? Lower arms and torso reduced to bonestains. Feet and lower legs slightly better preserved than the rest of the skeleton. Bones are a dark red-brown with black patches.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-489 /2545	Bead	Cowrie	4	N

PATHOLOGIES: None Noted

Skeleton (S): 8071 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 35-35

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

One of 4 secondary individuals in fill of burial 248. Cranium, mandible, parts of humeri and pelvis.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
	/1307	Other		1	Y
02-321	/2504	Bead		2	Y

Skeleton (S): 8577 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: **Age Group:** Juvenilis **Age:** 22-22

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

One of 4 secondary individuals in fill of burial 248. Cranium, mandible, parts of humeri, femur dx and pelvis.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Skeleton (S): 8578 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 3.5-4.5

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

One of 4 secondary individuals in fill of burial 248. Fragmented parts of femur sin.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Skeleton (S): 8579 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 3.5-4.5

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

One of 4 secondary individuals in fill of burial 248. Fragmented parts of femur sin.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 249

Date Opened: 2/20/2002 **Area:** WCE **Square:** 2.C5 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 6169 **Fill:** 6170 **Grave shape:** Oval **Grave type:** Other **Dimensions:** 58 x 24 cm

Earlier than: 218, **ΔTop:** 17.20000 **Context Description:** Late period child grave at the East end of WOTC

Later than: **ΔBottom:** 17.12000

Coffin: 6171

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** 47 x 24

Description:

Skeleton (P): 8078

No Skeleton In Grave:

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** 0.5-1

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Other

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 180

Notes: 9 months +/- 3 months

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Burial is cut several times by other burials in the East and North. The bones are very poorly preserved, reddish brown with dark spots. The burial is lying alongside the Wall of the Crow.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-198 /2506	Cowrie Shell	Cowrie	1	N
02-199 /02-199	Amulet	Wdjat bead	1	N

Burial: 250

Date Opened: 2/20/2002 **Area:** WCE **Square:** 2.C7 **Excavator:** ED **Phase:** Saite **MNI:** 1

Cut: 6173 **Fill:** 6172 **Grave shape:** Oval **Grave type:** Other **Dimensions:** 68 x 16 cm

Earlier than: **ΔTop:** **Context Description:** Child burial at east end of WOTC

Later than: **ΔBottom:** 16.70000

Coffin: No Coffin

Skeleton (P): 8079 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** .75-1.3

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 93

Notes: 1 year +/- 4 months

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 10 **Preservation:** Extremely Poor

Notes:

Skeleton very fragile and poorly preserved. Burial has been truncated at head-end, and most of the skull is missing. Bones are a dark reddish brown, with extensive longitudinal cracking.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
2210	/2210	Bead	Faience bead	1	N

Burial: 251

Date Opened: 2/20/2002 **Area:** WCE **Square:** 2.C7 **Excavator:** GV **Phase:** Saite **MNI:** 2

Cut: 6177 **Fill:** 6176 **Grave shape:** Oval **Grave type:** Other **Dimensions:** 118 x 32 cm

Earlier than: **ΔTop:** **Context Description:** Late period child burial near WCE

Later than: **ΔBottom:** 16.54999

Coffin: 6175

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 116 x 31

Description: Coffin with traces of inscription in black, in a stripe down the lid of the coffin, outlined in blue

Skeleton (P): 8080

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 5-9

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Other

Hand Placement: Other

Feet Placement: Both feet pointing right

Burial Orientation (Head W of N,°): 208

Notes:

TAPHONOMY:

Truncated: Unknown **Disarti. %:** **Preservation:** Poor

Notes:

Crown of skull is NE and head to NW. Arms are extended under coxae. Skull is crushed and flattened, and the skeleton has slipped down in the coffin so that the spine is slightly bent. Longitudinal cracking of long bones. Bones are a dark brown colour. Facial skeleton completely crushed and maxilla and maxillary teeth missing.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Skeleton (S): 8781

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary adult ph2 pedis in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 252

Date Opened: 3/2/2002 **Area:** WCE **Square:** 2.C5 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 6178 **Fill:** 6179 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 132 x 46 cm

Earlier than: 207, **ΔTop:** 17.31999 **Context Description:** LP burial at SE corner of WOTC

Later than: **ΔBottom:** 16.70000

Coffin: 6180

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** 127 x 23

Description:

Skeleton (P): 8081

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 4.5-9

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 93

Notes:

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 10 **Preservation:** Good

Notes:

The bones are well preserved, allthough skeleton has been truncated and some bones are missing; humerus, radius, ulna, coxae sin, and radius et ulna dx, plus manus. Bones are a light reddish brown colour, cranium a light yellowish gray.

B72 applied.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 253

Date Opened: 3/3/2002 **Area:** WCE **Square:** 2.C5 **Excavator:** JOK **Phase:** Saite **MNI:** 1

Cut: 6181 **Fill:** 6182 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 81 x 24 cm

Earlier than: **ΔTop:** 17.11000 **Context Description:** Late Period child burial at SE corner of WOTC

Later than: **ΔBottom:** 16.96500

Coffin: No Coffin

Skeleton (P): 8082 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 1.5-2.5

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Left hand on pelvis/femur, right extended

Feet Placement: Feet crossed, right over left

Burial Orientation (Head W of N,°): 180

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 5 **Preservation:** Poor

Notes:

Child grave lying alongside the end of the Wall of the Crow. Cut was truncated by Burial 207/218, but not skeleton. The left femur is fragmented and the left arm is mssing, possibly crushed by tumble from the wall? Skull got fragmented due to exposure during excavation. Bones are a medium reddish brown.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-517 /2267	Bead	Faience bead	1	N

Burial: 254

Date Opened: 2/27/2002 **Area:** WCE **Square:** 2.E5 **Excavator:** JOK **Phase:** Saite **MNI:** 1

Cut: 6184 **Fill:** 6183 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 203 x 67 cm

Earlier than: **ΔTop:** 18.62000 **Context Description:** LP burial along northern face of the WOTC.

Later than: **ΔBottom:** 18.11000

Coffin: 6193

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 185 x 41

Description: Only traces of coffin remain around skeleton - no color preserved.

Skeleton (P): 8083

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Senilis **Age:** 45-60

Stature: 170.144 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Left hand on pelvis/femur, right extended

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 100

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

Bones are a yellowish gray. Pedis are very weathered and crumble when touched. The rest of the skeleton is better preserved, but might have been exposed to the elements at some point.

PATHOLOGIES:

Caries
Congenital Disorder
Trauma or Dislocation
Coxa vara? Legg-Calvé-Perthes disease? Left hip.

OBJECTS: No objects associated with this burial

Burial: 255

Date Opened: 2/27/2002 **Area:** WCE **Square:** 2.E5 **Excavator:** TB **Phase:** Saite **MNI:** 1

Cut: 6186 **Fill:** 6185 **Grave shape:** Oval **Grave type:** Other **Dimensions:** 200 x 66 cm

Earlier than: **ΔTop:** 18.53000 **Context Description:** Burial on the nort side of WOTC, quite deep - approx 40 cm below sand in E-W direction

Later than: **ΔBottom:** 18.06999

Coffin: No Coffin

Skeleton (P): 8084 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F? **Age Group:** Juvenilis **Age:** 12-15

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Right hand on pelvis/femur, left extended

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 94

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

Bones are a yellowish gray and very fragile. The burial has been exposed to the elements at some point. The skull is slightly better preserved and has black spots on the calvarium. Longitudinal cracking on ossa longa.

PATHOLOGIES:

Enamel Hypoplasia
Caries
Calculus

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
Obj.No?	Cowrie Shell	Cowrie	1	N

Burial: 256

Date Opened: 2/27/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 6187 **Fill:** 6188 **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 82 x 57 cm

Earlier than: 203, **ΔTop:** 17.3 **Context Description:** Hevily truncated burial, only lower legs remain. Cut by 203 in the north, and 257 in the south. Grave shape unobservable.

Later than: **ΔBottom:** 17.15

Coffin: 6189

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 78 x 34

Description: White paint/slip preserved on outside of coffin, black paint fragments on coffin bottom (outside of coffin)

Skeleton (P): 8085

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 150

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:** Poor

Notes:

Only proximal 2/3 of tibiae and fibulae remain. Epiphyses closed.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 257

Date Opened: 2/27/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Saite **MNI:** 3

Cut: 6190 **Fill:** 6191 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 201 x 45 cm

Earlier than: 259, **ΔTop:** 17.28 **Context Description:** Adult burial near WOTC; cutting burial 256 and overlying burial 268. Burial is itself cut by 191.

Later than: 268, **ΔBottom:** 16.9

Coffin: 6190

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 182 x 37

Description: truncated; top part of mask is missing. Wig is black, white and red. No color remains on mask proper.

Skeleton (P): 8086

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Juvenilis **Age:** 12-15

Stature: 161.64 cm, +/- 3.226 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 97

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** **Preservation:** Poor

Notes:

Feet bones are disturbed, feet placement not visible. Remnants of organic material (shroud covered in resin?) on left part of face. Bones of the skull dry and cracked. The body has slipped down in the coffin and the feet have become "squeezed" against the coffin wall. Bones are a light reddish brown with yellowish gray patches. Except for left mandible, most teeth are missing or loose.

PATHOLOGIES:

Enamel Hypoplasia

LEH on one left P1 inf, and both left canines.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-200 /2507	Cowrie Shell	Cowrie	1	N

Skeleton (S): 8580 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary bones in fill of burial 257.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Skeleton (S): 8581 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Juvenilis **Age:** 10-24

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary bones in fill of burial 257.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 258

Date Opened: 2/27/2002 **Area:** WCE **Square:** 2.C7 **Excavator:** GV **Phase:** Saite **MNI:** 1

Cut: 6194 **Fill:** 6196 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 174 x 66 cm

Earlier than: **ΔTop:** 16.65 **Context Description:** Child burial near WOTC

Later than: **ΔBottom:** 16.40999

Coffin: 6195

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 157 x 39.5

Description: No mask preserved - some blue and white on the coffin body (larger patches) and red and black spots.

Skeleton (P): 8087

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 5-9

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Other

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 144

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

Bones were a very dark reddish brown with black areas, poorly preserved and damp at the time of excavation, so that they were soft and friable. There was a dark discoloration of the soil around the bones.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-201 /2508	Earring	Jewelry	1	N
02-202 /2546	Bead	Stone bead	1	N

Burial: 259

Date Opened: 2/27/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Saite **MNI:** 3

Cut: 6197 **Fill:** 6198 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 196 x 56 cm

Earlier than: **ΔTop:** 17.32 **Context Description:** Adult burial close to WOTC cutting 257 and overlying 265

Later than: 257, **ΔBottom:** 16.87

Coffin: 6199

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 178 x 39.8

Description: Coffin had no real shoulders but was wider in the shoulder region. The foot part had a strong brown vertical band and a large foot box. Coffin edge c. 1.5-3.5 cms. Mask fragmented, but nose is visible. Traces of white and strobg brown paint.

Skeleton (P): 8088

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 25-35

Stature: 158.28 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands crossed on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 48

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 5 **Preservation:** Fair

Notes:

The mandibula had disarticulated from the cranium and was resting on the cervical vertebrae, superior up. The hands and feet were also disarticulated, and the carpal and metacarpal bones were not preserved. They appear to have been resting on the pubic bone, which was very poorly preserved. The facial skeleton was damaged and had caved in, probably because of the weight of the mask. There was extensive longitudinal cracking to the ossa longa, and the joints are poorly preserved, but apart from that the skeleton was comparatively well preserved.The proximal diaphyses of the femurs and distal diaphyses of the humeri were dark brown, the rest of the skeleton was a lighter, reddish brown colour. Vertebrae and Sternum were preserved.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Skeleton (S): 8089 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 18-79

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes: Burial was assigned number 260, but is really a secondary deposit in burial 259, so cut and fill numbers are the same.

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary bones in fill of 259, originally named 260.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Skeleton (S): 8591 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Juvenilis **Age:** 10-24

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: No **Disarti. %:** 100 **Preservation:**

Notes:

Secondary juvenile bones in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 261

Date Opened: 2/28/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 6201 **Fill:** 6200 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 81 x 33 cm

Earlier than: 169 **ΔTop:** 17.07999 **Context Description:** Infant burial in E end of 2C6 sondage, about 5m from WOTC (East of), dug into OK architechtural remains and ash deposit.

Later than: **ΔBottom:** 16.77000

Coffin: 6202

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 49.5 x 21

Description: Only traces of coffin remain in a rectangle around the preserved part of the skeleton, no sign of a lid or mask.

Skeleton (P): 8090

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** .25-.75

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 93

Notes:

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 10 **Preservation:** Poor

Notes:

The mandibula was resting superior up on cervical vertebrae, facial skeleton fragmented. The ribcage was slightly disarticulated, but this appeared to be due to the collapse of the thorax. The cranial vault had collapsed, but it was still possible to determine that the original head orientation was anterior up and chin on chest. Skeleton had been truncated above pelvis, and the lower part of the skeleton was missing. Bones were a reddish brown colour, and were comparatively well preserved, albeit fractured.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 262

Date Opened: 2/28/2002 **Area:** WCE **Square:** 2.C7 **Excavator:** GV **Phase:** Saite **MNI:** 1

Cut: 6203 **Fill:** 6204 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 61.5 x 28 cm

Earlier than: 258, **ΔTop:** 16.74 **Context Description:** Infant burial near WOTC

Later than: **ΔBottom:** 16.65

Coffin: No Coffin

Skeleton (P): 8091 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** .5-1

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Both hands extended at sides

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** **Preservation:** Poor

Notes:

Burial 262 was cut by 258, and underlying and probably disturbed by 250. The skeleton itself had been truncated by these subsequent burials, and both the cranium and feet were missing. The manus bones were not preserved, but the arms were extended at the sides. The bones were a reddish brown colour, with no darker patches. The spine had an unnatural curve, but this was probably due to the fact that the burial sloped downwards slightly. The joints and epiphyses were not preserved. The bones were fragmented and brittle.On the bronze bracelet found by the left hand there were textile impressions/imprints.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-203a /02-203a	Bead	Faience bead	10	N
02-203b /02-203b	Bead	Stone bead	1	N
02-203c /02-203c	Cowrie Shell	Cowrie	1	N
02-204 /2510	Bracelet	Jewelry	1	N
02-205a /2511a	Bead	Faience bead	4	N
02-205b /2511b	Bead	Faience bead	1	N
02-205c /02-205c	Bead	Faience bead	1	N
02-206 /206	Bead	Stone bead	1	N

Burial: 263

Date Opened: 3/2/2002 **Area:** WCE **Square:** 2.E5 **Excavator:** TB **Phase:** Saite **MNI:** 1

Cut: 6206 **Fill:** 6205 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 215 x 80 cm

Earlier than: **ΔTop:** 17.56 **Context Description:** Adult burial near WOTC, underlying 235.

Later than: **ΔBottom:** 17.25

Coffin: 6213

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 184 x 54

Description: Almost nothing remains of lid, but walls are fairly well preserved around upper body. Well defined anthropoid shape.

Skeleton (P): 8092

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 18-20

Stature: 175.61 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Both feet pointing left

Burial Orientation (Head W of N,°): 87

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

Cranium was damaged during excavation. The skeletal material was very fragile and brittle. The bones were a yellowish beige colour with dark brown patches. This burial was lying at a higher elevation, and seems to have been weathered rather than flooded. It is possible that the poor preservation is owed in part to lime stones falling off the Wall of the Crow - the burial was right at the corner of the wall.

PATHOLOGIES:

Caries

Caries on 1, 3, 9, 12 and 20

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-207 /2512	Bracelet	Jewelry	1	N

Burial: 264

Date Opened: 3/2/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** ED **Phase:** Saite **MNI:** 1

Cut: 6207 **Fill:** 6208 **Grave shape:** Other **Grave type:** Other **Dimensions:** 26 x 19 cm

Earlier than: **ΔTop:** **Context Description:** Badly truncated childburial at E end of WOTC. Cut shape not visible.

Later than: **ΔBottom:** 16.55999

Coffin: NF8093

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** x

Description: No feature was given to this coffin, though there clearly is remnants of a mud coffin under the body. Too porly preserved to tell shape. Feature was given as "NF8093", meaning "No Feature", to enable data entry.

Skeleton (P): 8093

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 1-2

Stature: Not calculated

Burial Position: Extended, anterior up

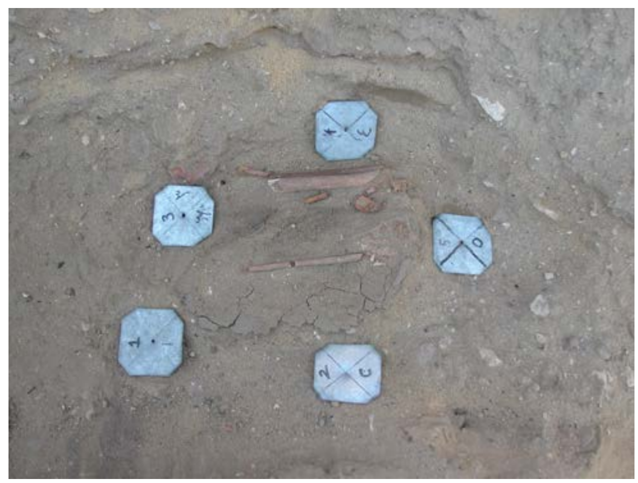
Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 94

Notes:



TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Fair

Notes:

Only lower legs remained of this burial. It was underlying and truncated by subsequent burials. The bones were fractured, but otherwise in fairly good condition, and had a reddish brown colour.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

APPENDIX I: BURIAL CATALOGUE

Burial: 265

Date Opened: 3/2/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** ED **Phase:** Saite **MNI:** 2

Cut: 6211 **Fill:** 6210 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 227 x 74 cm

Earlier than: 259 **ΔTop:** 17.2 **Context Description:** Late period coffin burial at E end of WOTC

Later than: **ΔBottom:** 16.51

Coffin: 6212

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 213 x 58

Description: Red mask with black painted eyes and a scarab at center of wig.

Skeleton (P): 8094 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M? **Age Group:** Maturus **Age:** 33-45

Stature: 157.58 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Right hand on pelvis/femur, left extended

Feet Placement: Other

Burial Orientation (Head W of N,°): 10

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 2 **Preservation:** Fair

Notes:

Left foot extended, right foot pointing right. The bones had a dark reddish brown colour. Costae, vertebrae, sacrum and joints were in a worse state of preservation than the rest of the skeleton. Some postmortem fracturing of the ossa longa. Mandibula was dislodged and resting on cervical vertebrae, so that the mouth gaped open. The metatarsals were also slightly disarticulated, suggesting that the coffin did not collapse until the body was at least partly skeletalized.

Insect activity on right frontal, originally mistaken for lesion (before cleaning)

OBJECTS: No objects associated with this burial

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Lipping
Eburnation
Abscess
Trauma or Dislocation

Osteophytes, porotic surface and eburnation on at least one Ve Ce (7, remaining Ve Ce too poorly preserved to tell), grade III, and slight lipping and osteophytic growth on at least one Ve Lu (2, remaining ve Lu too poorly preserved to tell).

Abscess on mandible (buccal) below M1 inf dx. Healed fracture, MT II sin, and lipping and osteophytic growth on phalanges pedis, mainly sin.

Skeleton (S): 8601 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Juvenilis **Age:** 14-21

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 266

Date Opened: 3/10/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** TW **Phase:** Saite **MNI:** 1

Cut: 6214 **Fill:** 6215 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 102 x 31 cm

Earlier than: 191, **ΔTop:** **Context Description:** Child burial near WOTC

Later than: **ΔBottom:** 17.03

Coffin: 6216

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** x

Description: Only traces remain, no color preserved

Skeleton (P): 8095 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 2-4

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 60

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 2 **Preservation:** Extremely Poor

Notes:

This burial had been truncated at pelvis by burial 191, but although only the legs were undisturbed some disarticulated skull fragments still remained under the truncating burial. The cut was excavated somewhat before it was recognized that it was underlying burial 191, and the bones were damaged slightly due to exposure. The bones were reddish brown with dark brown patches, and very brittle. There was extensive longitudinal cracking to the ossa longa, and the diaphyses were fragmented.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-208 /208	Amulet	Bes	1	N

Burial: 267

Date Opened: 3/5/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** TW **Phase:** Saite **MNI:** 2

Cut: 6217 **Fill:** 6218 **Grave shape:** Rectangular **Grave type:** Mud-lined grave **Dimensions:** 112 x 33 cm

Earlier than: **ΔTop:** 17.19400 **Context Description:** LP child burial at WCE

Later than: 280 **ΔBottom:** 17.09000

Coffin: 6219

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 105 x 23

Description: Only traces left of coffin

Skeleton (P): 8096 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 4-8

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 84

Notes:

TAPHONOMY:

Truncated: Modern **Disarti. %:** 5 **Preservation:**

Notes:

Disarticulated manus, situated in upper thorax, which is also disturbed. Original position of hands probably on pelvic region. Head crushed and then partially trowelled away or trampled during excavation. The bones were a medium reddish brown with no darker areas.

PATHOLOGIES:

Enamel Hypoplasia

Enamel hypoplasia on Canine sup dx

OBJECTS: No objects associated with this burial

Skeleton (S): 8782

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary adult skullfragments and ossa longa in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

APPENDIX I: BURIAL CATALOGUE

Burial: 268

Date Opened: 3/5/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Saite **MNI:** 3

Cut: 6220 **Fill:** 6221 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 210 x 34 cm

Earlier than: 257 **ΔTop:** 17.28000 **Context Description:** Coffin burial close to WOTC

Later than: 256 **ΔBottom:** 16.92000

Coffin: 6231

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 210 x 38

Description: Only the footend remains of coffin, and a few fragments of a rounded head-end

Skeleton (P): 8097 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Juvenilis **Age:** 14-18

Stature: 158.73 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 94

Notes: Sex assessment is very tentative

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Poor

Notes:

The burial had been truncated, and allthough the head end of the coffin was still visible the lower legs were all that remained of the skeleton. The legs had been cut through the distal epiphyses of the femurs, and the sharp edges of the fractures suggest that the bone was still "green" when the body was dismembered. The bones were well preserved, and were a medium reddish brown colour.

PATHOLOGIES:

Irregular perforations on talus and calcaneus.

Calcaneus Dx: Irregular perforation, surrounded by shallow pitting, on posterior talar articular surface, continuing on the corresponding facet on talus dx. A second, smooth, semi-oval lesion, c. 6.4 mm in diam, is situated between posterior and anterior talar facets on calcaneus.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-209 /2513	Bead	Faience bead	1	N
02-210 /2514	Bead	Faience bead	1	N
02-510a /2272	Bead	Faience bead	1	N
02-510b /2271	Bead	Faience bead	1	N

Skeleton (S): 8592 **No Skeleton In Grave:** ☐

DESCRIPTION:
Sex: ? **Age Group:** Juvenilis **Age:** 17-18
Stature: Not calculated
Burial Position: Not Applicable
Head Orientation: Not applicable
Hand Placement: Not applicable
Feet Placement: Not applicable
Burial Orientation (Head W of N,°):
Notes:

TAPHONOMY:
Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**
Notes:
Secondary juvenile bones in fill.

PATHOLOGIES: None Noted

No digital photos available for this burial

OBJECTS: No objects associated with this burial

Skeleton (S): 8593 **No Skeleton In Grave:** ☐

DESCRIPTION:
Sex: ? **Age Group:** Adult **Age:** 18-79
Stature: Not calculated
Burial Position: Not Applicable
Head Orientation: Not applicable
Hand Placement: Not applicable
Feet Placement: Not applicable
Burial Orientation (Head W of N,°):
Notes:

TAPHONOMY:
Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**
Notes:
Secondary adult patella in fill.

PATHOLOGIES: None Noted

No digital photos available for this burial

OBJECTS: No objects associated with this burial

Burial: 269

Date Opened: 3/6/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** TB **Phase:** Saite **MNI:** 2

Cut: 6229 **Fill:** 6228 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 66 x 21 cm

Earlier than: **ΔTop:** 17.17000 **Context Description:** Coffin child burial close to WOTC

Later than: **ΔBottom:** 17.09000

Coffin: 6230

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 65 x 16

Description: Only traces remain of coffin. Rectangular outline of mud around skeleton

Skeleton (P): 8098 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** .25-.75

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 78

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 10 **Preservation:** Poor

Notes:

A childburial with fragmented cranium, probably due to overburden pressure. The cranium had collapsed outwards, and the facial bones were largely eroded away. The mandibula had become disarticulated from the cranium and was lying superior up on the chest. There was also some disarticulation in the thorax area, probably due to the collapse of the ribcage. Hands and feet were not preserved, but at least the right arm was extended aloing the body.

PATHOLOGIES:

Small bone spurs bilaterally on medial aspect of proximal third of humeri, bilateral. Myositis ossificans?

Small bone spurs bilaterally on medial aspect of proximal third of humeri, bilateral. Myositis ossificans?

OBJECTS: No objects associated with this burial

Skeleton (S): 8783 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary adult Vertebra Lumbale in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 270

Date Opened: 3/6/2002 **Area:** WCE **Square:** 2.D5 **Excavator:** JOK **Phase:** Saite **MNI:** 1

Cut: 6234 **Fill:** 6235 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 14.1999998092650

Earlier than: 271 **ΔTop:** 17.46999 **Context Description:** Badly truncated child burial close to WOTC.

Later than: **ΔBottom:** 17.43000

Coffin: No Coffin

Skeleton (P): 8099 **No Skeleton In Grave:**

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 0-7

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:** Extremely Poor

Notes:

The skeleton was badly damaged by burial 271. Al that remained was some fragments of the skull and the proximal right humerus. The bones were brittle and had a yellowish gray colour with dark brown spots.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 271

Date Opened: 3/6/2002 **Area:** WCE **Square:** 2.D5 **Excavator:** JOK **Phase:** Saite **MNI:** 2

Cut: 6239 **Fill:** 6238 **Grave shape:** **Grave type:** **Dimensions:** 168 x 47 cm

Earlier than: **ΔTop:** 17.43000 **Context Description:** Late Period burial of WOTC..

Later than: 270 **ΔBottom:** 17.14999

Coffin: 6240

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** 38 x 32

Description: Only traces remain of coffin, no color preserved.

Skeleton (P): 8100

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 21-24

Stature: 153.69 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 100

Notes: 17-25=teeth, 21-23=epi-closure

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Good

Notes:

The skeleton was comparatively well preserved and the bones had a light reddish brown colour with darker patches. Upper body was tilted slightly to the right in the coffin. On the left parietal there was a fracture, probably perimortem.

PATHOLOGIES:

Caries
Abscess
Trauma or Dislocation
Cut in parietal, green fracture --> peri-mortem, but not long before.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-211a	Amulet	Wdjat incised	1	N
02-211b	Bead	Stone bead	1	N
02-211c	Bead	Faience bead	1	N

Skeleton (S): 8101 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: **Age Group:** InfansII **Age:** 5-6

Stature: Not calculated

Burial Position:

Head Orientation:

Hand Placement:

Feet Placement:

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

Fragments of a child skull in fill of 271. The skull bones did not match the fragments of burial 270, since the same part of the left parietal was represented in both burials. The bones were brittle with a yellowish gray colour.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 273

Date Opened: 3/6/2002 **Area:** WCE **Square:** 2.D5 **Excavator:** TW **Phase:** Saite **MNI:** 2

Cut: 6243 **Fill:** 6242 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 95 x 49 cm

Earlier than: **ΔTop:** 17.21999 **Context Description:** Infant burial alongside E face of WOTC

Later than: **ΔBottom:** 17.13999

Coffin: 6244

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** 19.5 x 13.6

Description: Only traces of receptacle - not visible in photos

Skeleton (P): 8102

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** 0-.2

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 0

Notes: Very poor preservation, likely damaged by falling rocks from the wall.

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 20 **Preservation:** Extremely Poor

Notes:

Not much remained of this childburial. Cranium, fragments of cervical and thoracic vertebrae, costae 1-3 sin and dx, scapula dx, humerus dx, the proximal epiphys of ulna dx, femur dx tibia dx and tibia et fibula dx were represented. There were bonestains in place of the tarsus. The bones were fragmented and had a yellowish white colour. There was some evidence of water erosion. It is also possible that the extent of fragmentation owes in part to blocks of limestone falling off the Wall of the Crow.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Skeleton (S): 8784 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Undet. **Age:** -

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary bones in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 274

Date Opened: 3/6/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 5887 **Fill:** 6245 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 81 x 36 cm

Earlier than: **ΔTop:** **Context Description:** Childburial abutting the WOTC, dug into OK ashy deposit

Later than: **ΔBottom:** 16.76000

Coffin: No Coffin

Skeleton (P): 8103 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** .5-1

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Not applicable

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 98

Notes: 700498-502 mislabelled as 275

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

The matrix around the skeleton was very damp at the time of excavation. Not many skeletal elements survived; cranium, costae sin and dx, coxae sin, Vert Lu 1-5 and Vert Th 12, the proximal epiphys of the right radius and tibiae et fibulae were represented. The cranium was fragmented and had a light reddish brown colour. The postcranial bones that remained were in fairly good condition, and had a darker reddish brown colour.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 275

Date Opened: 3/7/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** TW **Phase:** Saite **MNI:** 2

Cut: 6237 **Fill:** 6236 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 143 x 50 cm

Earlier than: 259, **ΔTop:** 17.17000 **Context Description:** Truncated Late Period burial at WOTC

Later than: 282 **ΔBottom:** 16.95999

Coffin: 6246

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 126 x 46

Description: Mask missing

Skeleton (P): 8104

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 25-30

Stature: 170.0 cm, +/- 3.218 cm

Burial Position: Extended, anterior down

Head Orientation: Crown of skull west, facing north

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 80

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Poor

Notes:

The burial was truncated at both ends, diagonally at the knees ang at a 90 degree angle at neck. Only the mandibula remained of the cranium. The skeleton was interred face down. The ossa longa were dark brown, the rest of the postcranial skeleton a slightly lighter reddish brown colour with darker patches. The bones of the hands were stretched out parallell between the femurs. The skeleton gave the impression of having been wrapped - the bones were lying quite close together in an orderly fashion. The left femur was inverted and lying anterior up, possibly dislodged when the burial was cut into.

OBJECTS: No objects associated with this burial

PATHOLOGIES:

Lipping
Porosity

Skeleton (S): 8594 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Undet. **Age:** -

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary bones in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 276

Date Opened: 3/7/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** TB **Phase:** Saite **MNI:** 1

Cut: 6248 **Fill:** 6347 **Grave shape:** **Grave type:** **Dimensions:** 162 x 34 cm

Earlier than: **ΔTop:** 16.96999 **Context Description:** Coffin burial without skeleton.

Later than: **ΔBottom:** 16.79000

Coffin: 6249

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 144 x 35

Description:

Skeleton (P): VS6249

No Skeleton In Grave: X

DESCRIPTION:

Sex: ? **Age Group:** Nosk. **Age:** -

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 97

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:** Extremely Poor

Notes:

There was no skeleton in this burial. An ashy deposit was found inside the coffin at the head end. No bones whatsoever.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 278

Date Opened: 3/10/2002 **Area:** WCE **Square:** 2.E5 **Excavator:** TB **Phase:** Saite **MNI:** 1

Cut: 6254 **Fill:** 6253 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 182 x 49 cm

Earlier than: **ΔTop:** 17.78000 **Context Description:** Late Period coffin burial at NE corner of WOTC

Later than: 295, **ΔBottom:** 17.27000

Coffin: 6259

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 176 x 39

Description: Molded mudmask with red, black and white color

Skeleton (P): 8106

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F? **Age Group:** Juvenilis **Age:** 12-15

Stature: Not calculated

Burial Position: Other

Head Orientation: Crown of skull west, facing south

Hand Placement: Not applicable

Feet Placement: Both feet pointing right

Burial Orientation (Head W of N,°): 79

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 30 **Preservation:** Fair

Notes:

The skeleton was a light reddish brown colour, the cranium a pinkish light gray with darker spots. The bones were comparatively well preserved. The trunk of the body was disarticulated in a way that suggested the body was interred in the coffin extended on its side. The legs were slightly tilted towards the right and so support this theory, as does the position of the skull. The coffin was intact, and too big for the skeleton.

PATHOLOGIES:

Enamel Hypoplasia
Caries
Supernumerary teeth

OBJECTS: No objects associated with this burial

APPENDIX I: BURIAL CATALOGUE

Burial: 279

Date Opened: 03/10/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** **Phase:** Saite **MNI:** 1

Cut: 6255 **Fill:** 6256 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 125 x 41 cm

Earlier than: 212 **ΔTop:** 18.302 **Context Description:** Truncated burial near WOTC

Later than: **ΔBottom:** 16.99

Coffin: No Coffin

Skeleton (P): 8107 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F **Age Group:** Senilis **Age:** 45-60

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Other

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 180

Notes: Skeleton truncated by 212. Arms are also missing, and femurs appear to have been torn out of the sockets. Reburial?

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Good

Notes:

The skeleton had been truncated by burial 212, and legs are missing - however, femurs are not cut, but the whole bone is missing, and hip sockets are empty. It is possible that truncation happened when bones were still green, and the legs became separated at the hip joint. Also, arms are completely missing, without truncation, again from the joint socket. No truncation here, so it appears the body was interred without arms? Perhaps without legs as well?

Also, scapulae positioned as if arms were pulled out of their sockets (see photo).

OBJECTS: No objects associated with this burial

PATHOLOGIES:

Vertebral Osteophytes	*Abscess*
Vertebral Lipping	*Spicules on Malleus dx.*
	Enlarged foramen corpus, c. 11 mm in diam, cavity extends through corpus of vertebra. Interior surface is irregular but smooth.
	Osteophytic growth and lipping on cervical, thoracic and lumbar vertebrae.

Burial: 282

Date Opened: 3/10/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Saite **MNI:** 2

Cut: 6261 **Fill:** 6262 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 172 x 36 cm

Earlier than: 275, **ΔTop:** 16.93000 **Context Description:** Adult burila under 275 and 259, close to WOTC

Later than: **ΔBottom:** 16.75

Coffin: No Coffin

Skeleton (P): 8110 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 18-25

Stature: 160.54 cm, +/- 2.732 cm

Burial Position: Extended, anterior up

Head Orientation: Other

Hand Placement: Other

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 82

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 20 **Preservation:** Poor

Notes:

Crown of skull was west, face south and chin on chest. Right hand on pelvis, left hand missing. Feet were missing.Burial 282 has been cut by several subsequent. burials. The left coxae, femur, patella, tibia et fibula and pedis was missing, as well as the distal right femur, the patella and the right tibia and pedis. The left side of the upper body is disturbed and the left arm is disarticulated, as well as the thorax, albeit not severely. There was extensive fracturing of the remaining ossa longa, both longitudinal and latitudinal. The bones were a dark reddish brown.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Skeleton (S): 8596 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Juvenilis **Age:** 10-24

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary juvenile bones in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

APPENDIX I: BURIAL CATALOGUE

Burial: 283

Date Opened: 3/11/2002 **Area:** WCE **Square:** 2.E6 **Excavator:** JOK **Phase:** Saite **MNI:** 1

Cut: 6263 **Fill:** 6264 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 133 x 31 cm

Earlier than: **ΔTop:** 17.78000 **Context Description:**

Later than: **ΔBottom:** 17.25

Coffin: No Coffin

Skeleton (P): 8111 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Juvenilis **Age:** 11-15

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Left hand on pelvis/femur, right extended

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 78

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 10 **Preservation:** Poor

Notes:

The burial has been truncated, and although no skeletal elements are missing except for the right knee, the right femur and coxae had become disarticulated and were not lying in anatomical position. The burial had also been "shortened" in that the pelvis was in line with the elbows. It is unclear whether this was caused by the truncation of the burial or in connection with the original interrement. It is possible that the skeleton was re-arranged to fit an encasement that has not survived, but no traces of such an encasement were found. The bones were a light yellowish gray colour with darker spots and were dry and very brittle at the time of excavation. There was extensive flattening of the ossa membri inferioris.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 284

Date Opened: 3/11/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** TW **Phase:** Saite **MNI:** 1

Cut: 6266 **Fill:** 6267 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 124 x 33 cm

Earlier than: 267, **ΔTop:** 16.95 **Context Description:** Child burial near WOTC

Later than: 291, **ΔBottom:** 16.69

Coffin: 6268

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 117 x 28

Description: Mask not preserved except for a few flecks of blue in the center, but traces of decoration in the chest region in red, white and black on yellow bottom.

Skeleton (P): 8112

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansI **Age:** 3-5

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Not applicable

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 94

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 50 **Preservation:** Poor

Notes:

The skeleton was tilted about 45 degrees with a southern dip and the bones were slightly disarticulated. The right femur was inverted and lying posterior up. The vertebrae were in disarray. The cranium was extensively fractured postmortem, possibly trowel damaged. Judging from the position of the various skeletal elements at the time of excavation it appears the body was tilted before it became skeletalized.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-252	Bead	metal bead	1	N
02-258	Cowrie Shell	Cowrie	1	N

PATHOLOGIES:

Enamel Hypoplasia

One LEH groove on each permanent central upper incisor, (unerupted).

APPENDIX I: BURIAL CATALOGUE

Burial: 285

Date Opened: 3/11/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Saite **MNI:** 2

Cut: 6269 **Fill:** 6270 **Grave shape:** Oval **Grave type:** Other **Dimensions:** 190 x 71 cm

Earlier than: 268 **ΔTop:** 17.29999

Later than: **ΔBottom:** 16.70000 0762939

Context Description: Burial with empty, intact coffin. An unusual number of grave goods suggests that the empty coffin was known to relatives at time of burial.

Coffin: 7438

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 184 x 34

Description:

Skeleton (P): VS7438

No Skeleton In Grave: X

DESCRIPTION:

Sex: **Age Group:** Nosk. **Age:** -

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** N/A **Preservation:** N/A

Notes:

There was no skeleton in this coffin, even though the coffin itself was intact. It was an adult sized coffin, and one of the richest graves excavated. Apart from the small objects there were also three pilgrim-flasks buried with this coffin.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-255	Bead	Faience bead	1	N
02-261a	Cowrie Shell	Cowrie	18	N
02-261b	Bead	Bead	1	N
02-261c	Bead	Bead	1	N
02-261d	Bead	Imitation cowrie	1	N
02-261e	Bead	Faience bead	1	N
02-261f	Bead	Faience bead	1	N
02-261g	Bead	Faience bead	1	N
02-261h	Bead	Faience bead	1	N
02-261i	Bead	Faience bead	1	N
02-261j	Bead	Bead	1	N
02-257	Bracelet	Jewelry	1	N
7444	Votive Vessel	Votive vessel	3	N

Skeleton (S): 8597 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Juvenilis **Age:** -

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes: One I1 sin 6-11 yrs old, one fragment of a juvenile long bone and one Ph pedis from fill. Secondary

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary bones in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 286

Date Opened: 3/11/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** PN **Phase:** Saite **MNI:** 2

Cut: 7440 **Fill:** 7441 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 106 x 40 cm

Earlier than: 212 **ΔTop:** **Context Description:** Truncated adukt burial near WOTC

Later than: **ΔBottom:** 16.88999

Coffin: 7442

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 90 x 24

Description: Coffin poorly preserved, and only lower part remains since burial was truncated. Appear to have been painted monochrome yellow.

Skeleton (P): 8113

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Senilis **Age:** 50-59

Stature: 152.22 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 22

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Fair

Notes:

The skeleton had been truncated at the waist. There were traces of the three lower lumbal vertebrae, and the hands had also escaped truncation, since they were positioned on the hips, curling around the proximal epiphyses of the femurs. The diaphyses of the remaining ossa longa were fairly well preserved, the pelvis, hands feet and joints were poorly preserved. The bones were a dark reddish bone where preserved.

PATHOLOGIES:

Lipping	
Periostosis	*Lipping and osteophytic growth on a medial and a distal Ph Manus. Peristosis in both fibulas.*

OBJECTS: No objects associated with this burial

Skeleton (S): 8598 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 0-7

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary infans bones in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 287

Date Opened: 3/11/2002 **Area:** WCE **Square:** 2.E6 **Excavator:** JOK **Phase:** Saite **MNI:** 1

Cut: 6265 **Fill:** 7443 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 82 x 33 cm

Earlier than: **ΔTop:** 17.54999 **Context Description:** Late Period burial to the E of burial 283. truncated by large pit, feet missing.

Later than: **ΔBottom:** 17.31999

Coffin: No Coffin

Skeleton (P): 8114 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 4-8

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Both hands extended at sides

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 78

Notes:

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 3 **Preservation:** Poor

Notes:

The skeleton was poorly preserved and shows signs of weathering (Behrensmeyer stage 1). The bones were a light yellowish gray colour with dark brownpatches.The body was truncated at the knees and the lower legs were missing. The coxae are lying parallel to each other, suggesting that the body was slightly tilted to its right side.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-260a	Cowrie Shell	Cowrie	5	N
02-260b	Bead	Faience bead	1	N
02-260c	Pendant	Wdjat incised	1	N
02-260d	Amulet	Wdjat bead	1	N
02-260e	Bead	Faience bead	1	N
02-260f	Amulet	Wdjat bead	1	N
02-260g	Bead	Faience bead	1	N

Burial: 288

Date Opened: 3/12/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** TW **Phase:** Saite **MNI:** 1

Cut: 7445 **Fill:** 7446 **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 87 x 31 cm

Earlier than: **ΔTop:** **Context Description:** Child burial in eroded coffin at WOTC

Later than: 293 **ΔBottom:** 16.79999

Coffin: 7447

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 83 x 27

Description: Only traces of coffin remain, eroded at E end

Skeleton (P): 8115

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 1-2

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 98

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

A poorly preserved child skeleton. There was extensive postmortem longitudinal fracturing of the ossa longa, paired with anterior posterior flattening of the same bones. The cranium was also fractured, but held together by the matrix inside the skull cavity. The skeleton had a metal bracelet on its left arm, and there was some discoloration of the lower arm bones. The thoracic vertebrae were reduced to bonestains.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-298a	Bead	Faience bead	1	N
02-298b	Amulet	Wdjat composite	2	N
02-298c	Bead	Faience bead	2	N
02-298d	Cowrie Shell	Cowrie	1	N
02-298e	Bead	Stone bead	1	N
02-298f	Pendant	Lotus bud	1	N
02-298g	Pendant	Lotus bud	1	N
02-298h	Bead	Stone bead	18	N
02-298i	Bead	Faience bead	29	N
02-289a	Pendant	Jewelry	1	N
02-289b	Pendant	Jewelry	1	N
02-290	Bead	Faience bead	4	N
02-297a	Earring/Ring	Jewelry	1	N
02-297b	Bead	metal bead	6	N
02-297c	Bead	metal bead	21	N
02-299a	Amulet	Wdjat composite	2	N
02-299b	Bracelet	Jewelry	1	N
02-266a	Bead	Wdjat composite	1	N
02-266b	Bead	metal bead	1	N
02-266c	Bead	Faience bead	1	N
02-267a	Bead	metal bead	5	N
02-267b	Bead	Faience bead	4	N
02-267c	Bead	metal bead	1	N
02-336	Earring	Jewelry	1	N

Burial: 290

Date Opened: 3/12/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 7450 **Fill:** 7451 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 102 x 28 cm

Earlier than: 192, **ΔTop:** 17.0 **Context Description:** Child burial near WOTC

Later than: 291 **ΔBottom:** 16.83

Coffin: No Coffin

Skeleton (P): 8117 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 1.335-2.665

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Both hands extended at sides

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 173

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Good

Notes:

The bones were a medium reddish brown. There was extensive postmortem fracturing to the calvarium and longitudinal fracturing of the right femur. There was also evidence of gnawing on the proximal left tibia. The postcranial bones with the exception of the femurs were otherwise fairly well preserved.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 291

Date Opened: 3/13/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 7453 **Fill:** 7454 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 196 x 56 cm

Earlier than: 290, **ΔTop:** 16.78000

Later than: **ΔBottom:** 16.54999

Context Description: Adult burial underlying burial 290. The east end of the coffin was close to the cut of 265, but it was not possible to determine if they were intercutting.

Coffin: 7455

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 193 x 43.6

Description: Nothing left of the face of the coffin. The wig is black, white, red and yellow, and appear to have traces of hieroglyphic inscription (on wig only) in blue. Cloth imprint on left wig lappet.

Skeleton (P): 8118

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 25-35

Stature: 149.64 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing north

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 96

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:** Fair

Notes:

A 10 cm strip at the center of the skeleton from the crown of the skull to the sacrum was very poorly preserved and crushed, probably due to the collapse of the coffin lid. The joints were also poorly preserved. The bones were a very dark reddish brown colour, with the exception of the cranium, which was a lighter reddish brown.

PATHOLOGIES:

Porosity
Porotic Hyperostosis

Calculus
Trauma or Dislocation

Porotic glenoid fossa on sin scapula, calculus on a few teeth and porotic hyperostosis on both parietals. Also, peri-mortem fracture on right frontal, at supraorbital ridge - oval depression. No evidence of healing, likely postmortem, but not long after death - mummification damage?

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-277	Bead			Y

Burial: 292

Date Opened: 3/13/2002 **Area:** WCE **Square:** 2.E6 **Excavator:** JOK **Phase:** Saite **MNI:** 1

Cut: 7456 **Fill:** 7457 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 161 x 34.5 cm

Earlier than: **ΔTop:** 17.76000 **Context Description:** Late Period burial at NE end of WOTC, directly north of 283 and 287

Later than: **ΔBottom:** 17.19000

Coffin: No Coffin

Skeleton (P): 8119 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F? **Age Group:** Maturus **Age:** 33-45

Stature: 154.50 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 87

Notes: On burialform is recorded a coffin, #7461. This was a mudwall which was mistakenly thought to be a coffin. Feature has been cancelled.

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

The skeleton was poorly preserved. There was extensive flattening of the ossa longa, and longitudinal fracturing. The cranium and pedis were a light yellowish gray, the rest of the skeleton was a light reddish brown colour. All bones had dark brown spots. The cortex of the ossa longa was very thin, but this appeared to be postmortem changes.

PATHOLOGIES:

Vertebral Osteophytes *Caries*
Lipping
Porosity

OBJECTS: No objects associated with this burial

Burial: 293

Date Opened: 3/13/2002 **Area:** WCE **Square:** 2.C7 **Excavator:** TW **Phase:** Saite **MNI:** 1

Cut: 7458 **Fill:** 7459 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 126 x 40.5 cm

Earlier than: 288 **ΔTop:** **Context Description:** Coffin child burial close to WOTC

Later than: **ΔBottom:** 16.61000

Coffin: 7460

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 118 x 31.4

Description: Mask is to poorly preserved for any features to be distinguishable, but there are remnants of molded wig lappets and a darker strip down the lid of the coffin.

Skeleton (P): 8120

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 5-9

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands crossed on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 115

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Fair

Notes:

The legs of the skeleton had been truncated, the left leg above and the right leg just below the knee. The cranium was lying on its side and flattened towards the sagittal plane. There was about 25 cm between the crown of the skull and the inside wall of the head end of the coffin, but if this was because the skeleton had slipped down in the coffin or it the coffin was simply too big for the child inside was difficult to tell due to the truncation of the coffin. The skeleton was slightly tilted to the south and was lying closer to the south coffin wall than the north, resting on its right humerus.

PATHOLOGIES:

Cribra Orbitalia

Enamel Hypoplasia
Caries
Dental disease - loss of teeth with resorption?

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-264	Other	iron tweezers	1	N
02-265	Other	faience tile	1	N

Burial: 294

Date Opened: 3/13/2002 **Area:** WCE **Square:** 2.C7 **Excavator:** TW **Phase:** Saite **MNI:** 2

Cut: 7462 **Fill:** 7463 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 146 x 38 cm

Earlier than: 234 **ΔTop:** 16.8 **Context Description:** Juvenile burial near WOTC

Later than: 302, **ΔBottom:** 16.49

Coffin: 7464

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 150 x 30

Description: Coffin truncated and poorly preserved, but traces of red paint remains, and a black headdress

Skeleton (P): 8121

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 10-12

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 114

Notes:

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 20 **Preservation:** Good

Notes:

The body was not centered in the coffin but lying against the northern coffin wall. The skeleton was truncated at the distal tibiae, and both the tibiae and the fibulae were twisted 90 degrees to the north. The ossa longa were flattened and crushed. The mandibula had disarticulated from the cranium, and there was also slight disarticulation of the rest of the skeleton with movement to the east of the thorax, pelvis and hand bones, possibly due to water activity. There were putrefaction or insect marks on the calvarium, and evidence of insect activity on the pelvis. The bones were a medium reddish brown and comparatively well preserved aside from the fracturing.

PATHOLOGIES:

Sulci instead of popliteal line on both tibiae.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-278a	Amulet	Wdjat incised	1	N
02-278b	Amulet	Wdjat incised	1	N

Skeleton (S): 8786

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Undet. **Age:** -

Stature: Not calculated

Burial Position:

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement:

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary costaefragments in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 295

Date Opened: 3/14/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Roman **MNI:** 2

Cut: 7465 **Fill:** 7466 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 162 x 51 cm

Earlier than: **ΔTop:** 17.42000 **Context Description:** Late Period burial north of B 270. Cut by pit feature (not burial) 6332.

Later than: **ΔBottom:** 17.06999

Coffin: 7469

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 148 x 44

Description: Only traces remain of coffin.

Skeleton (P): 8122

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 17-24

Stature: 160.51 cm, +/- 3.226 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Other

Feet Placement: Other

Burial Orientation (Head W of N,°): 93

Notes: 17-24=todd, 25-35=teeth

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 20 **Preservation:** Fair

Notes:

The upper half of the skeleton was a light reddish beige, the lower half a medium reddish brown. The bones were somewhat disarticulated and appeared to have been flushed down towards the foot end of the coffin, c.f. burial 294, probably due to water activity. The arms and the hand bones were moved but still in anatomical position relative to each other, suggesting that the displacement of the skeletal elements happened when ligaments were still holding the bones together. The mandible had disarticulated from the cranium. The lower legs were truncated just below the tibial foramen nutricium. Aside from disarticulation the skeleton was comparatively well preserved.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
7466	Votive Vessel	Votive vessel	1	N

PATHOLOGIES:

Enamel Hypoplasia

Skeleton (S): 8599 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Undet. **Age:** -

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary bones (juvenilis or adult) in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 296

Date Opened: 3/14/2002 **Area:** WCE **Square:** 2.E6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 7467 **Fill:** 7468 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 138 x 18 cm

Earlier than: **ΔTop:** 17.48 **Context Description:** Child coffin burial close to WOTC

Later than: 298 **ΔBottom:** 17.27

Coffin: 7470

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 133 x 12.8

Description: No color left on coffin, and only remnants of lid remain

Skeleton (P): 8124

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 2-4

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 91

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

The skeleton was slighly tilted to its right, and judging from the way the bones collapsed this was the position in which the body was originally interred, or at least it happened before skeletalization. There was a black organic matter covering the calvarium. It was also present in occasional patches on the postcranial skeleton. Possibly traces of resin and evidence of mummification? The burial was disturbed slightly during the excavation of the cut directly to the north, but was not cut by this burial originally. The bones themselves were a light yellowish gray and the ribs appeared to be slightly weathered. There was extensive fracturing to the midsection of the skeleton, from the 12th thoracic vertebrae to the tuberositas tibiae. The remainder of the skeleton was in a slightly better state of preservation.

OBJECTS: No objects associated with this burial

PATHOLOGIES:

Spicules on os malleus sin

Burial: 297

Date Opened: 3/16/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** TW **Phase:** Saite **MNI:** 1

Cut: 7471 **Fill:** 7472 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 202 x 53 cm

Earlier than: 305 **ΔTop:** **Context Description:** Adult burial near WOTC

Later than: 288 **ΔBottom:** 16.7

Coffin: 7473

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 187 x 34.2

Description: Not much color remains on coffin. Originally there was a molded face, but no facial features remain. Lines of darker mud down the lid of the coffin may suggest there were once wood supports in the lid.

Skeleton (P): 8125

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Maturus **Age:** 45-55

Stature: 145.47 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing north

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 94

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

The skeleton was a reddish brown colour with dark brown patches on femora only. The cranium and femora were flattened, and the right femur was curved, but this appeared to be pathological. The bones were not in a good state of preservation. The cranium was anterior up, but the mandibula had fallen down and was resting superior up on the cervical vertebrae, so that the mouth gaped open. There was plenty of room between the crown of the skull and the inside head end of the coffin.

PATHOLOGIES:

Porosity
Periostosis

Periodontal disease
Trauma or Dislocation

Arthritic changes on caput mandibula sin, healed fracture on tibia (and possibly femur) dx, periodontal disease with several teeth in maxilla lost premortem.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
Obj.No?	Other	pearl	1	N
02-507	Bead	pearl	1	N

Burial: 298

Date Opened: 3/16/2002 **Area:** WCE **Square:** 2.E6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 7474 **Fill:** 7475 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 93 x 24 cm

Earlier than: 296 **ΔTop:** 17.26000 **Context Description:** Child burial close to WOTC

Later than: **ΔBottom:** 17.22999

Coffin: No Coffin

Skeleton (P): 8126 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 2-4

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Other

Feet Placement:

Burial Orientation (Head W of N,°): 90

Notes: Litchics found in burial - possibly contemporary?

TAPHONOMY:

Truncated: No **Disarti. %:** 5 **Preservation:** Poor

Notes:

The bones were a medium reddish brown with occasional darker patches. There was extensive fracturing of the skull, and the calvarium had caved in. There was also extensive longitudinal fracturing to the ossa longa. This skeleton showed signs of having been very tightly wrapped. The arms were lying close together on top of the skeleton, and the legs were in superposition, the right over the left. The bones were in a poor state of preservation.

PATHOLOGIES:

Enamel Hypoplasia

Enamel hypoplasias on permanent upper central incisors and permanent lower lateral incisors.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-356	Bead	Imitation cowrie	1	N
	Other			
	Other			

Burial: 299

Date Opened: 3/16/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 7477 **Fill:** 7478 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 172 x 53 cm

Earlier than: 203 **ΔTop:** **Context Description:** Adult burial underlying bur 203, feet missing

Later than: **ΔBottom:** 16.95999

Coffin: No Coffin

Skeleton (P): 8127

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M? **Age Group:** Adultus **Age:** 25-35

Stature: 166.04 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes: Attrition 18-35, but all epi closed=25-35

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 1 **Preservation:** Fair

Notes:

The bones were a medium reddish brown with darker patches, mainly on the femora and tibiae. The skull was originally anterior up but the mandibula had disarticulated from the cranium so that the mouth gaped open. There was some horizontal fracturing of the ossa longa, and some dry bone fractures of the facial bones, but aside from that the skeleton was in comparatively good gondition. The metatarsals were not preserved.

PATHOLOGIES:

Vertebral Lipping

Caries
Periodontal disease

Lower M1 and M2 lost premortem, caries on M1 sup sin, and lipping on Lumbar 4 and 5

OBJECTS: No objects associated with this burial

APPENDIX I: BURIAL CATALOGUE

Burial: 301

Date Opened: 3/17/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 7479 **Fill:** 7480 **Grave shape:** Rectangular **Grave type:** Simple, sand-filled pit **Dimensions:** 210 x 60 cm

Earlier than: 231, **ΔTop:** 16.73999 **Context Description:** Adult burial just west of bur 291

Later than: **ΔBottom:** 16.44000

Coffin: 7481

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 202 x 57

Description: Mask deterirated, but surrounded by wig/headdress in blue and white. Red strip down the center - no inscription visible.

Skeleton (P): 8129 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F? **Age Group:** Maturus **Age:** 35-45

Stature: 157.74 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 96

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

The skull was originally anterior up, but the mandibula had disarticulated from the cranium and was resting superior up on the cervical vertebrae, so that the mouth gaped open. There was some fracturing to the left side of the face and frontale due to overburden pressure. The joints were poorly preserved and there was some flattening of the ossa longa. The bones were a medium reddish brown with darker areas on femora and tibiae. Manus, pedis, tibiae, costae 1 sin and dx and the occipital bone showed better preservation than the remainder of the skeleton.

OBJECTS: No objects associated with this burial

PATHOLOGIES:

Lipping	*Trauma or Dislocation*
Osteomyelitis	
Periostosis	*Fracture on occipital/parietal (healed) with inflammation of fracture site. Arthritic changes on phalanges pedis. Cloaca and osteomyelitis on fibula sin.*

Burial: 302

Date Opened: 3/17/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** TW **Phase:** Saite **MNI:** 1

Cut: 7482 **Fill:** 7483 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 147 x 51 cm

Earlier than: 304, **ΔTop:** **Context Description:** Child coffin burial cutting longside of 303 - first thought to be a double burial. However, 302 is actually cutting the pit of 302, though not the actual interrment - it is possible that the adult burial was known when the

Later than: 303 **ΔBottom:** 16.14999

Coffin: 7484

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 119 x 31

Description: Narrow molded mask, with remnants of white paint. Wig has remnants of black paint on it.

Skeleton (P): 8130

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 2-4

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 66

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

The skull was damaged and flattened, and there were few skeletal elements represented from this burial, even though the coffin was intact. There was an oval discoloration of the soil under the skeleton stretching from the midsection of where the ribcage would have been had it been preserved to mid-corpus of the right femur. The discoloration was interpreted as a bonestain. The bones that were represented were a very dark reddish brown.

PATHOLOGIES:

Cribra Orbitalia

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
7476	Votive Vessel	Votive vessel	1	N

Burial: 303

Date Opened: 3/17/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** TW **Phase:** Saite **MNI:** 1

Cut: 7485 **Fill:** 7486 **Grave shape:** **Grave type:** **Dimensions:** 212 x 76 cm

Earlier than: **ΔTop:** **Context Description:**

Later than: **ΔBottom:** 16.07999

Coffin: 7489

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 186 x 55.4

Description: Beautiful winged headdress - blue face with finely molded features and eyes outlined in black. Black oval (scarab?) on forehead. Winged headdress with red and yellow pattern around head - mid lappets of wig are blue, and ends of lappets have horizontal stripes in red, white and yellow. No color preserved on coffin body. Traces of wood remained

Skeleton (P): 8131

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 20-30

Stature: 172.16 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 78

Notes: teeth=25-35

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:** Poor

Notes:

The bones of this skeleton had erosion marks typical for dampness. (the outer surface of the bones eroded away.) The bones were soft, friable and very badly preserved. Traces of wood and possibly linen were found on the skeleton underneath the mask of the coffin. The fill of the grave immediately overlying the thorax and abdominal area was very dark and organic looking and had almost a velvety texture. It was sampled and awaits further analysis. The bones were a very dark reddish brown. Unfortunately most of the ossa longa were crushed when the grave was left open during lunch and dogs on the site got in to it.

PATHOLOGIES:

Enamel Hypoplasia

LEH on upper incisors

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-303	Bead	Bead	2	N
	Other	pearl	1	N
	Other	Other	1	N
02-312	Earring/Ring	Jewelry	1	N

Burial: 304

Date Opened: 3/17/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** TW **Phase:** Saite **MNI:** 1

Cut: 7487 **Fill:** 7488 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 53 x 21 cm

Earlier than: 238 **ΔTop:** **Context Description:** Infant burial near WOTC

Later than: 302/303 **ΔBottom:** 16.82

Coffin: No Coffin

Skeleton (P): 8132 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** .25-.75

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing north

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 45

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 10 **Preservation:** Fair

Notes:

The lower part of this burial was not recovered, but it was unclear whether this was due to excavations the season before, natural erosion or just differential preservation. It was not possible to define the limits of the cut. The burial was situated at the Western limits of the 2001 E-W sondage at WCE, in a slope. The bones were a brownish red, almost terra cotta coloured. There was nothing left of the skeleton below pelvis.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 305

Date Opened: 3/18/2002 **Area:** WCE **Square:** 2.C7 **Excavator:** TW **Phase:** Saite **MNI:** 1

Cut: 7490 **Fill:** 7491 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 193 x 49 cm

Earlier than: 297, **ΔTop:** **Context Description:** Late period coffin burial close to WOTC

Later than: **ΔBottom:** 16.37000

Coffin: 7492

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 176 x 42

Description: Finealy molded mask with facial features still preserved - traces of white on face. Head end of coffin is a bit "boxy", with squared corners on headdress. Traces of blue and red on coffin body.

Skeleton (P): 8133

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M? **Age Group:** Juvenilis **Age:** 15-18

Stature: 165.11 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Feet crossed, left over right

Burial Orientation (Head W of N,°): 117

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 5 **Preservation:**

Notes:

The skeleton was closely aligned with Northern coffin wall. The tibiae and femora had longitudinal cracks and were slightly disarticulated sideways, and the skull was deformed from pressure. The skeleton was affected by mold and showed marks on the bones, probably from decay of the body. The left femur was twisted 90 deg outwards, so that the caput femoris was pointing up. The skeleton was a darkj reddish brown with dark brown areas. The position of the skeleton in the coffin, the ribcage in particular, suggests the deceased was tightly wrapped at the time of interrment.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 306

Date Opened: 3/19/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** TW **Phase:** Saite **MNI:** 1

Cut: 7493 **Fill:** 7494 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 82 x 33 cm

Earlier than: 286 **ΔTop:** 17.08 **Context Description:** Infant burial, truncated by 286

Later than: **ΔBottom:** 16.93

Coffin: No Coffin

Skeleton (P): 8134 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** .5-1.5

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Other

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 32

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** **Preservation:** Extremely Poor

Notes:

The cranium and most of the skeletal elements from the right side of the body was missing in this burial. The bones were a dark reddish brown and very poorly preserved. The cranium was probably truncated by burial 286, the rest of the missing skeletal elements probably due to differential preservation.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 307

Date Opened: 3/19/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 7495 **Fill:** 7496 **Grave shape:** Rectangular **Grave type:** Simple, sand-filled pit **Dimensions:** 186 x 57 cm

Earlier than: **ΔTop:** 17.03 **Context Description:** Child burial at WCE, cutting burial 187 and wall6347.

Later than: 187 **ΔBottom:** 16.68

Coffin: 7497

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 181 x 45

Description: A relatively complete mask, black and yellow paint preserved. Face molded with facial details in black on yellow base - striped wig. Obs! Two sets of photos on mask. Coffin is adult sized.

Skeleton (P): 8135

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 7-10

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands crossed on pelvis/femur

Feet Placement: Feet crossed, right over left

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 2 **Preservation:** Fair

Notes:

The skeleton had slipped down about 50 cm towards the foot end of the coffin, which was again too big for the small child inside it. There were remnants of a black organic matter on the left femur, possibly resin. Evidence of mummification? There was a small hole on the laterally on the right fibula, which might be taphonomic or perimortem, it was difficult to determine. The cranium were slightly deformed due to pressure. The feet appeared to have been bound together or wrapped. The bones were a dark reddish brown and damp at the time of excavation.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 308

Date Opened: 3/21/2002 **Area:** WCE **Square:** 2.B6 **Excavator:** PN **Phase:** Saite **MNI:** 2

Cut: 7499 **Fill:** 7500 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 209 x 52 cm

Earlier than: **ΔTop:** 17.10000 **Context Description:** Adult burial near WOTC. No burials overlying it

Later than: **ΔBottom:** 16.96999

Coffin: 7501

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 182 x 49

Description: Badly preserved coffin, no mask remains

Skeleton (P): 8136

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Senilis **Age:** 60-79

Stature: 155.37 cm, +/- cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing north

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 5 **Preservation:** Poor

Notes:

There was extensive flattening and longitudinal cracking to the ossa longa. The feet were disturbed for reasons unknown - there were no visible graves in the immediate vicinity at the time of excavation. The radii and the ulnae had separated so that the ulnae were under the iliums and the radii on the pubis. The original position of the hands was determined to be on pelvis. Possibly the body of this individual was slightly decayed allready at the time of interment? The cranium was fractured postmortem and parts of the frontale and left parietal were not recovered. Ossa membri superioris were in a worse state of preservation than the rest of the skeleton, with the exception of the left radius et ulna. The bones were a light reddish brown.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-311	Cowrie Shell	Cowrie	1	N

PATHOLOGIES:

Vertebral Osteophytes	*Calculus*
Vertebral Lipping	
	Osteophytic growth and lipping on lumbar vertebrae.

Skeleton (S): 8600 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Juvenilis **Age:** 10-24

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary juvenile bones in fill.

PATHOLOGIES: None Noted

No digital photos available for this burial

OBJECTS: No objects associated with this burial

Burial: 309

Date Opened: 4/4/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 7521 **Fill:** 7498 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 82 x 37 cm

Earlier than: **ΔTop:** 16.99 **Context Description:** Child burial close to WOTC - not intercutting any other burials in the vicinity.

Later than: **ΔBottom:** 16.86

Coffin: No Coffin

Skeleton (P): 8137 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** .25-.75

Stature: Not calculated

Burial Position: Other

Head Orientation: Crown of skull west, facing north

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 5 **Preservation:** Extremely Poor

Notes:

The burial had been truncated diagonally midway, and the only skeletal elements that remained were cranium, claviculae, a few costae fragments, a lumbar and fragments of thoracic vertebrae, the right radius and the bones of the right hand. The cranium was crushed and flattened due to overburden pressure, and the skeleton was badly preserved. The bones were a dark reddish brown color. No other graves were truncating the burial, but the damage was not new.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 310

Date Opened: 3/26/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 7502 **Fill:** 7503 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 75 x 30 cm

Earlier than: 265, **ΔTop:** 17.17 **Context Description:** Childburial close to WOTC cut by 265 and 259.

Later than: **ΔBottom:** 16.77

Coffin: 7504

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 71.3 x 23

Description: Molded coffin - flat surface where mask should be. It is possible there was a wooden mask attached originally, which has not survived.

Skeleton (P): 8138

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 3.5-4.5

Stature: Not calculated

Burial Position: Other

Head Orientation: Crown of skull west, facing north

Hand Placement: Right hand on pelvis/femur, left extended

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 96

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 5 **Preservation:** Fair

Notes:

The skeleton was truncated at the knees, lower legs missing, and was lying slightly on its left side in an extended position, with the right hand on the pelvis and the left hand under the left femur. The femurs had slipped down slightly, probably due to the truncation. There was longitudinal dry bone fracturing to the femurs. The cranium had been slightly flattened towards the sagittal plane. The bones were a reddish brown colour and comparatively well preserved.

PATHOLOGIES:

Enamel Hypoplasia

Enamel hypoplasias on right lower deciduous canine.

OBJECTS: No objects associated with this burial

Burial: 311

Date Opened: 3/26/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 7505 **Fill:** 7506 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 169 x 47 cm

Earlier than: **ΔTop:** 17.14 **Context Description:** Adult burial, not underlying any other burials but cutting mudbrickwall 6409 and sunk into granite dust 6423.

Later than: **ΔBottom:** 16.75

Coffin: 7507

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 147 x 41

Description: Poorly preserved coffin, only preserved over face and chest area. Bluish white color traces.

Skeleton (P): 8139

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 20-25

Stature: 153.15 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Other

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 99

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Good

Notes:

There was a thin layer of bluish white colour covering the upper third of the skeleton. Possibly remnants of a cartonnage? There was some dry fracturing to the occipital and temporal bones of the cranium due to overburden pressure, and there was also some fracturing to the tibiae, but more like holes than longitudinal cracking. The joints were poorly preserved and the bones were damp at the time of excavation, but otherwise fairly well preserved. The skeleton was a dark reddish brown colour with dark brown areas except for the feet that were a medium reddish brown.

OBJECTS: No objects associated with this burial

PATHOLOGIES:

Vertebral Osteophytes	
Vertebral Lipping	*Osteophytic growth and lipping on cervical vertebrae.*
	Crowding of teeth and overbite.

APPENDIX I: BURIAL CATALOGUE

Burial: 312

Date Opened: 3/27/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Saite **MNI:** 2

Cut: 7508 **Fill:** 7509 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 201 x 50 cm

Earlier than: 311, **ΔTop:** 16.79999 **Context Description:** Juvenile burial close to WOTC

Later than: **ΔBottom:** 16.46999 9313354

Coffin: 7510

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 187 x 39.5

Description: No color remains on face. Wig is blue. Inscription down the front of coffin reads .....Pth-Skr-Wsr nb Ro-Setaw. Small narrow face, rounded head and foot nd

Skeleton (P): 8140 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M? **Age Group:** Juvenilis **Age:** 15-18

Stature: 159.02 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 165

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

The bones of the skeleton were a dark reddish brown colour with darker patches. There were remnants of a black organic matter on the right arm and on the femora, possibly resin and evidence of mummification. The bones where this material was present were also the most well-preserved of the skeleton. There was a depression fracture to the right temporal bone, and there were also fracturing to the left shoulder, and the acromion was not recovered. Both fractures looked postmortem, but old, possibly at the time of interrement. The bones were comparatively well-preserved, apart from the joints of the knees, the right shoulder joint and crista iliaca.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
Obj.No?	Other	pearl	1	N

PATHOLOGIES:

Porosity *Periostosis* *Cribra Orbitalia*	*Post mortem damage, possibly from preparation from burial* *Porosity on distal left humerus, bilateral cribra orbitalia and several post-mortem (but non-recent) fractures - deoression fracture on right temporal, acromion cut off (sharp edge, non-recent cut) and another cut with sharp edges on posterior/dorsal aspect of proximal third of right tibia. Mummification damage?*

Skeleton (S): 8787

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 1-2

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary MT in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 313

Date Opened: 4/2/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 7511 **Fill:** 7512 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 54 x 16 cm

Earlier than: **ΔTop:** 17.15999 **Context Description:** Disturbed infant burial directly on top of coffin of 314

Later than: 314 **ΔBottom:** 17.05999

Coffin: No Coffin

Skeleton (P): 8141 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** 0-.1675

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 63

Notes: Birth +/- 2 months

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 10 **Preservation:** Extremely Poor

Notes:

Almost nothing remains of this skeleton, only some costae and vertebral fragments, parts of a humerus and femur dx and fragments of the cranium. It was the skeleton of a small child, and from the position of the bones (they were lying in superposition, almost in a strip) it appeared the body had been tightly wrapped, c.f burial 298. The burial did not appear to be truncated, since the cut was still visible, so the poor preservation of the bones probably owed more to the fact that the grave was very shallow and got trampled than to disturbance in antiquity.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-432	Amulet	Wdjat bead	1	N

Burial: 314

Date Opened: 4/2/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 7513 **Fill:** 7514 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 212 x 53 cm

Earlier than: 313 **ΔTop:** 17.24 **Context Description:** Adult coffin burial directly under 313 and dug into OK wall at WOTC

Later than: 308, **ΔBottom:** 16.88

Coffin: 7515

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 192 x 41

Description: Mask is not very well preserved, but has traces of color (blue red and yellow at the top of the head, yellow, red and black below the face and on wig. Ends of wig lappets are decorated in a checkerboard pattern, and traces of an eye outlined in black is still visible. Yellow is used as a pattern color on the coffin, but in places where the color has worn off

Skeleton (P): 8142

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 18-35

Stature: 152.07 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Both feet pointing left

Burial Orientation (Head W of N,°): 99

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 2 **Preservation:** Good

Notes:

The skeleton had slipped down in the coffin, leaving ca 25 cm between the crown of the skull and the inside head-end of the coffin. The phalanges of the feet were slightly disarticulated, the metatarsals still in anatomical position, suggesting that the movement of the body inside the coffin took place after putrefaction had already set in, There were traces of insect activity on both iliums. The diaphyses of the ossa longa and the calvarium were in a better state of preservation than the rest of the skeleton.There was transverse comminuted postmortem fracturing to the ossa longa, and the right radius et ulna were slightly disarticulated, the ulna having moved laterally, leaving a ca 5 cm gap between the two bones. The skeleton was a dark reddish brown.

PATHOLOGIES:

Cribra Orbitalia
Porotic Hyperostosis

Enamel Hypoplasia
Caries
Calculus

Enamel hypoplasias; both linear and non-linear.
Cribra Orbitalia
Porotic Hyperostosis
Caries
Calculus

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-361	Bead	Bead	20	N
02-435	Bead	Bead	1	N
02-437	Bead	Bead	1	N

Burial: 315

Date Opened: 4/2/2002 **Area:** WCE **Square:** 2.B6 **Excavator:** JK **Phase:** Saite **MNI:** 2

Cut: 7516 **Fill:** 7517 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 50 x 32 cm

Earlier than: 308 **ΔTop:** 17.21 **Context Description:** Child burial close to OK wall in WCE

Later than: **ΔBottom:** 16.99

Coffin: 7518

Shape: Undetermined **Type:** Undetermined **Dimensions:** 10 x 5

Description: Only a a small patch of coffin bottom remains, no color left.

Skeleton (P): 8143

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 3-5

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 79

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

The skeleton had been truncated above pelvis, and the skull was trowel damaged. The bones were extremely fragmented and in a \very poor state of preservation. The only skeletal elements that remained were the cranium, the cervical vertebrae and fragments of the lower spine, the right scapula, the left humerus and two costae fragments. All bones in the thorax region reduced to bonestains, leaving an oval darker discoloration of the soil. The bones were a light yellowish brown to yellowish gray.

OBJECTS: No objects associated with this burial

PATHOLOGIES:

Enamel Hypoplasia

Linear Enamel Hypoplasia on both upper and lower permanent incisors (central and lateral) as well as all permanent canines.

Skeleton (S): 8788 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary adult cervicale and costae in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 316

Date Opened: 4/2/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** JK **Phase:** Saite **MNI:** 2

Cut: 7519 **Fill:** 7520 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 94 x 37 cm

Earlier than: **ΔTop:** 17.12 **Context Description:** Truncated child burial, dug into OK deposits and right next to big granite and limestone blocks.

Later than: **ΔBottom:** 16.98

Coffin: No Coffin

Skeleton (P): 8144 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** .5-1

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 318

Notes:

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 10 **Preservation:** Poor

Notes:

A badly preserved child skeleton. The burial had been truncated and some of the sin skeletal elements were missing due to this, other skeletal elements were reduced to bone stains. The bones of the skull were very brittle and the cranium was completely shattered. There was extreme fragmentation of the postcranial skeleton as well. The bones were a medium reddish brown.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-373	Bead	Faience bead	1	N
02-381	Bead	Faience bead	3	N
02-382	Bead	Faience bead	3	N
02-383a	Other	metal	1	N
02-383b	Cowrie Shell	Cowrie	1	N
02-384	Cowrie Shell	Cowrie	1	N
Obj.No?	Bead	Bead	1	N

Skeleton (S): 8789 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary MT in fill.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 320

Date Opened: 4/7/2002 **Area:** WCE **Square:** 2.E7 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 7530 **Fill:** 7529 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 235 x 53 cm

Earlier than: **ΔTop:** **Context Description:** Adult burial NE of the WOTC

Later than: **ΔBottom:** 16.82999

Coffin: 7531

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 185 x 34

Description: Only traces remain of coffin, around and ynder the sksleton. No lid.

Skeleton (P): 8148

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Adultus **Age:** 25-35

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands crossed on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 120

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

The anterior part of the skull was not recovered. Since the grave was very shallow and the area had been previously cleaned this was probably due to recent activities on the surface. The bones of the skeleton showed signs of erosion, the periosteum was eaten away on large parts of the skeleton. There was extensive flattening of the ossa longa paired with longitudinal cracking. The ribcage was almost enirely reduced to bone stains.The bones were a light yellowish gray with black spots.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

APPENDIX I: BURIAL CATALOGUE

Burial: 321

Date Opened: 4/7/2002 **Area:** WCE **Square:** 2.F7 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 7532 **Fill:** 7533 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 199 x 45 cm

Earlier than: 320 **ΔTop:** **Context Description:** Juvenile burial northeast of WOTC

Later than: **ΔBottom:** 16.57

Coffin: No Coffin

Skeleton (P): 8149 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Juvenilis **Age:** 12-18

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 98

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** **Preservation:**

Notes:

The cut of this burial was truncated, but not the skeleton itself. The bones were damp at the time of excavation, very soft and friable, and the periosteum was eroded away in places. There was extensive flattening and cracking to the ossa longa, and there was also a dark organic matter both over and under the legs, from about midway of the femoral diaphys to midway on the tibial diaphys, possibly remnants of wrapping? The same organic matter was also found in a thinner layer on the skull and across the shoulders. There was a dark discoloration of the soil in the thorax area, possibly remnants of the same organic matter. The bones were a medium reddish brown with dark reddish brown spots. The postcranial skeleton was very poorly preserved, the cranium slightly better preserved.

OBJECTS: No objects associated with this burial

PATHOLOGIES:

Enamel Hypoplasia
Caries

LEH on 15, but pit defect (not linear) EH on 22.
Caries on 18, 19 and 30.

Burial: 326

Date Opened: 4/10/2002 **Area:** WCE **Square:** 2.D7 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 5878 **Fill:** 5871 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 87 x 27 cm

Earlier than: **ΔTop:** 17.14 **Context Description:** Child burial dug into granite dust approx. 6-7 m from WOTC. No other burials above or below.

Later than: **ΔBottom:** 16.95

Coffin: No Coffin

Skeleton (P): 8154 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 1-2

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing north

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 85

Notes:

TAPHONOMY:

Truncated: Modern **Disarti. %:** **Preservation:**

Notes:

The cut of this burial had been truncated when the E-W trench near the Wall of the Crow was cut in the 2001 season, and some of skeletal elements not represented in the grave had probably fallen out of the baulk when it eroded. The skull had also been exposed for some time at the time of excavation. The only skeletal elements that remained from the right side of the body (including the cranium) at the time of excavation were a fragment of the right ilium, the proximal third of the femur, the distal third of the tibia and a few phalanges pedis. The bones were a medium reddish brown and quite well preserved, especially when considering the exposure. Aside from the burial items recorded at the time of the excavation there was also a faiance wdjat plaque (object number ?) that we suspect might originate from this burial. It was recovered below the grave in the E-W trench after it fell out of the baulk.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-417a	Bead	metal bead	1	N
02-417b	Bead	Faience bead	1	N

PATHOLOGIES:

Porotic Hyperostosis

Porotic Hyperostosis on both parietals.
Porosity on external auditory canal - ear infection?

Burial: 327

Date Opened: 4/10/2002 **Area:** WCE **Square:** 2.B8 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 6121 **Fill:** 6133 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 171 x 58 cm

Earlier than: **ΔTop:**

Later than: **ΔBottom:** 16.74

Context Description: Burial had been truncated both recently (by section from 2001) and in antiquity - lower legs missing. The bones were also lying in a jumble inside the remnants of the coffin.

Coffin: 6167

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** 136.5 x 40

Description: Only part of the bottom of the coffin is preserved under the skeleton. It was not possible to tell the shape of the coffin. No paint or decoration was found.

Skeleton (P): 8155

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F? **Age Group:** Adultus **Age:** 18-25

Stature: 157.61 cm, +/- 2.517 cm

Burial Position: Extended, anterior up

Head Orientation: Other

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 353

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 95 **Preservation:** Fair

Notes:

The skeleton was truncated both recently and in antiquity. A recent archeological section had been cut through the top part of the calvarium. The skeleton had also been truncated slightly below tuberositas tibiae, bilaterally. The feet bones that were recovered were lying in the area of the proximal tibiaes. The femurs were lying above the tibiae, but there was a gap of ca 15 cm between the different skeletal elements. The femora were also twisted a 90 degree angle, c.f burial 219. Coxae dx was lying on top of the femurs, and between the femora and skull the rest of the postcranial skeleton was lying in a jumble. The bones are awaiting analysis in the store room, and at the moment it is very hard to determine whether the disarticulation of this individual was deliberate or taphonomical. There was no evidence for other burials in the immediate vicinity, so it was also hard to explain why the lower legs were missing. It could be that the body of this person met with a similar fate as that of the individual in 324. Since only the upper part of the coffin bottom was preserved it is very hard to tell. The bones were a light reddish brown in the upper part of the burial and a medium reddish brown in the lower part of the burial, and comparatively well preserved, although there was some longitudinal cracking to

OBJECTS: No objects associated with this burial

PATHOLOGIES:

Femoral anteversion, bilateral

Burial: 328

Date Opened: 4/10/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 6166 **Fill:** 6174 **Grave shape:** Rectangular **Grave type:** Simple, sand-filled pit **Dimensions:** 90 x 23 cm

Earlier than: 330 **ΔTop:** 17.26 **Context Description:** Child burial without coffin close to WOTC, underlying burial 330

Later than: **ΔBottom:** 16.94

Coffin: No Coffin

Skeleton (P): 8156 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 2-4

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 96

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Poor

Notes:

The crown of the skull was truncated, but it was very difficult to determine whether by the baulkline or by burial 265, since 265 was oriented directly N-S and subsequently perfectly aligned with the baulkline.The fractures to the skull did appear to be recent, though. Burial 328 was also truncated by 330, and the bones from the right side of the postcranial skeleton were not recovered. The bones were a very dark brown colour and were with the exception of the cranium and vertebral column comparatively well preserved. There was an oval postmortem hole on the frontal bone.

PATHOLOGIES:

Cribra Orbitalia — *Porosity on dx zygomaticum as well.*

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-435	Bead	Stone bead	1	N

Burial: 329

Date Opened: 4/10/2002 **Area:** WCE **Square:** 2.C8 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 6252 **Fill:** 6209 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 100 x 31 cm

Earlier than: 331 **ΔTop:** **Context Description:** Child burial inside a large, probably older burialcut c. 15 m east of the WOTC

Later than: 336 **ΔBottom:** 16.75

Coffin: No Coffin

Skeleton (P): 8157 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 3-5

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Other

Hand Placement: Other

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 127

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 2 **Preservation:** Poor

Notes:

The skeleton had been truncated both recently and in antiquity. There was a section cut through the crown of the skull from when the 2001 N-S trench was laid out, and the skeleton had also been truncated diagonally, from the left shoulder to the right proximal tibia by burial 336. When excavating burial 336 it was recognized that 336 had been truncated by unknown activities, and it is possible that these activities were also responsible for the truncation of the lower legs of burial 329, but this could not be determined since no more excavation was done in the immediate area. The left arm and hand and both legs and feet except for the proximal right femur were not recovered, as well as the left coxae. No vertebraes and no sacrum were preserved. The cranium was in fair condition apart from the truncation, and there was an oval postmortem hole on the left side of the frontale. Postcranial bones were poorly preserved. The skeleton was a light reddish brown colour.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-419	Cowrie Shell	Cowrie	26	N
02-418	Bead	Faience bead	1	N
02-431	Bead	Faience bead	1	N

PATHOLOGIES:

Cribra Orbitalia *Porosity in orbits and ectocranially on frontal bone.*

Burial: 330

Date Opened: 4/11/2002 **Area:** WCE **Square:** 2.D6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 7550 **Fill:** 7551 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 203 x 38 cm

Earlier than: **ΔTop:** 17.27 **Context Description:** Adult burial SE of WOTC

Later than: 328 **ΔBottom:** 16.88

Coffin: 7552

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 184 x 45

Description: Very poorly preserved. Whitewashed, no signs of other colors. Mask made in relief, but no facial features remain. Only mask part of coffin preserved.

Skeleton (P): 8158

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 35-45

Stature: 165.37 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Other

Feet Placement:

Burial Orientation (Head W of N,°): 95

Notes:

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 10 **Preservation:** Fair

Notes:

The very top of the coffin was truncated, but it was very difficult to determine whether by the baulkline or by burial 265, since 265 was oriented directly N-S and subsequently perfectly aligned with the baulkline. This truncation did not affect the skeleton, but the grave was also truncated by the cut of a sandfilled pit, Feature 6474, which had crushed the facial bones of the cranium and caused slight disarticulation of the thorax. Also, most of the left humerus was not recovered, and the right humerus was crushed. This pit was first thought to be a burial, but did not contain any bones. Burial 330 was itself cutting burial 328, which was directly south, and there was also a cut visible in the section of the burialpit, of a as of yet unnamed burial. There was slight longitudinal cracking to the femora, but aside from that and the fractures caused by the truncation the bones were in good condition. The skeleton was a light reddish brown colour.

OBJECTS: No objects associated with this burial

PATHOLOGIES:

Vertebral Osteophytes *Caries*
Vertebral Lipping

Osteophytic growth and lipping on thoracic and lumbar vertebrae and one Ph pedis. Caries on lower incisors.

Burial: 331

Date Opened: 4/11/2002 **Area:** WCE **Square:** 2.B8 **Excavator:** PN **Phase:** Saite **MNI:** 2

Cut: 7553 **Fill:** 7554 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 196 x 55 cm

Earlier than: **ΔTop:** 16.84 **Context Description:** Adult burial c. 14 m east of WOTC

Later than: 329 **ΔBottom:** 16.46

Coffin: 7555

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 183 x 40

Description:

Skeleton (P): 8159

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Maturus **Age:** 35-45

Stature: 165.78 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 124

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

The left arm was crushed from mid-humerus down, and the left femur was fractured postmortem. The left ilium was also crushed. Most likely this was recent damage to the bones, since the grave was discovered in 2001 but left in situ. The joints were badly preserved, and there was some transverse cracking to the ossa longa. The ribcage was reduced to bonestains. The cranium, lower left arm, patellae and pedis were better preserved than the rest of the skeleton. The bones were a medium reddish brown with darker patches except for the left femur that was a grayish white colour.

OBJECTS: No objects associated with this burial

PATHOLOGIES:

Caries
Trauma or Dislocation
Vertebral Osteophytes
Vertebral Lipping
Periostosis
Cribra Orbitalia

Slight osteophytic growth and lipping on sacrum promontorium and lumbar vertebrae 1-5
Three ve Th fragment (arcus) show ligamenta flava
Mild Cribra Orbitalia
Large cavity on M3 inf sin and interproximal caries on P1 inf dx
PNB on tibia and fibula dx
Possible healed fracture (Colles?) on ulna dx - styloid process missing.

Skeleton (S): 8582 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes: Secondary bones in fill of burial 331 - fragmented femur, ulna and scapula, costae and a fragmented cranium. Measurment was taken on Cav Glen dx, indicates male sex.

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary bones in fill of burial 331 - fragmented femur, ulna and scapula, costae and a fragmented cranium. Measurment was taken on Cav Glen dx, indicates male sex.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 332

Date Opened: 4/21/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 7556 **Fill:** 7557 **Grave shape:** Rectangular **Grave type:** Simple, sand-filled pit **Dimensions:** 195 x 56 cm

Earlier than: 265, **ΔTop:** 16.63 **Context Description:** Adult burial c 5 m east of WOTC

Later than: 262 **ΔBottom:** 16.34

Coffin: 7558

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 186 x 50.5

Description: The coffin is fragmented, and the face (mask) is missing completely, with only a round/oval hole where it should have been. As the coffin itself is fairly well shaped and appears t have been nicely decorated, it is possible that the mask part of the coffin was originally wood, which has deteriorated, leaving the oval void behind.

Skeleton (P): 8160

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 20-25

Stature: 169.16 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 96

Notes: JOK notebook entered

TAPHONOMY:

Truncated: No **Disarti. %:** 2 **Preservation:** Fair

Notes:

Burial 332 appears to be cutting and not cut by burial 265. It was hard to determine though, because the section of 2.C7/2.C6 was laid out exactly where they join, before the burials were recognized. The coffin but not the skeleton is damaged at the foot-end by unknown activities - there were no known burials in the immediate vicinity. The mandible had disarticulated slightly from the cranium so that the mouth gaped open. The feet were extended at the time of excavation but were probably flexed upwards at the time of interrement and fell down when putrefaction set in. This suggests that the coffin did not collapse until after the body inside was skeletalized. With the exception of the spinal column and the ribs the skeleton was comparatively well-preserved. There was some flattening to the distal femurs, but not much. The bones were a medium reddish brown with darker patches on the ossa longa, and were somewhat damp at the time of excavation.

OBJECTS: No objects associated with this burial

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Cribra Orbitalia

Slight lipping and osteophytic growth on Ve Ce
Porosity on Ve Th 1-4
Ligamentum Flavum on Ve Th

Slight Cribra Orbitalia
Caries on both inferior third molars

Burial: 333

Date Opened: 4/21/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** JK **Phase:** Saite **MNI:** 4

Cut: 7560 **Fill:** 7559 **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 129 x 52 cm

Earlier than: **ΔTop:** 17 **Context Description:** Child burial covered with stones, near WOTC

Later than: 335 **ΔBottom:** 16.85700

Coffin: 7561

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 105 x 15

Description: Only traces remain of coffin, no sign of lid.

Skeleton (P): 8161

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 2-4

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 80

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 3 **Preservation:** Poor

Notes:

Badly preserved childburial that was covered with a large amount of stones, probably intentionally to keep it from being truncated. There was 37 kg of granite blocks and 117 kg large limestones on top of the burial. The weight of the stones probably contributed to the poor preservation. There were also a large amount of secondary bones in the fill. The facial bones were crushed, and the mandibula had disarticulated from the cranium and slipped down slightly. The pelvis and most of the ribcage were not recovered, and there was a dark discoloration where the lower ribcage would have been. The right radius and proximal femur were missing as well as claviculae, scapulae, manus, pedis, ulna sin, distal radius sin, proximal tibia sin and fibulae. The bones were a light reddish brown colour. The tibiae and distal left femur were better preserved than the rest of the skeleton.

PATHOLOGIES:

Cribra Orbitalia

Slight Cribra

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-501	Other	shist sherd	1	N
02-505	Bead	Imitation cowrie	1	N
02-473	Cowrie Shell	Cowrie	5	N
02-471	Bead	shell bead	1	N
02-472	Cowrie Shell	Cowrie	2	N

APPENDIX I: BURIAL CATALOGUE

Skeleton (S): 8162 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes: Secondary adult bones in fill of burial 333.

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary adult bones in fill of burial 333.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Skeleton (S): 8584 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 0-7

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes: Secondary child bones in fill of burial 333.

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary child bones in fill of burial 333.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Skeleton (S): 8585 — **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 5-14

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes: Secondary bones from a child in fill of burial 333.

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Secondary bones from a child in fill of burial 333.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

APPENDIX I: BURIAL CATALOGUE

Burial: 335

Date Opened: 4/22/2002 **Area:** WCE **Square:** 2.C6 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: 7563 **Fill:** 7564 **Grave shape:** Anthropoid **Grave type:** Simple, sand-filled pit **Dimensions:** 200 x 65 cm

Earlier than: 333 **ΔTop:** 17.09000 **Context Description:** Adult burial dug into OK wall near WOTC

Later than: **ΔBottom:** 16.64999

Coffin: 7565

Shape: Other **Type:** Mudcoffin, plain **Dimensions:** 199 x 49

Description: Coffin has a rounded head-end and a rectangular foot-end. Only traces remain of the lid along the upper right side of the coffin and the foot-end, and no paint was preserved. A possible explanation to the poor preservation could be that this burial as well was covered in stones, although not to the extent of burial 333, which was right next to it. Possibly

Skeleton (P): 8163

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 35-50

Stature: 169.50 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement:

Burial Orientation (Head W of N,°): 104

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 2 **Preservation:** Good

Notes:

This burial underlaid burial 333, and was partly covered by stones in the same manner as 333, although not to the same extent. (35 kg granite and 39 kg limestones) It is possible that the stones covering 333 were originally placed over this burial and moved. The feet of this skeleton were pointing straight up, as if they were bound at the time of interrment. They were not resting on the coffin wall, and the phalanges had fallen backwards as the body decayed, and were resting plantar up un the metacarpals at the time of excavation. The left femur was twisted slightly inwards at the distal end. There was some recent fracturing to the calvarium, and slight longitudinal and transverse cracking to the ossa longa. The skeleton was comparatively well preserved, and the bones were a medium reddish brown colour. The bones were somewhat damp at the time of excavation.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
02-504	Bead	Faience bead	1	N

PATHOLOGIES:

Vertebral Osteophytes	*Trauma or Dislocation*
Vertebral Lipping	
Schmorl's nodes	*Osteophytes on entire spine.*
	One broken rib (rib 6 dx)
	Schmorl's on Th 8 and 9

Burial: 336

Date Opened: 4/23/2002 **Area:** WCE **Square:** 2.C9 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 7566 **Fill:** 7567 **Grave shape:** Rectangular **Grave type:** Simple, sand-filled pit **Dimensions:** 90 x 36 cm

Earlier than: 329 **ΔTop:** 17.37000 **Context Description:** Child burial close to WOTC under burial 329

Later than: **ΔBottom:** 16.59000

Coffin: No Coffin

Skeleton (P): 8164 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 3-5

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

When excavating this burial it was recognized that it had been truncated diagonally from the right pubis to the left distal femur by unknown activities, and it is possible that these activities were also responsible for the truncation of the lower legs of burial 329, but this could not be determined since no more excavation was done in the immediate area. This burial was at a lower elevation than 329, but appeared to be later and cutting 329. The cranium was crushed, and many skeletal elements were missing. In spite of the otherwise poor preservation the dorsal half of the ribcage had not collapsed, but was still lying in more or less anatomical position, like a bowl. There was extensive cracking, both transversal and longitudinal, to the ossa longa. The postcranial skeleton was a very dark reddish brown, the skull a light reddish gray.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
	Other			

PATHOLOGIES:

Cribra Orbitalia

Burial: 337

Date Opened: 4/24/2002 **Area:** WCE **Square:** 2.B6 **Excavator:** PN **Phase:** Saite **MNI:** 1

Cut: 7568 **Fill:** 7569 **Grave shape:** Rectangular **Grave type:** Simple, sand-filled pit **Dimensions:** 221 x 66 cm

Earlier than: **ΔTop:** 16.99 **Context Description:** Adult burial just south of east end of WOTC. Not intercutting with any other burials.

Later than: **ΔBottom:** 16.67

Coffin: 7570

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 185 x 45.5

Description: Head end of coffin destroyed, but lappets of wig have black, yellow and red stripes.

Skeleton (P): 8165

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Maturus **Age:** 35-45

Stature: 146.13 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 98

Notes:

TAPHONOMY:

Truncated: Modern **Disarti. %:** 0 **Preservation:** Fair

Notes:

The cranium had been exposed earlier in the season, and there was nothing left of the facial bones at the time of excavation. It is possible that the cranium got damaged by trowelling when the area was cleaned. There was an abnormal curvature of the spine which appeared to be taphonomical. The skeleton was lying very close to the head-end of the coffin, with about 40 cm to spare at the foot end, so possibly the body slipped inside the coffin and this movement caused the curving of the spine. The distal right femur and proximal right tibia were crushed, and there was slight transverse cracking of the ossa longa, but aside from that the postcranial skeleton was well preserved. The bones of the upper body were a medium reddish gray-brown, the legs and the hands that were positioned in between the proximal femurs were a dark reddish brown colour.

OBJECTS: No objects associated with this burial

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping

Burial: 338

Date Opened: 1/4/2004 **Area:** NSGH **Square:** 4.Q4 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 36 x 30 cm

Earlier than: **ΔTop:** **Context Description:** A childburial situated in one of the rooms and close to the wall in NSGH

Later than: **ΔBottom:** 16.46999

Coffin: No Coffin

Skeleton (P): 20439 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** .665-1.335

Stature: Not calculated

Burial Position: Other

Head Orientation: Crown of skull west, facing north

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 135

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 10 **Preservation:** Extremely Poor

Notes:

Burial exposed somewhat during previous seasons; then covered and plateaued. Truncated in antiquity, above pelvis, and right part of skull completely gone.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
	/1209a	Bead	Faience bead	2	N
714	/1209b	Amulet	Wdjat incised	1	N
727	/1252	Amulet	Wdjat incised	1	N

Burial: 339

Date Opened: 2/4/2004 **Area:** NSGH **Square:** 4.Q4 **Excavator:** **Phase:** Roman **MNI:** 2

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 145 x 58 cm

Earlier than: **ΔTop:** **Context Description:** LP burial cutting wall 3063. Was given F# 3546 by Mohsen - plateaued and trowel damaged from exposure.

Later than: 368 **ΔBottom:** 16.45

Coffin: No Coffin

Skeleton (P): 20507 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 40-45

Stature: 164.65 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

PATHOLOGIES:

Schmorl's nodes	*Trauma or Dislocation*
	Flattening of proximal third of femoral diaphys, with pronounced muscle attachments/linea glutea.
	Schmorl's nodes on T11 and T12 caudally, L4 caudal and L5 cranial
	Flattening of proximal third of femoral diaphys, with pronounced muscle attachments/linea glutea.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
	Other	metal slag	1	

Skeleton (S): 21006 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Adultus **Age:** 17-25

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes: Secondary bones in fill. Probably the truncated parts of burial 368.

No digital photos available for this burial

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 340

Date Opened: 1/12/2004 **Area:** NSGH **Square:** 4.Q4 **Excavator:** TB **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Other **Dimensions:** 85 x 33 cm

Earlier than: **ΔTop:** 17.37000 **Context Description:** A primary grave dug into wall:3070 in NSGH.

Later than: **ΔBottom:** 16.63999

Coffin: 20426

Shape: Other **Type:** Mudcoffin, plain **Dimensions:** 127 x 22

Description: Round head end - square footbox. No color remains now - photos from 2001 shows the coffin was better preserved when first exposed. The msk had a molded face with delicate nose and a wig, some yellow color preserved on the wig.

Skeleton (P): 20435

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 1-2

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes: See burialform.

TAPHONOMY:

Truncated: Modern **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Facial bones were missing, only the calott remained intact, and some of the maxilla and mandible. Although, according to Mark the facial bones was previously visible and photos taken before the burial was backfilled. Postcranial skeleton was in rather good condition.

PATHOLOGIES:

Cribra Orbitalia

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
666	/1200	Scarab	Scarab	1	N
670	/1202	Amulet	Horus falcon	1	N
671	/1203	Bead	metal bead	2	N
672	/1210	Cowrie Shell	Cowrie	1	N
673	/1201	Earring	Jewelry	1	N

Burial: 343

Date Opened: 1/15/2004 **Area:** NSGH **Square:** 4.R6 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Other **Dimensions:** 204 x 60 cm

Earlier than: **ΔTop:** **Context Description:** Lp burial with coffin in room in NSGH. In wall. Not intercutting with any other burials.

Later than: **ΔBottom:** 16.5

Coffin: 20431

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 1.94 x 45

Description: No mask preserved. Coffin has fairly thick walls.

Skeleton (P): 20436

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 18-23

Stature: 162.34 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:** Good

Notes:

Well preserved skeleton - skull crushed by dogs after exposure, pelvis fragmented. Burial had been plateaued in 2001, but bones almost completely were covered by the coffin.

PATHOLOGIES:

Calculus

Slight calculus

OBJECTS: No objects associated with this burial

Burial: 344

Date Opened: 1/21/2004 **Area:** NSGH **Square:** 4.Q4 **Excavator:** **Phase:** Roman **MNI:** 2

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 226 x 110 cm

Earlier than: **ΔTop:** **Context Description:** Burial in a room in NSGH. In wall 3185

Later than: **ΔBottom:** 16.60

Coffin: 20451

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 202 x 46

Description: Not much remains of the mask and wig, but some color (yellow, black, white) remains on wig. Wig has black stripes and a checkerboard pattern at bottom of lappets.

Skeleton (P): 20450

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 25-35

Stature: 163.74 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing north

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 105

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Schmorl's nodes
Cribra Orbitalia
Porotic Hyperostosis
Caries
Abscess

Healing cribra, some porosity on temporal sin.
Osteophytic groth and lipping on both cervical, thoracic and lumbar vertebrae; schmorl's nodes on Ve Lu 4 and 5
Defect on Ve Th body 1
One rib fracture (healed), right side
Arthritic changes to left glenoid fossa
Caries on M1 and M2 inf sin and M2 sup dx (buccally) and abscess in place of M1 inf dx.

OBJECTS: No objects associated with this burial

Skeleton (S): 21280

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Undet. **Age:** -

Stature: Not calculated

Burial Position:

Head Orientation:

Hand Placement:

Feet Placement:

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 345

Date Opened: 1/20/2004 **Area:** NSGH **Square:** 4.S6 **Excavator:** **Phase:** Roman **MNI:** 2

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 208 x 60 cm

Earlier than: **ΔTop:** **Context Description:** Plateaued burial on North street, next to NSGH

Later than: **ΔBottom:** 15.62

Coffin: No Coffin

Skeleton (P): 21005 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Senilis **Age:** 50-60

Stature: 165.94 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

This was a plateaued burial without a coffin so therefore the skeleton was not so well preserved. Insect activity on both femora.

PATHOLOGIES:

Vertebral Osteophytes	*Caries*
Vertebral Lipping	
Lipping	*Extensive osteophyte formation on entire spine, Ve Ce 4 and 5 are fused.*
Eburnation	*Arthritic changes in left wrist, hip and both shoulders.*
Porosity	*Slight Cribra Orbitalia.*
Cribra Orbitalia	*Caries on M2 sup sin (15)*

OBJECTS: No objects associated with this burial

APPENDIX I: BURIAL CATALOGUE

Skeleton (S): **21282** **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 0-7

Stature: Not calculated

Burial Position:

Head Orientation:

Hand Placement:

Feet Placement:

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 347

Date Opened: 1/4/2004 **Area:** NSGH **Square:** 4.R4 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 205 x 61 cm

Earlier than: 348 **ΔTop:** 17.29000 **Context Description:** Badly truncated burial, with only lower legs/feet and skull intact

Later than: **ΔBottom:** 16.5

Coffin: 20459

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 177 x 36

Description: Poorly preserved mask with red and yellow color traces

Skeleton (P): 20444

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Senilis **Age:** 45-60

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Not applicable

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 230

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Poor

Notes:

Severaly truncated skeleton (by another grave, 348) - only skull and lower legs and feet remain

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 348

Date Opened: 1/22/2004 **Area:** NSGH **Square:** 4.R4 **Excavator:** **Phase:** Roman **MNI:** 2

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 204 x 87 cm

Earlier than: **ΔTop:** 17.06999 **Context Description:** This burial cuts burial 347

Later than: 347 **ΔBottom:** 16

Coffin: No Coffin

Skeleton (P): 20474 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Senilis **Age:** 45-60

Stature: 169.69 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Both hands extended at sides

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 270

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

Fairly well preserved skeleton, with the exception of visceral cranium, maxilla and mandible which are highly fragmented.

PATHOLOGIES:

Vertebral Osteophytes	*Calculus*
Vertebral Lipping	
Osteomyelitis	*Cloaca from osteomyelitis on lateral aspect of proximal shaft, humerus sin. Slight raised area around cloaca, but no evidence of fracture.*
Periostosis	

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
20454 /20454	Votive Vessel	Votive vessel	1	N

Skeleton (S): **20445** **No Skeleton In Grave:**

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 349

Date Opened: 1/22/2004 **Area:** NSGH **Square:** 4.R5 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Other **Dimensions:** 180 x 59 cm

Earlier than: 350 **ΔTop:** 16.73 **Context Description:** Skeleton burial in "great pit" in 4.R5, truncated by B 350.

Later than: **ΔBottom:** 16.44

Coffin: No Coffin

Skeleton (P): 20458 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 25-35

Stature: 146.94 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Poor

Notes:

Skeleton truncated by later burial (350) and right side of lower body missing, as well as right arm from elbow. Lower leg crushed by overburden.

PATHOLOGIES:

Vertebral Osteophytes *Calculus*
Cribra Orbitalia

OBJECTS: No objects associated with this burial

Burial: 350

Date Opened: 2/11/2004 **Area:** NSGH **Square:** 4.R5 **Excavator:** **Phase:** Roman **MNI:** 2

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** x cm

Earlier than: **ΔTop:** 17.30999 **Context Description:**

Later than: 349 **ΔBottom:** 16.04000

Coffin: No Coffin

Skeleton (P): 21008 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 35-45

Stature: 160.63 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Left hand on pelvis/femur, right extended

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes: No evidence of truncation, and pit too small to have accommodated skull - possible that skeleton was interred with the head missing.

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Poor

Notes:

Skeleton appears to have been interred without skull.

PATHOLOGIES:

Vertebral Osteophytes	
Lipping	*Ligamenta flava on Ve Th. 10; osteophytic growth on Ph Pedis*

OBJECTS: No objects associated with this burial

Skeleton (S): **21283** **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position:

Head Orientation:

Hand Placement:

Feet Placement:

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

OBJECTS: No objects associated with this burial

PATHOLOGIES:

APPENDIX I: BURIAL CATALOGUE

Burial: 351

Date Opened: 2/4/2004 **Area:** NSGH **Square:** 4.S6 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 200 x 80 cm

Earlier than: **ΔTop:** 17 **Context Description:** Coffin burial in 4.S6

Later than: **ΔBottom:** 16.38999

Coffin: 21000

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 50 x 192

Description: Badly preserved coffin with traces of winged headdress, stripes of red/orange and blue on wig lappets.

Skeleton (P): 21002 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Senilis **Age:** 45-65

Stature: 166.71 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

Extensive flattening of skull and femurs

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Eburnation
Abscess
Periodontal disease

OBJECTS: No objects associated with this burial

Burial: 352

Date Opened: 1/25/2004 **Area:** NSGH **Square:** 4.S6 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Sub-rectangular **Grave type:** Simple, sand-filled pit **Dimensions:** 92 x 33 cm

Earlier than: **ΔTop:** 16.59799 **Context Description:** Child burial dug into OK wall.

Later than: **ΔBottom:** 16.47800

Coffin: No Coffin

Skeleton (P): 20472 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 2-4

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 265

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

In this square burials were plateaued during previous seasons with some of the burial fill still in situ. The skull of this burial was trowel damaged, and some of the bones exposed and recovered with fabric. Hands and feet poorly preserved, longitudinal cracking of long bones.

PATHOLOGIES:

Cribra Orbitalia

OBJECTS: No objects associated with this burial

Burial: 353

Date Opened: 1/25/2004 **Area:** NSGH **Square:** 4.R5 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 192 x 80 cm

Earlier than: **ΔTop:** 16.63999 **Context Description:** Coffin burial in one of the rooms of NSGH. Coffin had been truncated, but not skeleton.

Later than: **ΔBottom:** 16.45999

Coffin: 20468

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 146 x 39

Description: Very faint traces of red and light pink on coffin body, but lid mainly gone.

Skeleton (P): 20469

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 24-35

Stature: 155.672 cm, +/- 2.517 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 120

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

A perforation through the bone on left parietal, by coronal suture. Likely insect activity, not perimortem, but not recent.

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Lipping
Cribra Orbitalia
Porotic Hyperostosis
Enamel Hypoplasia
Calculus

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
	Bead			Y

Burial: 354

Date Opened: 1/25/2004 **Area:** NSGH **Square:** 4.S6 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 141 x 57 cm

Earlier than: **ΔTop:** 16.03000 **Context Description:** A plateaued burial (square was taken down around it).

Later than: **ΔBottom:** 15.94999

Coffin: No Coffin

Skeleton (P): 21001 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 7-9

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Both hands extended at sides

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Many bones reduced to bonestains. Diaphyses of tibias and fibulas completely gone.

Black spots on some cranial bones, looks almost burnt.

PATHOLOGIES:

Enamel Hypoplasia
Caries

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
20477	Votive Vessel	Votive vessel	1	N
1771	Other	Other		Y
20478	Votive Vessel	Votive vessel	1	N

Burial: 366

Date Opened: 2/4/2004 **Area:** NSGH **Square:** 4.R6 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 170 x 60 cm

Earlier than: **ΔTop:** 17.11 **Context Description:** Burial with limestones in fill

Later than: **ΔBottom:** 15.93000

Coffin: No Coffin

Skeleton (P): 20504 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 35-45

Stature: 161.64 cm, +/- 3.353 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Right hand on pelvis/femur, left extended

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Schmorl's nodes
Lipping
Cribra Orbitalia
Caries
Periodontal disease
Calculus

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
	Bead			Y
	Bead			Y
1514	Bead			Y

Burial: 367

Date Opened: 2/9/2004 **Area:** NSGH **Square:** 4.R4 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 215 x 81 cm

Earlier than: **ΔTop:** **Context Description:** Coffin burial cutting wall 3063

Later than: **ΔBottom:**

Coffin: 20508

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 50 x 196

Description: OUTER COFFIN (F# 20508): Shape visible of mask but no details. Wig preserved with red, black and white stripes

INNER COFFIN (F# 21007): Finely molded face, white bottom with light and dark blue detail on wig. Some red traces

Skeleton (P): 20509

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 35-50

Stature: 174.05 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes: This burial had two coffins: Outer coffin 20508, Inner coffin 21007

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:** Poor

Notes:

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Porosity
Periostosis
Caries
Abscess
Trauma or Dislocation

OBJECTS: No objects associated with this burial

Burial: 368

Date Opened: 2/8/2004 **Area:** NSGH **Square:** 4.Q4 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 189 x 51 cm

Earlier than: 339 **ΔTop:** **Context Description:** LP coffin burial trucated by 339

Later than: **ΔBottom:** 16.38

Coffin: 21003

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 184 x 36

Description: Mask is truncated.

Skeleton (P): 21004

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Juvenilis **Age:** 15-18

Stature: 153.96 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 110

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 2 **Preservation:** Poor

Notes:

Burial was truncated and cranium missing.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 369

Date Opened: 2/4/2004 **Area:** NSGH **Square:** 4.Q4 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 212 x 77 cm

Earlier than: **ΔTop:** **Context Description:**

Later than: **ΔBottom:** 15.93999

Coffin: No Coffin

Skeleton (P): **21026** **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 35-45

Stature: 165.57 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Both hands extended at sides

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 70

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:** Fair

Notes:

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Porosity
Trauma or Dislocation

OBJECTS: No objects associated with this burial

Burial: 370

Date Opened: 2/11/2004 **Area:** NSGH **Square:** 4.R6 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 170 x 64 cm

Earlier than: **ΔTop:** **Context Description:** A burial lying in two squares.

Later than: **ΔBottom:** 15.86999

Coffin: No Coffin

Skeleton (P): **21013** **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F **Age Group:** Senilis **Age:** 45-60

Stature: 159.63 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Left hand on pelvis/femur, right extended

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 100

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:** Poor

Notes:

Poorly preserved skeleton, damp bones.

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Lipping
Caries
Periodontal disease
Trauma or Dislocation

OBJECTS: No objects associated with this burial

Burial: 371

Date Opened: 2/12/2004 **Area:** NSGH **Square:** 4.Q4 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Other **Grave type:** Other **Dimensions:** 62 x 68 cm

Earlier than: **ΔTop:** 16.67 **Context Description:** Badly truncated burial cut into stonewall (3185)

Later than: **ΔBottom:** 16.51

Coffin: 21018

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 62 x 47

Description: Only traces of mud coffin bottom remains

Skeleton (P): 21024

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 19-24

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 135

Notes: Skeleton badly truncated

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 10 **Preservation:** Poor

Notes:

Severely truncated burial. Only pelvis and a few lumbar vertebrae, plus partial lower arms remains. Also, the burial was uncovered in 2001, initially, and re-covered.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

Burial: 372

Date Opened: 2/4/2004 **Area:** NSGH **Square:** 4.Q6 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Other **Dimensions:** 164 x 72 cm

Earlier than: **ΔTop:** **Context Description:** Coffin burial dug into Ok gallery wall

Later than: **ΔBottom:** 16.60000

Coffin: 21027

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 40 x 162

Description: Well p-reserved mask with moulded face - eyes, mouth, nose and cheeks in relief, and wig with white/yellow stripes on lappets. Not much color remains. Coffin was truncated, and lower part was missed and not included in the TS shots. Photgraphed later without crosses for stitching.

Skeleton (P): 21034

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M? **Age Group:** Juvenilis **Age:** 14-18

Stature: 143.77 cm, +/- 4.218 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 2% **Preservation:** Fair

Notes:

Tibia, fibula, pedis and half of femur missing from truncation.
Skull fragmented, perhaps from lifting of mask.

PATHOLOGIES:

Cribra Orbitalia *Calculus*

OBJECTS: No objects associated with this burial

Burial: 373

Date Opened: 2/12/2004 **Area:** NSGH **Square:** 4.S5 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 139 x 40 cm

Earlier than: **ΔTop:** 16.511 **Context Description:** Child burial dug into north street slightly of limestone tumble from gable façade

Later than: **ΔBottom:**

Coffin: 21023

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 30 x 117

Description: Not preserve - lid collapsed, but traces of white and red on body of coffin.

Skeleton (P): 21025 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 1-2

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Both hands extended at sides

Feet Placement: Feet crossed, right over left

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:** Extremely Poor

Notes:

Coffin was exposed since beginning of season when overburden was removed, and bones were very badly preserved and crumbled to the touch.

PATHOLOGIES:

Cribra Orbitalia
Porotic Hyperostosis — *Slight Crribra in left orbit, as well as porotic hyperostosis on left frontal and porosity on left zygomatic.*

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
1269	/1269	Amulet	Wdjat incised	1	N
1268	/1268	Bead	Cowrie	4	N
1267	/1267	Bracelet	Jewelry	1	N

Burial: 374

Date Opened: 2/15/2004 **Area:** NSGH **Square:** 4.Q5 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 148 x 69 cm

Earlier than: 369 **ΔTop:** 17.27 **Context Description:** LP coffin burial in NSGH, cut by Burial # 369

Later than: **ΔBottom:** 16.45000

Coffin: 21030

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 139 x 36

Description: No mask preserved, head end truncated by 369. Some color left at foot end, longitudinal/vertical blue/red stripes

Skeleton (P): 21035

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 17-25

Stature: 161.32 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Hands crossed on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Good

Notes:

Well preserved skeleton but truncated at chest height - shoulders and skull missing.

PATHOLOGIES:

Eburnation — *Bony spur on patella*

MSM's not assessed, but unusually large muscle attachments on this individual:

Femur sin and dx: Troch. maj and min very large. (Gluteus minimus and Iliopsoas)
Radius sin: Oblique line very pronounced and forming a crest,. Origin: Extensor pollicis brevis)
Ulnar head, sin: Triceps brachii

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
1260a	Bead	Stone bead	1	N
1259	Cowrie Shell	Cowrie	9	N
1260b	Bead	Stone bead	1	N

Burial: 375

Date Opened: 2/16/2004 **Area:** NSGH **Square:** 4.Q5 **Excavator:** **Phase:** Roman **MNI:** 2

Cut: ? **Fill:** ? **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 206 x 91 cm

Earlier than: **ΔTop:** 17.22 **Context Description:** Burial in a stepped out along side wall (3077) in shaft of room 7 in NSGH.

Later than: **ΔBottom:** 16.78

Coffin: No Coffin

Skeleton (P): 21033 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 40-45

Stature: 152.02 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Both hands extended at sides

Feet Placement: Feet crossed, left over right

Burial Orientation (Head W of N,°): 40

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

With the exception of the left side of the cranium and the clavicles, the skeleton is in a poor state of preservation with extensive fragmentation and some bones reduced to bonestains.

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Periostosis
Caries
Abscess
Calculus
Periodontal disease
Trauma or Dislocation

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
	Bead	Faience bead	3	Y
1286	Bead	Faience bead	1	N
1594	Whetstone?	Other	1	

Skeleton (S): **21281** **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Undet. **Age:** -

Stature: Not calculated

Burial Position:

Head Orientation:

Hand Placement:

Feet Placement:

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 376

Date Opened: 2/16/2004 **Area:** NSGH **Square:** 4.Q5 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 89 x 34 cm

Earlier than: **ΔTop:** 17.26 **Context Description:** Lp burial in NSGH cuting another burial not excavated yet, to the west of Burial # 378.

Later than: **ΔBottom:** 16.14999

Coffin: No Coffin

Skeleton (P): 21056 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 1-2

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Both hands extended at sides

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:** Extremely Poor

Notes:

Skeleton in very poor condition. Only bonestains left of postcranial skeleton. Cranium has caved in and visceral cranium is nearly gone.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
21041	Votive Vessel	Votive vessel	1	N
	Bead			

Burial: 377

Date Opened: 2/16/2004 **Area:** NSGH **Square:** 4.Q5 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 186 x 42 cm

Earlier than: **ΔTop:** **Context Description:** A child burial in a coffin in NSGH.

Later than: **ΔBottom:** 16.59000

Coffin: 21040

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 128 x 32

Description: Only outline of coffin remains

Skeleton (P): 21045

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 4-8

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes: MNI added to Bform with comments, not entered

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

Skull flattened by ground pressure. Epiphyses and vertebrae poorly preserved (bonestains)

PATHOLOGIES:

Cribra Orbitalia

OBJECTS: No objects associated with this burial

Burial: 378

Date Opened: 2/17/2004 **Area:** NSGH **Square:** 4.Q5 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 180 x 66 cm

Earlier than: **ΔTop:** 16.83 **Context Description:** Lp burial in NSGH cutting burial 376. a pottery vessel was found in the fill oriented north south along of wall in the domestic area.

Later than: 376 **ΔBottom:** 15.71000

Coffin: No Coffin

Skeleton (P): 21044 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Senilis **Age:** 45-60

Stature: 160.37 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 0

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

PATHOLOGIES:

Vertebral Osteophytes *Periodontal disease*
Periostosis

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
2384	Votive Vessel	Votive vessel	1	N
2392	Votive Vessel	Votive vessel	1	N
21001	Votive Vessel	Votive vessel	1	N

Burial: 379

Date Opened: 2/17/2004 **Area:** NSGH **Square:** 4.Q6 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 160.5 x 49.8 cm

Earlier than: 384 **ΔTop:** 17.23 **Context Description:** Cut have been dug along wall in room 8, sw corner. Has been truncated along north side (left side of body)

Later than: **ΔBottom:** 16.49

Coffin: 21048

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 160 x 49

Description: Red on and above face 10R 4/6, white base paint above face and as base on body. Blue on wig (5BG 7/2) and collar (5B 5/6). Yellow stripes on wig 10YR 8/6, 10YR 6/6.

Skeleton (P): 21074

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F? **Age Group:** Juvenilis **Age:** 10-15

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Both hands extended at sides

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 67

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 5 **Preservation:** Poor

Notes:

Cranium and postcranial very poor - lower limbs somewhat better preserved but truncated. Skull flattened from ground prssure.

PATHOLOGIES:

Enamel Hypoplasia

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
	Personal	bead net	1	N
2911	Bead	Faience bead	1	N
2912	Bead	Faience bead	1	N
3073	Bead	Faience bead	1	N
3074	Bead	Faience bead	1	N
3182	Bead	Faience bead	1	N
3183	Bead	Faience bead	1	N
3192	Bead	Faience bead	1	N
1328	Bead Dress	Stone bead	1	N
1329	Bead	Metal beads	1	N
	Bead Dress			

Burial: 380

Date Opened: 2/18/2004 **Area:** NSGH **Square:** 4.R5 **Excavator:** TB **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** **Dimensions:** 209 x 62 cm

Earlier than: 388 **ΔTop:** 17.04000 **Context Description:** LP burial with coffin. Burial truncated and several bones missing.

Later than: **ΔBottom:** 16.5

Coffin: 21052

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 130 x 24

Description:

Skeleton (P): 21053

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M? **Age Group:** Maturus **Age:** 35-45

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Burial truncated by bur 388. Coffin damaged and hands,feet, pelvis and proximal parts of Femur are missing. Burial also very shallow when started on so bones has probably been stepped on.

PATHOLOGIES:

Enamel Hypoplasia
Caries
Abscess
Calculus

OBJECTS: No objects associated with this burial

Burial: 382

Date Opened: 2/18/2004 **Area:** NSGH **Square:** 4.R5 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 167 x 60 cm

Earlier than: **ΔTop:** 17.3341 **Context Description:** Burial in 4 squares

Later than: **ΔBottom:** 16.02

Coffin: No Coffin

Skeleton (P): 21057 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 17-23

Stature: 152.88 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Both hands extended at sides

Feet Placement: Extended feet

Burial Orientation (Head W of N,°):

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

Insect damage on several long bones. Skeleton initially looked well preserved, but fragmented during lifting.

PATHOLOGIES:

OBJECTS: No objects associated with this burial

Burial: 384

Date Opened: 2/25/2004 **Area:** NSGH **Square:** 4.Q5 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Other **Dimensions:** 168 x 75 cm

Earlier than: 391 **ΔTop:** 17.26 **Context Description:** LP burial in room 8, NSGH. Cutting a wall and under the pottery deposit (21075-78) & limestone layer. Truncated with burial# 379.

Later than: 379 **ΔBottom:** 16.37

Coffin: No Coffin

Skeleton (P): 21082

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 25-35

Stature: 165.35 cm, +/- cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

Skeleton truncated from left acetabulum to right knee, and missing bones below pelvis except for proximal half of femur dx. Skull crushed by weight of limestones in fill.

Black material on vertebrae (lumb) as well as arms and sternum - resin?

Clavicles also pointing sharply down - tightly wrapped?

Hands at a strange angle, with right hand pointing away from the body. Maybe related to elbow fracture.

PATHOLOGIES:

Schmorl's nodes

Caries

Trauma or Dislocation

Fractured left elbow, with remodeling of joint and synostosis.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
21075	Votive Vessel	Votive vessel	1	N
21076	Votive Vessel	Votive vessel	1	N
21077	Votive Vessel	Votive vessel	1	N
21078	Votive Vessel	Votive vessel	1	N
2160	Bead	Faience bead	1	N
1346	Bead	Faience bead	1	
1346	Bead	Faience bead	2	
1346	Bead	Faience bead	4	
1345	Bead	Faience bead	7	
1345	Bead	Faience bead	12	
1345	Bead	Faience bead	1	
1428	Bead	Faience bead	2	
1428	Bead	Bead	1	
1428	Bead	Faience bead	1	

Burial: 385

Date Opened: 2/23/2004 **Area:** NSGH **Square:** 4.Q4 **Excavator:** TB **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, mud-filled grave **Dimensions:** 208 x 45 cm

Earlier than: **ΔTop:** 16.85000 **Context Description:** Burial with a nice coffin inside NSGH.

Later than: **ΔBottom:** 16.25

Coffin: 21066

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 189 x 36

Description: Painted coffin with damaged mask. Some red color still visible on face. Also traces of white, red, yellow and blue on the wig lappets. Pattern not discernable. The coffin was painted on both the inside and outside, including the outside bottom (i.e. made elsewhere).

Skeleton (P): 21069

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M? **Age Group:** Maturus **Age:** 40-45

Stature: 147.934 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing north

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

Cranium somewhat damaged from stones coming from the surrounding walls.

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Lipping
Eburnation
Abscess
Trauma or Dislocation

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
1633	Bead	Faience bead	1	N

APPENDIX I: BURIAL CATALOGUE

Burial: 386

Date Opened: 2/23/2004 **Area:** NSGH **Square:** 4.Q5 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Sub-rectangular **Grave type:** Simple, sand-filled pit **Dimensions:** 101 x 47 cm

Earlier than: **ΔTop:** 17.12000 **Context Description:** LP burial in NSGH cutting a plaster wall.

Later than: **ΔBottom:** 16.35000

Coffin: No Coffin

Skeleton (P): 21080 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infant **Age:** .5-1

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands crossed on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Poorly preserved baby skeleton - hands and feet completely missing.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
	Other	Other	1	
1587	Axe	Other	1	
1320	Earring	Jewelry	2	N

Burial: 387

Date Opened: 2/24/2004 **Area:** NSGH **Square:** 4.Q4 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 110 x 29 cm

Earlier than: **ΔTop:** 16.77000 **Context Description:** LP child burial located in Sq. 4.Q4. north of B. 385.

Later than: **ΔBottom:** 16.39699

Coffin: No Coffin

Skeleton (P): 21070 **No Skeleton In Grave:**

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 2-4

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°):

Notes:

TAPHONOMY:

Truncated: Modern **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Skeleton exposed during earlier seasons, and seemingly trowel damaged. Also exposed somewhat from previous seasons. Very poor preservation.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
	/1291c	Earring/Ring	Jewelry	1	N
1291	/1291b	Cowrie Shell	Cowrie	1	N
1291	/1291a	Amulet	Wdjat incised	1	N
1292	/1292	Cowrie Shell	Cowrie	1	N

Burial: 388

Date Opened: 2/25/2004 **Area:** NSGH **Square:** 4.R5 **Excavator:** TB **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 200 x 55 cm

Earlier than: **ΔTop:** 17.21

Later than: 380 **ΔBottom:** 16.1

Context Description: Burial situated in two squares. The burial also situated in to a wall. A big jar F#21079 was found in the fill. The burial was also truncating bur 380.

Coffin: No Coffin

Skeleton (P): 21083 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 20-25

Stature: 159.09 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Both hands extended at sides

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 150

Notes: No coffin

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

The skeleton was situated in a wall and limestone from the wall had fallen on to the skull and parts of rest of the bones and caused some damage.

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Enamel Hypoplasia
Caries
Calculus
Porotic lesion on occipital, endocranial

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
21079	Votive Vessel	Votive vessel	1	N
	Other	Other		Y

Burial: 389

Date Opened: 3/3/2004 **Area:** NSGH **Square:** 4.R5 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 66 x 90 cm

Earlier than: **ΔTop:** 17.10 **Context Description:** Childburial in two squares in the wall at North street.

Later than: **ΔBottom:** 16.73

Coffin: No Coffin

Skeleton (P): 21086 **No Skeleton In Grave:**

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 2-4

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Other

Hand Placement: Left hand on pelvis/femur, right extended

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 135

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

Fair preservation for such a small child, but many bones are crushed and crumble to the touch. Skull is very mottled

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
1371	/1371	Earring	Jewelry	1	N
1370	/1370	Amulet	Wdjat composite	1	N
1376	/1376b	Amulet	Axe shaped	1	N
1376	/1376a	Cowrie Shell	Cowrie	1	N
1374	/1374	Bead	Faience bead	1	N
1385	/1385d	Bead	Faience bead	2	N
1385	/1385b	Cowrie Shell	Cowrie	17	N
1385	/1385e	Bead	Stone bead	1	N
1385	/1385a	Bead	shell bead	2	N
1385	/1385c	Bead	Stone bead	1	N
1385	/1385g	Amulet	Nut - sow	1	N
1385	/1385f	Bead	Faience bead	1	N
1385	/1385h	Bead	Faience bead	1	N
1384	/1384	Amulet	Wdjat incised	1	N

Burial: 390

Date Opened: 3/3/2004 **Area:** NSGH **Square:** 4.Q5 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Sub-rectangular **Grave type:** Simple, sand-filled pit **Dimensions:** 211 x 56 cm

Earlier than: 386 **ΔTop:** 17.19 **Context Description:** LP coffin burial located in domestic area of NSGH south of B. 386 and north of Burial 375.

Later than: **ΔBottom:** 16.17

Coffin: 21089

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 191 x 42

Description: Well preserved mud mask; face red, wig painted in yellow and light blue

Skeleton (P): 21090

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F? **Age Group:** Juvenilis **Age:** 12-15

Stature: 153.15 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Feet crossed, left over right

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:** Fair

Notes:

Cranium crushed, vertebrae fragmentary, ossa longa quite well preserved.

PATHOLOGIES:

Cribra Orbitalia *Enamel Hypoplasia*

OBJECTS: No objects associated with this burial

Burial: 391

Date Opened: 3/9/2004 **Area:** NSGH **Square:** 4.Q5 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 168 x 20 cm

Earlier than: 384 **ΔTop:** 17.17 **Context Description:** Badly truncated burial

Later than: **ΔBottom:** 16.36

Coffin: 21081

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 40 x 20

Description: Coffin badly truncated, only a sliver remains. Traces of Wsh collar.

Skeleton (P): 21093

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Extended, anterior up

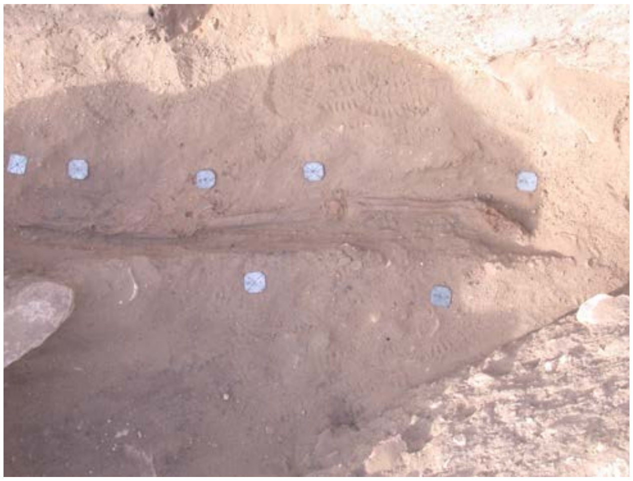
Head Orientation: Not applicable

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:



TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** **Preservation:** Extremely Poor

Notes:

Extremely poorly preserved and extensively truncated burial, only a sliver remains with some long bones and pelvis.

PATHOLOGIES:

Lipping *Eburnation* *Porosity*	*Lipping, eburnation and porosity on right acromion.*

OBJECTS: No objects associated with this burial

Burial: 392

Date Opened: 3/4/2004 **Area:** NSGH **Square:** 4.Q6 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 29 x 81 cm

Earlier than: **ΔTop:** 17.18 **Context Description:** LP child burial located in t he domestic area in NSGH 0.3 m. north of burial# 390 and 0.2m. East of burial 386.

Later than: **ΔBottom:** 16.72

Coffin: No Coffin

Skeleton (P): 21096 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 0.5-1.5

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Other

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Extremely poorly preserved burial, bones below pelvis and hands are missing, and many other bones reduced to bonestains. The burial was NOT truncated, so the missing bones is probably due to groundwater levels.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
1381	/1381b	Bead	Faience bead	10	N
1381	/1381a	Amulet	Wdjat incised	1	N
1383	/1383	Bead	Faience bead	24	N
1380	/1380	Bead	Faience bead	2	N
1382	/1382b	Bead	Faience bead	12	N
1382	/1382a	Amulet	Wdjat incised	1	N
	/2262	Bead		2	

Burial: 393

Date Opened: 3/4/2004 **Area:** NSGH **Square:** 4.Q5 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 182 x 44 cm

Earlier than: **ΔTop:** 17.02 **Context Description:** Late Period burial in vestibule of OK house, truncating 3 other burials

Later than: 384,391 **ΔBottom:** 15.88

Coffin: No Coffin

Skeleton (P): 21274 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Senilis **Age:** 45-60

Stature: 164.1772 cm, +/- cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Both hands extended at sides

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 45

Notes: Mudpack between legs was given F# 21275

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

Poorly preserved skeleton, with some bones reduced to bonestains - mainly epiphyses and cervical vertebrae. The burial was fairly deep and the bones damp.

PATHOLOGIES:

Vertebral Lipping *Periodontal disease*

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
1474	/1474a	Bead	Faience bead	1	Y
1474	/1474b	Bead	Faience bead	1	
1624	/1624	Bead	Faience bead	2	

Burial: 395

Date Opened: 3/6/2004 **Area:** NSGH **Square:** 4.R4 **Excavator:** TB **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 125 x 46 cm

Earlier than: **ΔTop:** 16.95 **Context Description:** A child burial in a nice coffin with a mud mask. Some color left on it, red and yellow.

Later than: **ΔBottom:** 16.26

Coffin: 21105

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 95 x 25

Description: Anthropoid coffin with molded mask that has traces of red and yellow. Red traces on chhek and forhead area. Face proper is broken, but mask has wig with lappets.

Skeleton (P): 21102

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 1.5-2.5

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Not applicable

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

EXtremely poorly preserved burial - bones are damp and crumble to the touch. Many bones are just bonestains.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
4813	/1386a	Cowrie Shell	Cowrie	3	N
4813	/1386c	Bead	Stone bead	1	N
4813	/1386d	Bracelet	Faience bead	1	N
4813	/1386b	Bead	Stone bead	1	N

Burial: 396

Date Opened: 3/7/2004 **Area:** NSGH **Square:** 4.Q6 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 201 x 39 cm

Earlier than: 390 **ΔTop:** **Context Description:** Late Period burial in NSGH

Later than: **ΔBottom:** 16.207

Coffin: 21278

Shape: Undetermined **Type:** Undetermined **Dimensions:** x

Description: Only traces remain of coffin; no color preserved, foot end rectabgular.

Skeleton (P): 21279

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F? **Age Group:** Juvenilis **Age:** 14-17

Stature: 152.34 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** **Preservation:** Extremely Poor

Notes:

Poorly preserved skeleton, truncated by another burial (390). Bones are friable and splinter easily.

PATHOLOGIES: None Noted

OBJECTS: No objects associated with this burial

APPENDIX I: BURIAL CATALOGUE

Burial: 398

Date Opened: 2/15/2005 **Area:** WD **Square:** 3.I40 **Excavator:** **Phase:** Saite **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 251 x 73 cm

Earlier than: **ΔTop:** 20.07099 **Context Description:** Late Period burial sunk in OK pottery dump, at higher elevation than usual.

Later than: **ΔBottom:** 18.718

Coffin: 23712

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 40 x 197

Description: Winged scarab headdress with red and blue pattern on white bottom. Small face with modeled ears. Blue color on face - not well preserved. Blue and red vertical stripes between lappets, probably wsh collar. Traces of hieroglyphic inscription down the center of the lid, beginning is legible: htp di nsw Ptah-Skr...... (Probably Wsir, but not visible).

Skeleton (P): 23715 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F **Age Group:** Senilis **Age:** 45-70

Stature: 159.06 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 120

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Good

Notes:

The preservation was better than usual, due to the higher ground. Some bones were cracked and the pelvis disintegrated, maybe because of the longer exposure of the bones due to teaching. Munsell: Hands 5YR 4/4, Ilium 7.5R 3/2, general 7.5YR 6/6-5-6 with flecks of black on postcranial and upper ossa longa.

Fatty organic residue in pelvis.

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Periostosis
Cribra Orbitalia
Porotic Hyperostosis
Periodontal disease
Cloaca on humerus dx, anterior aspect of proximal epiphysis.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
23710	Votive Vessel	Votive vessel	1	N

Burial: 399

Date Opened: 2/5/2005 **Area:** WD **Square:** 3.I40 **Excavator:** TW **Phase:** Saite **MNI:** 2

Cut: ? **Fill:** ? **Grave shape:** Sub-rectangular **Grave type:** Simple, sand-filled pit **Dimensions:** 194 x 65 cm

Earlier than: **ΔTop:** 20.11499 **Context Description:** Child buried in same cut as S#23713, dug in O.K. pottery

Later than: **ΔBottom:** 19.40800

Coffin: 23709

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 180 x 45

Description: Anthropoid coffin, lid intact but "melted" onto body, traces of white paint on outside.

Skeleton (P): 23713

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 25-35

Stature: 152.34 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 80

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Good

Notes:

Textile impression on left femur, see photo. Also, ethmoid and vomer were complete, so no intracranial excerebration was carried out on this individual.

PATHOLOGIES:

Vertebral Osteophytes
Spondylolysis
Periostosis

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
/1842	Other			Y

Coffin: 23716

Shape: Undetermined **Type:** Wood coffin **Dimensions:** x

Description: Only fragments of wood left along back of child

Skeleton (P): 23714 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 3-5

Stature: Not calculated

Burial Position: Other

Head Orientation: Crown of skull west, facing north

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 85

Notes: Double burial, child and female

TAPHONOMY:

Truncated: No **Disarti. %:** 2 **Preservation:** Good

Notes:

Light brown-beige. TW refused to take Munsell Slight disarticulation of mandible and some ribs, skull crushed by overburden. Otherwise quite good preservation.

Manubrium & sternum unfused. Occipital cracked and warped.

PATHOLOGIES:

Periostosis
Cribra Orbitalia

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
5509 /1839	Amulet	Bastet	1	N

APPENDIX I: BURIAL CATALOGUE

Burial: 401

Date Opened: 2/19/2005 **Area:** WD **Square:** 3.I40 **Excavator:** **Phase:** Saite **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 204 x 46 cm

Earlier than: **ΔTop:** 19.75 **Context Description:** Late Period burial dug into O.K. dump, through ash & pottery layers

Later than: **ΔBottom:** 18.97999

Coffin: 23729

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 175 x 35

Description: Well preserved mask, rounded face, white/black wig extended to the chest, wsh collar, blue and red lines

Skeleton (P): 23738 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Senilis **Age:** 45-60+

Stature: 166.65 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 130

Notes:

TAPHONOMY:

Truncated: Modern **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Feet damaged/truncated since they were so close to the surface. Skull was flattened by the weight of the coffin mask. Munsell 7.5YR 5/8-44 with mottled black pattern. Lighter 5YR 6/8 and 3/4. Degree of preservation is very poor, with bones alternatively wet and mushy or dry and brittle.

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Caries
Abscess
Periodontal disease
Trauma or Dislocation

OBJECTS: No objects associated with this burial

Burial: 402

Date Opened: 2/21/2005 **Area:** WD **Square:** 3J.39 **Excavator:** **Phase:** Saite **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 200 x 59 cm

Earlier than: **ΔTop:** **Context Description:** LP burial in WD. Skeleton was lying in a coffin with colours left on it. Burial dug in a O.K dump pile, in the lower part of the dump slope.

Later than: **ΔBottom:** 19.03000

Coffin: 23722

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 46 x 188

Description: Finely painted but badly preserved mud coffin. Yellow and blue striped wig with red dotted outline around edges of wig. Molded face; not preserved. Wsh collar in red and blue with black outlines. Traces of hieroglyphic inscription; badly preserved, but "htp di nsw Wsir" is legible. Also visible is god/human figure on chest, below collar with red skin, blue

Skeleton (P): 23739

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 45-50

Stature: 161.00 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 150

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

Munsell 10YR 6/6 brownish yellow. Fair to poor preservation; head crushed

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Lipping
Eburnation
Porosity
Cribra Orbitalia
Caries

OBJECTS: No objects associated with this burial

Burial: 404

Date Opened: 2/28/2005 **Area:** WD **Square:** 3.I40 **Excavator:** **Phase:** Saite **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 222 x 60 cm

Earlier than: **ΔTop:** 20.02 **Context Description:** LP burial in OK pottery deposit in WD

Later than: **ΔBottom:**

Coffin: 23731

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 45 x 186

Description: Very poorly preserved mudmask with white color and white lappets - mask not preserved.

Skeleton (P): 23740

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Senilis **Age:** 45-60

Stature: 151.53 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 100

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Fair

Notes:

Crushed cranium, longitudinal cracking of long bones. Otherwise fairly well preserved. Munsell: 10YR 8/3 with mottled black spots.

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Eburnation
Periostosis
Periodontal disease
Trauma or Dislocation

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
1890 /1890	Point	Other	1	Y

Burial: 405

Date Opened: 2/5/2005 **Area:** WD **Square:** 3.I40 **Excavator:** **Phase:** Saite **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** x cm

Earlier than: **ΔTop:** 19.37000 **Context Description:** Lp burial in OK pottery deposit in WD.

Later than: **ΔBottom:** 18.81999

Coffin: 23730

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 190 x 60

Description: Badly preserved coffin in shape of an irregular hexagon. White pigment remains on wig lappets; face mask not preserved, but traces of a molded mask still visible.

Skeleton (P): 23736

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Senilis **Age:** 50-60

Stature: 158.58 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 105

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 2 **Preservation:** Poor

Notes:

Maxilla sin disarticulated. Skeleton left exposed for extended period because it was used as a drawing object for the field school, and was chosen since it was one of the poorer preserved skeletons to start with, so preservation at time of lifting was poor. Bones dry and brittle. Also the grave with the lowest elevation. Munsell: 10YR 8/4 very pale brown (manus) 10YR 8/1 white (Ilium sin)

PATHOLOGIES:

Periostosis

Caries
Abscess
Calculus
Periodontal disease

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
1892	/1892	Pounder	Other	1	

Burial: 406

Date Opened: 2/5/2005 **Area:** WD **Square:** 3.J39 **Excavator:** **Phase:** Saite **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 131 x 52 cm

Earlier than: **ΔTop:** **Context Description:** LP burial in old kingdom pottery deposit in WD.

Later than: **ΔBottom:** 19.42000

Coffin: 23732

Shape: Rectangular **Type:** Wood coffin **Dimensions:** 108 x 23

Description: Too damaged, but appears to have been a wooden box. No mask.

Skeleton (P): 23735

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 1.5-2.5

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 120

Notes:

TAPHONOMY:

Truncated: Modern **Disarti. %:** 2 **Preservation:** Excellent

Notes:

7.5YR pink, 5YR 5/8 yellowish red. Cranium fragmented and slightly disarticulated after rain collapsed the baulk above it. Extremities damaged and feet missing, maybe when overburden was taken off, the grave was very shallow. Ribcage was not collapsed. Excellent preservation for GPMP

PATHOLOGIES:

Cribra Orbitalia

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
1923	/1923	Cowrie Shell	Cowrie	4	N
1929	/1929	Cowrie Shell	Cowrie	2	N
1924	/1924	Cowrie Shell	Cowrie	4	N
1931	/1931	Earring/Ring	Jewelry	2	N
1940	/1940	Earring/Ring	Jewelry	2	N
1944	/1944	Necklace	Jewelry	1	N
1944	/1944	Bead	Faience bead	?	N

Burial: 407

Date Opened: 3/5/2005 **Area:** WD **Square:** 3.I41 **Excavator:** **Phase:** Saite **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 200 x 71 cm

Earlier than: **ΔTop:** **Context Description:** LP burial in OK pottery deposit in WD.

Later than: **ΔBottom:** 19.20999

Coffin: 23744

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 1.84 x 42

Description: Monovhrome yellow, with wig and lappets. Originally appears to have had a molded mask, but face is damaged.

Skeleton (P): 23743

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Juvenilis **Age:** 15-18

Stature: 158.536 cm, +/- 2.732 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 94

Notes:

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 10 **Preservation:** Good

Notes:

Well preserved skeleton, lying in a slope of OK pottery dump. Lower legs truncate/damaged by erosion of the slope (natural causes)

PATHOLOGIES:

Cribra Orbitalia

Enamel Hypoplasia

Caries

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
2008	/2008b	Bead	Stone bead	1	N
2008	/2008e	Bead	Stone bead	1	N
2008	/2008h	Bead	Faience bead	1	N
2008	/2008g	Bead	Faience bead	1	N
2008	/2008f	Bead	Faience bead	1	N
2008	/2008d	Bead	Stone bead	3	N
2008	/2008i	Bead	Faience bead	3	N
2008	/2008j	Bead	Faience bead	2	N
2008	/2008a	Amulet	Hatmehyt	1	N
2008	/2008k	Amulet	Wdjat incised	1	N
2010	/2010a	Bead	Stone bead	1	N
2010	/2010b	Bead	metal bead	1	N
2010	/2010c	Bead	Faience bead	3	N
2012	/2012d	Amulet	Other	1	N
2012	/2012a	Bead	Stone bead	1	N
2012	/2012c	Bead	Faience bead	1	N
2012	/2012b	Bead	Faience bead	24	N
2012	/2012e	Other	Other	1	N
2009	/2009f	Bead	Stone bead	1	N
2009	/2009g	Bead	metal bead	1	N
2009	/2009d	Bead	Faience bead	1	N
2009	/2009a	Cowrie Shell	Cowrie	1	N
2009	/2009c	Bead	Faience bead	1	N

Obj. No:		Type:	Sub Type:	Q	Intr?
2009	/2009e	Bead	Faience bead	1	N
2009	/2009b	Amulet	Wdjat incised	1	N
2011	/2011c	Bead	Faience bead	1	N
2011	/2011d	Cowrie Shell	Cowrie	3	N
2011	/2011g	Bead	Faience bead	2	N
2011	/2011f	Bead	Stone bead	4	N
2011	/2011i	Bead	Faience bead	5	N

Burial: 408

Date Opened: 3/5/2005 **Area:** WD **Square:** 3.I39 **Excavator:** **Phase:** Saite **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 200 x 65 cm

Earlier than: **ΔTop:** 19.79999 **Context Description:** LP burial in OK pottery deposit in WD.

Later than: **ΔBottom:**

Coffin: 23749

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 166 x 35

Description: Finely molded face

Skeleton (P): 23752

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Juvenilis **Age:** 13-16

Stature: 162.05 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement:

Feet Placement:

Burial Orientation (Head W of N,°): 105

Notes: Linen imprints on and under coffin

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Good

Notes:

Munsell 10YR 8/2, 5YR 5/4. Strange discoloration on inside of epiphyses, purple/pink - 7.5R 6/2 Good preservation, although the skeleton was rained on and some bones cracked when they dried. Some type of robberycut [23761] had removed part of the overburden, so grave fairly shallow as found.
Textile impression on coffin, not body

PATHOLOGIES:

Periostosis *Enamel Hypoplasia*
Cribra Orbitalia *Calculus*

OBJECTS: No objects associated with this burial

Burial: 409

Date Opened: 3/9/2005 **Area:** WD **Square:** 3.I40 **Excavator:** JK **Phase:** Saite **MNI:** 3

Cut: ? **Fill:** ? **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 237 x 113 cm

Earlier than: **ΔTop:** **Context Description:** Double burial, truncated by later activity sunk trough OK dump.

Later than: **ΔBottom:**

Coffin: 23756

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 183 x 45

Description: Only foot end preserved

Skeleton (P): 23758

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 25-30

Stature: 162.59 cm, +/- 2.900 cm

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 30

Notes:

TAPHONOMY:

Truncated: Modern **Disarti. %:** 3 **Preservation:** Good

Notes:

Fairly well preserved bones although most of the skeleton was missing. A large robber's cut [23761] had truncated both this skeleton and [23758], and apparently taken off with the missing bones since almost none were found in the overburden. Munsell 10YR 4/6-6/3

PATHOLOGIES:

Congenital Disorder

Partial cleft sacra and 6-segment sacrum (non-metric trait, occult sacralization, i.e. NOT sacralization of L5).

OBJECTS: No objects associated with this burial

Coffin: 23757

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 84 x 45

Description:

Skeleton (P): 23759 **No Skeleton In Grave:**

DESCRIPTION:

Sex: ? **Age Group:** Adult **Age:** 18-79

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Extended feet

Burial Orientation (Head W of N,°):

Notes:

TAPHONOMY:

Truncated: Modern **Disarti. %:** 5 **Preservation:** Good

Notes:

Fairly well preserved bones although most of the skeleton was missing. A large robber's cut [23761] had truncated both this skeleton and [23758], and apparently taken off with the missing bones since almost none were found in the overburden. Munsell 10YR 4/6-6/3. 30% of coffin destroyed. SW corners remains.

PATHOLOGIES:

Lipping	*Heal spurs on dx calcaneus*
Porosity	
Periostosis	

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
9197	/2054	Other		1	
		Other		1	
	/2043	Other		1	
		Other		1	
	/2090	Vessel		1	
		Other		1	
9880	/2083	Other		1	

Skeleton (S): 23760 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: **Age Group:** Undet. **Age:** -

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 100 **Preservation:**

Notes:

Disarticulated secondary bone in burial 409, probably belonging to one of the two primary skeletons in the grave but no match has been made as of yet.

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 410

Date Opened: 3/8/2005 **Area:** WD **Square:** 3.I39 **Excavator:** **Phase:** Saite **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 163 x 57 cm

Earlier than: **ΔTop:** 20.42 **Context Description:** LP burial dug into OK pottery deposit in WD area.

Later than: **ΔBottom:** 19.76000

Coffin: No Coffin

Skeleton (P): 23755 **No Skeleton In Grave:**

DESCRIPTION:

Sex: M **Age Group:** Juvenilis **Age:** 13-16

Stature: 160.981 cm, +/- 3.218 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 100

Notes:

TAPHONOMY:

Truncated: Unknown **Disarti. %:** 0 **Preservation:** Good

Notes:

10YR 8/3 (temporale). Tibia and femur have patterns that could be roots or insect activity, but they look almost crystalline in pattern. Diagenesis? Humerus sin discolored green due to the bronze armring. Good preservation for GPMP. Feet and lower tibia missing, probably from robber's cut or backfill removal.

PATHOLOGIES:

Cribra Orbitalia *Calculus*

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
9335 /2037	Amulet	Amun-Min	3	N

Burial: 413

Date Opened: 12/11/2006 **Area:** WD **Square:** 3.J39 **Excavator:** MS **Phase:** Saite **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 225 x 54 cm

Earlier than: **ΔTop:** 20.29 **Context Description:** Late period burial dug into O.K. dump in ashy layer and pottery.

Later than: **ΔBottom:** 19.84

Coffin: 26191

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 161 x 36

Description: Coffin very deteriorated - no mask or color remains.

Skeleton (P): 26192 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F **Age Group:** Senilis **Age:** 45-60

Stature: 150.855 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Left hand on pelvis/femur, right extended

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 125

Notes:

TAPHONOMY:

Truncated: Modern **Disarti. %:** 2 **Preservation:** Fair

Notes:

Skull crushed - lying under previous access road to site. Pedis were disarticulated, otherwise fairly good preservation. Bones are tan with brown/black spots. White substance adhering to spine, right scapula, pubic bones and right iliac crest. Natron?

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping
Lipping
Eburnation
Periostosis

Caries
Periodontal disease
Calculus
Trauma or Dislocation

Fractured mandible, healed but resulted in non-union. All but three mandibular teeth lost - extensive calulus on 30 and 31.
Caries on 15
Lipping and porotic arthritic changes throughout spine
Extensive PNB on distal third of both tibiae - some involvement on tibiae.
Osteochondritis dissecans on both femora - lateral condyle.

OBJECTS: No objects associated with this burial

Burial: 418

Date Opened: 11/16/2006 **Area:** MS **Square:** 3.L48 **Excavator:** ZSH **Phase:** Roman **MNI:** 2

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 186 x 64 cm

Earlier than: **ΔTop:** 17.30 **Context Description:** Double burial at western end of Main Street, close to WD

Later than: **ΔBottom:** 16.59

Coffin: 26208

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 183 x 44

Description: Deteriorated coffin, flattened and misshapen. Molded facial features, some yellow and blue traces remain on upper part of coffin and wig, no pattern visible.

Skeleton (P): 26213

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 30-35

Stature: 155.01 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 120

Notes: Northern coffin burial in double burial 418.

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Breaks in skull perhaps caused after death by heavy object. The skeleton is completely fragmentary. Burial matrix was tafla mixed sand - body also shows signs of water erosion.

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping

Enamel Hypoplasia
Caries

Slight osteophytes on L3, 4 and 5.
Caries on M2 sup dx (2)
LEH on 9 and 11
Skeleton very poorly preserved.

OBJECTS: No objects associated with this burial

Coffin: 26209

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 135 x 42

Description: Coffin very deteriorated, some white and red color preserved on mask but no pattern visible. Molded facial features.

Skeleton (P): 26214 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F? **Age Group:** Juvenilis **Age:** 12-17

Stature: 147.62 cm, +/- cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Both feet pointing left

Burial Orientation (Head W of N,°): 120

Notes: Double burial, with two coffins in one cut. This is the southern coffin and burial.

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

The burial is completely fragmented - shallow grave, and in tefla/sand. It also looks as if there has been some water damage. Warping of skull - heavy limestones on top of burial.

PATHOLOGIES:

Cribra Orbitalia

Bribra orbitalia. Diastema between M3 and M2 sup dx.

OBJECTS: No objects associated with this burial

Burial: 421

Date Opened: 11/21/2006 **Area:** WCES **Square:** 4.V4 **Excavator:** TB **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 44 x cm

Earlier than: **ΔTop:** 16.83 **Context Description:** Severely truncated LP child burial. No coffin.

Later than: **ΔBottom:** 16.7

Coffin: No Coffin

Skeleton (P): 26268

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 2-5

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 100

Notes: Severely truncated child skeleton. Age based on long bone length only.

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 5 **Preservation:** Extremely Poor

Notes:

Badly preserved because it has been truncated from two sides.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
26220	Votive Vessel	Votive vessel	1	N
26220	Votive Vessel	Votive vessel	1	N

APPENDIX I: BURIAL CATALOGUE

Burial: 423

Date Opened: 11/26/2006 **Area:** WCES **Square:** 4.V4 **Excavator:** MS **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 245 x 168 cm

Earlier than: 421 **ΔTop:** 16.54 **Context Description:** Late period burial located north of main street, marked by amphora F#26225. Fill of amphora F#26226

Later than: **ΔBottom:** 15.89

Coffin: No Coffin

Skeleton (P): 26253 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 25-35

Stature: 164.604 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Other

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 100

Notes: Late Period burial sunk through OK deposit. No coffin. Pottery in grave is early Roman.

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

This burial was very deep (bottom elev 15.81) and was very damp at time of excavation. The groundwater had eaten away at most bones, and many elements were reduced to bonestains, or completely crumbled when lifted.

PATHOLOGIES:

Vertebral Lipping *Enamel Hypoplasia*

Slight lipping on Ve Lu 2, 3 and 5.
LEH (two grooves) on 22 (Canine).

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
26225		Votive Vessel	Votive vessel	1	N
26235		Votive Vessel	Votive vessel	1	N
3076	/3076	Cowrie Shell	Cowrie	1	N
3077	/3077	Cowrie Shell	Cowrie	1	N
		Other	Other		Y
3171	/3171	Bead	Faience bead	1	N

Burial: 424

Date Opened: 11/28/2006 **Area:** WCES **Square:** 4.Y6 **Excavator:** MA **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 230 x 75 cm

Earlier than: **ΔTop:** 16.72 **Context Description:** Late period burial sunk through OK deposits north of Main Street.

Later than: 425 **ΔBottom:** 15.78

Coffin: No Coffin

Skeleton (P): 26254 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M? **Age Group:** Senilis **Age:** 45-65

Stature: 165.91 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing north

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 110

Notes: Burial truncated with burial 425. Limestones in grave F#26230. Pottery in grave is early Roman. (1st-2nd century CE)

No digital photos available for this burial

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

This burial was very deep, and therefore damp and affected by the rising groundwater level. Interestingly, the cut of the burial around the head and shoulders was sunk through a OK wall, which appears to have protected the bones slightly; the rest of the cut was sunk through sand. AC 33 applied.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
26231	Votive Vessel	Votive vessel	1	N
26232	Votive Vessel	Votive vessel	1	N
26233	Votive Vessel	Votive vessel	1	N

Burial: 425

Date Opened: 11/5/2006 **Area:** WCES **Square:** **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 230 x 75 cm

Earlier than: 424 **ΔTop:** 16.795 **Context Description:** LP coffin burial heavily truncated by another burial (424), sunk through OK wall.

Later than: **ΔBottom:** 15.78

Coffin: 27206

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 210 x 35

Description: No mask preserved, only traces left of coffin. No colour.

Skeleton (P): 27207

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M? **Age Group:** Adultus **Age:** 18-25

Stature: Not calculated

Burial Position: Not Applicable

Head Orientation: Crown of skull west, facing south

Hand Placement: Not applicable

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 85

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Fair

Notes:

The burial was heavily truncated by burial 424, only the cranium and small pieces of the trunk remained. Bones were damp, because of the low elevation and the ground water rising, but otherwise fair preservation.

PATHOLOGIES:

Caries

Caries (occlusal) on 15, and buccally on 17 and 32.

OBJECTS: No objects associated with this burial

Burial: 426

Date Opened: 11/6/2006 **Area:** WCES **Square:** 4.W6 **Excavator:** ZSH **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 177 x 59 cm

Earlier than: **ΔTop:** 16.84000 **Context Description:** Late period burial S of WOTC, sunk through OK deposits

Later than: **ΔBottom:** 16.03000

Coffin: No Coffin

Skeleton (P): 26252 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F? **Age Group:** Maturus **Age:** 45-55

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 110

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

Buria at a low elevation, affected by rising groundwater levels. Bones turn to mush when touched and many elements reduced to bonestains. The upper body slightly better preserved than the lower part (legs) since it was in a part of the grace sunk through a mudbrick wall, while the legs were sunk in sand.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
26236	Votive Vessel	Votive vessel	1	N
26242	Votive Vessel	Votive vessel	1	N

Burial: 434

Date Opened: 11/5/2006 **Area:** WCES **Square:** 4X46 **Excavator:** JK **Phase:** Saite **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Sub-rectangular **Grave type:** Other **Dimensions:** 220 x 90 cm

Earlier than: **ΔTop:** 16.68 **Context Description:**

Later than: **ΔBottom:**

Coffin: 27215

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 100 x 50

Description: Poorly preserved coffin, traces of white paint.

Skeleton (P): 27220

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 20-30

Stature: 161.639 cm, +/- 3.226 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 115

Notes: This burial mainly contained one large storage jar and two smaller ones. All of them are complete or nearly complete. Inside one of the smaller jars was a complete conical bowl as well as a variety of sherds. The general

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** **Preservation:** Fair

Notes:

The bones are wet and crack easily after exposure. Otherwise good preservation. Feet are missing, and bottom end of coffin was truncated by unknown activities, though not modern.

PATHOLOGIES:

Periostosis
Porotic Hyperostosis
Enamel Hypoplasia
Trauma or Dislocation

Healed fracture on tibia sin
Perimortem cut on femur dx
Porotic hyperostosis on parieatals and around nuchal crest
LEH on 22-27

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
27221	Votive Vessel	Votive vessel	1	N
27223	Votive Vessel	Votive vessel	1	N
27224	Votive Vessel	Votive vessel	1	N

Burial: 439

Date Opened: 2/18/2007 **Area:** WCES **Square:** 4.U.4 **Excavator:** NBF **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 184 x 65 cm

Earlier than: **ΔTop:** 16.84

Later than: **ΔBottom:** 16.53

Context Description: Child burial located north of north street. Assemblage of limestone nearby (c. 1-2 m) but no visible structure.

Coffin: No Coffin

Skeleton (P): 28264 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 3-5

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Left hand on pelvis/femur, right extended

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 100

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 10 **Preservation:** Poor

Notes:

Disturbance of the left ribs and some of the teeth moved by tunneling animal. Cranium crushed and vertebrae decayed.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
?	/2643	Earring	Jewelry	1	N
?	/2644	Cowrie Shell	Cowrie	5	N
?	/2645	Cowrie Shell	Cowrie	6	N
?	/2830	Scarab	Scarab	1	N

Burial: 441

Date Opened: 2/19/2007 **Area:** WCES **Square:** 4.T.4 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 240 x 60 cm

Earlier than: **ΔTop:** 16.52 **Context Description:** Child in a long cut dug into ashy layer (floor?)

Later than: 442 **ΔBottom:** 15.95

Coffin: No Coffin

Skeleton (P): 28289 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** InfansII **Age:** 10-11

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement:

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 66

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

This burial was extremely poorly preserved. Only the cranium contained actual bone; the rest of the bones were reduced to bonestains or entirely missing.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
28263	Votive Vessel	Votive vessel	1	N
?	Bead	Faience bead	1	N

Burial: 442

Date Opened: 2/21/2007 **Area:** WCES **Square:** 4.T.4 **Excavator:** MF **Phase:** Roman **MNI:** 2

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 220 x 52 cm

Earlier than: 441 **ΔTop:** 16.62 **Context Description:** Truncated by 441

Later than: **ΔBottom:** 16.3

Coffin: 28280

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 136 x 29

Description: Nicely molded anthropoid coffin with marked footbox and molded facial features on mask. Truncated at head end. No color remains. The coffin was much too large for the small child inside.

Skeleton (P): 28281 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Infansl **Age:** 3.665-6.335

Stature: Not calculated

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 105

Notes: R Tibia has mild periostitis on diaphysis (AAG notes, not entered)

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Fair

Notes:

PATHOLOGIES:

Periostosis

Slight periostitis on right tibial shaft

OBJECTS: No objects associated with this burial

Coffin: 28293

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 195 x 38

Description: The coffin was poorly preserved but some colors remained. The inside bottom of the coffin was painted in red and black, while the lid had traces of wig lappets with vertical bands of yellow and light blue on a white bottom, with horizontal bands of the same colors at the end of the lappets. No mask was preserved.

Skeleton (P): **28294** **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Maturus **Age:** 35-50

Stature: 155.072 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement:

Burial Orientation (Head W of N,°): 105

Notes: Labeled 442.1 in paperwork

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Fair

Notes:

Truncated by 441 and slight degradation due to ground water, otherwise fairly well preserved compared to other burials in the same area.

PATHOLOGIES:

Periostosis

Calculus
Periodontal disease
Retrognathism, severe overbite, lythic lesion on scaphoid. Supernumerary tooth in maxilla.

Wear pattern on teeth suggest an uneven bite and chewing pattern, which appears to have caused an excessive amount of calculus on the right side of the dentition. The individual has a severe overbite, with Upper M3's aligned with lower M2's, upper M2's aligned with lower M1's, and upper M1's aligned with lower P2's. Upper right I1 exhibits alveolar bone loss around root and periodontal disease. Active alveolar boneloss appears mildly in the anterior dentition of the maxilla and along the posterior dentiton of the left mandible, with no associated tooth loss.

PNB on right tibia, longitudinal striations. Small circular lytic lesion on right scaphoid.

OBJECTS: No objects associated with this burial

Burial: 444

Date Opened: 2/25/2007 **Area:** WCES **Square:** 4.T.4 **Excavator:** RA **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 210 x 125 cm

Earlier than: **ΔTop:** 16.87 **Context Description:** Grave with limestone and pottery.

Later than: **ΔBottom:** 15.84

Coffin: No Coffin

Skeleton (P): 28297

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M? **Age Group:** Adultus **Age:** 18-23

Stature: 165.47 cm, +/- 3.226 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Both hands extended at sides

Feet Placement:

Burial Orientation (Head W of N,°): 90

Notes:

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Poor

Notes:

Poor preservation due to ground water truncation at east end feet and half of tibiae missing.

PATHOLOGIES:

Vertebral Lipping

Caries
Abscess
Calculus

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
28276		Votive Vessel	Votive vessel	1	N
3068	/2646	Scarab	Scarab	1	N
3069	/2800	Bead	Faience bead	1	N
3070	/2654	Cowrie Shell	Cowrie	1	N
	/2648	Bead	Faience bead	1	
?	/2649	Cowrie Shell	Cowrie	1	
?	/2652	Bead	Faience bead	1	

Burial: 450

Date Opened: 3/12/2007 **Area:** WCES **Square:** 4.T4 **Excavator:** TB **Phase:** Saite **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Other **Grave type:** Simple, sand-filled pit **Dimensions:** 280 x 90 cm

Earlier than: 444, **ΔTop:** **Context Description:** Truncated by 444 and 448 in deep end of large cut

Later than: **ΔBottom:** 15.87

Coffin: 28314

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** x

Description: Only a small piece of coffin remained on skull, with traces of blue, yellow and white. No mask preserved.

Skeleton (P): 28305

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M? **Age Group:** Adult **Age:** 18-79

Stature: 180.6 cm, +/- cm

Burial Position: Extended, anterior up

Head Orientation: Not applicable

Hand Placement: Not applicable

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 108

Notes: Jar not digitized

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 0 **Preservation:** Extremely Poor

Notes:

This burial was truncated by two other cuts, and also highly affected by the groundwater. Almost no bones remained.

PATHOLOGIES: None Noted

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
28316	Votive Vessel	Votive vessel	1	N
?	Votive Vessel	Votive vessel	1	N

Burial: 451

Date Opened: 3/19/2007 **Area:** WCES **Square:** 4.X4 **Excavator:** TB **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 177 x 50 cm

Earlier than: **ΔTop:** 17.07942 **Context Description:** Clear cut with 3 stones lying on top. Cut in NE-SW direction

Later than: **ΔBottom:** 15.97399

Coffin: No Coffin

Skeleton (P): 28326 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F? **Age Group:** Juvenilis **Age:** 15-17

Stature: 148.48 cm, +/- 2.732 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Both hands extended at sides

Feet Placement: Feet crossed, left over right

Burial Orientation (Head W of N,°): 45

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:** Poor

Notes:

Initially fair preservation, but the skeleton was damaged in a rain storm, which also sent the cover crashing down on the bones, fragmenting the legs.

PATHOLOGIES:

Enamel Hypoplasia

LEH on LLC and LRC

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
	/2653	Other	Other	1	
?	/3297	Other	Other	1	N
?	/2654	Other	Other	1	Y

Burial: 464

Date Opened: 2/16/2009 **Area:** W.COM **Square:** 3Q.43 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Sub-rectangular **Grave type:** Other **Dimensions:** 171 x 67 cm

Earlier than: **ΔTop:** 18.04999 **Context Description:** Late period burial in Western Compound area, to the west of the enclosure wall.

Later than: **ΔBottom:** 16.70999

Coffin: No Coffin

Skeleton (P): 31363 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 16-23

Stature: 156.91 cm, +/- 2.517 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands on pelvis/femur

Feet Placement: Not applicable

Burial Orientation (Head W of N,°): 94

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

Because of the depth of the burial, the groundwater had badly affected preservation, with only bonestains remaining in places, especially at epiphyses.

PATHOLOGIES:

Periodontal disease

Despite her young age, this individual had lost 8 teeth prior to her death; in all but one case (17), the alveoli were fully resorbed.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
31316	Votive Vessel	Votive vessel	1	N

Burial: 466

Date Opened: 2/18/2009 **Area:** W.COM **Square:** 3.P43 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Sub-rectangular **Grave type:** Other **Dimensions:** 190 x 82 cm

Earlier than: 30577 **ΔTop:** 18.14999 **Context Description:** Burial south of the wall of the crow in the western compound area

Later than: 31391 **ΔBottom:** 17.20000

Coffin: No Coffin

Skeleton (P): 31422 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M? **Age Group:** Senilis **Age:** 49-65

Stature: 159.156 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 83

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

PATHOLOGIES:

Eburnation	*Periodontal disease*
Cribra Orbitalia	
Porotic Hyperostosis	*Erosion and resorption of zygomatic bone/maxilla - maxillary sinusitis?* *Infection of mastoid process - mastoiditis* *EXtensive pre-mortem tooth loss, with resorption of bone* *Active cribra orbitalia and porotic hyperostosis on frontal bone* *Eburnation on two metatarsals, with associated sesamoid bones*

OBJECTS: No objects associated with this burial

Burial: 467

Date Opened: 2/17/2009 **Area:** CHUTE **Square:** 3M.42 **Excavator:** SD **Phase:** Saite **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Other **Grave type:** **Dimensions:** 213 x 83 cm

Earlier than: **ΔTop:** 17.54999 **Context Description:** E-W late period burial w/mud coffin dug into compacted sand

Later than: **ΔBottom:** 17.20000

Coffin: 31333

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 200 x 48

Description: Coffin appears to be made of two separate pieces: 1 rectangular wood/mud (traces of phytolith?) base with four sides of an inner painted mud coffin in anthropoid form. Outer coffin appears to have been made of wood with painted sides depicted four gods (sons of Horus?) in red/blue/yellow/black.

Skeleton (P): 31360

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Adultus **Age:** 24-35

Stature: 163.14 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 105

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 2 **Preservation:** Poor

Notes:

Bones initially well preserved but brittle, and crumbled during lifting. This could also have something to do with the long time it took to excavate the double coffin, and the hard cemented mud pack that adhered to the bone.

PATHOLOGIES:

Vertebral Osteophytes
Vertebral Lipping

Enamel Hypoplasia
Calculus

Osteophytic growth and lipping on lumbar vertebrae
LEH on upper central incisors
Slight calculus on lower central incisors and one lower molar

OBJECTS: No objects associated with this burial

Burial: 477

Date Opened: 3/3/2009 **Area:** W.COM **Square:** 3.R42 **Excavator:** **Phase:** Roman **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 54 x 175 cm

Earlier than: **ΔTop:** 17.74 **Context Description:** Late period burial between two limestone enclosure walls

Later than: **ΔBottom:** 16.58

Coffin: No Coffin

Skeleton (P): 31901 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 17-25

Stature: 159.176 cm, +/- 2.517 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up and chin on chest

Hand Placement: Hands on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 108

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** 0 **Preservation:** Poor

Notes:

Poorly preserved skeleton, with many bones reduced to bonestains. Feet missing completely, although burial was not truncated.

PATHOLOGIES:

Caries

Caries on 3, 4 and 16

OBJECTS:

Obj. No:		Type:	Sub Type:	Q	Intr?
?	/2274	Cowrie Shell	Cowrie	1	N

APPENDIX I: BURIAL CATALOGUE

Burial: 478

Date Opened: 3/9/2009 **Area:** W. **Square:** 3.Q43 **Excavator:** **Phase:** Saite **MNI:** 2

Cut: ? **Fill:** ? **Grave shape:** Oval **Grave type:** Simple, sand-filled pit **Dimensions:** 145 x 182 cm

Earlier than: **ΔTop:** 18.60000 **Context Description:** Burial found internal to limestone walls and to the west of the enclosure wall

Later than: **ΔBottom:** 17.25

Coffin: 31942

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 37 x 172

Description:

Skeleton (P): 31949

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: F **Age Group:** Senilis **Age:** 45-59

Stature: 150.21 cm, +/- 1.893 cm

Burial Position: Extended, anterior up

Head Orientation: Crown of skull west, facing south

Hand Placement: Hands crossed on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 94

Notes: Check teeth! Confusing dental sheet.

TAPHONOMY:

Truncated: In Antiquity **Disarti. %:** 3 **Preservation:** Extremely Poor

Notes:

Skull damaged slightly by truncation from 474, on frontal, orbitalia, parietal. Postcranial bones extremely poorly preserved, with trunk reduced to bonestains and ossa longa completely fragmented.

PATHOLOGIES:

Periodontal disease

Extensive wear and premortem tooth loss.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
31413	Votive Vessel	Votive vessel	1	N
31414	Votive Vessel	Votive vessel	1	N
31958	Votive Vessel	Votive vessel	1	N
31962	Votive Vessel	Votive vessel	1	N
31963	Votive Vessel	Votive vessel	1	N
31964	Votive Vessel	Votive vessel	1	N
31965	Votive Vessel	Votive vessel	1	N
31966	Votive Vessel	Votive vessel	1	N
31967	Votive Vessel	Votive vessel	1	N
31979	Votive Vessel	Votive vessel	1	N
31981	Votive Vessel	Votive vessel	1	N
31995	Votive Vessel	Votive vessel	1	N

Skeleton (S): 31941 **No Skeleton In Grave:** ☐

DESCRIPTION:

Sex: ? **Age Group:** Undet. **Age:** -

Stature: Not calculated

Burial Position:

Head Orientation:

Hand Placement:

Feet Placement:

Burial Orientation (Head W of N,°):

Notes:

No digital photos available for this burial

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:**

Notes:

OBJECTS: No objects associated with this burial

PATHOLOGIES: None Noted

Burial: 486

Date Opened: 3/14/2009 **Area:** W.COM **Square:** 3.R44 **Excavator:** **Phase:** Saite **MNI:** 1

Cut: ? **Fill:** ? **Grave shape:** Sub-rectangular **Grave type:** Simple, sand-filled pit **Dimensions:** 227 x 69 cm

Earlier than: **ΔTop:** 17.10 **Context Description:** Burial located east of enclosure wall

Later than: **ΔBottom:** 16.45

Coffin: 31931

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 200 x 56

Description: Face mask broken, parts of wig preserved

Skeleton (P): 31930

No Skeleton In Grave: ☐

DESCRIPTION:

Sex: M **Age Group:** Adultus **Age:** 17-25

Stature: 174.812 cm, +/- 3.060 cm

Burial Position: Extended, anterior up

Head Orientation: Anterior up

Hand Placement: Hands crossed on pelvis/femur

Feet Placement: Extended feet

Burial Orientation (Head W of N,°): 99

Notes:

TAPHONOMY:

Truncated: No **Disarti. %:** **Preservation:** Fair

Notes:

Fairly well preserved skeleton, but damp. Mudpack in abdomen, under sternum, likely evidence of mummification.

PATHOLOGIES:

Lipping

Distal Ph1 pedis had osteophytic growth
Two perforations/lytic lesions midshaft on fibula dx - possible taphonomic.

OBJECTS:

Obj. No:	Type:	Sub Type:	Q	Intr?
31926	Votive Vessel	Votive vessel	1	N

Burial: **120**

Date Opened: 3/15/2001 **Area:** WCE **Square:** 2.C8 **Phase:** Saite **Cut:** 3493 **Fill:** 3489

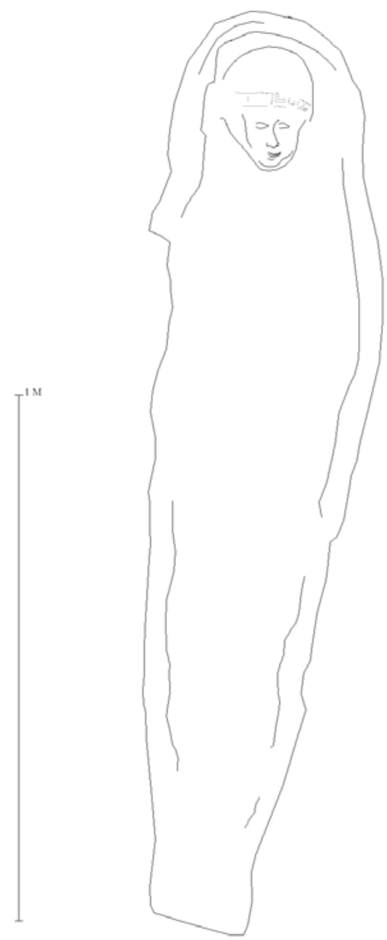
Coffin: 3488

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 180 x 40

Description:

COFFIN OCCUPANT:

Skeleton: 7961 **Sex:** M **Age Group:** Maturus **Age:** 36-42



Burial: 121

Date Opened: 3/15/2001 **Area:** WCE **Square:** 2.C8 **Phase:** Saite **Cut:** 3492 **Fill:** 3491

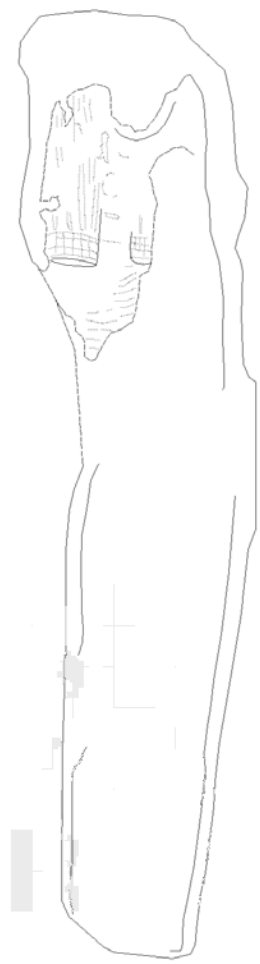
Coffin: 3490

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 184 x 38

Description: Not much remains of the mask proper, but it seems to have been painted red on a yellow background. The right side of the wig lappets is preserved and it has blue stripes on a yellow background with a black and red checkerboard pattern at the end.

COFFIN OCCUPANT:

Skeleton: 7962 **Sex:** F **Age Group:** Adultus **Age:** 25-35



Burial: 124

Date Opened: 3/19/2001 **Area:** WCE **Square:** 2.C8 **Phase:** Saite **Cut:** 3498 **Fill:** 3499

Coffin: 3505

Shape: Oval **Type:** Other **Dimensions:** x

Description: The feature 3505 referes to a stone surround around the burial, and not an actual coffin. The pit was surrounded by stones (granite) of about the same size, and with a bigger boulder at a higher elevation, which seems to have been covered by sand, i.e. it does not appear to be a grave marker (see sketch of profile).

COFFIN OCCUPANT:

Skeleton: 7965 **Sex:** ? **Age Group:** Infansl **Age:** 2-4

Burial: 126

Date Opened: 3/25/2001 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 3528 **Fill:** 3529

Coffin: 3527

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 159 x 43

Description: Mask very poorly preserved. Originally molded in mud - small flecks of red color preserved.

COFFIN OCCUPANT:

Skeleton: 7967 **Sex:** M? **Age Group:** Juvenilis **Age:** 16-18

Burial: 127

Date Opened: 3/27/2001 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 3532 **Fill:** 3533

Coffin: 3534

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 30 x 90

Description: The area of the coffin where the mask would be has collapsed, so it was not possible to see if there had been one originally.

COFFIN OCCUPANT:

Skeleton: 7968 **Sex:** ? **Age Group:** InfansII **Age:** 7-9

Burial: 129

Date Opened: 4/1/2001 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 3536 **Fill:** 3537

Coffin: 3535

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 177 x 33

Description:

COFFIN OCCUPANT:

Skeleton: 7970 **Sex:** M **Age Group:** Adultus **Age:** 24-30

Burial: 131

Date Opened: 4/1/2001 **Area:** WCE **Square:** 2.C8 **Phase:** Saite **Cut:** 3559 **Fill:** 3560

Coffin: 3561

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 187 x 38

Description: Almost nothing remains of coffin other than a faint outline in the sand.

COFFIN OCCUPANT:

Skeleton: 7972 **Sex:** M **Age Group:** Maturus **Age:** 35-40

Burial: 133

Date Opened: 4/3/2001 **Area:** WCE **Square:** 2.C8 **Phase:** Saite **Cut:** 3518 **Fill:** 3519

Coffin: 3556

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 147 x 39

Description: The mask has traces of red and white and black, and you can still see the outline of the right eye. It is poorly preserved. The wig has collapsed, but there are traces of white and red.

COFFIN OCCUPANT:

Skeleton: 7973 **Sex:** M **Age Group:** Maturus **Age:** 35-45

Burial: 134

Date Opened: 4/3/2001 **Area:** WCE **Square:** 2.C8 **Phase:** Saite **Cut:** 3564 **Fill:** 3565

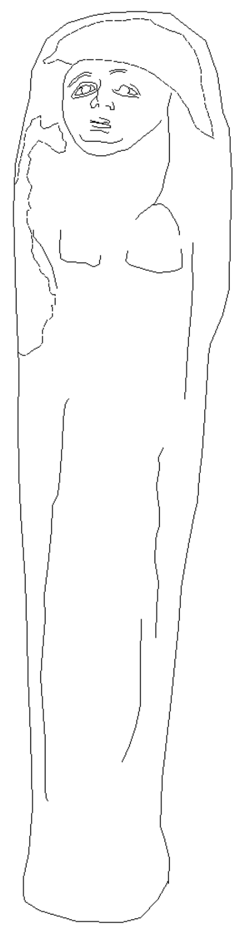
Coffin: 3566

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 128 x 31

Description: Mask has yellow background, eyes and eybrows painted in black. Mask still in place, rest of coffin has caved in.

COFFIN OCCUPANT:

Skeleton: 7974 **Sex:** ? **Age Group:** InfansII **Age:** 4-8



Burial: **135**

Date Opened: 4/3/2001 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 3553 **Fill:** 3554

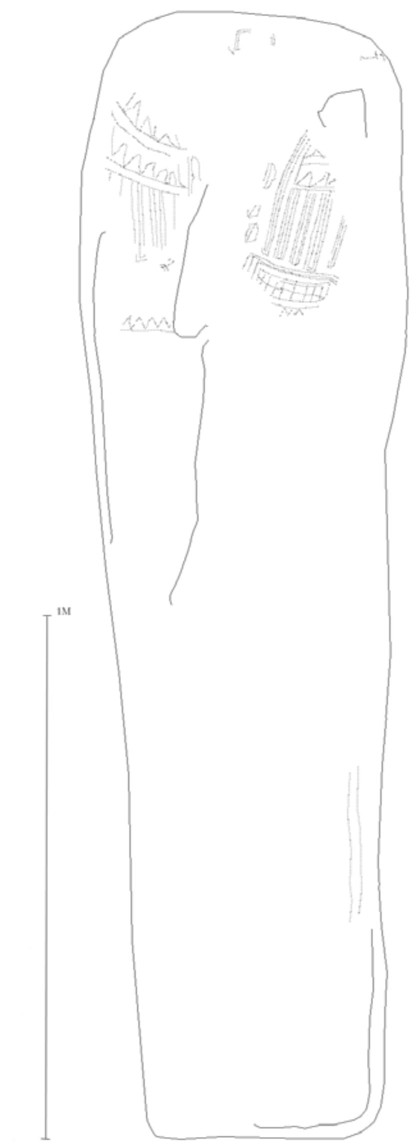
Coffin: 3569

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 191.5 x 47

Description: The wig is very elaborate with checkerboard pattern at the bottom of the lappets, but the mask is collapsed.

COFFIN OCCUPANT:

Skeleton: 7975 **Sex:** F **Age Group:** Adultus **Age:** 20-25



Burial: 136

Date Opened: 4/3/2001 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 3570 **Fill:** 3571

Coffin: 3572

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** x

Description: Significantly truncated coffin. Only traces remain.

COFFIN OCCUPANT:

Skeleton: 7976 **Sex:** ? **Age Group:** Adult **Age:** 18-79

No digital images of this coffin

Burial: 138

Date Opened: 4/3/2001 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 3575 **Fill:** 3576

Coffin: 3577

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 43 x 44

Description: Only head end remains of coffin. Mask is badly preserved, but appears to have had a wig and a white base coat of paint.

COFFIN OCCUPANT:

Skeleton: 7978 **Sex:** F **Age Group:** Maturus **Age:** 35-45

Burial: 141

Date Opened: 4/3/2001 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 3582 **Fill:** 3583

Coffin: 3584

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 136 x 32

Description: No mask visible. Coffin is rectangular tapering towards foot end, with a wider head end.

COFFIN OCCUPANT:

Skeleton: 7981 **Sex:** ? **Age Group:** Infansl **Age:** 2-4

Burial: 142

Date Opened: 4/3/2001 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 3585 **Fill:** 3586

Coffin: 3587

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 116 x 25

Description: The coffin is cracked and badly preserved, but finely shaped. Nothing remains of mask, but traces of yellow base color on coffin.

COFFIN OCCUPANT:

Skeleton: 7982 **Sex:** ? **Age Group:** Infant **Age:** .5-1

Burial: 150

Date Opened: 4/7/2001 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 3603 **Fill:** 3605

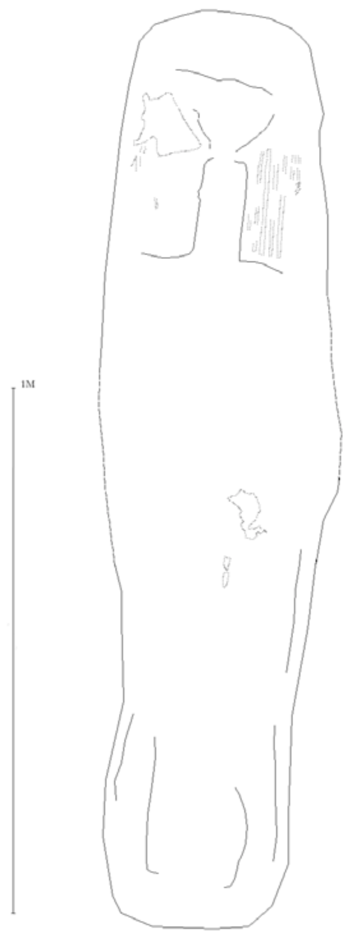
Coffin: 3604

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 190 x 50

Description: Coffin with fragmensts of blue, yellow and red paint on wig and mask. Too damaged to see pattern, but possibly representing vertical bands. Lower portion of coffin appears to have been painted entirely red, but too poorly preserved to be sure.

COFFIN OCCUPANT:

Skeleton: 7990 **Sex:** M **Age Group:** Maturus **Age:** 35-55



Burial: 158

Date Opened: 4/15/2001 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 3634 **Fill:** 3635

Coffin: 3643

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 55 x 27

Description: Traces of coffin remained only over the chest - blue painted mud.

COFFIN OCCUPANT:

Skeleton: 7994 **Sex:** M? **Age Group:** Adultus **Age:** 18-25

No digital images of this coffin

Burial: 160

Date Opened: 4/17/2001 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 3638 **Fill:** 3639

Coffin: 3644

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 192 x 50

Description: Mask gone, but wig lappets and chest section showed traces of horizontal bands on lappets and pattern in blue, yellow and red on white background. Wig also had black detail. Lower chest/abdomen: painted yellow with black Anubis. Anubis facing south. Also, extensive amount of fabric found on coffin as well as on skeleton. Macros taken.

COFFIN OCCUPANT:

Skeleton: 7996 **Sex:** M **Age Group:** Adultus **Age:** 25-35

Burial: 161

Date Opened: 4/19/2001 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 3647 **Fill:** 3637

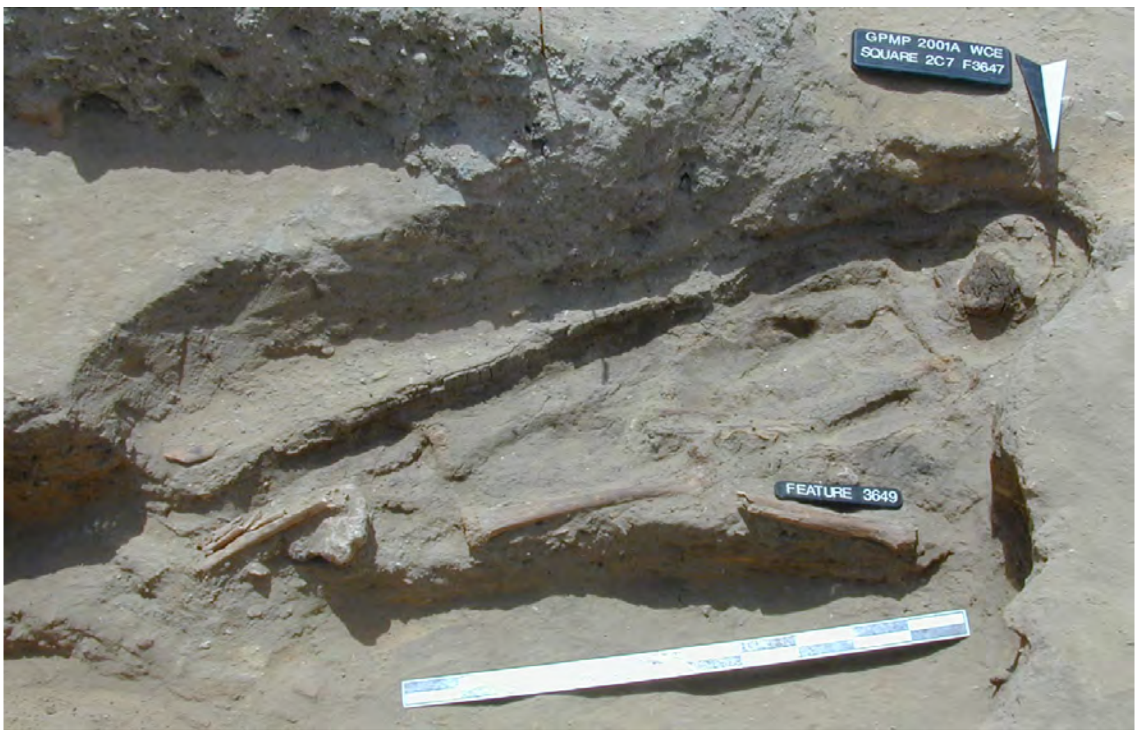
Coffin: 3647

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 170 x 44

Description:

COFFIN OCCUPANT:

Skeleton: 7997 **Sex:** M **Age Group:** Maturus **Age:** 35-45



APPENDIX II: COFFIN CATALOGUE

Burial: 169

Date Opened: 5/14/2001 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 4113 **Fill:** 4114

Coffin: 4115

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 49 x 180

Description: Coffin is brown to yellowish brown. Some yellow pigment found on left side of coffin, otherwise no paint preserved. Well preserved mud mask with fine facial features and a wig. Coffin has melted down on skeleton, and the very eastern part of the coffin has eroded away.

COFFIN OCCUPANT:

Skeleton: 8003 **Sex:** F **Age Group:** Maturus **Age:** 45-50

Burial: 183

Date Opened: 2/19/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 5883 **Fill:** 5882

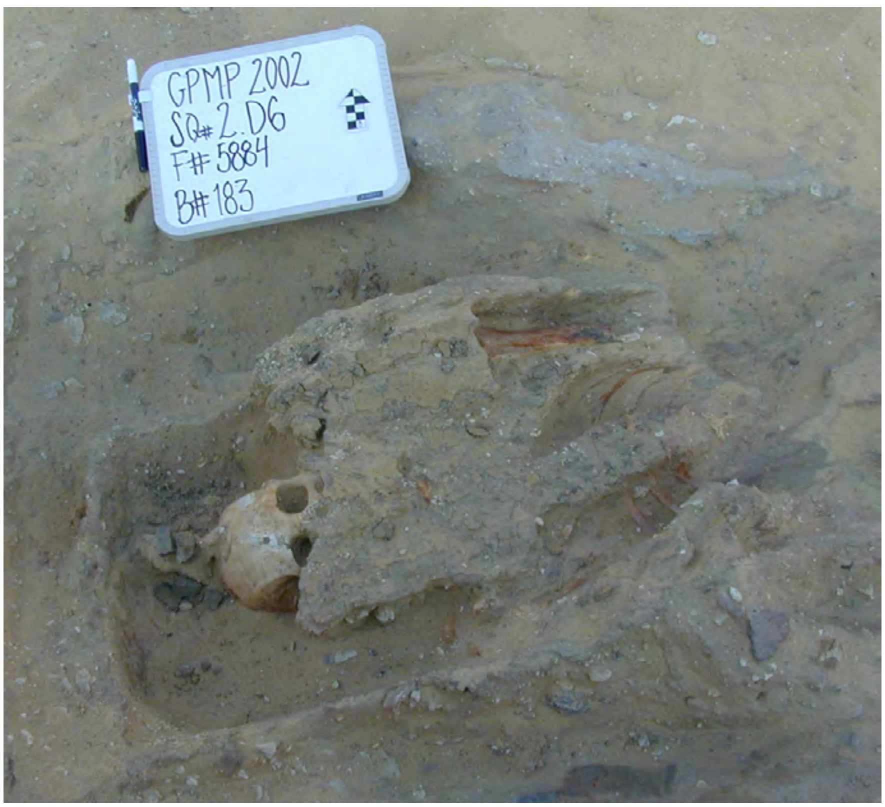
Coffin: 5884

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 103 x 96

Description: Traces of yellow paint. The coffin seems to have paint on top of the lid, but not underneath. The bottom of the coffin is also unpainted.

COFFIN OCCUPANT:

Skeleton: 8017 **Sex:** M **Age Group:** Maturus **Age:** 33-45



Burial: 191

Date Opened: 1/21/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 5892 **Fill:** 5893

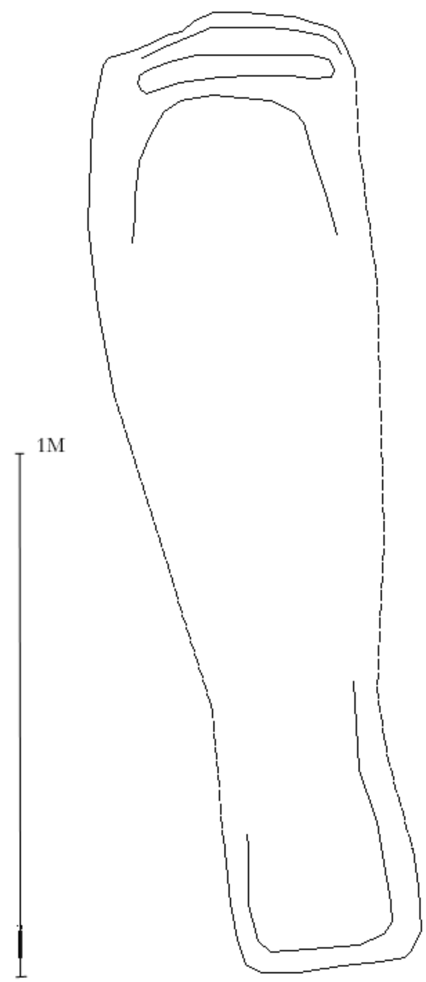
Coffin: 5894

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 176 x 48

Description:

COFFIN OCCUPANT:

Skeleton: 8025 **Sex:** M **Age Group:** Senilis **Age:** 60-74



Burial: 192

Date Opened: 1/22/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 5897 **Fill:** 5896

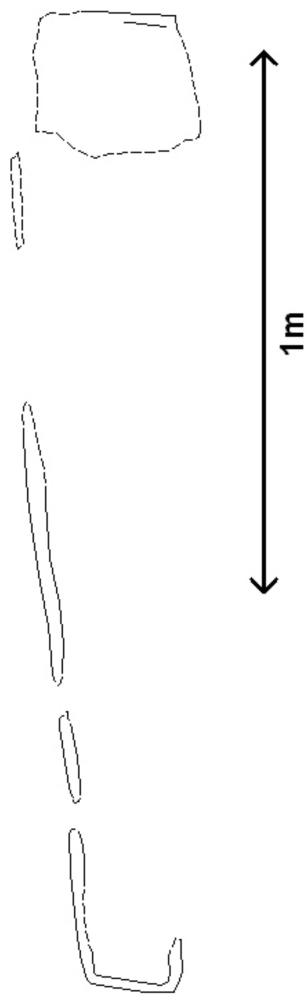
Coffin: 5898

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 178 x 25

Description: Only traces remain. Lid completely disintegrated.

COFFIN OCCUPANT:

Skeleton: 8026 **Sex:** F **Age Group:** Adultus **Age:** 18-20



Burial: 197

Date Opened: 1/23/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 5902 **Fill:** 5901

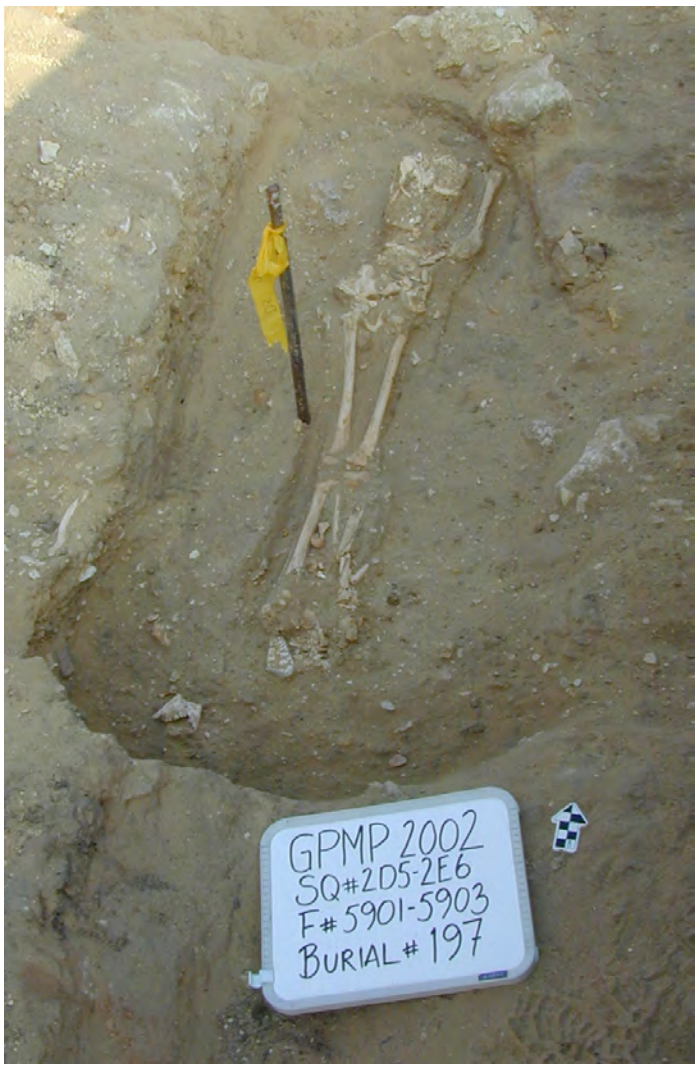
Coffin: 5903

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** 35 x 13.3

Description: Only traces remain. Lid completely disintegrated.

COFFIN OCCUPANT:

Skeleton: 8031 **Sex:** ? **Age Group:** InfansII **Age:** 5-14



Burial: 198

Date Opened: 1/24/2002 **Area:** WCE **Square:** 2.C5 **Phase:** Saite **Cut:** 5904 **Fill:** 5905

Coffin: 5906

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** x

Description: Only a corner of a coffin (head-end) remains. Outside of coffin was painted white, no pattern or mask visible.

COFFIN OCCUPANT:

Skeleton: 8032 **Sex:** ? **Age Group:** Adult **Age:** 18-79

No digital images of this coffin

Burial: 203

Date Opened: 1/30/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 5918 **Fill:** 5919

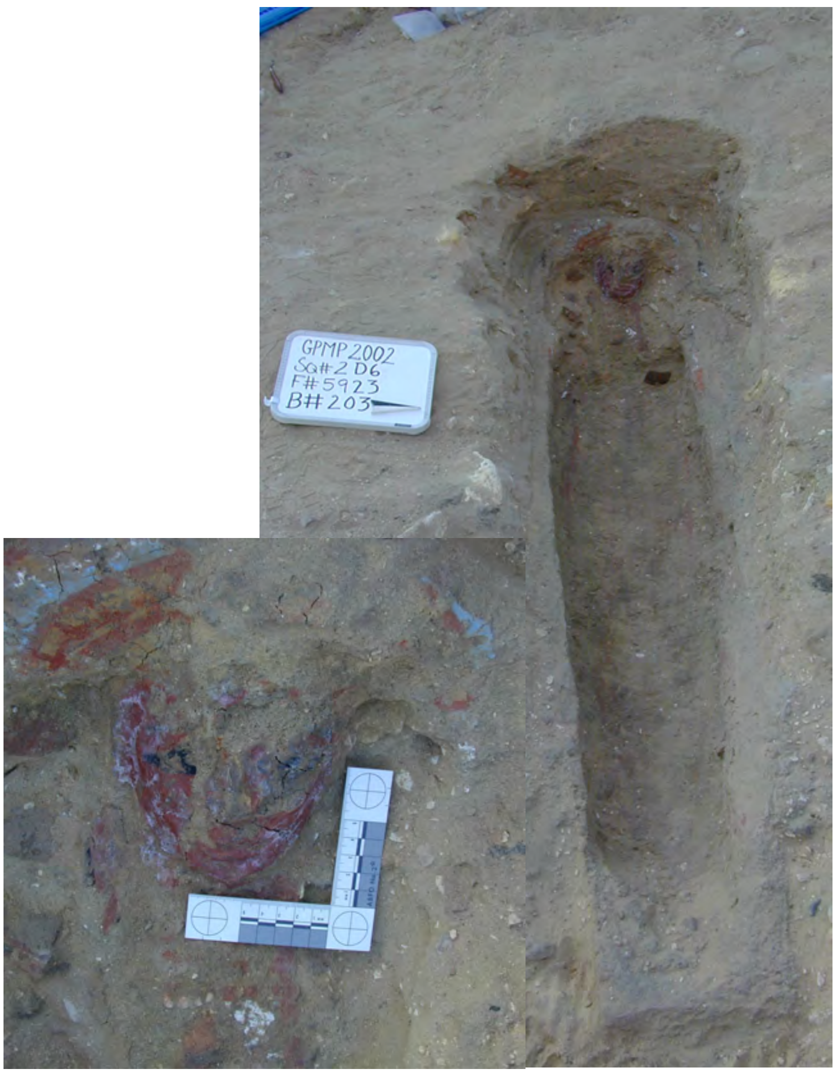
Coffin: 5923

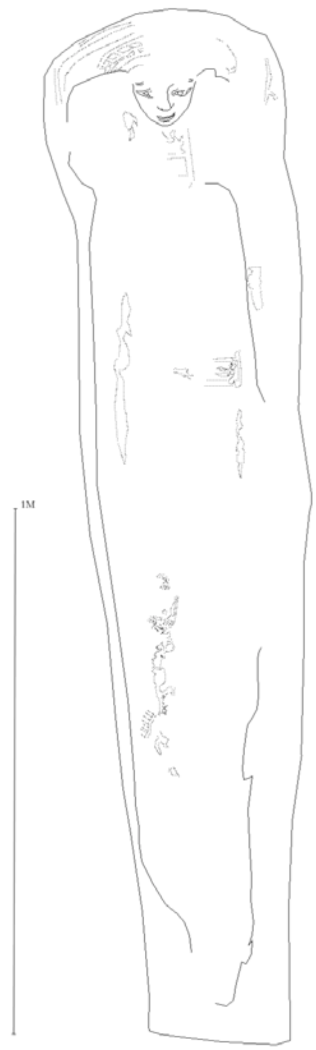
Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 187 x 45

Description: Mask painted red with black eyes and eyebrows

COFFIN OCCUPANT:

Skeleton: 8035 **Sex:** M **Age Group:** Maturus **Age:** 35-50





APPENDIX II: COFFIN CATALOGUE

Burial: 205

Date Opened: 1/27/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 5924 **Fill:** 5926

Coffin: 5925

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 110 x 26

Description: Only traces remain of coffin; no evidence of lid, just rectangular outline around skeleton.

COFFIN OCCUPANT:

Skeleton: 8036 **Sex:** ? **Age Group:** Infansl **Age:** 3.665-6.335

Burial: 206

Date Opened: 1/27/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 5928 **Fill:** 5927

Coffin: 5929

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 103 x 29

Description: Only traces remaain of coffin, rectangualr outine around body. No sign of lid.

COFFIN OCCUPANT:

Skeleton: 8037 **Sex:** ? **Age Group:** Infansl **Age:** 3-4

Burial: 208

Date Opened: 1/28/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 5933 **Fill:** 5932

Coffin: 5934

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 167 x 44

Description: Only traces remain of coffin, very badly preserved, but there were patches of red, yellow and royal blue on the sides of the coffin.

COFFIN OCCUPANT:

Skeleton: 8039 **Sex:** M **Age Group:** Adultus **Age:** 25-30

Burial: 210

Date Opened: 1/29/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 5937 **Fill:** 5938

Coffin: 5959

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 85 x 41

Description: Burial is trowel-damaged from the cleaning of the overburden in previous seasons. Only outline of coffin remains.

COFFIN OCCUPANT:

Skeleton: 8041 **Sex:** F **Age Group:** Maturus **Age:** 30-45

Burial: 211

Date Opened: 1/29/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 5940 **Fill:** 5939

Coffin: 5967

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 59 x 22.7

Description: Only traces of coffin wall remaining around skeleton

COFFIN OCCUPANT:

Skeleton: 8042 **Sex:** ? **Age Group:** Infant **Age:** .5-1

Burial: 212

Date Opened: 2/2/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 5942 **Fill:** 5941

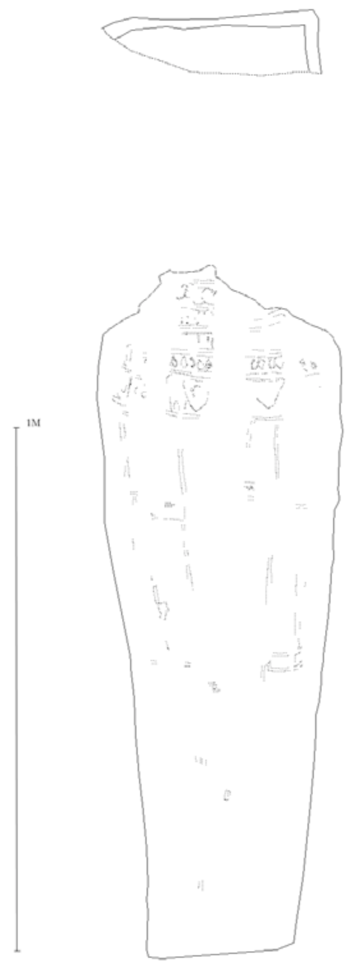
Coffin: 5954

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 180 x 43.5

Description: The mask kas been truncated, but the chest portion of the body is decorated with bands of red, yellow and black on a white bottom.

COFFIN OCCUPANT:

Skeleton: 8043 **Sex:** M? **Age Group:** Adultus **Age:** 25-35



Burial: 215

Date Opened: 2/2/2002 **Area:** WCE **Square:** 2.C5 **Phase:** Saite **Cut:** 5957 **Fill:** 5956

Coffin: 5955

Shape: Other **Type:** Painted/plastered mudcoffin **Dimensions:** 191 x 45

Description: Coffin was rounded at head-end and rectangular at footend. Traces of black and red color on coffin body, no mask preserved.

COFFIN OCCUPANT:

Skeleton: 8045 **Sex:** F **Age Group:** Adultus **Age:** 25-35

Burial: 218

Date Opened: 2/3/2002 **Area:** WCE **Square:** 2.C5 **Phase:** Saite **Cut:** 5963 **Fill:** 5962

Coffin: 5964

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 198 x 49

Description: Only traces remain of coffin along right side of body. Some patches of yellow paint are visible. No lid, mask or pattern.

COFFIN OCCUPANT:

Skeleton: 8048 **Sex:** M **Age Group:** Adultus **Age:** 19-23

Burial: 219

Date Opened: 2/4/2002 **Area:** WCE **Square:** 2.E6 **Phase:** Saite **Cut:** 5968 **Fill:** 5969

Coffin: 5970

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** 178 x 32

Description: Only traces remain of coffin around lower body. The hard black substance covering the neck, face and chest could be a resin covered shroud. No color or mask preserved from coffin.

COFFIN OCCUPANT:

Skeleton: 8049 **Sex:** M **Age Group:** Maturus **Age:** 35-45

Burial: 222

Date Opened: 2/6/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 6103 **Fill:** 6104

Coffin: 6105

Shape: Subrectangular **Type:** Mudcoffin, plain **Dimensions:** 95 x 32

Description: Nothing remains of coffin lid, just a mud outline.

COFFIN OCCUPANT:

Skeleton: 8052 **Sex:** ? **Age Group:** Infansl **Age:** 3-5

Burial: 224

Date Opened: 2/2/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6106 **Fill:** 6107

Coffin: 6108

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 64 x 20

Description: Only traces remain of coffin

COFFIN OCCUPANT:

Skeleton: 8054 **Sex:** ? **Age Group:** Infant **Age:** 0.5-1

Burial: 225

Date Opened: 7/2/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6109 **Fill:** 6110

Coffin: 6111

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** 51 x 27

Description: Only traces of an oval mud outline around cranium remains of coffin. No traces of decoration or lid.

COFFIN OCCUPANT:

Skeleton: 8055 **Sex:** ? **Age Group:** Infansl **Age:** .665-1.335

Burial: 226

Date Opened: 2/7/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6113 **Fill:** 6112

Coffin: 6114

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** x

Description: Only traces of coffin, no trace of decoration.

COFFIN OCCUPANT:

Skeleton: 8056 **Sex:** ? **Age Group:** Infant **Age:** 0.25-0.75

Burial: 230

Date Opened: 2/11/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 6123 **Fill:** 6122

Coffin: 6124

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 202 x 44

Description: Only traces of coffin remain, though some yellow colour was preserved on the inside wall of the coffin in the sw corner (head-end) , and on the outside of the coffin wall in the ne corner (foot-end). No mask preserved, but a hard clay substance on top of cranium may be remnants of a mask, sampled, bag# 2516.

COFFIN OCCUPANT:

Skeleton: 8060 **Sex:** M **Age Group:** Maturus **Age:** 35-45

Burial: 231

Date Opened: 2/12/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6126 **Fill:** 6125

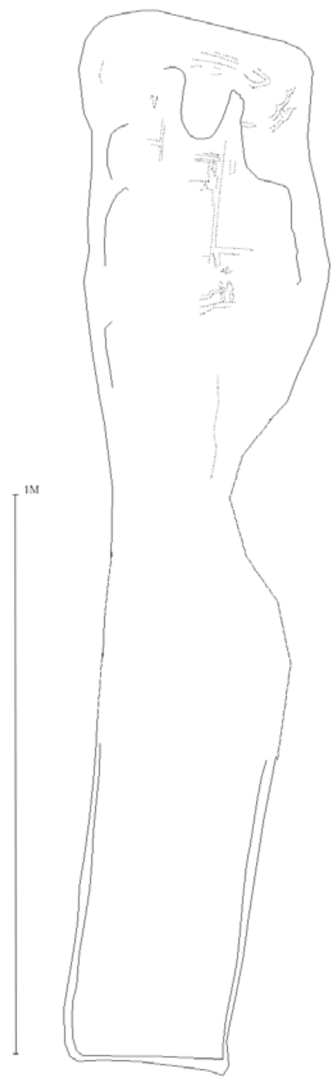
Coffin: 6127

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 193 x 42.7

Description: Poorly preserved, red small mask with molded features, yellow headdress on red and blue background.

COFFIN OCCUPANT:

Skeleton: 8061 **Sex:** M **Age Group:** Adultus **Age:** 21-35



Burial: 232

Date Opened: 2/12/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 6129 **Fill:** 6128

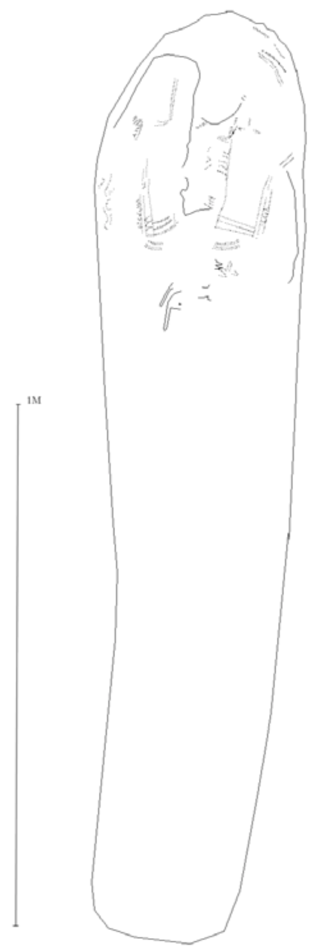
Coffin: 6130

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 179 x 41

Description: Fragmentary mask, with lots of color preserved. Red face, wig is blue with white and darker red pattern on yellow bottom. Remnants of what appears to be a recumbent Anubis in black on yellow bottom on chest.

COFFIN OCCUPANT:

Skeleton: 8062 **Sex:** M **Age Group:** Maturus **Age:** 40-50



Burial: **235**

Date Opened: 2/13/2002 **Area:** WCE **Square:** 2.E5 **Phase:** Roman **Cut:** 6136 **Fill:** 6137

Coffin: 6138

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 168 x

Description: Coffin was painted red and black, but very poorly preserved.

COFFIN OCCUPANT:

Skeleton: 8065 **Sex:** F **Age Group:** Maturus **Age:** 45-50

Burial: 240

Date Opened: 2/16/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 6144 **Fill:** 6145

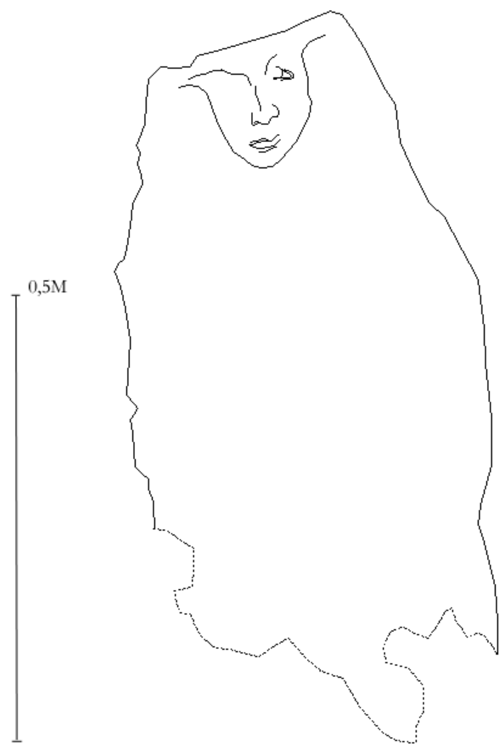
Coffin: 6146

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 85 x 36.8

Description: Error in ts - no elevations for this coffin.
Small mudmask with no paint preserved, save for some white around the mouth and reddish black around the eyes. A cornerpin went through the left cheek - new damage.

COFFIN OCCUPANT:

Skeleton: 8067 **Sex:** ? **Age Group:** Infansl **Age:** 3-5



Burial: 241

Date Opened: 2/12/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6147 **Fill:** 6148

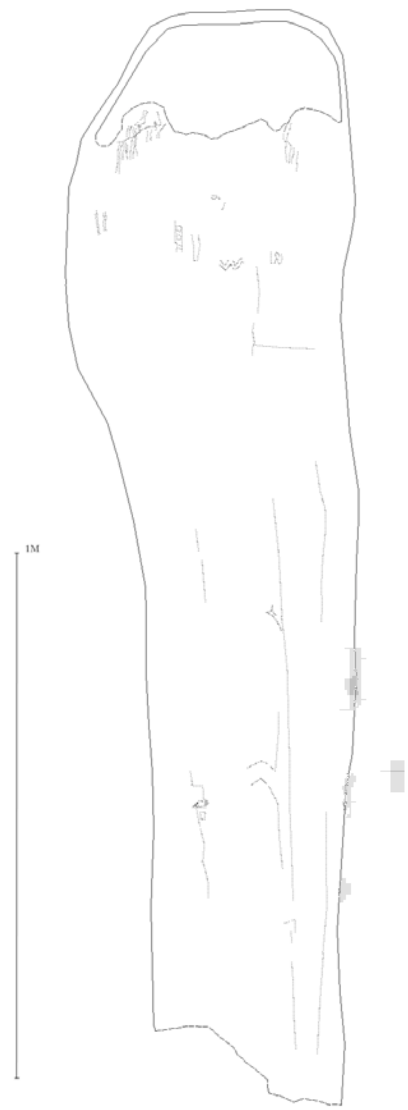
Coffin: 6149

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 211 x 53.9

Description: Very badly preserved, caved in. Coffin much too large for the child inside.

COFFIN OCCUPANT:

Skeleton: 8068 **Sex:** ? **Age Group:** InfansII **Age:** 4-8



Burial: 242

Date Opened: 2/17/2002 **Area:** WCE **Square:** 2.E5 **Phase:** Roman **Cut:** 6150 **Fill:** 6151

Coffin: 6152

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 177 x 45

Description: Traces of red color on mask, but very fragmented, not possible to distinguish patterns.

COFFIN OCCUPANT:

Skeleton: 8069 **Sex:** M **Age Group:** Maturus **Age:** 33-45

Burial: 243

Date Opened: 2/17/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6153 **Fill:** 6154

Coffin: 6155

Shape: Oval **Type:** Mudcoffin, plain **Dimensions:** 22 x 105

Description: Coffin very poorly preserved, merely outline. No color left.

COFFIN OCCUPANT:

Skeleton: 8070 **Sex:** ? **Age Group:** InfansII **Age:** 4-8

Burial: 248

Date Opened: 2/18/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 6164 **Fill:** 6165

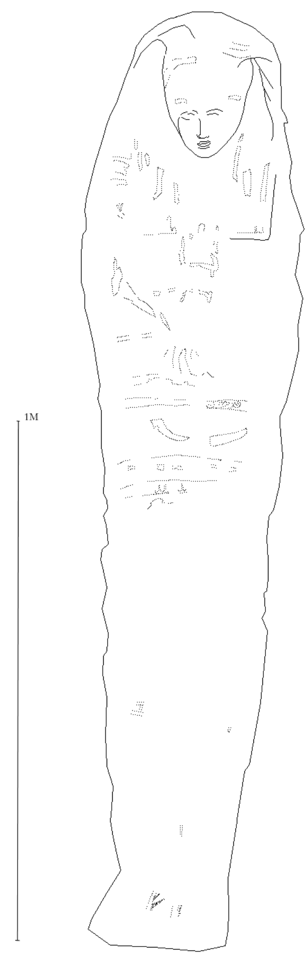
Coffin: 6163

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 181 x 44

Description: Finely molded mask. Nose is quite clear, mask colour is blue, red and yellow. Coffin is much too large for the juvenile inside.

COFFIN OCCUPANT:

Skeleton: 8077 **Sex:** ? **Age Group:** Juvenilis **Age:** 12-17



Burial: 249

Date Opened: 2/20/2002 **Area:** WCE **Square:** 2.C5 **Phase:** Saite **Cut:** 6169 **Fill:** 6170

Coffin: 6171

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** 47 x 24

Description:

COFFIN OCCUPANT:

Skeleton: 8078 **Sex:** ? **Age Group:** Infant **Age:** 0.5-1

Burial: 251

Date Opened: 2/20/2002 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 6177 **Fill:** 6176

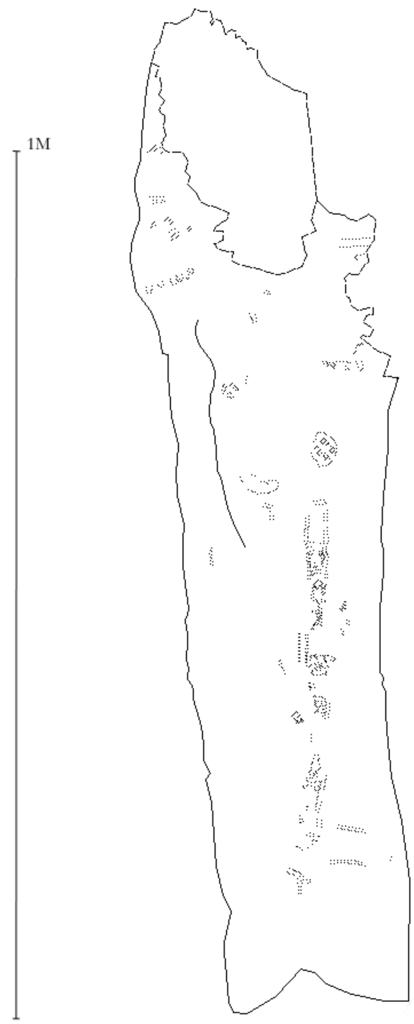
Coffin: 6175

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 116 x 31

Description: Coffin with traces of inscription in black, in a stripe down the lid of the coffin, outlined in blue

COFFIN OCCUPANT:

Skeleton: 8080 **Sex:** ? **Age Group:** InfansII **Age:** 5-9



Burial: 252

Date Opened: 3/2/2002 **Area:** WCE **Square:** 2.C5 **Phase:** Saite **Cut:** 6178 **Fill:** 6179

Coffin: 6180

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** 127 x 23

Description:

COFFIN OCCUPANT:

Skeleton: 8081 **Sex:** ? **Age Group:** InfansII **Age:** 4.5-9

Burial: 254

Date Opened: 2/27/2002 **Area:** WCE **Square:** 2.E5 **Phase:** Saite **Cut:** 6184 **Fill:** 6183

Coffin: 6193

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 185 x 41

Description: Only traces of coffin remain around skeleton - no color preserved.

COFFIN OCCUPANT:

Skeleton: 8083 **Sex:** M **Age Group:** Senilis **Age:** 45-60

Burial: 256

Date Opened: 2/27/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6187 **Fill:** 6188

Coffin: 6189

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 78 x 34

Description: White paint/slip preserved on outside of coffin, black paint fragments on coffin bottom (outside of coffin)

COFFIN OCCUPANT:

Skeleton: 8085 **Sex:** ? **Age Group:** Adult **Age:** 18-79

Burial: 257

Date Opened: 2/27/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6190 **Fill:** 6191

Coffin: 6190

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 182 x 37

Description: truncated; top part of mask is missing. Wig is black, white and red. No color remains on mask proper.

COFFIN OCCUPANT:

Skeleton: 8086 **Sex:** M **Age Group:** Juvenilis **Age:** 12-15

Burial: 258

Date Opened: 2/27/2002 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 6194 **Fill:** 6196

Coffin: 6195

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 157 x 39.5

Description: No mask preserved - some blue and white on the coffin body (larger patches) and red and black spots.

COFFIN OCCUPANT:

Skeleton: 8087 **Sex:** ? **Age Group:** InfansII **Age:** 5-9

Burial: 259

Date Opened: 2/27/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6197 **Fill:** 6198

Coffin: 6199

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 178 x 39.8

Description: Coffin had no real shoulders but was wider in the shoulder region. The foot part had a strong brown vertical band and a large foot box. Coffin edge c. 1.5-3.5 cms. Mask fragmented, but nose is visible. Traces of white and strobg brown paint.

COFFIN OCCUPANT:

Skeleton: 8088 **Sex:** F **Age Group:** Adultus **Age:** 25-35

Burial: 261

Date Opened: 2/28/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 6201 **Fill:** 6200

Coffin: 6202

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 49.5 x 21

Description: Only traces of coffin remain in a rectangle around the preserved part of the skeleton, no sign of a lid or mask.

COFFIN OCCUPANT:

Skeleton: 8090 **Sex:** ? **Age Group:** Infant **Age:** .25-.75

Burial: 263

Date Opened: 3/2/2002 **Area:** WCE **Square:** 2.E5 **Phase:** Saite **Cut:** 6206 **Fill:** 6205

Coffin: 6213

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 184 x 54

Description: Almost nothing remains of lid, but walls are fairly well preserved around upper body. Well defined anthropoid shape.

COFFIN OCCUPANT:

Skeleton: 8092 **Sex:** M **Age Group:** Adultus **Age:** 18-20

Burial: 264

Date Opened: 3/2/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 6207 **Fill:** 6208

Coffin: NF8093

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** x

Description: No feature was given to this coffin, though there clearly is remnants of a mud coffin under the body. Too porly preserved to tell shape. Feature was given as "NF8093", meaning "No Feature", to enable data entry.

COFFIN OCCUPANT:

Skeleton: 8093 **Sex:** ? **Age Group:** Infansl **Age:** 1-2

Burial: 265

Date Opened: 3/2/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 6211 **Fill:** 6210

Coffin: 6212

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 213 x 58

Description: Red mask with black painted eyes and a scarab at center of wig.

COFFIN OCCUPANT:

Skeleton: 8094 **Sex:** M? **Age Group:** Maturus **Age:** 33-45

Burial: 266

Date Opened: 3/10/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6214 **Fill:** 6215

Coffin: 6216

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** x

Description: Only traces remain, no color preserved

COFFIN OCCUPANT:

Skeleton: 8095 **Sex:** ? **Age Group:** Infansl **Age:** 2-4

Burial: 267

Date Opened: 3/5/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6217 **Fill:** 6218

Coffin: 6219

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 105 x 23

Description: Only traces left of coffin

COFFIN OCCUPANT:

Skeleton: 8096 **Sex:** ? **Age Group:** InfansII **Age:** 4-8

Burial: 268

Date Opened: 3/5/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6220 **Fill:** 6221

Coffin: 6231

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 210 x 38

Description: Only the footend remains of coffin, and a few fragments of a rounded head-end

COFFIN OCCUPANT:

Skeleton: 8097 **Sex:** ? **Age Group:** Juvenilis **Age:** 14-18

Burial: 269

Date Opened: 3/6/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6229 **Fill:** 6228

Coffin: 6230

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 65 x 16

Description: Only traces remain of coffin. Rectangular outline of mud around skeleton

COFFIN OCCUPANT:

Skeleton: 8098 **Sex:** ? **Age Group:** Infant **Age:** .25-.75

Burial: 271

Date Opened: 3/6/2002 **Area:** WCE **Square:** 2.D5 **Phase:** Saite **Cut:** 6239 **Fill:** 6238

Coffin: 6240

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** 38 x 32

Description: Only traces remain of coffin, no color preserved.

COFFIN OCCUPANT:

Skeleton: 8100 **Sex:** F **Age Group:** Adultus **Age:** 21-24

Burial: **273**

Date Opened: 3/6/2002 **Area:** WCE **Square:** 2.D5 **Phase:** Saite **Cut:** 6243 **Fill:** 6242

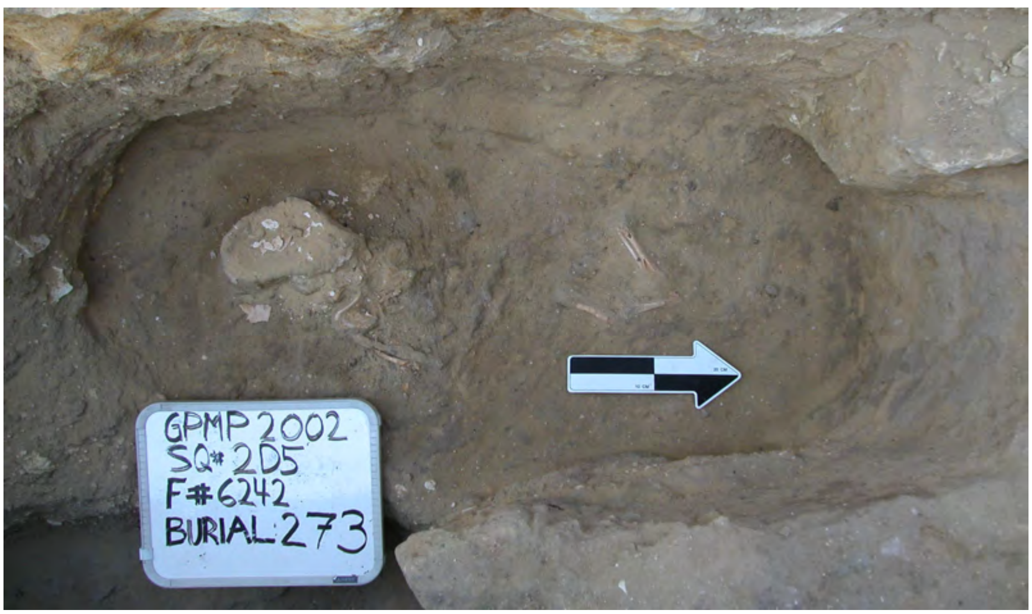
Coffin: 6244

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** 19.5 x 13.6

Description: Only traces of receptacle - not visible in photos

COFFIN OCCUPANT:

Skeleton: 8102 **Sex:** ? **Age Group:** Infant **Age:** 0-.2



Burial: 275

Date Opened: 3/7/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6237 **Fill:** 6236

Coffin: 6246

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 126 x 46

Description: Mask missing

COFFIN OCCUPANT:

Skeleton: 8104 **Sex:** M **Age Group:** Adultus **Age:** 25-30

Burial: 276

Date Opened: 3/7/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6248 **Fill:** 6347

Coffin: 6249

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 144 x 35

Description:

COFFIN OCCUPANT:

Skeleton: VS6249 **Sex:** ? **Age Group:** Nosk. **Age:** -

Burial: 278

Date Opened: 3/10/2002 **Area:** WCE **Square:** 2.E5 **Phase:** Saite **Cut:** 6254 **Fill:** 6253

Coffin: 6259

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 176 x 39

Description: Molded mudmask with red, black and white color

COFFIN OCCUPANT:

Skeleton: 8106 **Sex:** F? **Age Group:** Juvenilis **Age:** 12-15

Burial: 284

Date Opened: 3/11/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6266 **Fill:** 6267

Coffin: 6268

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 117 x 28

Description: Mask not preserved except for a few flecks of blue in the center, but traces of decoration in the chest region in red, white and black on yellow bottom.

COFFIN OCCUPANT:

Skeleton: 8112 **Sex:** ? **Age Group:** Infansl **Age:** 3-5

Burial: 285

Date Opened: 3/11/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 6269 **Fill:** 6270

Coffin: 7438

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 184 x 34

Description:

COFFIN OCCUPANT:

Skeleton: VS7438 **Sex:** **Age Group:** Nosk. **Age:** -

Burial: 286

Date Opened: 3/11/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 7440 **Fill:** 7441

Coffin: 7442

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 90 x 24

Description: Coffin poorly preserved, and only lower part remains since burial was truncated. Appear to have been painted monochrome yellow.

COFFIN OCCUPANT:

Skeleton: 8113 **Sex:** F **Age Group:** Senilis **Age:** 50-59

Burial: 288

Date Opened: 3/12/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 7445 **Fill:** 7446

Coffin: 7447

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 83 x 27

Description: Only traces of coffin remain, eroded at E end

COFFIN OCCUPANT:

Skeleton: 8115 **Sex:** ? **Age Group:** Infansl **Age:** 1-2

Burial: 291

Date Opened: 3/13/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 7453 **Fill:** 7454

Coffin: 7455

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 193 x 43.6

Description: Nothing left of the face of the coffin. The wig is black, white, red and yellow, and appear to have traces of hieroglyphic inscription (on wig only) in blue. Cloth imprint on left wig lappet.

COFFIN OCCUPANT:

Skeleton: 8118 **Sex:** F **Age Group:** Adultus **Age:** 25-35

Burial: 293

Date Opened: 3/13/2002 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 7458 **Fill:** 7459

Coffin: 7460

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 118 x 31.4

Description: Mask is to poorly preserved for any features to be distinguishable, but there are remnants of molded wig lappets and a darker strip down the lid of the coffin.

COFFIN OCCUPANT:

Skeleton: 8120 **Sex:** ? **Age Group:** InfansII **Age:** 5-9

Burial: 294

Date Opened: 3/13/2002 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 7462 **Fill:** 7463

Coffin: 7464

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 150 x 30

Description: Coffin truncated and poorly preserved, but traces of red paint remains, and a black headdress

COFFIN OCCUPANT:

Skeleton: 8121 **Sex:** ? **Age Group:** InfansII **Age:** 10-12

Burial: 295

Date Opened: 3/14/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Roman **Cut:** 7465 **Fill:** 7466

Coffin: 7469

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 148 x 44

Description: Only traces remain of coffin.

COFFIN OCCUPANT:

Skeleton: 8122 **Sex:** M **Age Group:** Adultus **Age:** 17-24

Burial: 296

Date Opened: 3/14/2002 **Area:** WCE **Square:** 2.E6 **Phase:** Saite **Cut:** 7467 **Fill:** 7468

Coffin: 7470

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 133 x 12.8

Description: No color left on coffin, and only remnants of lid remain

COFFIN OCCUPANT:

Skeleton: 8124 **Sex:** ? **Age Group:** Infansl **Age:** 2-4

Burial: 297

Date Opened: 3/16/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 7471 **Fill:** 7472

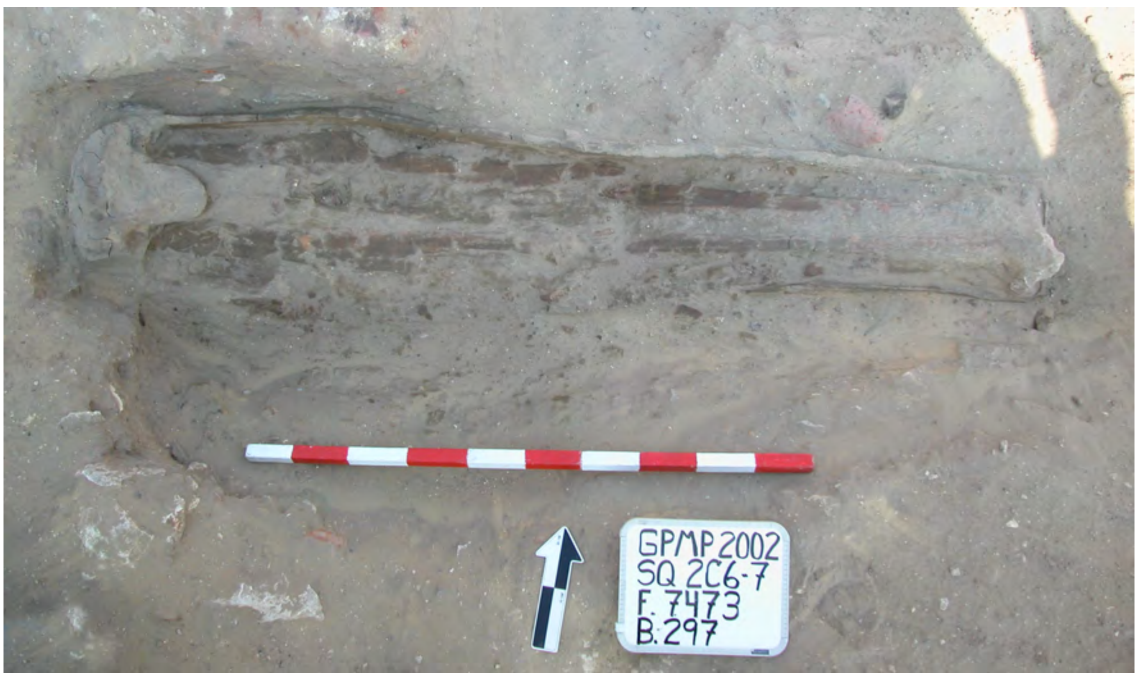
Coffin: 7473

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 187 x 34.2

Description: Not much color remains on coffin. Originally there was a molded face, but no facial features remain. Lines of darker mud down the lid of the coffin may suggest there were once wood supports in the lid.

COFFIN OCCUPANT:

Skeleton: 8125 **Sex:** F **Age Group:** Maturus **Age:** 45-55



Burial: 301

Date Opened: 3/17/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 7479 **Fill:** 7480

Coffin: 7481

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 202 x 57

Description: Mask deterirated, but surrounded by wig/headdress in blue and white. Red strip down the center - no inscription visible.

COFFIN OCCUPANT:

Skeleton: 8129 **Sex:** F? **Age Group:** Maturus **Age:** 35-45

Burial: 302

Date Opened: 3/17/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 7482 **Fill:** 7483

Coffin: 7484

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 119 x 31

Description: Narrow molded mask, with remnants of white paint. Wig has remnants of black paint on it.

COFFIN OCCUPANT:

Skeleton: 8130 **Sex:** ? **Age Group:** Infansl **Age:** 2-4

Burial: 303

Date Opened: 3/17/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 7485 **Fill:** 7486

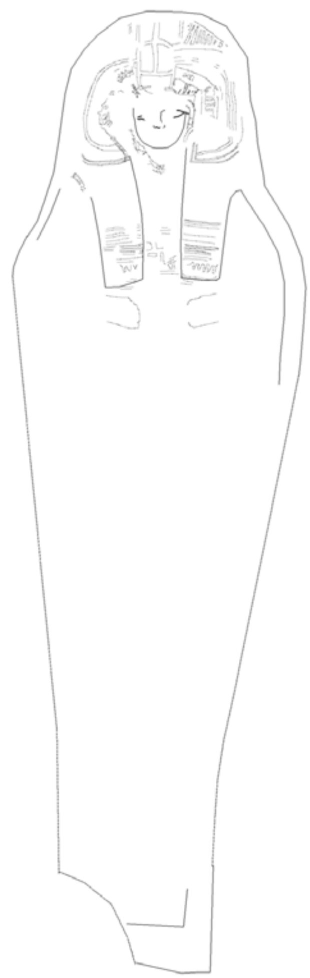
Coffin: 7489

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 186 x 55.4

Description: Beautiful winged headdress - blue face with finely molded features and eyes outlined in black. Black oval (scarab?) on forehead. Winged headdress with red and yellow pattern around head - mid lappets of wig are blue, and ends of lappets have horizontal stripes in red, white and yellow. No color preserved on coffin body. Traces of wood remained in coffin mud.

COFFIN OCCUPANT:

Skeleton: 8131 **Sex:** M **Age Group:** Adultus **Age:** 20-30



Burial: 305

Date Opened: 3/18/2002 **Area:** WCE **Square:** 2.C7 **Phase:** Saite **Cut:** 7490 **Fill:** 7491

Coffin: 7492

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 176 x 42

Description: Finealy molded mask with facial features still preserved - traces of white on face. Head end of coffin is a bit "boxy", with squared corners on headdress. Traces of blue and red on coffin body.

COFFIN OCCUPANT:

Skeleton: 8133 **Sex:** M? **Age Group:** Juvenilis **Age:** 15-18

Burial: 307

Date Opened: 3/19/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 7495 **Fill:** 7496

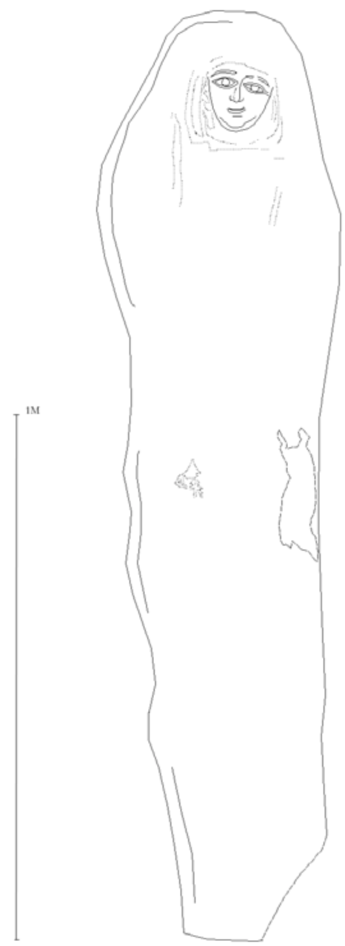
Coffin: 7497

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 181 x 45

Description: A relatively complete mask, black and yellow paint preserved. Face molded with facial details in black on yellow base - striped wig. Obs! Two sets of photos on mask. Coffin is adult sized.

COFFIN OCCUPANT:

Skeleton: 8135 **Sex:** ? **Age Group:** InfansII **Age:** 7-10



Burial: 308

Date Opened: 3/21/2002 **Area:** WCE **Square:** 2.B6 **Phase:** Saite **Cut:** 7499 **Fill:** 7500

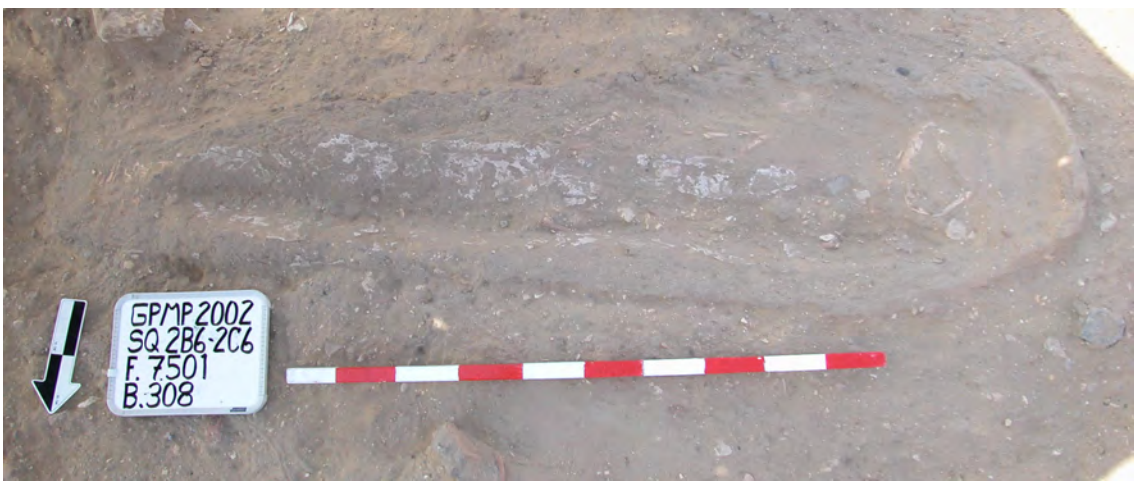
Coffin: 7501

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 182 x 49

Description: Badly preserved coffin, no mask remains

COFFIN OCCUPANT:

Skeleton: 8136 **Sex:** F **Age Group:** Senilis **Age:** 60-79



Burial: 310

Date Opened: 3/26/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 7502 **Fill:** 7503

Coffin: 7504

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 71.3 x 23

Description: Molded coffin - flat surface where mask should be. It is possible there was a wooden mask attached originally, which has not survived.

COFFIN OCCUPANT:

Skeleton: 8138 **Sex:** ? **Age Group:** Infansl **Age:** 3.5-4.5

Burial: 311

Date Opened: 3/26/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 7505 **Fill:** 7506

Coffin: 7507

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 147 x 41

Description: Poorly preserved coffin, only preserved over face and chest area. Bluish white color traces.

COFFIN OCCUPANT:

Skeleton: 8139 **Sex:** F **Age Group:** Adultus **Age:** 20-25

APPENDIX II: COFFIN CATALOGUE

Burial: 312

Date Opened: 3/27/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 7508 **Fill:** 7509

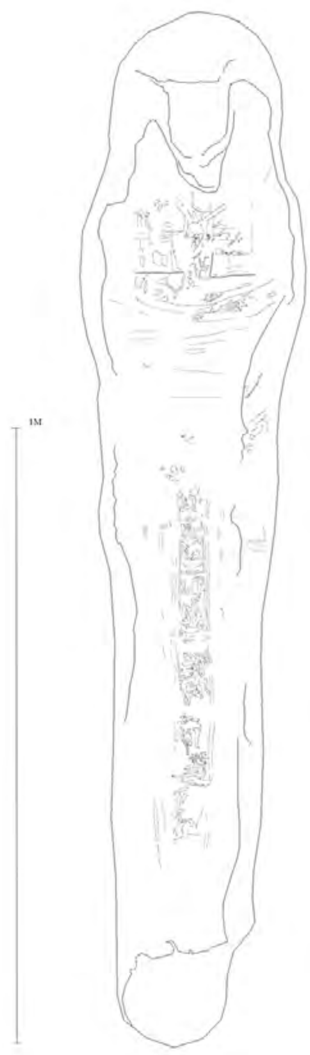
Coffin: 7510

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 187 x 39.5

Description: No color remains on face. Wig is blue. Inscription down the front of coffin reads .....Pth-Skr-Wsr nb Ro-Setaw. Small narrow face, rounded head and foot nd

COFFIN OCCUPANT:

Skeleton: 8140 **Sex:** M? **Age Group:** Juvenilis **Age:** 15-18



Burial: 314

Date Opened: 4/2/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 7513 **Fill:** 7514

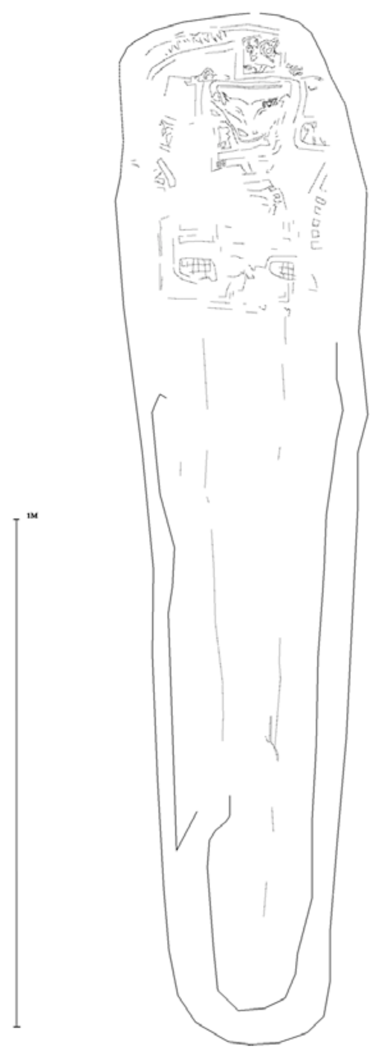
Coffin: 7515

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 192 x 41

Description: Mask is not very well preserved, but has traces of color (blue red and yellow at the top of the head, yellow, red and black below the face and on wig. Ends of wig lappets are decorated in a checkerboard pattern, and traces of an eye outlined in black is still visible. Yellow is used as a pattern color on the coffin, but in places where the color has worn off it also looks like yellow was used as a base.

COFFIN OCCUPANT:

Skeleton: 8142 **Sex:** F **Age Group:** Adultus **Age:** 18-35



Burial: 315

Date Opened: 4/2/2002 **Area:** WCE **Square:** 2.B6 **Phase:** Saite **Cut:** 7516 **Fill:** 7517

Coffin: 7518

Shape: Undetermined **Type:** Undetermined **Dimensions:** 10 x 5

Description: Only a a small patch of coffin bottom remains, no color left.

COFFIN OCCUPANT:

Skeleton: 8143 **Sex:** ? **Age Group:** Infansl **Age:** 3-5

Burial: 320

Date Opened: 4/7/2002 **Area:** WCE **Square:** 2.E7 **Phase:** Saite **Cut:** 7530 **Fill:** 7529

Coffin: 7531

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 185 x 34

Description: Only traces remain of coffin, around and ynder the sksleton. No lid.

COFFIN OCCUPANT:

Skeleton: 8148 **Sex:** ? **Age Group:** Adultus **Age:** 25-35

Burial: 327

Date Opened: 4/10/2002 **Area:** WCE **Square:** 2.B8 **Phase:** Saite **Cut:** 6121 **Fill:** 6133

Coffin: 6167

Shape: Undetermined **Type:** Mudcoffin, plain **Dimensions:** 136.5 x 40

Description: Only part of the bottom of the coffin is preserved under the skeleton. It was not possible to tell the shape of the coffin. No paint or decoration was found.

COFFIN OCCUPANT:

Skeleton: 8155 **Sex:** F? **Age Group:** Adultus **Age:** 18-25

Burial: 330

Date Opened: 4/11/2002 **Area:** WCE **Square:** 2.D6 **Phase:** Saite **Cut:** 7550 **Fill:** 7551

Coffin: 7552

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 184 x 45

Description: Very poorly preserved. Whitewashed, no signs of other colors. Mask made in relief, but no facial features remain. Only mask part of coffin preserved.

COFFIN OCCUPANT:

Skeleton: 8158 **Sex:** M **Age Group:** Maturus **Age:** 35-45

Burial: 331

Date Opened: 4/11/2002 **Area:** WCE **Square:** 2.B8 **Phase:** Saite **Cut:** 7553 **Fill:** 7554

Coffin: 7555

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 183 x 40

Description:

COFFIN OCCUPANT:

Skeleton: 8159 **Sex:** F **Age Group:** Maturus **Age:** 35-45

Burial: 332

Date Opened: 4/21/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 7556 **Fill:** 7557

Coffin: 7558

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 186 x 50.5

Description: The coffin is fragmented, and the face (mask) is missing completely, with only a round/oval hole where it should have been. As the coffin itself is fairly well shaped and appears t have been nicely decorated, it is possible that the mask part of the coffin was originally wood, which has deteriorated, leaving the oval void behind. Lappets of the wig are black, with horizontal bands of red and blue squares on a yellow bottom at the end of the lappets. Mid-chest are traces of a black pattern, possibly a head and forelimbs of a recumbent Anubis?

COFFIN OCCUPANT:

Skeleton: 8160 **Sex:** M **Age Group:** Adultus **Age:** 20-25

Burial: 333

Date Opened: 4/21/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 7560 **Fill:** 7559

Coffin: 7561

Shape: Rectangular **Type:** Mudcoffin, plain **Dimensions:** 105 x 15

Description: Only traces remain of coffin, no sign of lid.

COFFIN OCCUPANT:

Skeleton: 8161 **Sex:** ? **Age Group:** Infansl **Age:** 2-4

Burial: 335

Date Opened: 4/22/2002 **Area:** WCE **Square:** 2.C6 **Phase:** Saite **Cut:** 7563 **Fill:** 7564

Coffin: 7565

Shape: Other **Type:** Mudcoffin, plain **Dimensions:** 199 x 49

Description: Coffin has a rounded head-end and a rectangular foot-end. Only traces remain of the lid along the upper right side of the coffin and the foot-end, and no paint was preserved. A possible explanation to the poor preservation could be that this burial as well was covered in stones, although not to the extent of burial 333, which was right next to it. Possibly the stones were moved from this burial to 333. No signs of color or decoration.

COFFIN OCCUPANT:

Skeleton: 8163 **Sex:** M **Age Group:** Maturus **Age:** 35-50

Burial: 337

Date Opened: 4/24/2002 **Area:** WCE **Square:** 2.B6 **Phase:** Saite **Cut:** 7568 **Fill:** 7569

Coffin: 7570

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 185 x 45.5

Description: Head end of coffin destroyed, but lappets of wig have black, yellow and red stripes.

COFFIN OCCUPANT:

Skeleton: 8165 **Sex:** F **Age Group:** Maturus **Age:** 35-45

Burial: 340

Date Opened: 1/12/2004 **Area:** NSGH **Square:** 4.Q4 **Phase:** Roman **Cut:** 20424 **Fill:** 20425

Coffin: 20426

Shape: Other **Type:** Mudcoffin, plain **Dimensions:** 127 x 22

Description: Round head end - square footbox. No color remains now - photos from 2001 shows the coffin was better preserved when first exposed. The msk had a molded face with delicate nose and a wig, some yellow color preserved on the wig.

COFFIN OCCUPANT:

Skeleton: 20435 **Sex:** ? **Age Group:** Infansl **Age:** 1-2

Burial: 343

Date Opened: 1/15/2004 **Area:** NSGH **Square:** 4.R6 **Phase:** Roman **Cut:** 20429 **Fill:** 20430

Coffin: 20431

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 1.94 x 45

Description: No mask preserved. Coffin has fairly thick walls.

COFFIN OCCUPANT:

Skeleton: 20436 **Sex:** M **Age Group:** Adultus **Age:** 18-23

Burial: 344

Date Opened: 1/21/2004 **Area:** NSGH **Square:** 4.Q4 **Phase:** Roman **Cut:** 20448 **Fill:** 20449

Coffin: 20451

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 202 x 46

Description: Not much remains of the mask and wig, but some color (yellow, black, white) remains on wig. Wig has black stripes and a checkerboard pattern at bottom of lappets.

COFFIN OCCUPANT:

Skeleton: 20450 **Sex:** M **Age Group:** Adultus **Age:** 25-35

Burial: 347

Date Opened: 1/4/2004 **Area:** NSGH **Square:** 4.R4 **Phase:** Roman **Cut:** 20442 **Fill:** 20443

Coffin: 20459

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 177 x 36

Description: Poorly preserved mask with red and yellow color traces

COFFIN OCCUPANT:

Skeleton: 20444 **Sex:** M **Age Group:** Senilis **Age:** 45-60

Burial: 351

Date Opened: 2/4/2004 **Area:** NSGH **Square:** 4.S6 **Phase:** Roman **Cut:** 20462 **Fill:** 20463

Coffin: 21000

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 50 x 192

Description: Badly preserved coffin with traces of winged headdress, stripes of red/orange and blue on wig lappets.

COFFIN OCCUPANT:

Skeleton: 21002 **Sex:** M **Age Group:** Senilis **Age:** 45-65

Burial: 353

Date Opened: 1/25/2004 **Area:** NSGH **Square:** 4.R5 **Phase:** Roman **Cut:** 20467 **Fill:** 20466

Coffin: 20468

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 146 x 39

Description: Very faint traces of red and light pink on coffin body, but lid mainly gone.

COFFIN OCCUPANT:

Skeleton: 20469 **Sex:** F **Age Group:** Adultus **Age:** 24-35

Burial: 367

Date Opened: 2/9/2004 **Area:** NSGH **Square:** 4.R4 **Phase:** Roman **Cut:** 20998 **Fill:** 20999

Coffin: 20508

Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 50 x 196

Description: OUTER COFFIN (F# 20508): Shape visible of mask but no details. Wig preserved with red, black and white stripes

INNER COFFIN (F# 21007): Finely molded face, white bottom with light and dark blue detail on wig. Some red traces on body.

COFFIN OCCUPANT:

Skeleton: 20509 **Sex:** M **Age Group:** Maturus **Age:** 35-50

Burial: 368

Date Opened: 2/8/2004 **Area:** NSGH **Square:** 4.Q4 **Phase:** Roman **Cut:** 20510 **Fill:** 20511

Coffin: 21003

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 184 x 36

Description: Mask is truncated.

COFFIN OCCUPANT:

Skeleton: 21004 **Sex:** F **Age Group:** Juvenilis **Age:** 15-18

Burial: 371

Date Opened: 2/12/2004 **Area:** NSGH **Square:** 4.Q4 **Phase:** Roman **Cut:** 21016 **Fill:** 21017

Coffin: 21018

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 62 x 47

Description: Only traces of mud coffin bottom remains

COFFIN OCCUPANT:

Skeleton: 21024 **Sex:** F **Age Group:** Adultus **Age:** 19-24

Burial: 372

Date Opened: 2/4/2004 **Area:** NSGH **Square:** 4.Q6 **Phase:** Roman **Cut:** 21019 **Fill:** 21020

Coffin: 21027

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 40 x 162

Description: Well p-reserved mask with moulded face - eyes, mouth, nose and cheeks in relief, and wig with white/yellow stripes on lappets. Not much color remains. Coffin was truncated, and lower part was missed and not included in the TS shots. Photgraphed later without crosses for stitching.

COFFIN OCCUPANT:

Skeleton: 21034 **Sex:** M? **Age Group:** Juvenilis **Age:** 14-18

Burial: 373

Date Opened: 2/12/2004 **Area:** NSGH **Square:** 4.S5 **Phase:** Roman **Cut:** 21021 **Fill:** 21022

Coffin: 21023

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 30 x 117

Description: Not preserve - lid collapsed, but traces of white and red on body of coffin.

COFFIN OCCUPANT:

Skeleton: 21025 **Sex:** ? **Age Group:** Infansl **Age:** 1-2

Burial: 374

Date Opened: 2/15/2004 **Area:** NSGH **Square:** 4.Q5 **Phase:** Roman **Cut:** 21028 **Fill:** 21029

Coffin: 21030

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 139 x 36

Description: No mask preserved, head end truncated by 369. Some color left at foot end, longitudinal/vertical blue/red stripes

COFFIN OCCUPANT:

Skeleton: 21035 **Sex:** M **Age Group:** Adultus **Age:** 17-25

Burial: 377

Date Opened: 2/16/2004 **Area:** NSGH **Square:** 4.Q5 **Phase:** Roman **Cut:** 21038 **Fill:** 21039

Coffin: 21040

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 128 x 32

Description: Only outline of coffin remains

COFFIN OCCUPANT:

Skeleton: 21045 **Sex:** ? **Age Group:** InfansII **Age:** 4-8

Burial: 379

Date Opened: 2/17/2004 **Area:** NSGH **Square:** 4.Q6 **Phase:** Roman **Cut:** 21046 **Fill:** 21047

Coffin: 21048

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 160 x 49

Description: Red on and above face 10R 4/6, white base paint above face and as base on body. Blue on wig (5BG 7/2) and collar (5B 5/6). Yellow stripes on wig 10YR 8/6, 10YR 6/6.

Yellow and blue stripes on wig, and traces of red and blue stripes on white bottom on chest, likely Wsh collar. Wide blue stripes are edged with yellow. F\inely molded face on mask, face measures 15.64 cm in length and 14.5 cm in width.

COFFIN OCCUPANT:

Skeleton: 21074 **Sex:** F? **Age Group:** Juvenilis **Age:** 10-15

Burial: 380

Date Opened: 2/18/2004 **Area:** NSGH **Square:** 4.R5 **Phase:** Roman **Cut:** 21050 **Fill:** 21051

Coffin: 21052

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 130 x 24

Description:

COFFIN OCCUPANT:

Skeleton: 21053 **Sex:** M? **Age Group:** Maturus **Age:** 35-45

Burial: 385

Date Opened: 2/23/2004 **Area:** NSGH **Square:** 4.Q4 **Phase:** Roman **Cut:** 21064 **Fill:** 21065

Coffin: 21066

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 189 x 36

Description: Painted coffin with damaged mask. Some red color still visible on face. Also traces of white, red, yellow and blue on the wig lappets. Pattern not discernable. The coffin was painted on both the inside and outside, including the outside bottom (i.e. made elsewhere).

COFFIN OCCUPANT:

Skeleton: 21069 **Sex:** M? **Age Group:** Maturus **Age:** 40-45

Burial: 390

Date Opened: 3/3/2004 **Area:** NSGH **Square:** 4.Q5 **Phase:** Roman **Cut:** 21087 **Fill:** 21088

Coffin: 21089

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 191 x 42

Description: Well preserved mud mask; face red, wig painted in yellow and light blue

COFFIN OCCUPANT:

Skeleton: 21090 **Sex:** F? **Age Group:** Juvenilis **Age:** 12-15

Burial: 391

Date Opened: 3/9/2004 **Area:** NSGH **Square:** 4.Q5 **Phase:** Roman **Cut:** 21091 **Fill:** 21092

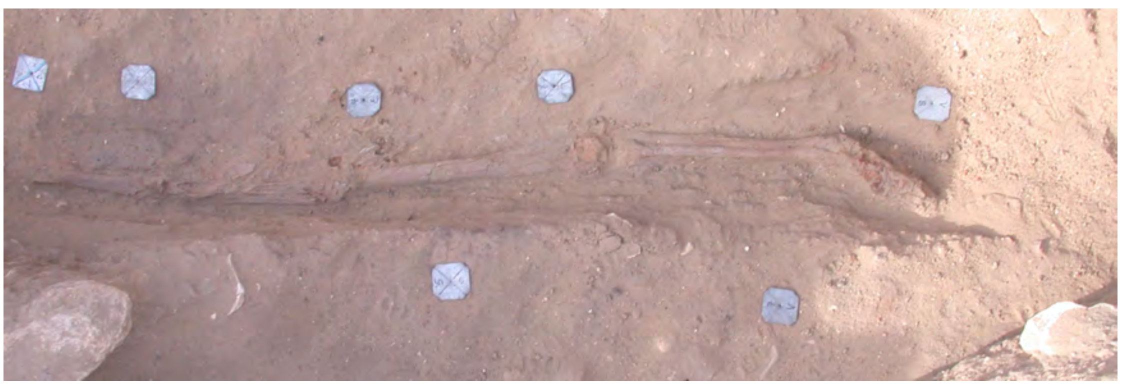
Coffin: 21081

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 40 x 20

Description: Coffin badly truncated, only a sliver remains. Traces of Wsh collar.

COFFIN OCCUPANT:

Skeleton: 21093 **Sex:** ? **Age Group:** Adult **Age:** 18-79



Burial: 395

Date Opened: 3/6/2004 **Area:** NSGH **Square:** 4.R4 **Phase:** Roman **Cut:** 21273 **Fill:** 21104

Coffin: 21105

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 95 x 25

Description: Anthropoid coffin with molded mask that has traces of red and yellow. Red traces on chhek and forhead area. Face proper is broken, but mask has wig with lappets.

COFFIN OCCUPANT:

Skeleton: 21102 **Sex:** ? **Age Group:** Infansl **Age:** 1.5-2.5

Burial: 396

Date Opened: 3/7/2004 **Area:** NSGH **Square:** 4.Q6 **Phase:** Roman **Cut:** 21276 **Fill:** 21277

Coffin: 21278

Shape: Undetermined **Type:** Undetermined **Dimensions:** x

Description: Only traces remain of coffin; no color preserved, foot end rectabgular.

COFFIN OCCUPANT:

Skeleton: 21279 **Sex:** F? **Age Group:** Juvenilis **Age:** 14-17

APPENDIX II: COFFIN CATALOGUE

Burial: 398

Date Opened: 2/15/2005 **Area:** WD **Square:** 3.I40 **Phase:** Saite **Cut:** 23705 **Fill:** 23706

Coffin: 23712

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 40 x 197

Description: Winged scarab headdress with red and blue pattern on white bottom. Small face with modeled ears. Blue color on face - not well preserved. Blue and red vertical stripes between lappets, probably wsh collar. Traces of hieroglyphic inscription down the center of the lid, beginning is legible: htp di nsw Ptah-Skr...... (Probably Wsir, but not visible). There were also less inclusions inside the coffin, suggesting it stayed intact for some time. Wood fragments were found under the mask.

COFFIN OCCUPANT:

Skeleton: 23715 **Sex:** F **Age Group:** Senilis **Age:** 45-70

Burial: 399

Date Opened: 2/5/2005 **Area:** WD **Square:** 3.I40 **Phase:** Saite **Cut:** 23707 **Fill:** 23708

Coffin: 23709

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 180 x 45

Description: Anthropoid coffin, lid intact but "melted" onto body, traces of white paint on outside.

COFFIN OCCUPANT:

Skeleton: 23713 **Sex:** F **Age Group:** Adultus **Age:** 25-35

Coffin: 23716

Shape: Undetermined **Type:** Wood coffin **Dimensions:** x

Description: Only fragments of wood left along back of child

COFFIN OCCUPANT:

Skeleton: 23714 **Sex:** ? **Age Group:** Infansl **Age:** 3-5

Burial: 401

Date Opened: 2/19/2005 **Area:** WD **Square:** 3.I40 **Phase:** Saite **Cut:** 23718 **Fill:** 23719

Coffin: 23729

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 175 x 35

Description: Well preserved mask, rounded face, white/black wig extended to the chest, wsh collar, blue and red lines

COFFIN OCCUPANT:

Skeleton: 23738 **Sex:** M **Age Group:** Senilis **Age:** 45-60+

Burial: 402

Date Opened: 2/21/2005 **Area:** WD **Square:** 3J.39 **Phase:** Saite **Cut:** 23720 **Fill:** 23721

Coffin: 23722

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 46 x 188

Description: Finely painted but badly preserved mud coffin. Yellow and blue striped wig with red dotted outline around edges of wig. Molded face; not preserved. Wsh collar in red and blue with black outlines. Traces of hieroglyphic inscription; badly preserved, but "htp di nsw Wsir" is legible. Also visible is god/human figure on chest, below collar with red skin, blue hair; standing in adoration pose with arm in front of face. Also wood traces preserved in coffin walls.

COFFIN OCCUPANT:

Skeleton: 23739 **Sex:** M **Age Group:** Maturus **Age:** 45-50

Burial: 404

Date Opened: 2/28/2005 **Area:** WD **Square:** 3.I40 **Phase:** Saite **Cut:** 23725 **Fill:** 23726

Coffin: 23731

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 45 x 186

Description: Very poorly preserved mudmask with white color and white lappets - mask not preserved.

COFFIN OCCUPANT:

Skeleton: 23740 **Sex:** F **Age Group:** Senilis **Age:** 45-60

Burial: 405

Date Opened: 2/5/2005 **Area:** WD **Square:** 3.I40 **Phase:** Saite **Cut:** 23727 **Fill:** 23728

Coffin: 23730

Shape: Hexagonal **Type:** Painted/plastered mudcoffin **Dimensions:** 190 x 60

Description: Badly preserved coffin in shape of an irregular hexagon. White pigment remains on wig lappets; face mask not preserved, but traces of a molded mask still visible.

COFFIN OCCUPANT:

Skeleton: 23736 **Sex:** F **Age Group:** Senilis **Age:** 50-60

Burial: 406

Date Opened: 2/5/2005 **Area:** WD **Square:** 3.J39 **Phase:** Saite **Cut:** 23733 **Fill:** 23734

Coffin: 23732

Shape: Rectangular **Type:** Wood coffin **Dimensions:** 108 x 23

Description: Too damaged, but appears to have been a wooden box. No mask.

COFFIN OCCUPANT:

Skeleton: 23735 **Sex:** ? **Age Group:** Infansl **Age:** 1.5-2.5

Burial: 407

Date Opened: 3/5/2005 **Area:** WD **Square:** 3.I41 **Phase:** Saite **Cut:** 23741 **Fill:** 23742

Coffin: 23744

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 1.84 x 42

Description: Monovhrome yellow, with wig and lappets. Originally appears to have had a molded mask, but face is damaged.

COFFIN OCCUPANT:

Skeleton: 23743 **Sex:** F **Age Group:** Juvenilis **Age:** 15-18

Burial: 408

Date Opened: 3/5/2005 **Area:** WD **Square:** 3.I39 **Phase:** Saite **Cut:** 23747 **Fill:** 23748

Coffin: 23749

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 166 x 35

Description: Finely molded face

COFFIN OCCUPANT:

Skeleton: 23752 **Sex:** M **Age Group:** Juvenilis **Age:** 13-16

Burial: 409

Date Opened: 3/9/2005 **Area:** WD **Square:** 3.I40 **Phase:** Saite **Cut:** 23750 **Fill:** 23751

Coffin: 23756

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 183 x 45

Description: Only foot end preserved

COFFIN OCCUPANT:

Skeleton: 23758 **Sex:** M **Age Group:** Adultus **Age:** 25-30

Coffin: 23757

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** 84 x 45

Description:

COFFIN OCCUPANT:

Skeleton: 23759 **Sex:** ? **Age Group:** Adult **Age:** 18-79

Burial: 413

Date Opened: 12/11/2006 **Area:** WD **Square:** 3.J39 **Phase:** Saite **Cut:** 26185 **Fill:** 26186

Coffin: 26191

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 161 x 36

Description: Coffin very deteriorated - no mask or color remains.

COFFIN OCCUPANT:

Skeleton: 26192 **Sex:** F **Age Group:** Senilis **Age:** 45-60

Burial: 418

Date Opened: 11/16/2006 **Area:** MS **Square:** 3.L48 **Phase:** Roman **Cut:** 26205 **Fill:** 26206

Coffin: 26208

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 183 x 44

Description: Deteriorated coffin, flattened and misshapen. Molded facial features, some yellow and blue traces remain on upper part of coffin and wig, no pattern visible.

COFFIN OCCUPANT:

Skeleton: 26213 **Sex:** M **Age Group:** Adultus **Age:** 30-35

Coffin: 26209

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 135 x 42

Description: Coffin very deteriorated, some white and red color preserved on mask but no pattern visible. Molded facial features.

COFFIN OCCUPANT:

Skeleton: 26214 **Sex:** F? **Age Group:** Juvenilis **Age:** 12-17

Burial: 425

Date Opened: 11/5/2006 **Area:** WCES **Square:** **Phase:** Roman **Cut:** 27204 **Fill:** 27205

Coffin: 27206

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 210 x 35

Description: No mask preserved, only traces left of coffin. No colour.

COFFIN OCCUPANT:

Skeleton: 27207 **Sex:** M? **Age Group:** Adultus **Age:** 18-25

Burial: 434

Date Opened: 11/5/2006 **Area:** WCES **Square:** 4X46 **Phase:** Saite **Cut:** 27208 **Fill:** 27209

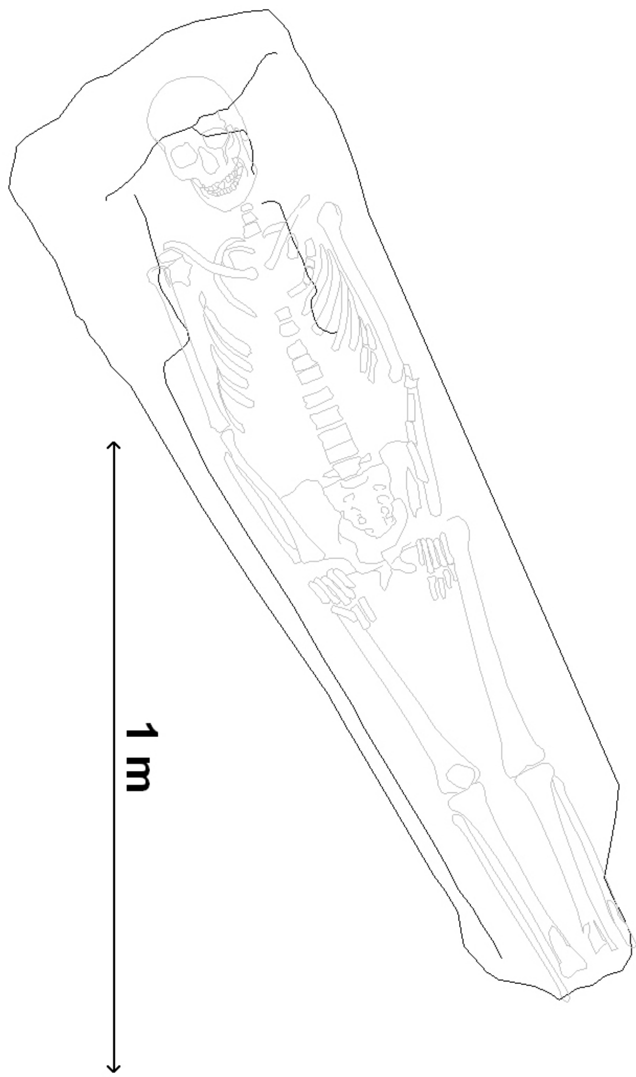
Coffin: 27215

Shape: Subrectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 100 x 50

Description: Poorly preserved coffin, traces of white paint.

COFFIN OCCUPANT:

Skeleton: 27220 **Sex:** M **Age Group:** Adultus **Age:** 20-30



Burial: 442

Date Opened: 2/21/2007 **Area:** WCES **Square:** 4.T.4 **Phase:** Roman **Cut:** 28267 **Fill:** 28269

Coffin: 28280

Shape: Anthropoid **Type:** Mudcoffin, plain **Dimensions:** 136 x 29

Description: Nicely molded anthropoid coffin with marked footbox and molded facial features on mask. Truncated at head end. No color remains. The coffin was much too large for the small child inside.

COFFIN OCCUPANT:

Skeleton: 28281 **Sex:** ? **Age Group:** Infansl **Age:** 3.665-6.335

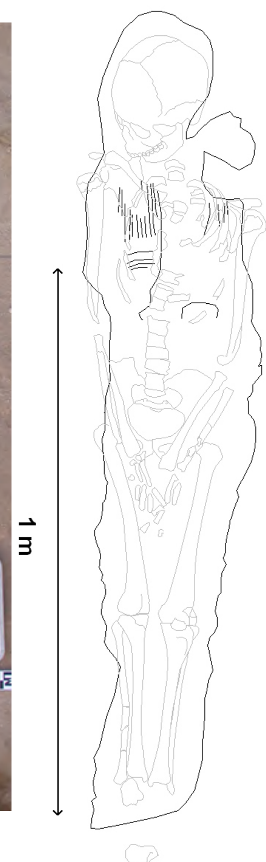
Coffin: 28293

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 195 x 38

Description: The coffin was poorly preserved but some colors remained. The inside bottom of the coffin was painted in red and black, while the lid had traces of wig lappets with vertical bands of yellow and light blue on a white bottom, with horizontal bands of the same colors at the end of the lappets. No mask was preserved.

COFFIN OCCUPANT:

Skeleton: 28294 **Sex:** M **Age Group:** Maturus **Age:** 35-50



Burial: 450

Date Opened: 3/12/2007 **Area:** WCES **Square:** 4.T4 **Phase:** Saite **Cut:** 28273 **Fill:** 28274

Coffin: 28314

Shape: Undetermined **Type:** Painted/plastered mudcoffin **Dimensions:** x

Description: Only a small piece of coffin remained on skull, with traces of blue, yellow and white. No mask preserved.

COFFIN OCCUPANT:

Skeleton: 28305 **Sex:** M? **Age Group:** Adult **Age:** 18-79

Burial: 467

Date Opened: 2/17/2009 **Area:** CHUTE **Square:** 3M.42 **Phase:** Saite **Cut:** 31323 **Fill:** 31324

Coffin: 31333

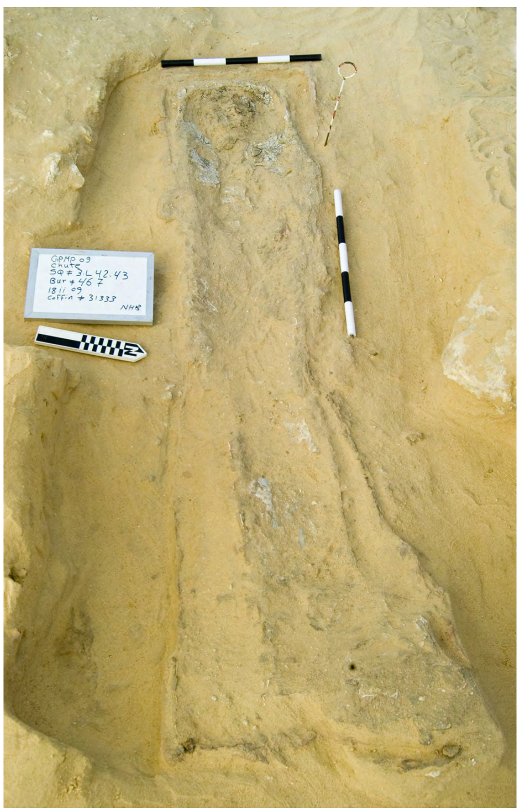
Shape: Rectangular **Type:** Painted/plastered mudcoffin **Dimensions:** 200 x 48

Description: Coffin appears to be made of two separate pieces: 1 rectangular wood/mud (traces of phytolith?) base with four sides of an inner painted mud coffin in anthropoid form. Outer coffin appears to have been made of wood with painted sides depicted four gods (sons of Horus?) in red/blue/yellow/black.

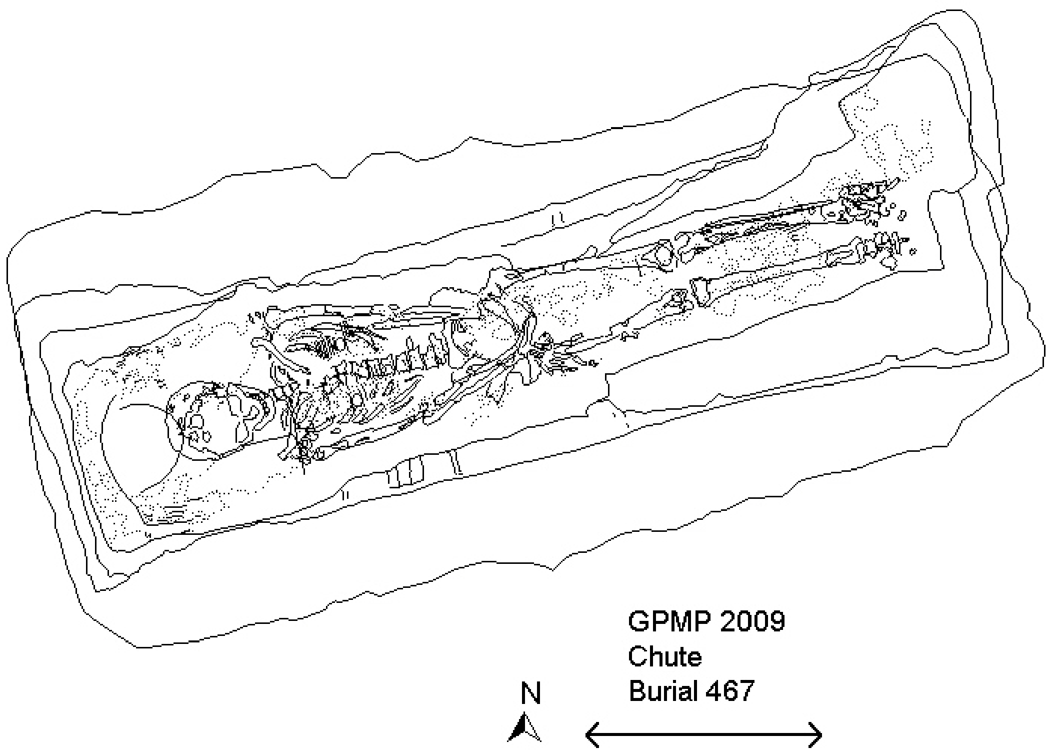
Sides of inner mud coffin are plastered in white paint, outer coffin had base as well. The skeleton is packed/embedded in hardened mud which contains small lacunae which originally may have contained material which has subsequently degraded. This mud layer may have hardened as a result of flooding/groundwater.

COFFIN OCCUPANT:

Skeleton: 31360 **Sex:** F **Age Group:** Adultus **Age:** 24-35



APPENDIX II: COFFIN CATALOGUE



Burial: 478

Date Opened: 3/9/2009 **Area:** W. **Square:** 3.Q43 **Phase:** Saite **Cut:** 31396 **Fill:** 31395

Coffin: 31942

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 37 x 172

Description:

COFFIN OCCUPANT:

Skeleton: 31949 **Sex:** F **Age Group:** Senilis **Age:** 45-59

Burial: 486

Date Opened: 3/14/2009 **Area:** W.COM **Square:** 3.R44 **Phase:** Saite **Cut:** 31907 **Fill:** 31908

Coffin: 31931

Shape: Anthropoid **Type:** Painted/plastered mudcoffin **Dimensions:** 200 x 56

Description: Face mask broken, parts of wig preserved

COFFIN OCCUPANT:

Skeleton: 31930 **Sex:** M **Age Group:** Adultus **Age:** 17-25

APPENDIX III A:

LIST OF ALL OBJECTS BY BURIAL

APPENDIX III: OBJECT CATALOGUE

Burial: 115 Skeleton: 7956

Sex M **Age Group:** Adultus **Age Range:** 20-25 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(3)	Intrusive Y/N?
2826		Votive Vessel	Votive vessel	1	N
01a-73	2429	Bead	Faience bead	1	Y
Obj.No?		Other	pearl	1	Y

Burial: 120 Skeleton: 7961

Sex M **Age Group:** Maturus **Age Range:** 36-42 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
01a-82		Other	pearl	1	N

Burial: 123 Skeleton: 7964

Sex M **Age Group:** Adultus **Age Range:** 17-24 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:()	Intrusive Y/N?
01a-83	2431	Bead	Faience bead		Y

Burial: 124 Skeleton: 7965

Sex ? **Age Group:** InfansI **Age Range:** 2-4 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
01a-81	2432	Earring	Jewelry	1	N
Obj.No?		Other	pearl	1	N

Burial: 125 Skeleton: 7966

Sex ? **Age Group:** InfansI **Age Range:** 2-4 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
01a-84	2436	Bead	Faience bead	1	N
01a-85	01a-85	Amulet	Sobek	1	N

Burial: 126 Skeleton: 7967

Sex M? **Age Group:** Juvenilis **Age Range:** 16-18 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
01a-88	2437	Bead	Faience bead	1	Y
2001-4		Other	pearl	1	Y

APPENDIX III: OBJECT CATALOGUE

Burial: 127 Skeleton: 7968
Sex ? **Age Group:** InfansII **Age Range:** 7-9 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
01a-98	01a-98	Amulet	Nut - sow	1	N

Burial: 134 Skeleton: 7974
Sex ? **Age Group:** InfansII **Age Range:** 4-8 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(19)	Intrusive Y/N?
01a-126	01a-126	Amulet	Wdjat incised	1	N
01a-102	2438	Bead	Faience bead	2	N
01a-103	01a-103	Amulet	Nut - sow	1	N
01a-109a	see desc	Bead	Faience bead	1	N
01a-109b	see desc	Bead	Faience bead	1	N
01a-109c	2439c	Bead	Faience bead	2	N
01a-127a	see desc	Bead	Faience bead	1	N
01a-127b	see desc	Bead	Glass bead	1	N
01a-127c	see desc	Bead	Faience bead	1	N
01a-127d	2440d	Bead	Faience bead	7	N
01a-127e	see desc	Bead	Faience bead	1	N

Burial: 139 Skeleton: 7979
Sex ? **Age Group:** Infant **Age Range:** .665-1.335 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(8)	Intrusive Y/N?
01a-101	2442	Cowrie Shell	Cowrie	3	N
01a-100	2441a	Bead	Glass bead	1	N
01a-100b	2441b	Cowrie Shell	Cowrie	4	N

Burial: 140 Skeleton: 7980
Sex ? **Age Group:** InfansII **Age Range:** 4-8 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
01a-116a	01a-116a	Amulet	Wdjat incised	1	N
01a-116b	01a-116b	Amulet	Hathor - cow	1	N

APPENDIX III: OBJECT CATALOGUE

Burial: 141 **Skeleton:** 7981
Sex ? **Age Group:** Infansl **Age Range:** 2-4 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(8)	Intrusive Y/N?
01a-119	01a-119	Earring	Jewelry	1	N
01a-120	2445	Earring	Jewelry	1	N
01a-106	2443	Cowrie Shell	Cowrie	4	N
01a-107	2444	Bead	Faience bead	2	N

Burial: 142 **Skeleton:** 7982
Sex ? **Age Group:** Infant **Age Range:** .5-1 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(3)	Intrusive Y/N?
01a-118	2447	Earring	Jewelry	1	N
01a-104	2446	Cowrie Shell	Cowrie	1	N
01a-105	01a-105	Amulet	Wdjat bead	1	N

Burial: 148 **Skeleton:** 7988
Sex ? **Age Group:** Infansl **Age Range:** 1-2 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(4)	Intrusive Y/N?
01a-122	2448	Cowrie Shell	Cowrie	1	N
01a-123	2449	Bead	Faience bead	2	N
01a-124	2450	Bead	Bead	1	N

Burial: 150 **Skeleton:** 8586
Sex ? **Age Group:** Adultus **Age Range:** 18-44 **Phase:** Saite **P/S:** S

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:()	Intrusive Y/N?

Burial: 160 **Skeleton:** 7996
Sex M **Age Group:** Adultus **Age Range:** 25-35 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
1601		Other	pearl	1	Y

Burial: 161 Skeleton: 7997
Sex M **Age Group:** Maturus **Age Range:** 35-45 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
3624		Votive Vessel	Votive vessel	1	N
		Other	vessel fill	1	N

Burial: 168 Skeleton: 8002
Sex F **Age Group:** Senilis **Age Range:** 50-74 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(4)	Intrusive Y/N?
		Other	leather	1	N
		Other	leather	1	N
		Other	leather	1	N
		Other	leather	1	N

Burial: 192 Skeleton: 8026
Sex F **Age Group:** Adultus **Age Range:** 18-20 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
02-46	2459	Bead	Faience bead	2	N

Burial: 197 Skeleton: 8031
Sex ? **Age Group:** InfansII **Age Range:** 5-14 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(3)	Intrusive Y/N?
02-44	2460	Bead	Faience bead	1	N
02-45	2461	Bead	Stone bead	1	N
02-17	17	Earring	Jewelry	1	N

Burial: 205 Skeleton: 8036
Sex ? **Age Group:** InfansI **Age Range:** 3.665-6.335 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(194)	Intrusive Y/N?
5911		Votive Vessel	Votive vessel	1	N
02-37	2470	Bead	Faience bead	136	N
02-28	2462	Bracelet	Faience bead	1	N
02-29	2463	Bracelet	Stone bead	1	N
02-30	2464	Bracelet	Faience bead	1	N
02-31	2465	Bracelet	Faience bead	1	N

02-32	2466	Bracelet	Glass bead	1	N
02-33	2467	Bracelet	Faience bead	1	N
02-34	2468	Bracelet	Faience bead	1	N
02-36	02-36	Amulet	Wdjat composite	1	N
02-38	2471	Bead	Faience bead	41	N
02-35	2469	Bracelet	Imitation cowrie	1	N
02-41a	2474a	Bead	Faience bead	1	N
02-41b	2474b	Bead	Faience bead	1	N
02-40	2473	Bracelet	Jewelry	1	N
02-39	2472	Bead	Faience bead	1	N
02-192	02-192	Bead	Faience bead	1	N
02-193	02-193	Bead	Glass bead	1	N
02-194	02-194	Earring	Jewelry	1	N

Burial: 206 Skeleton: 8037

Sex ? **Age Group:** Infansl **Age Range:** 3-4 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(19)	Intrusive Y/N?
02-23	2477	Cowrie Shell	Cowrie	2	N
02-26	2480	Anklet	Jewelry	1	N
02-27	2481	Anklet	Jewelry	1	N
02-24	2478	Cowrie Shell	Cowrie	11	N
02-22	2476	Other	Jewelry	1	N
02-20	2475	Bead	metal bead	1	N
02-21	02-21	Amulet	Wdjat composite	1	N
02-25	2479	Pendant	Jewelry	1	N

Burial: 207 Skeleton: 8038

Sex F? **Age Group:** Juvenilis **Age Range:** 12-15 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
02-42	2482	Bead	Faience bead	1	Y

APPENDIX III: OBJECT CATALOGUE

Burial: 210 Skeleton: 8041

Sex F **Age Group:** Maturus **Age Range:** 30-45 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:()	Intrusive Y/N?
		Other			Y

Burial: 212 Skeleton: 8043

Sex M? **Age Group:** Adultus **Age Range:** 25-35 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(3)	Intrusive Y/N?
02-61	2483	Bead	Imitation cowrie	1	N
02-123	2484	Bead	Faience bead	2	N

Burial: 213 Skeleton: 8044

Sex ? **Age Group:** Infansl **Age Range:** 1.335-2.665 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
02-43	02-43	Scarab	Scarab	1	N

Burial: 215 Skeleton: 8045

Sex F **Age Group:** Adultus **Age Range:** 25-35 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
5930		Votive Vessel	Votive vessel	1	N
02-78	2486	Bead	Stone bead	1	Y

Burial: 217 Skeleton: 8047

Sex ? **Age Group:** Infansl **Age Range:** 2-4 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(6)	Intrusive Y/N?
02-64a	02-64a	Amulet	Other	1	N
02-64b	2487b	Bead	Bead	1	N
02-65	2488	Bead	Bead	1	N
02-66	2489	Bead	Glass bead	1	N
02-67	2490	Bead	Faience bead	2	N

Burial: 221 Skeleton: 8051

Sex M **Age Group:** Maturus **Age Range:** 35-55 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
6101	AW59735	Votive Vessel	Votive vessel	1	N
02-121	2491	Bead	Faience bead	1	

Burial: 222 Skeleton: 8052
Sex ? **Age Group:** Infansl **Age Range:** 3-5 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(7)	Intrusive Y/N?
02-125	2492	Bead	Faience bead	1	N
02-126	2493	Bead	Glass bead	4	N
02-127	2494	Bead	Faience bead	2	N

Burial: 225 Skeleton: 8055
Sex ? **Age Group:** Infansl **Age Range:** .665-1.335 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
		Other	Other		
02-114	2495	Cowrie Shell	Cowrie	1	N

Burial: 226 Skeleton: 8056
Sex ? **Age Group:** Infant **Age Range:** 0.25-0.75 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
02-118	2496	Cowrie Shell	Cowrie	1	N

Burial: 227 Skeleton: 8057
Sex F **Age Group:** Adultus **Age Range:** 18-21 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(12)	Intrusive Y/N?
02-103	2497	Bead	Imitation cowrie	9	N
02-104	2499	Bead	Glass bead	1	N
02-105	2498	Bead	Glass bead	1	N
02-106	02-106	Amulet	Wdjat incised	1	N

Burial: 235 Skeleton: 8065
Sex F **Age Group:** Maturus **Age Range:** 45-50 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:()	Intrusive Y/N?
		Other			Y
		Other			Y
		Other			Y

APPENDIX III: OBJECT CATALOGUE

Burial: 238 Skeleton: 8166
Sex ? **Age Group:** InfansI **Age Range:** 1.335-2.665 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(3)	Intrusive Y/N?
02-100	2501	Cowrie Shell	Cowrie	1	N
02-101	02-101	Amulet	Wdjat composite	1	N
02-102	2500	Bead	Stone bead	1	N

Burial: 240 Skeleton: 8067
Sex ? **Age Group:** InfansI **Age Range:** 3-5 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(4)	Intrusive Y/N?
02-92	02-92	Amulet	Bes	1	N
02-93	02-93	Amulet	Bes	1	N
02-94	02-94	Amulet	Wdjat incised	1	N
02-95	02-95	Amulet	Wdjat incised	1	N

Burial: 241 Skeleton: 8068
Sex ? **Age Group:** InfansII **Age Range:** 4-8 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(7)	Intrusive Y/N?
02-449	02-449	Bead	Faience bead	1	N
02-195	2502	Cowrie Shell	Cowrie	6	N

Burial: 242 Skeleton: 8069
Sex M **Age Group:** Maturus **Age Range:** 33-45 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
6151		Votive Vessel	Votive vessel	1	N

Burial: 243 Skeleton: 8070
Sex ? **Age Group:** InfansII **Age Range:** 4-8 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
02-196	2503	Bracelet		1	N

Burial: 245 Skeleton: 8074
Sex ? **Age Group:** Infant **Age Range:** .75-1 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(6)	Intrusive Y/N?
02-197	2505	Bead	Bead	2	N
02-197a	02-197a	Cowrie Shell	Cowrie	2	N

02-197b	02-197b	Bead	Imitation cowrie	1	N
02-197c	02-197c	Bead	Faience bead	1	N

Burial: 247 Skeleton: 8076
Sex M? **Age Group:** Juvenilis **Age Range:** 12-18 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
6168		Votive Vessel	Votive vessel	1	N

Burial: 248 Skeleton: 8071
Sex M **Age Group:** Adultus **Age Range:** 35-35 **Phase:** Saite **P/S:** S

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(7)	Intrusive Y/N?
	1307	Other		1	Y
02-321	2504	Bead		2	Y
02-489	2545	Bead	Cowrie	4	N

Burial: 249 Skeleton: 8078
Sex ? **Age Group:** Infant **Age Range:** 0.5-1 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
02-198	2506	Cowrie Shell	Cowrie	1	N
02-199	02-199	Amulet	Wdjat bead	1	N

Burial: 250 Skeleton: 8079
Sex ? **Age Group:** Infant **Age Range:** .75-1.3 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
2210	2210	Bead	Faience bead	1	N

Burial: 253 Skeleton: 8082
Sex ? **Age Group:** InfansI **Age Range:** 1.5-2.5 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
02-517	2267	Bead	Faience bead	1	N

Burial: 255 Skeleton: 8084
Sex F? **Age Group:** Juvenilis **Age Range:** 12-15 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
Obj.No?		Cowrie Shell	Cowrie	1	N

APPENDIX III: OBJECT CATALOGUE

Burial: 257 **Skeleton:** 8086
Sex M **Age Group:** Juvenilis **Age Range:** 12-15 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
02-200	2507	Cowrie Shell	Cowrie	1	N

Burial: 258 **Skeleton:** 8087
Sex ? **Age Group:** InfansII **Age Range:** 5-9 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
02-201	2508	Earring	Jewelry	1	N
02-202	2546	Bead	Stone bead	1	N

Burial: 262 **Skeleton:** 8091
Sex ? **Age Group:** Infant **Age Range:** .5-1 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(20)	Intrusive Y/N?
02-203a	02-203a	Bead	Faience bead	10	N
02-203b	02-203b	Bead	Stone bead	1	N
02-203c	02-203c	Cowrie Shell	Cowrie	1	N
02-204	2510	Bracelet	Jewelry	1	N
02-205a	2511a	Bead	Faience bead	4	N
02-205b	2511b	Bead	Faience bead	1	N
02-205c	02-205c	Bead	Faience bead	1	N
02-206	206	Bead	Stone bead	1	N

Burial: 263 **Skeleton:** 8092
Sex M **Age Group:** Adultus **Age Range:** 18-20 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
02-207	2512	Bracelet	Jewelry	1	N

Burial: 266 **Skeleton:** 8095
Sex ? **Age Group:** InfansI **Age Range:** 2-4 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
02-208	208	Amulet	Bes	1	N

APPENDIX III: OBJECT CATALOGUE

Burial: 268 Skeleton: 8097

Sex ? **Age Group:** Juvenilis **Age Range:** 14-18 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(4)	Intrusive Y/N?
02-209	2513	Bead	Faience bead	1	N
02-210	2514	Bead	Faience bead	1	N
02-510a	2272	Bead	Faience bead	1	N
02-510b	2271	Bead	Faience bead	1	N

Burial: 271 Skeleton: 8100

Sex F **Age Group:** Adultus **Age Range:** 21-24 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(3)	Intrusive Y/N?
02-211a		Amulet	Wdjat incised	1	N
02-211b		Bead	Stone bead	1	N
02-211c		Bead	Faience bead	1	N

Burial: 284 Skeleton: 8112

Sex ? **Age Group:** Infansl **Age Range:** 3-5 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
02-252		Bead	metal bead	1	N
02-258		Cowrie Shell	Cowrie	1	N

Burial: 285 Skeleton: VS7438

Sex **Age Group:** Nosk. **Age Range:** **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(32)	Intrusive Y/N?
02-255		Bead	Faience bead	1	N
02-261a		Cowrie Shell	Cowrie	18	N
02-261b		Bead	Bead	1	N
02-261c		Bead	Bead	1	N
02-261d		Bead	Imitation cowrie	1	N
02-261e		Bead	Faience bead	1	N
02-261f		Bead	Faience bead	1	N
02-261g		Bead	Faience bead	1	N
02-261h		Bead	Faience bead	1	N
02-261i		Bead	Faience bead	1	N

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:	Intrusive Y/N?
02-261j		Bead	Bead	1	N
02-257		Bracelet	Jewelry	1	N
7444		Votive Vessel	Votive vessel	3	N

Burial: 287 Skeleton: 8114

Sex ? **Age Group:** InfansII **Age Range:** 4-8 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(11)	Intrusive Y/N?
02-260a		Cowrie Shell	Cowrie	5	N
02-260b		Bead	Faience bead	1	N
02-260c		Pendant	Wdjat incised	1	N
02-260d		Amulet	Wdjat bead	1	N
02-260e		Bead	Faience bead	1	N
02-260f		Amulet	Wdjat bead	1	N
02-260g		Bead	Faience bead	1	N

Burial: 288 Skeleton: 8115

Sex ? **Age Group:** InfansI **Age Range:** 1-2 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(107)	Intrusive Y/N?
02-298a		Bead	Faience bead	1	N
02-298b		Amulet	Wdjat composite	2	N
02-298c		Bead	Faience bead	2	N
02-298d		Cowrie Shell	Cowrie	1	N
02-298e		Bead	Stone bead	1	N
02-298f		Pendant	Lotus bud	1	N
02-298g		Pendant	Lotus bud	1	N
02-298h		Bead	Stone bead	18	N
02-298i		Bead	Faience bead	29	N
02-289a		Pendant	Jewelry	1	N
02-289b		Pendant	Jewelry	1	N
02-290		Bead	Faience bead	4	N
02-297a		Earring/Ring	Jewelry	1	N
02-297b		Bead	metal bead	6	N
02-297c		Bead	metal bead	21	N

02-299a	Amulet	Wdjat composite	2	N
02-299b	Bracelet	Jewelry	1	N
02-266a	Bead	Wdjat composite	1	N
02-266b	Bead	metal bead	1	N
02-266c	Bead	Faience bead	1	N
02-267a	Bead	metal bead	5	N
02-267b	Bead	Faience bead	4	N
02-267c	Bead	metal bead	1	N
02-336	Earring	Jewelry	1	N

Burial: 291 Skeleton: 8118

Sex F **Age Group:** Adultus **Age Range:** 25-35 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:()	Intrusive Y/N?
02-277		Bead			Y

Burial: 293 Skeleton: 8120

Sex ? **Age Group:** InfansII **Age Range:** 5-9 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
02-264		Other	iron tweezers	1	N
02-265		Other	faience tile	1	N

Burial: 294 Skeleton: 8121

Sex ? **Age Group:** InfansII **Age Range:** 10-12 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
02-278a		Amulet	Wdjat incised	1	N
02-278b		Amulet	Wdjat incised	1	N

Burial: 295 Skeleton: 8122

Sex M **Age Group:** Adultus **Age Range:** 17-24 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
7466		Votive Vessel	Votive vessel	1	N

Burial: 297 Skeleton: 8125

Sex F **Age Group:** Maturus **Age Range:** 45-55 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
Obj.No?		Other	pearl	1	N

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:	Intrusive Y/N?
02-507		Bead	pearl	1	N

Burial: 298 Skeleton: 8126
Sex ? **Age Group:** Infansl **Age Range:** 2-4 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
02-356		Bead	Imitation cowrie	1	N
		Other			
		Other			

Burial: 302 Skeleton: 8130
Sex ? **Age Group:** Infansl **Age Range:** 2-4 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
7476		Votive Vessel	Votive vessel	1	N

Burial: 303 Skeleton: 8131
Sex M **Age Group:** Adultus **Age Range:** 20-30 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(5)	Intrusive Y/N?
02-303		Bead	Bead	2	N
		Other	pearl	1	N
		Other	Other	1	N
02-312		Earring/Ring	Jewelry	1	N

Burial: 308 Skeleton: 8136
Sex F **Age Group:** Senilis **Age Range:** 60-79 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
02-311		Cowrie Shell	Cowrie	1	N

Burial: 312 Skeleton: 8140
Sex M? **Age Group:** Juvenilis **Age Range:** 15-18 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
Obj.No?		Other	pearl	1	N

Burial: 313 Skeleton: 8141
Sex ? **Age Group:** Infant **Age Range:** 0-.1675 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
02-432		Amulet	Wdjat bead	1	N

Burial: 314 **Skeleton:** 8142
Sex F **Age Group:** Adultus **Age Range:** 18-35 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(22)	Intrusive Y/N?
02-361		Bead	Bead	20	N
02-435		Bead	Bead	1	N
02-437		Bead	Bead	1	N

Burial: 316 **Skeleton:** 8144
Sex ? **Age Group:** Infant **Age Range:** .5-1 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(11)	Intrusive Y/N?
02-373		Bead	Faience bead	1	N
02-381		Bead	Faience bead	3	N
02-382		Bead	Faience bead	3	N
02-383a		Other	metal	1	N
02-383b		Cowrie Shell	Cowrie	1	N
02-384		Cowrie Shell	Cowrie	1	N
Obj.No?		Bead	Bead	1	N

Burial: 326 **Skeleton:** 8154
Sex ? **Age Group:** Infansl **Age Range:** 1-2 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
02-417a		Bead	metal bead	1	N
02-417b		Bead	Faience bead	1	N

Burial: 328 **Skeleton:** 8156
Sex ? **Age Group:** Infansl **Age Range:** 2-4 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
02-435		Bead	Stone bead	1	N

Burial: 329 **Skeleton:** 8157
Sex ? **Age Group:** Infansl **Age Range:** 3-5 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(28)	Intrusive Y/N?
02-419		Cowrie Shell	Cowrie	26	N
02-418		Bead	Faience bead	1	N
02-431		Bead	Faience bead	1	N

APPENDIX III: OBJECT CATALOGUE

Burial: 333 Skeleton: 8161
Sex ? **Age Group:** Infansl **Age Range:** 2-4 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(10)	Intrusive Y/N?
02-501		Other	shist sherd	1	N
02-505		Bead	Imitation cowrie	1	N
02-473		Cowrie Shell	Cowrie	5	N
02-471		Bead	shell bead	1	N
02-472		Cowrie Shell	Cowrie	2	N

Burial: 335 Skeleton: 8163
Sex M **Age Group:** Maturus **Age Range:** 35-50 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
02-504		Bead	Faience bead	1	N

Burial: 336 Skeleton: 8164
Sex ? **Age Group:** Infansl **Age Range:** 3-5 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:()	Intrusive Y/N?
		Other			

Burial: 338 Skeleton: 20439
Sex ? **Age Group:** Infant **Age Range:** .665-1.335 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(4)	Intrusive Y/N?
	1209a	Bead	Faience bead	2	N
714	1209b	Amulet	Wdjat incised	1	N
727	1252	Amulet	Wdjat incised	1	N

Burial: 339 Skeleton: 20507
Sex M **Age Group:** Maturus **Age Range:** 40-45 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
		Other	metal slag	1	

Burial: 340 Skeleton: 20435
Sex ? **Age Group:** Infansl **Age Range:** 1-2 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(6)	Intrusive Y/N?
666	1200	Scarab	Scarab	1	N
670	1202	Amulet	Horus falcon	1	N

671	1203	Bead	metal bead	2	N
672	1210	Cowrie Shell	Cowrie	1	N
673	1201	Earring	Jewelry	1	N

Burial: 348 Skeleton: 20474

Sex M **Age Group:** Senilis **Age Range:** 45-60 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
20454	20454	Votive Vessel	Votive vessel	1	N

Burial: 353 Skeleton: 20469

Sex F **Age Group:** Adultus **Age Range:** 24-35 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:()	Intrusive Y/N?
		Bead			Y

Burial: 354 Skeleton: 21001

Sex ? **Age Group:** InfansII **Age Range:** 7-9 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
20477		Votive Vessel	Votive vessel	1	N
1771		Other	Other		Y
20478		Votive Vessel	Votive vessel	1	N

Burial: 366 Skeleton: 20504

Sex M **Age Group:** Maturus **Age Range:** 35-45 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:()	Intrusive Y/N?
		Bead			Y
		Bead			Y
1514		Bead			Y

Burial: 373 Skeleton: 21025

Sex ? **Age Group:** InfansI **Age Range:** 1-2 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(6)	Intrusive Y/N?
1269	1269	Amulet	Wdjat incised	1	N
1268	1268	Bead	Cowrie	4	N
1267	1267	Bracelet	Jewelry	1	N

APPENDIX III: OBJECT CATALOGUE

Burial: 374 Skeleton: 21035

Sex M **Age Group:** Adultus **Age Range:** 17-25 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(11)	Intrusive Y/N?
1260a		Bead	Stone bead	1	N
1259		Cowrie Shell	Cowrie	9	N
1260b		Bead	Stone bead	1	N

Burial: 375 Skeleton: 21033

Sex M **Age Group:** Maturus **Age Range:** 40-45 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(5)	Intrusive Y/N?
		Bead	Faience bead	3	Y
1286		Bead	Faience bead	1	N
1594		Whetstone?	Other	1	

Burial: 376 Skeleton: 21056

Sex ? **Age Group:** InfansI **Age Range:** 1-2 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
21041		Votive Vessel	Votive vessel	1	N
		Bead			

Burial: 378 Skeleton: 21044

Sex M **Age Group:** Senilis **Age Range:** 45-60 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(3)	Intrusive Y/N?
2384		Votive Vessel	Votive vessel	1	N
2392		Votive Vessel	Votive vessel	1	N
21001		Votive Vessel	Votive vessel	1	N

Burial: 379 Skeleton: 21074

Sex F? **Age Group:** Juvenilis **Age Range:** 10-15 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(10)	Intrusive Y/N?
		Personal	bead net	1	N
2911		Bead	Faience bead	1	N
2912		Bead	Faience bead	1	N
3073		Bead	Faience bead	1	N
3074		Bead	Faience bead	1	N

3182		Bead	Faience bead	1	N
3183		Bead	Faience bead	1	N
3192		Bead	Faience bead	1	N
1328		Bead Dress	Stone bead	1	N
1329		Bead	Metal beads	1	N
		Bead Dress			
		Bead Dress			
		Bead			

Burial: 384 Skeleton: 21082

Sex M **Age Group:** Adultus **Age Range:** 25-35 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(36)	Intrusive Y/N?
21075		Votive Vessel	Votive vessel	1	N
21076		Votive Vessel	Votive vessel	1	N
21077		Votive Vessel	Votive vessel	1	N
21078		Votive Vessel	Votive vessel	1	N
2160		Bead	Faience bead	1	N
1346		Bead	Faience bead	1	
1346		Bead	Faience bead	2	
1346		Bead	Faience bead	4	
1345		Bead	Faience bead	7	
1345		Bead	Faience bead	12	
1345		Bead	Faience bead	1	
1428		Bead	Faience bead	2	
1428		Bead	Bead	1	
1428		Bead	Faience bead	1	

Burial: 385 Skeleton: 21069

Sex M? **Age Group:** Maturus **Age Range:** 40-45 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
1633		Bead	Faience bead	1	N

Burial: 386 Skeleton: 21080
Sex ? **Age Group:** Infant **Age Range:** .5-1 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(4)	Intrusive Y/N?
		Other	Other	1	
1587		Axe	Other	1	
1320		Earring	Jewelry	2	N

Burial: 387 Skeleton: 21070
Sex ? **Age Group:** Infansl **Age Range:** 2-4 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(4)	Intrusive Y/N?
	1291c	Earring/Ring	Jewelry	1	N
1291	1291b	Cowrie Shell	Cowrie	1	N
1291	1291a	Amulet	Wdjat incised	1	N
1292	1292	Cowrie Shell	Cowrie	1	N

Burial: 388 Skeleton: 21083
Sex F **Age Group:** Adultus **Age Range:** 20-25 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
21079		Votive Vessel	Votive vessel	1	N
		Other	Other		Y

Burial: 389 Skeleton: 21086
Sex ? **Age Group:** Infansl **Age Range:** 2-4 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(32)	Intrusive Y/N?
1371	1371	Earring	Jewelry	1	N
1370	1370	Amulet	Wdjat composite	1	N
1376	1376b	Amulet	Axe shaped	1	N
1376	1376a	Cowrie Shell	Cowrie	1	N
1374	1374	Bead	Faience bead	1	N
1385	1385d	Bead	Faience bead	2	N
1385	1385b	Cowrie Shell	Cowrie	17	N
1385	1385e	Bead	Stone bead	1	N
1385	1385a	Bead	shell bead	2	N
1385	1385c	Bead	Stone bead	1	N

1385	1385g	Amulet	Nut - sow	1	N
1385	1385f	Bead	Faience bead	1	N
1385	1385h	Bead	Faience bead	1	N
1384	1384	Amulet	Wdjat incised	1	N

Burial: 392 Skeleton: 21096

Sex ? **Age Group:** Infansl **Age Range:** 0.5-1.5 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(52)	Intrusive Y/N?
1381	1381b	Bead	Faience bead	10	N
1381	1381a	Amulet	Wdjat incised	1	N
1383	1383	Bead	Faience bead	24	N
1380	1380	Bead	Faience bead	2	N
1382	1382b	Bead	Faience bead	12	N
1382	1382a	Amulet	Wdjat incised	1	N
	2262	Bead		2	

Burial: 393 Skeleton: 21274

Sex M **Age Group:** Senilis **Age Range:** 45-60 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(4)	Intrusive Y/N?
1474	1474a	Bead	Faience bead	1	Y
1474	1474b	Bead	Faience bead	1	
1624	1624	Bead	Faience bead	2	

Burial: 395 Skeleton: 21102

Sex ? **Age Group:** Infansl **Age Range:** 1.5-2.5 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(6)	Intrusive Y/N?
4813	1386a	Cowrie Shell	Cowrie	3	N
4813	1386c	Bead	Stone bead	1	N
4813	1386d	Bracelet	Faience bead	1	N
4813	1386b	Bead	Stone bead	1	N

Burial: 398 Skeleton: 23715

Sex F **Age Group:** Senilis **Age Range:** 45-70 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
23710		Votive Vessel	Votive vessel	1	N

APPENDIX III: OBJECT CATALOGUE

Burial: 399 Skeleton: 23713
Sex F **Age Group:** Adultus **Age Range:** 25-35 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
	1842	Other			Y
5509	1839	Amulet	Bastet	1	N

Burial: 404 Skeleton: 23740
Sex F **Age Group:** Senilis **Age Range:** 45-60 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
1890	1890	Point	Other	1	Y

Burial: 405 Skeleton: 23736
Sex F **Age Group:** Senilis **Age Range:** 50-60 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
1892	1892	Pounder	Other	1	

Burial: 406 Skeleton: 23735
Sex ? **Age Group:** InfansI **Age Range:** 1.5-2.5 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(118)	Intrusive Y/N?
1923	1923	Cowrie Shell	Cowrie	4	N
1929	1929	Cowrie Shell	Cowrie	2	N
1924	1924	Cowrie Shell	Cowrie	4	N
1931	1931	Earring/Ring	Jewelry	2	N
1940	1940	Earring/Ring	Jewelry	2	N
1944	1944	Necklace	Jewelry	1	N
1944	1944	Bead	Faience bead	103	N

Burial: 407 Skeleton: 23743
Sex F **Age Group:** Juvenilis **Age Range:** 15-18 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(135)	Intrusive Y/N?
2008	2008b	Bead	Stone bead	1	N
2008	2008e	Bead	Stone bead	1	N
2008	2008h	Bead	Faience bead	1	N
2008	2008g	Bead	Faience bead	1	N
2008	2008f	Bead	Faience bead	1	N

2008	2008d	Bead	Stone bead	3	N
2008	2008i	Bead	Faience bead	3	N
2008	2008j	Bead	Faience bead	2	N
2008	2008a	Amulet	Hatmehyt	1	N
2008	2008k	Amulet	Wdjat incised	1	N
2010	2010a	Bead	Stone bead	1	N
2010	2010b	Bead	metal bead	1	N
2010	2010c	Bead	Faience bead	3	N
2012	2012d	Amulet	Other	1	N
2012	2012a	Bead	Stone bead	1	N
2012	2012c	Bead	Faience bead	1	N
2012	2012b	Bead	Faience bead	24	N
2012	2012e	Other	Other	1	N
2009	2009f	Bead	Stone bead	1	N
2009	2009g	Bead	metal bead	1	N
2009	2009d	Bead	Faience bead	1	N
2009	2009a	Cowrie Shell	Cowrie	1	N
2009	2009c	Bead	Faience bead	1	N
2009	2009e	Bead	Faience bead	1	N
2009	2009b	Amulet	Wdjat incised	1	N
2011	2011c	Bead	Faience bead	1	N
2011	2011d	Cowrie Shell	Cowrie	3	N
2011	2011g	Bead	Faience bead	2	N
2011	2011f	Bead	Stone bead	4	N
2011	2011i	Bead	Faience bead	5	N
2011	2011a	Stamp	stamp seal	1	N
2011	2011b	Amulet	Wdjat bead	1	N
2011	2011e	Amulet	Wdjat bead	1	N
2011	2011h	Amulet	Wdjat bead	1	N
2067	2067a	Bead	Stone bead	1	N
2067	2067b	Bead	Faience bead	1	N

2049	2049c	Bead	Stone bead	1	N
2049	2049g	Bead	Stone bead	1	N
2049	2049d	Bead	Stone bead	4	N
2049	2049b	Bead	Faience bead	1	N
2049	2049j	Bead	metal bead	5	N
2049	2049a-2	Amulet	Wdjat bead	4	N
2049	2049e	Bead	Stone bead	1	N
2049	2049i	Amulet	poppy shape	2	N
2049	2049a	Amulet	Wdjat incised	1	N
2049	2049f	Amulet	Wdjat bead	1	N
2049	2049h	Amulet	Wdjat incised	1	N
2053	2053b	Bead	Stone bead	1	N
2053	2053a	Cowrie Shell	Cowrie	2	N
2066	2066j	Bead	metal bead	1	N
2066	2066h	Bead	Stone bead	1	N
2066	2066i	Bead	Faience bead	1	N
2066	2066e	Bead	Stone bead	1	N
2066	2066f	Bead	Stone bead	1	N
2066	2066g	Bead	Stone bead	1	N
2066	2066d	Bead	Faience bead	2	N
2066	2066c	Bead	Faience bead	6	N
2066	2066a	Cowrie Shell	Cowrie	3	N
2066	2066b	Amulet	Wdjat bead	3	N
2065	2065b	Amulet	Bird amulet	1	N
2065	2065d	Bead	Imitation cowrie	1	N
2065	2065e	Bead	Faience bead	1	N
2065	2065c	Bead	Stone bead	3	N
2065	2065a	Cowrie Shell	Cowrie	2	N
2050	2050b	Bead	Stone bead	1	N
2050	2050a	Amulet	Wdjat incised	1	N
2064	2064c	Bead	metal	1	N

2064	2064b	Bead	Stone bead	2	N
2064	2064a	Bead	Stone bead	1	N

Burial: 409 Skeleton: 23759
Sex ? **Age Group:** Adult **Age Range:** 18-79 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(7)	Intrusive Y/N?
9197	2054	Other		1	
		Other		1	
	2043	Other		1	
		Other		1	
	2090	Vessel		1	
		Other		1	
9880	2083	Other		1	

Burial: 410 Skeleton: 23755
Sex M **Age Group:** Juvenilis **Age Range:** 13-16 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(3)	Intrusive Y/N?
9335	2037	Amulet	Amun-Min	3	N

Burial: 421 Skeleton: 26268
Sex ? **Age Group:** Infansl **Age Range:** 2-5 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
26220		Votive Vessel	Votive vessel	1	N
26220		Votive Vessel	Votive vessel	1	N

Burial: 423 Skeleton: 26253
Sex M **Age Group:** Adultus **Age Range:** 25-35 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(5)	Intrusive Y/N?
26225		Votive Vessel	Votive vessel	1	N
26235		Votive Vessel	Votive vessel	1	N
3076	3076	Cowrie Shell	Cowrie	1	N
3077	3077	Cowrie Shell	Cowrie	1	N
		Other	Other		Y
3171	3171	Bead	Faience bead	1	N

APPENDIX III: OBJECT CATALOGUE

Burial: 424 Skeleton: 26254

Sex M? **Age Group:** Senilis **Age Range:** 45-65 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(3)	Intrusive Y/N?
26231		Votive Vessel	Votive vessel	1	N
26232		Votive Vessel	Votive vessel	1	N
26233		Votive Vessel	Votive vessel	1	N

Burial: 426 Skeleton: 26252

Sex F? **Age Group:** Maturus **Age Range:** 45-55 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
26236		Votive Vessel	Votive vessel	1	N
26242		Votive Vessel	Votive vessel	1	N

Burial: 434 Skeleton: 27220

Sex M **Age Group:** Adultus **Age Range:** 20-30 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(3)	Intrusive Y/N?
27221		Votive Vessel	Votive vessel	1	N
27223		Votive Vessel	Votive vessel	1	N
27224		Votive Vessel	Votive vessel	1	N

Burial: 439 Skeleton: 28264

Sex ? **Age Group:** InfansI **Age Range:** 3-5 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(13)	Intrusive Y/N?
?	2643	Earring	Jewelry	1	N
?	2644	Cowrie Shell	Cowrie	5	N
?	2645	Cowrie Shell	Cowrie	6	N
?	2830	Scarab	Scarab	1	N

Burial: 441 Skeleton: 28289

Sex ? **Age Group:** InfansII **Age Range:** 10-11 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
28263		Votive Vessel	Votive vessel	1	N
?		Bead	Faience bead	1	N

Burial: 444 Skeleton: 28297
Sex M? **Age Group:** Adultus **Age Range:** 18-23 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(7)	Intrusive Y/N?
28276		Votive Vessel	Votive vessel	1	N
3068	2646	Scarab	Scarab	1	N
3069	2800	Bead	Faience bead	1	N
3070	2654	Cowrie Shell	Cowrie	1	N
	2648	Bead	Faience bead	1	
?	2649	Cowrie Shell	Cowrie	1	
?	2652	Bead	Faience bead	1	

Burial: 450 Skeleton: 28305
Sex M? **Age Group:** Adult **Age Range:** 18-79 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(2)	Intrusive Y/N?
28316		Votive Vessel	Votive vessel	1	N
?		Votive Vessel	Votive vessel	1	N

Burial: 451 Skeleton: 28326
Sex F? **Age Group:** Juvenilis **Age Range:** 15-17 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(3)	Intrusive Y/N?
	2653	Other	Other	1	
?	3297	Other	Other	1	N
?	2654	Other	Other	1	Y

Burial: 464 Skeleton: 31363
Sex F **Age Group:** Adultus **Age Range:** 16-23 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
31316		Votive Vessel	Votive vessel	1	N

Burial: 477 Skeleton: 31901
Sex M **Age Group:** Adultus **Age Range:** 17-25 **Phase:** Roman **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
?	2274	Cowrie Shell	Cowrie	1	N

Burial: 478 Skeleton: 31949

Sex F **Age Group:** Senilis **Age Range:** 45-59 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(12)	Intrusive Y/N?
31413		Votive Vessel	Votive vessel	1	N
31414		Votive Vessel	Votive vessel	1	N
31958		Votive Vessel	Votive vessel	1	N
31962		Votive Vessel	Votive vessel	1	N
31963		Votive Vessel	Votive vessel	1	N
31964		Votive Vessel	Votive vessel	1	N
31965		Votive Vessel	Votive vessel	1	N
31966		Votive Vessel	Votive vessel	1	N
31967		Votive Vessel	Votive vessel	1	N
31979		Votive Vessel	Votive vessel	1	N
31981		Votive Vessel	Votive vessel	1	N
31995		Votive Vessel	Votive vessel	1	N

Burial: 486 Skeleton: 31930

Sex M **Age Group:** Adultus **Age Range:** 17-25 **Phase:** Saite **P/S:** P

Obj#:	New Obj#:	Type:	Sub Type:	Quantity:(1)	Intrusive Y/N?
31926		Votive Vessel	Votive vessel	1	N

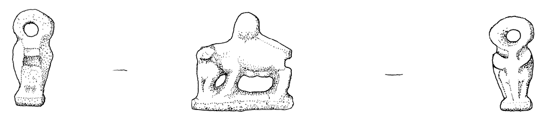
APPENDIX III B:

ILLUSTRATIONS AND PHOTOS OF BURIAL ITEMS
ALL ILLUSTRATIONS AT SCALE 1:1
SCALE OF PHOTOGRAPHS VARIES
ILLUSTRATIONS BY CAROLINE HEBRON AND JOHNNY KARLSSON, © AERA
PHOTOGRAPHS BY KEVIN KAISER AND YUKINORI KAWAE, © AERA

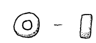
APPENDIX III: OBJECT CATALOGUE

BURIAL 106

Wadj amulet, CH plate 27



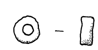
OBJECT 00b-60
Faience Sow amulet



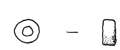
OBJECT 00b-55b
Faience beads, 1:20

OBJECT 00b-56b
Faience beads, 1:15

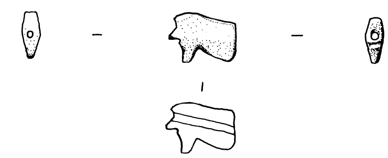
OBJECT 00b-56b
Faience bead



OBJECT 00b-13c
Faience beads, 2:13

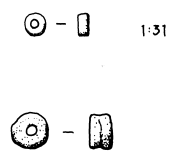


OBJECT 00b-53
Faience beads, 1:3

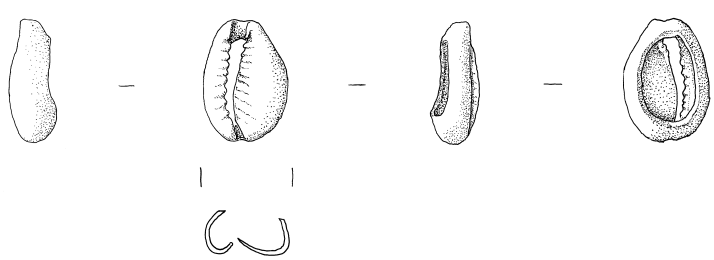


OBJECT 00b-12
Cornelian Horus eye bead

OBJECT 00b-57b
Faience beads, 1:28 (right ankle)



OBJECT 00b-58b
Faience beads (left ankle)

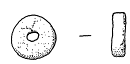


OBJECT 00b-13a
Cowrie shell beads, 1:2

BURIAL 107

OBJECT 00b-15
Faience tubular bead

BURIAL 115



OBJECT 01a-73
Faience circular bead

APPENDIX III: OBJECT CATALOGUE

BURIAL 123

OBJECT 01a-83
Faience tubular bead

BURIAL 124

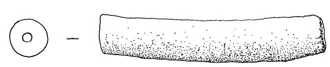
OBJECT 01a-81
Copper alloy earring with cornelian bead

BURIAL 125

OBJECT 01a-85
Faience Sobek amulet

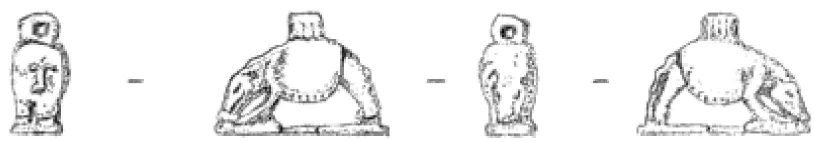
OBJECT 01a-84
Faience circular bead

BURIAL 126



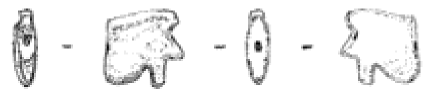
OBJECT 01a-88
Faience tubular bead

BURIAL 127

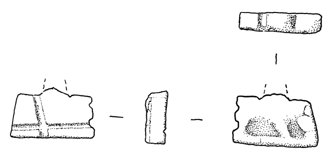


OBJECT 01a-98
Faience Sow amulet

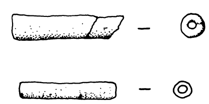
BURIAL 134



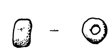
OBJECT 01a -126
Faience Horus eye amulet



OBJECT 01a-103
Faience Sow amulet



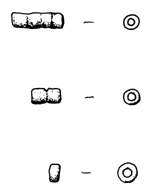
Object 01a-102
Faience tubular beads



OBJECT 01a-127e
Faience bead, 1:2

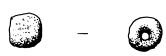
OBJECT 01a-127a
Faience bead

BURIAL 134 (Continued)



OBJECT 01a-127d
Faience beads

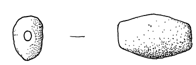
OBJECT 01a-127c, 109a, 1:2
Faience beads



OBJECT 01a-127b
Faience bead

APPENDIX III: OBJECT CATALOGUE

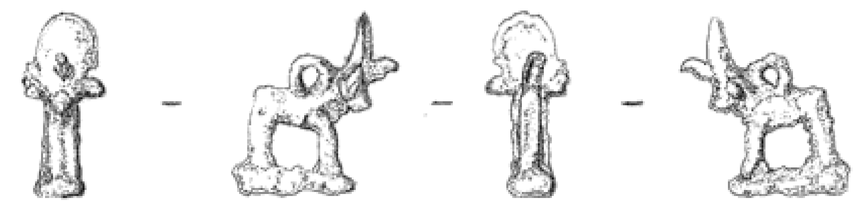
BURIAL 139



OBJECT 01a-100a
Ovoid faience bead

APPENDIX III: OBJECT CATALOGUE

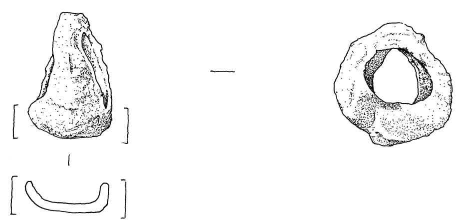
BURIAL 140



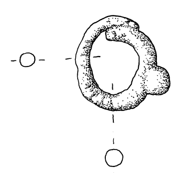
OBJECT 01a-116b
Copper Hathor amulet

OBJECT 01a-116a
Faience amulet

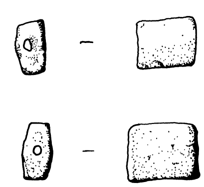
BURIAL 141



OBJECT 01a-119
Metal hoop (*copper alloy, earring, right ear*)



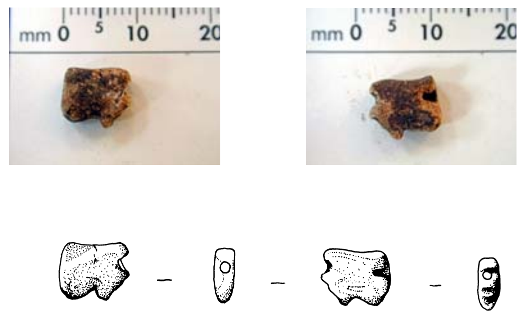
OBJECT 01a-120
Copper alloy earring



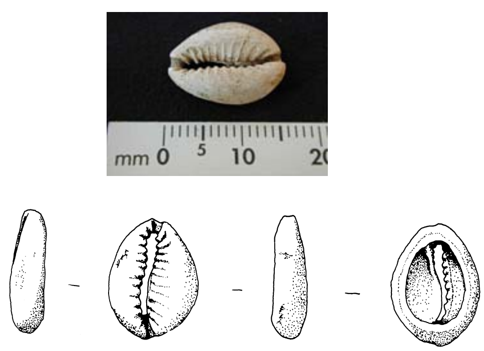
OBJECT 01a-107
Faience beads
(*bracelet together with cowries at left wrist*)

APPENDIX III: OBJECT CATALOGUE

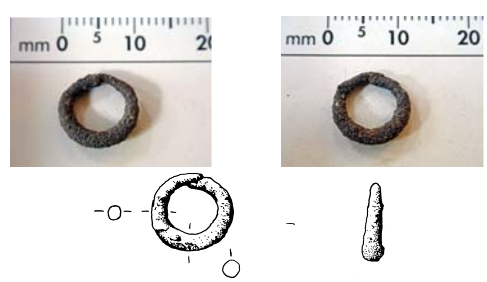
BURIAL 142



OBJECT 01a-105
Horus eye bead



OBJECT 01a-104
Cowrie shell bead



OBJECT 01a-118
Copper alloy earring

BURIAL 148

Object 01a-122

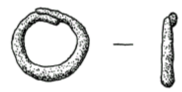
BURIAL 161

Jar 3624 in fill

BURIAL 171

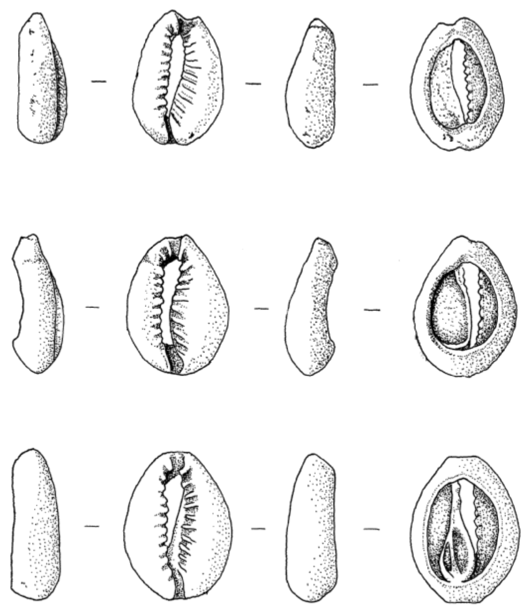
OBJECT 02-5
Faience cowrie shell imitation

BURIAL 180

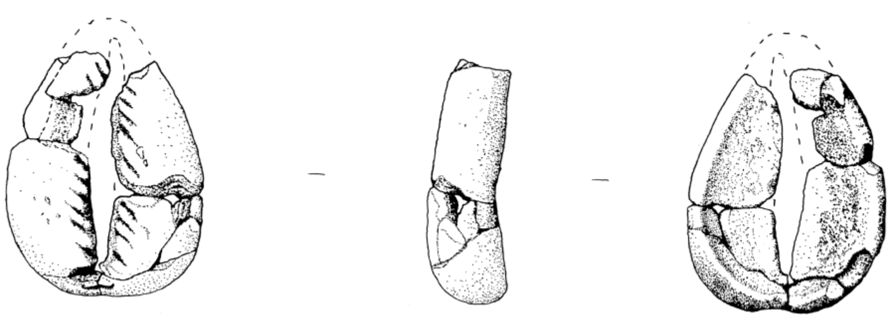


OBJECT 02-9
Copper alloy earring

OBJECT 02-8a
Cornelian bead



OBJECT 02-8
Cowrie shell beads



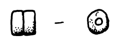
OBJECT 02-10
Faience cowrie shell imitation

BURIAL 184

OBJECT 02-47
Faience tubular bead

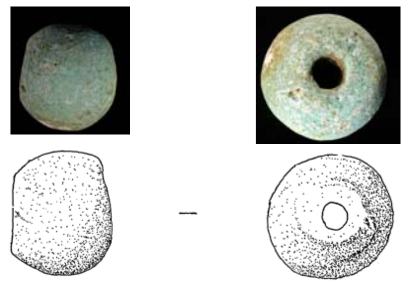
APPENDIX III: OBJECT CATALOGUE

BURIAL 192

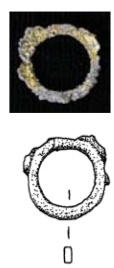


OBJECT 02-46
Faience bead

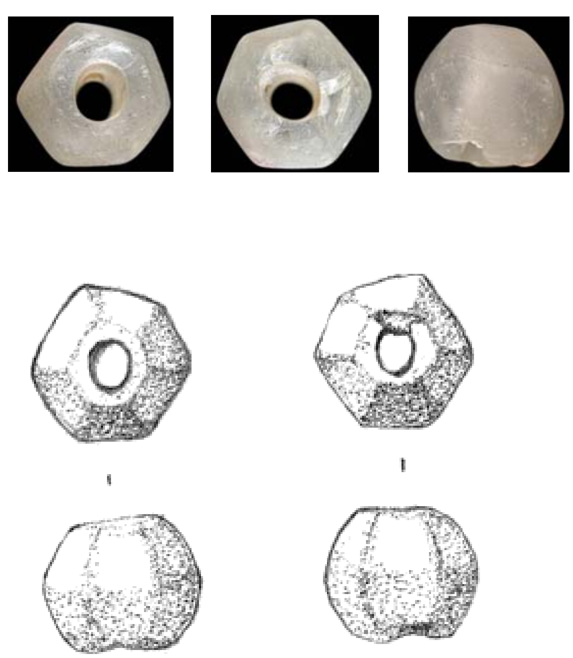
BURIAL 197



OBJECT 02-44
Faience bead



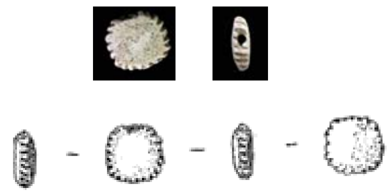
OBJECT 02-17
Metal ring (Silver?)



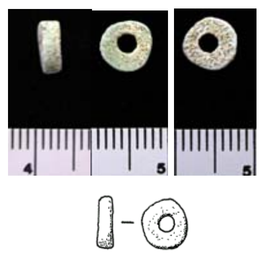
OBJECT 02-45
Alabaster sexagonal bead

APPENDIX III: OBJECT CATALOGUE

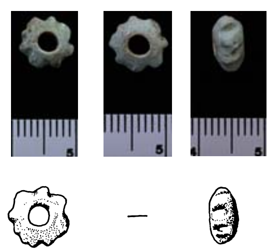
BURIAL 205



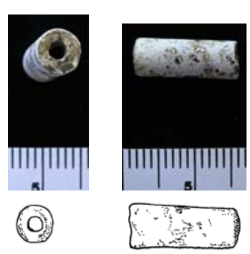
OBJECT 02-193
Faience sun disk bead



OBJECT 02-41a
Faience bead

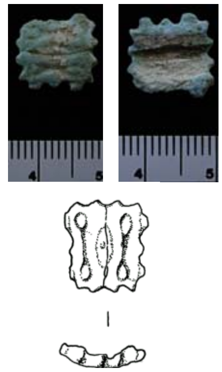


OBJECT 02-30
Faience barrel bead

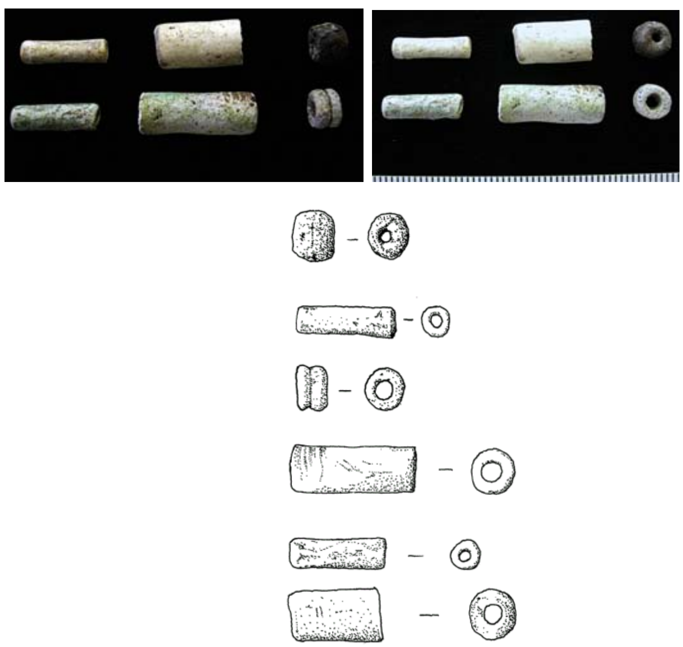


OBJECT 02-31, 32
Faience tubular beads 1:2
(at manus dx)

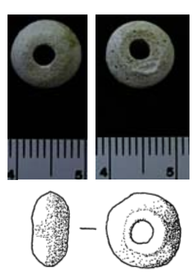
BURIAL 205 (continued)



OBJECT 02-36
Faience multiple eye bead
(at manus dx)

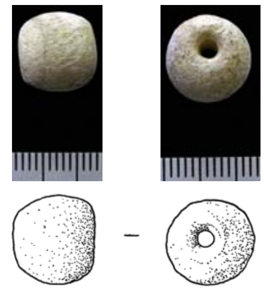


OBJECT 02-38
Faience beads
(necklace of shells and beads)

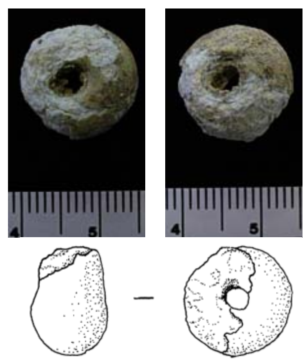


OBJECT 02-41b
Faience bead

BURIAL 205 (continued)

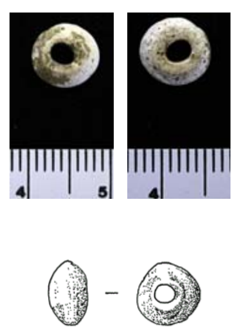


OBJECT 02-29
Alabaster bead
(at manus dx)



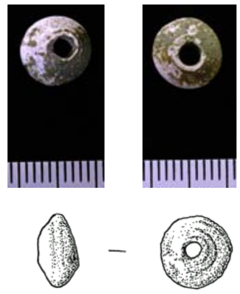
OBJECT 02-28
Faience bead
(at manus dx)

OBJECT 02-192
Faience tubular bead

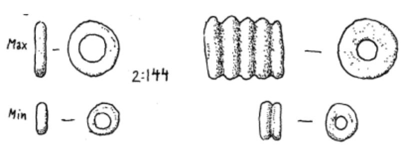


OBJECT 02-34
Faience bead
(at manus dx)

BURIAL 205 (continued)



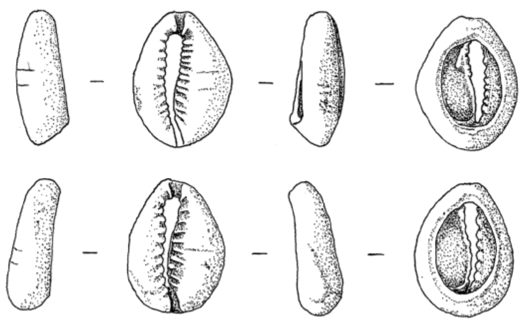
OBJECT 02-33
Faience bead
(at manus dx)



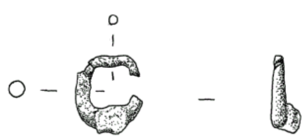
OBJECT 02-37Faience beads *(at scapula sin)*

OBJECT 02-38
Shell beads, 2 of 29
(necklace of shells and beads)

BURIAL 205 (continued)



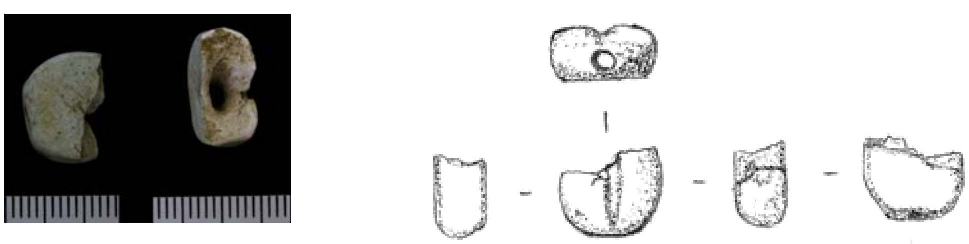
OBJECT 02-38
Cowrie shell beads
(*necklace of shells and beads*)



OBJECT 02-192
Metal earring (copper?)

BURIAL 205 (continued)

OBJECT 02-40
Copper alloy bracelet



OBJECT 02-35
Faience scaraboid bead fragment

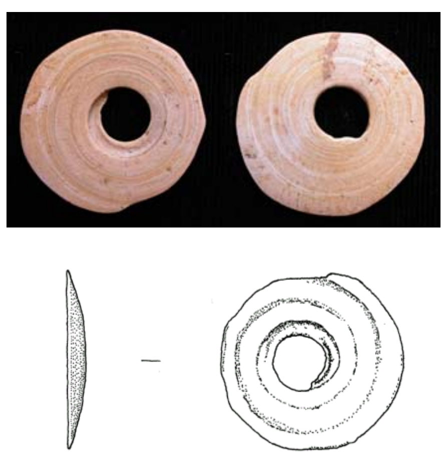
BURIAL 205 (continued)

VESSEL 5911
(found on top of burial 205)

BURIAL 206

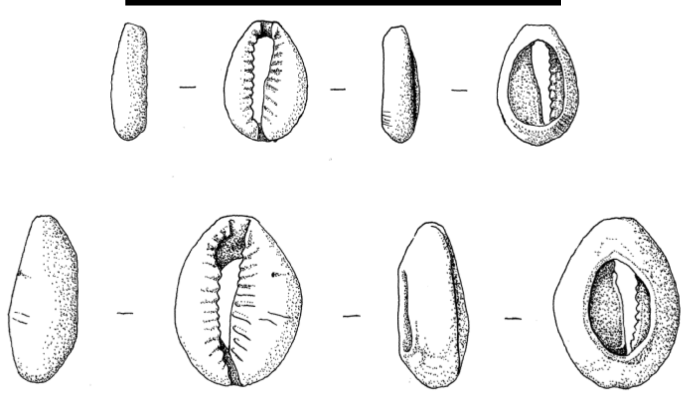
OBJECT 02-20
Copper alloy bead

OBJECT 02-21
Faience multiple eye bead



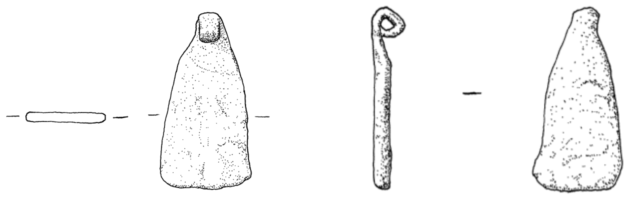
OBJECT 02-22
Shell bead-pendant

BURIAL 206 (continued)

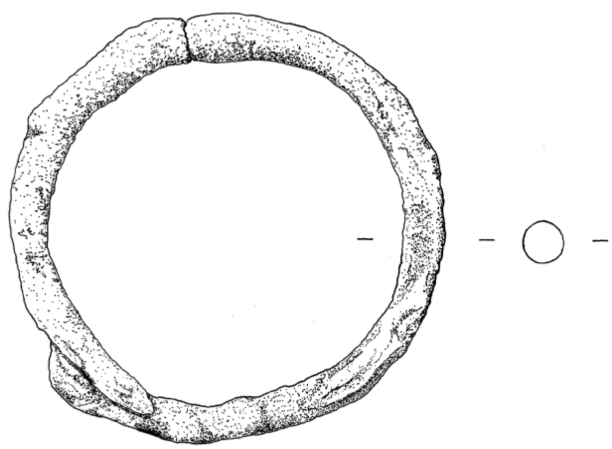


OBJECT 02-23,24
Cowrie shell beads 2 of 13

BURIAL 206 (continued)

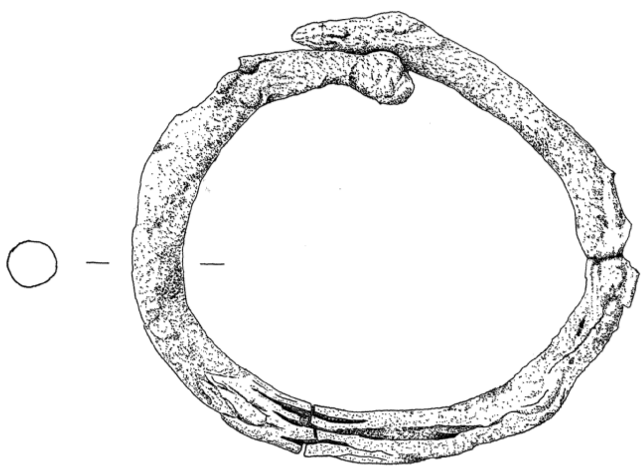


OBJECT 02-25
Copper alloy pendant

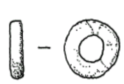


OBJECT 02-26
Iron ankle bracelet

BURIAL 206 (continued)

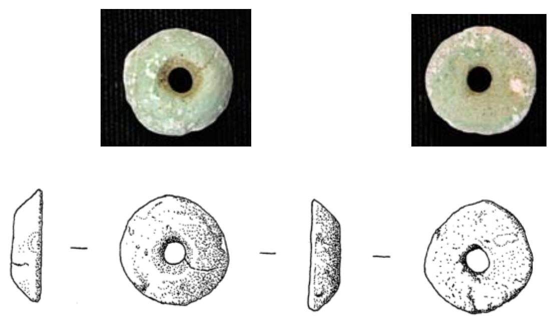


OBJECT 02-27
Iron ankle bracelet



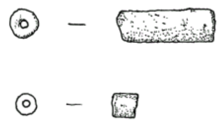
OBJECT 02-39
Faience disk bead

BURIAL 207

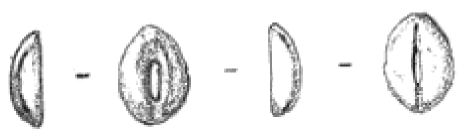


OBJECT 02-42
Faience bead

BURIAL 212

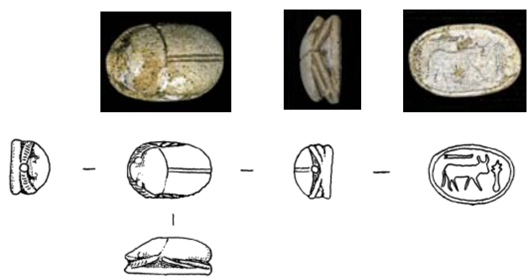


OBJECT 02-123
Faience tubular beads



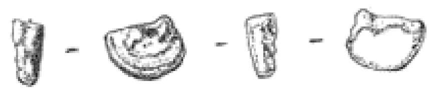
OBJECT 02-61
Faience cowrie shell imitation

BURIAL 213



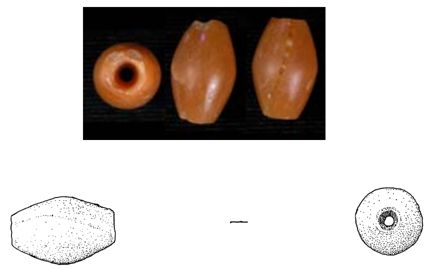
OBJECT 02-43
Faience scarab bead

BURIAL 214

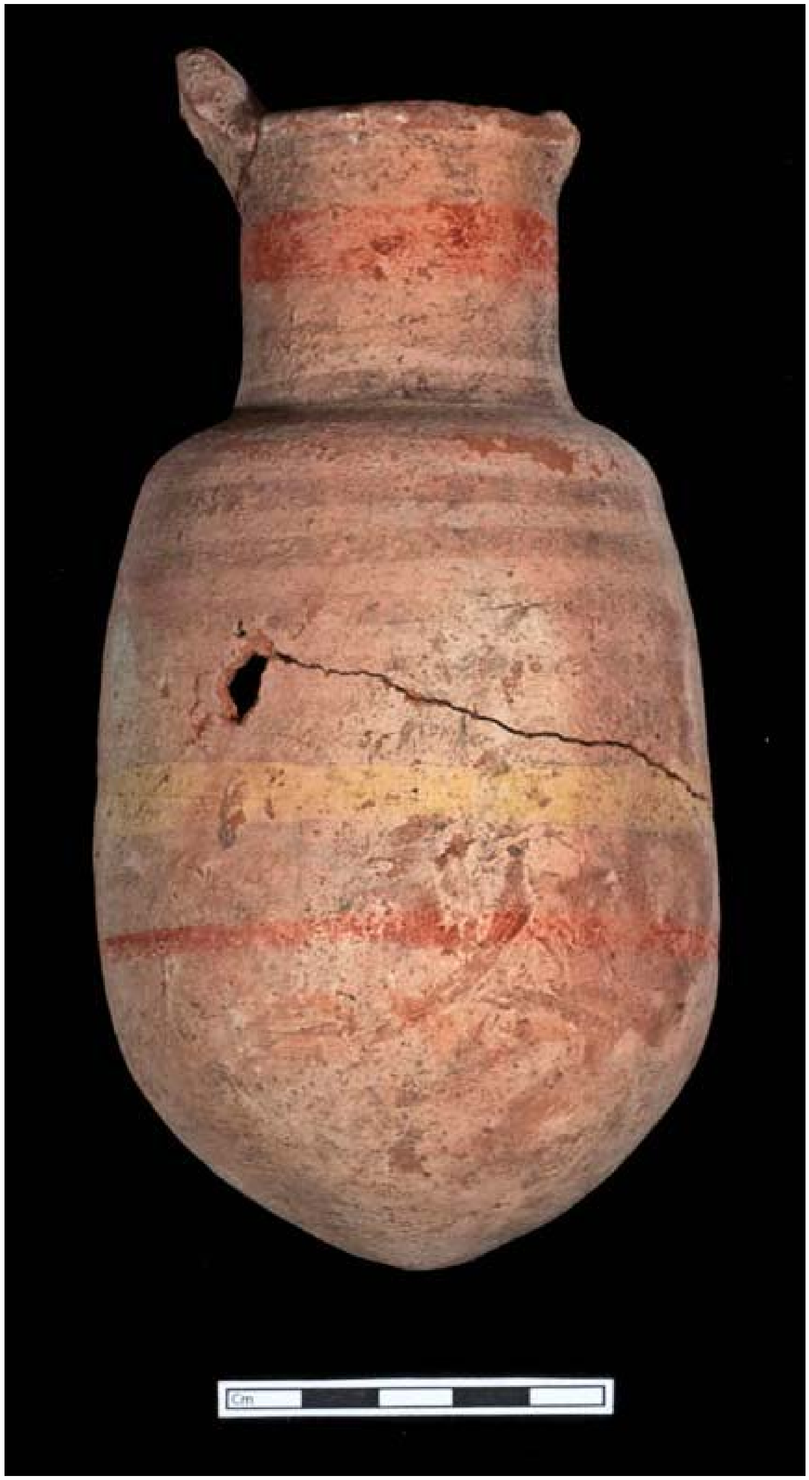


OBJECT 02-59
Faience amulet fragment

BURIAL 215



OBJECT 02-78
Cornelian biconal bead

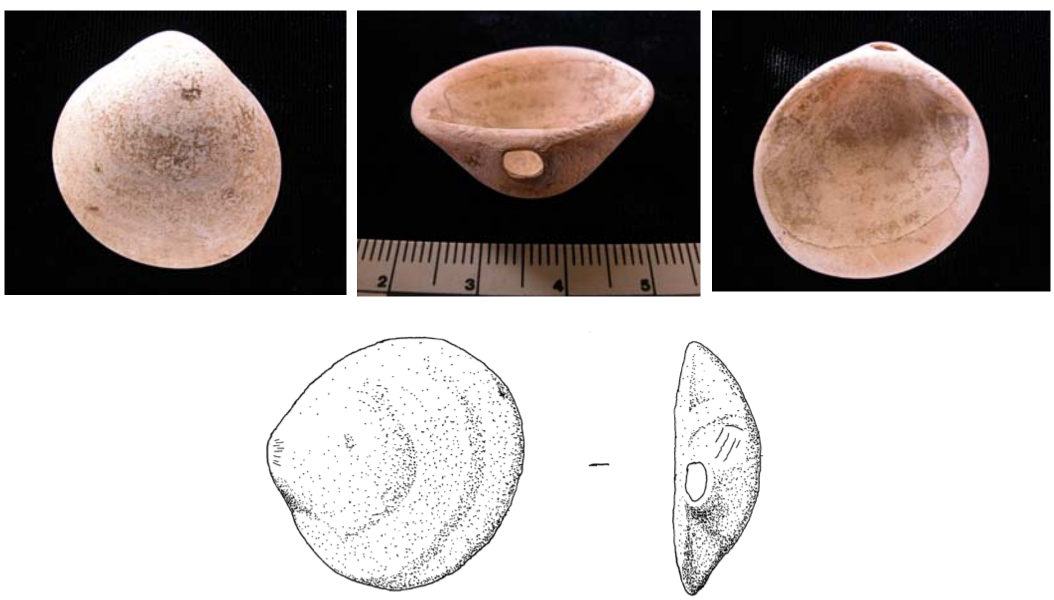


VESSEL 5930 (found on top of burial 215)

APPENDIX III: OBJECT CATALOGUE

BURIAL 217

OBJECT 02-64a
Limestone bird? amulet
(Part of necklace)



OBJECT 02-64b
Shell bead
(Part of necklace)

BURIAL 217 (Continued)

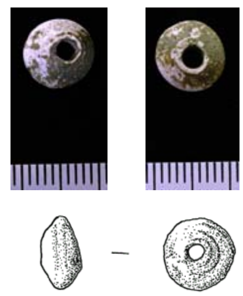
OBJECT 02-65
Shell bead
(Part of necklace)

OBJECT 02-66
Glass eye bead
(Part of necklace)

OBJECT 02-67
Faience beads
(Part of necklace)

APPENDIX III: OBJECT CATALOGUE

BURIAL 205 (continued)



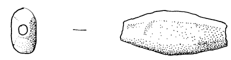
B

OBJECT 02-33
Faience bead
(at manus dx)

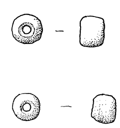
OBJECT 02-37Faience beads *(at scapula sin)*

OBJECT 02-38 Shell beads, 2 of 29 (necklace of shells and beads)

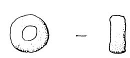
BURIAL 222



OBJECT 02-125
White faience lozenge shaped bead
(*Part of necklace*)



OBJECT 02-126
Red glass bead, 1:2
White faience bead, 1:2
(*Part of necklace*)



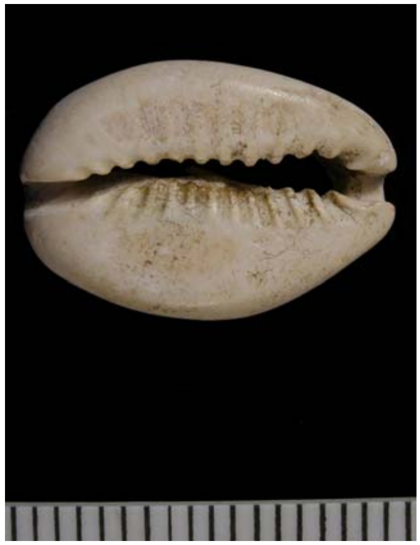
OBJECT 02-127
Grey faience bead, 1:2
(*part of necklace*)

BURIAL 225

Obj 02-114

APPENDIX III: OBJECT CATALOGUE

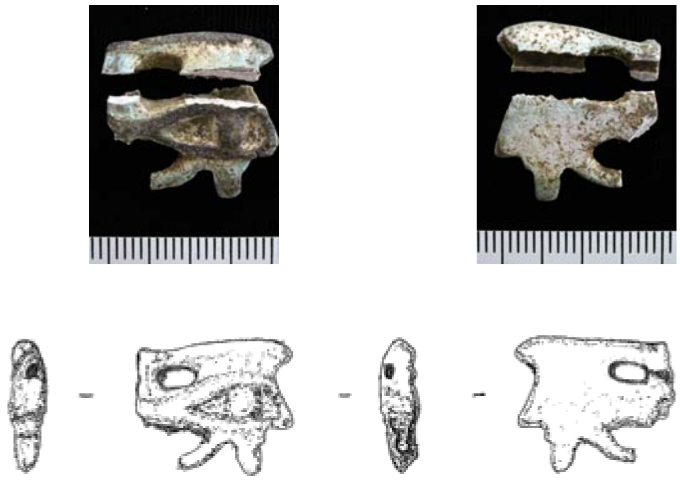
BURIAL 226



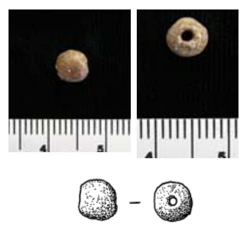
Obj 02-118

APPENDIX III: OBJECT CATALOGUE

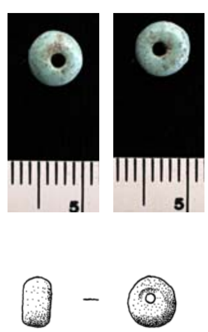
BURIAL 227



OBJECT 02-106
Faience Horus eye amulet

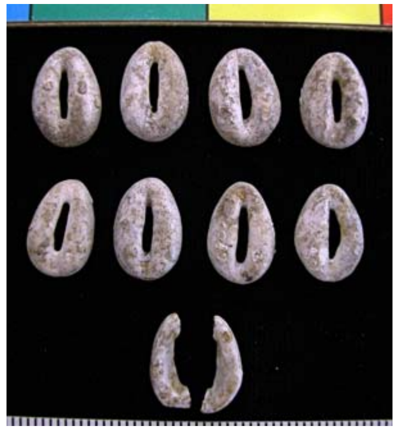


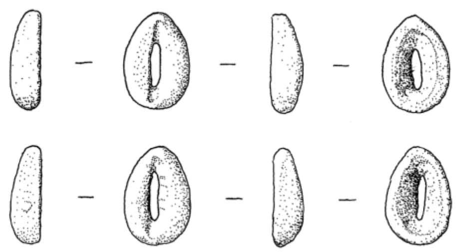
OBJECT 02-105
Faience bead



OBJECT 02-104
Faience bead

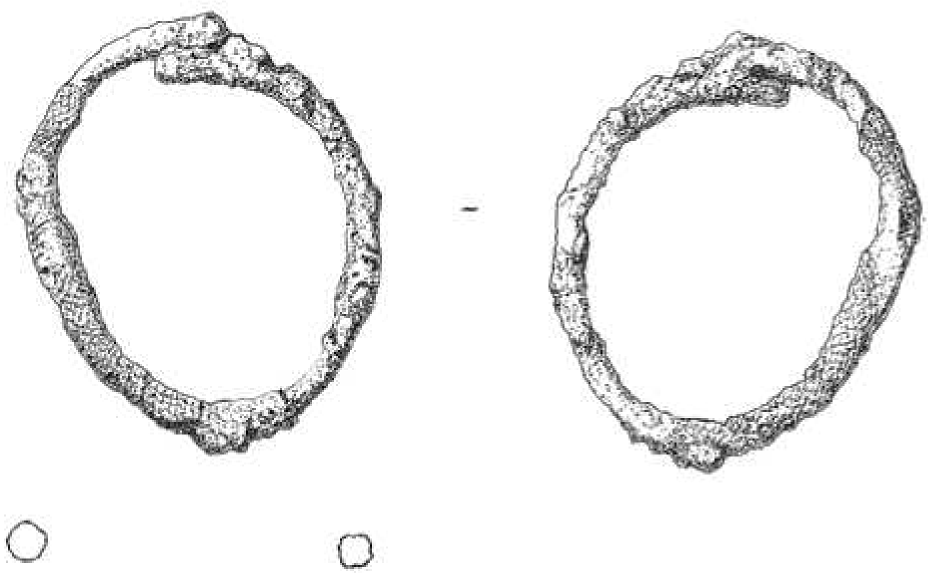
BURIAL 227(Continued)





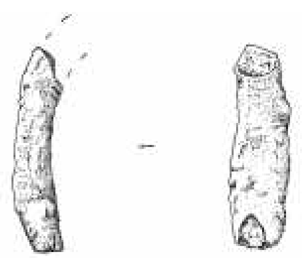
OBJECT 02-103
Faience cowrie shell imitations
2 of 9

BURIAL 262 (continued)



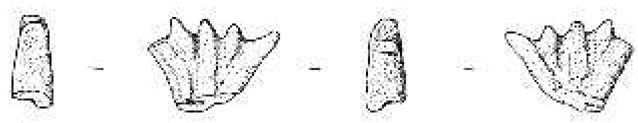
OBJECT 02-204
Bronze bracelet

BURIAL 263



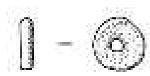
OBJECT 02-207
Fragment of metal bracelet?

BURIAL 266

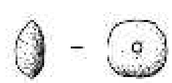


OBJECT 02-208
Crown of a faience Bes amulet

BURIAL 268

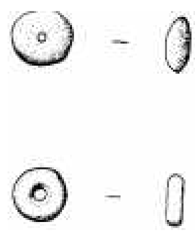


OBJECT 02-210
Shell disk bead
(Found in fill)



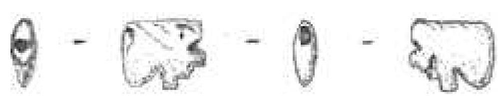
OBJECT 02-209
Blue faience bead
(Found underneath coffin in feet area)

BURIAL 269



OBJECT 02-510a+b
Faience bead, shell bead

BURIAL 271



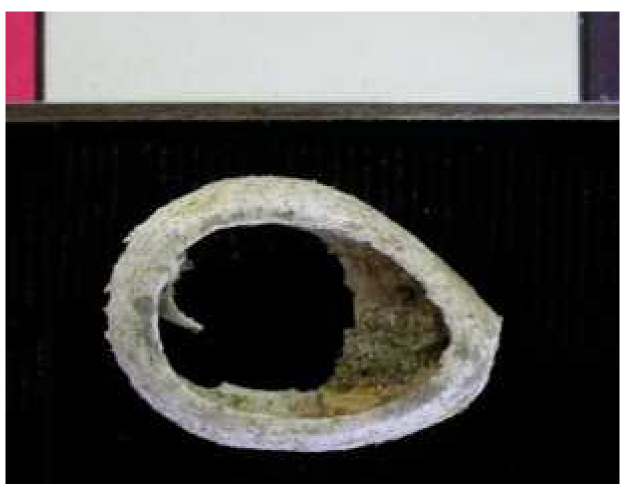
OBJECT 02-211a
Lapis Horus eye amulet

OBJECT 02-211b
Cornelian bead

OBJECT 02-211
Faience tubular bead

BURIAL 284

Obj 02-252
Found by left femur



Obj 02-258
Found at neck

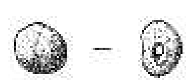
APPENDIX III: OBJECT CATALOGUE

BURIAL 285

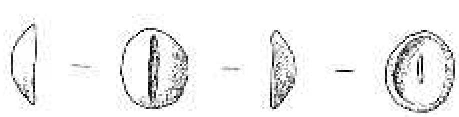
OBJECT 02-261c, g
Faience bead 1 of 2

OBJECT 02-261f, i
Blue faience bead

OBJECT 02 261e
Grey faience tubular bead

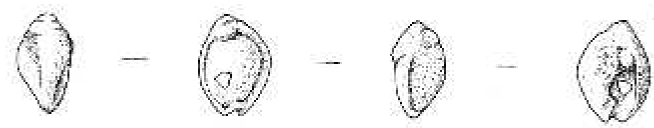


OBJECT 02 261h
Green faience oblong bead

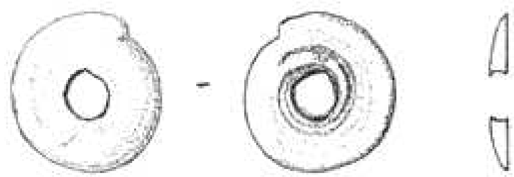


OBJECT 02-261d
Shell disk (back piece of cowrie)

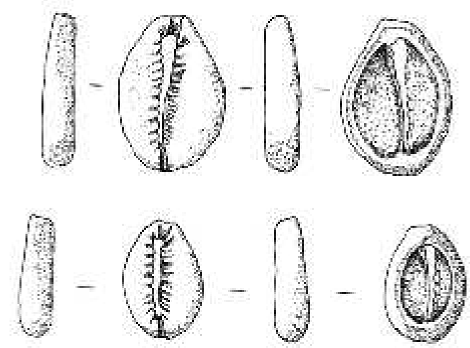
BURIAL 285 /(continued)



OBJECT 02-261b
Shell bead



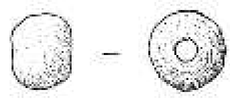
OBJECT 02-261j
Shell disk bead



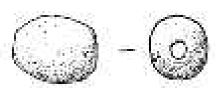
OBJECT 02-261a
Cowrie shell beads 2 of 18

BURIAL 287

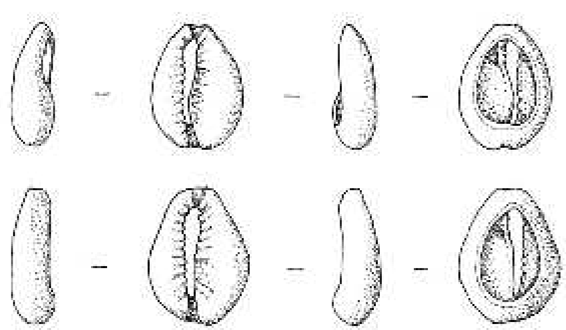
OBJECT 02-260b
Faience spherical bead



OBJECT 02-260g
Faience spherical bead



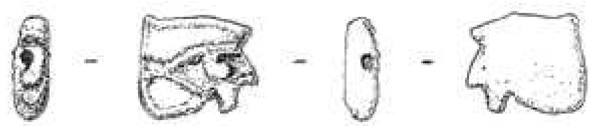
OBJECT 02-260e
Faience ovoid bead



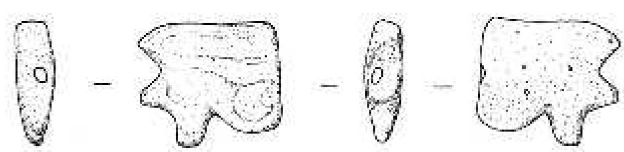
OBJECT 02-260a
Cowrie shell beads 2 of 5

BURIAL 287 (continued)

OBJECT 02-260d
Faience horus eye amulet



OBJECT 02-260f
Faience Horus eye amulet

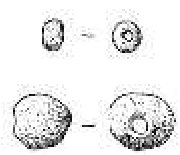


OBJECT 02-260c
Faience Horus eye amulet

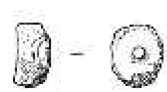
APPENDIX III: OBJECT CATALOGUE

BURIAL 288

OBJECT 02-290
Metal spiral beads (silver?) 1of 4



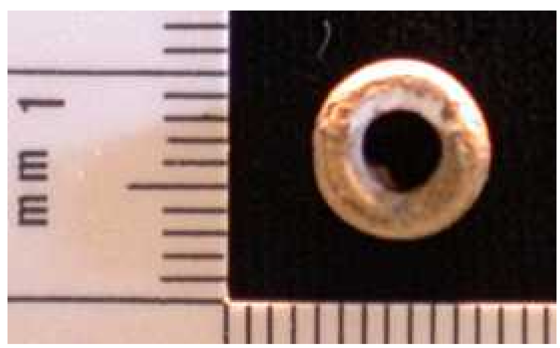
OBJECT 02-298h
Faience spherical beads, 2 of 18

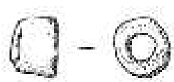


OBJECT 02-298h
Cornelian bead

BURIAL 288 (continued)

OBJECT 02-267b
Faience disk beads 1 of 4
(probably as part of bracelet)

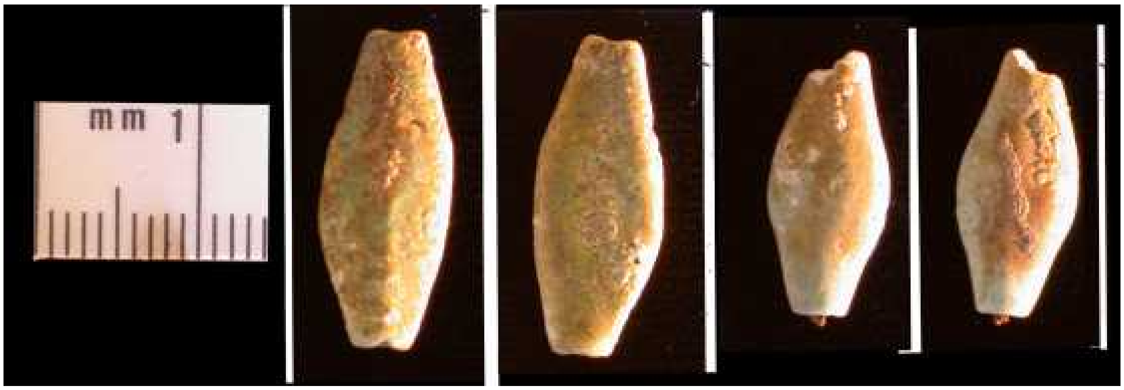


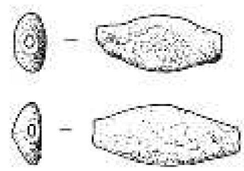


OBJECT 02-298a
Faience tubular bead

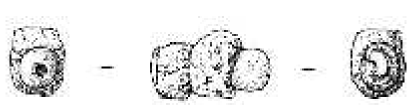
APPENDIX III: OBJECT CATALOGUE

BURIAL 288 (continued)



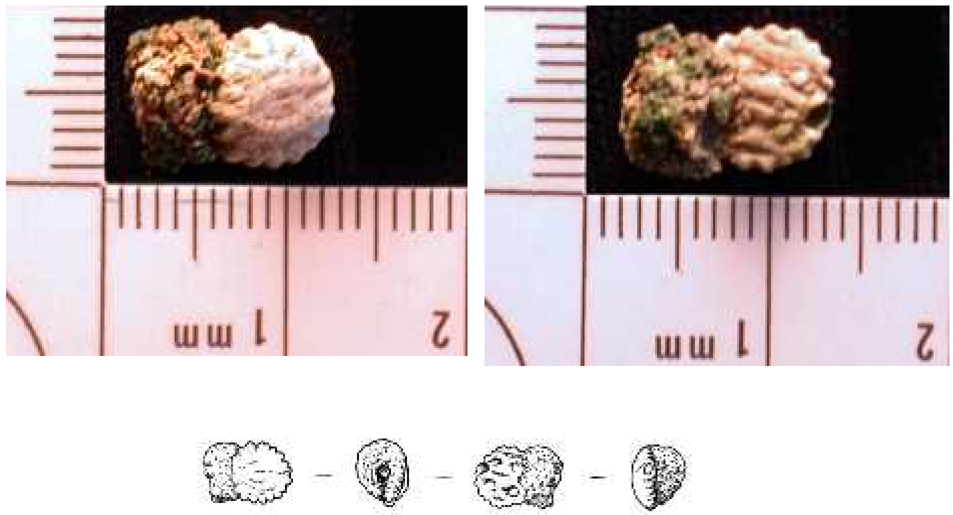


OBJECT 02-298C
Faience lozenge shaped beads



OBJECT 02-267a
2 faience diskbeads, 2 bronze beads and 1 faience round bead attached to each other

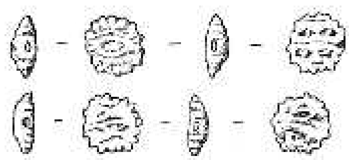
BURIAL 288 (continued)



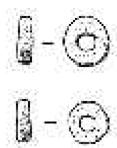
OBJECT 02-266a
Serated faience eye bead attached to a bronze bead

OBJECT 02-299a
Serated faience eye bead attached to bronze bead

BURIAL 288 (continued)

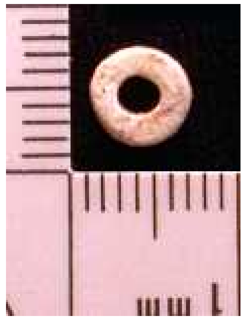


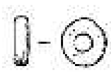
OBJECT 02-298B
Serated faience eye beads



OBJECT 02-298i
Faience disk beads, 2 of 29

BURIAL 288 (continued)

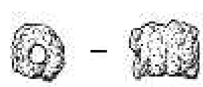




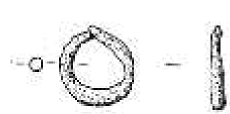
OBJECT 02-266c
Faience disk bead

OBJECT 02-266b
Bronze bead

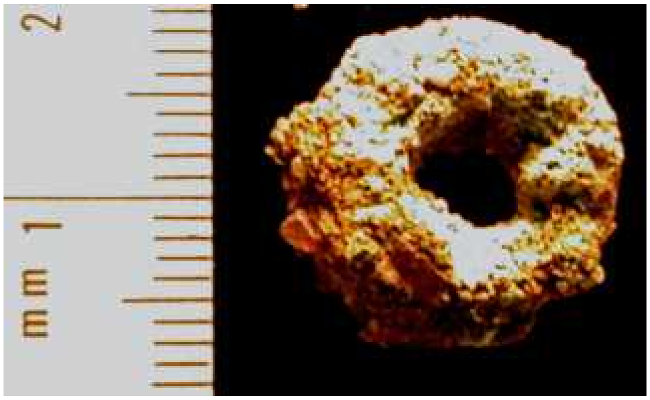
BURIAL 288 (continued)

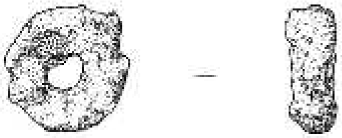


OBJECT 02-297c
Bronze spiral bead, 1 of 21

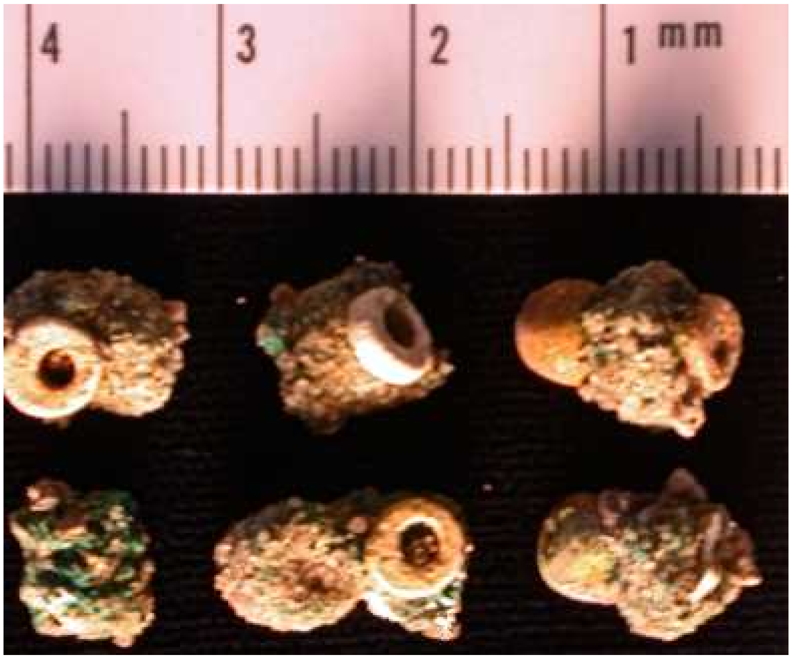


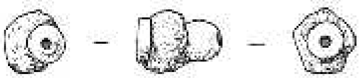
OBJECT 02-336
Metal earring (copper)



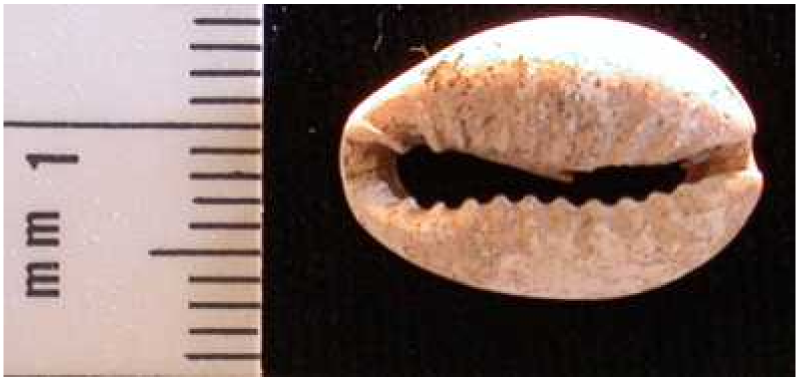


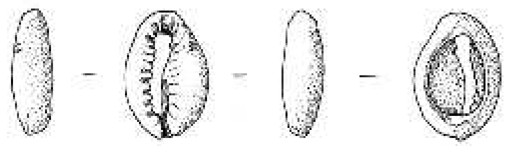
OBJECT 02-297a
Bronze? ring
(with fragments of textile attached)



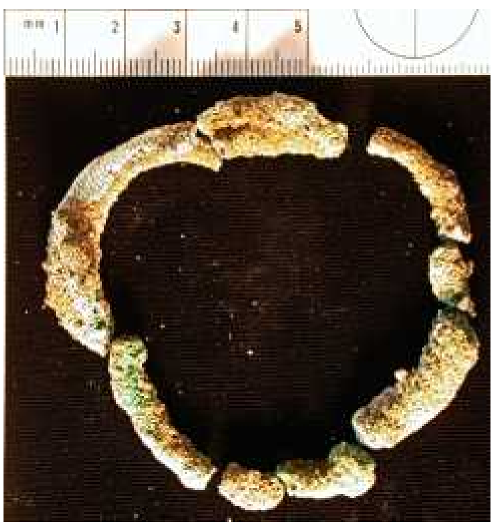


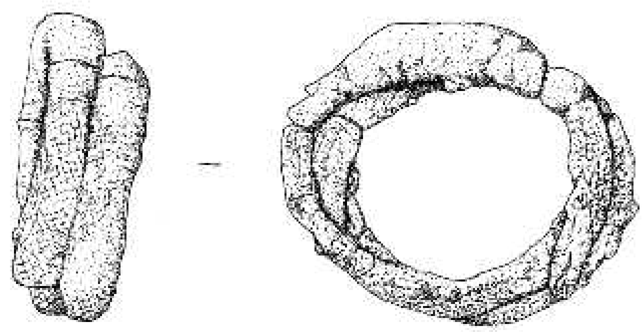
OBJECT 02-297b
1 of 5 faience disk beads and 1 of 2 faience spherical beads attached to a bronze bead





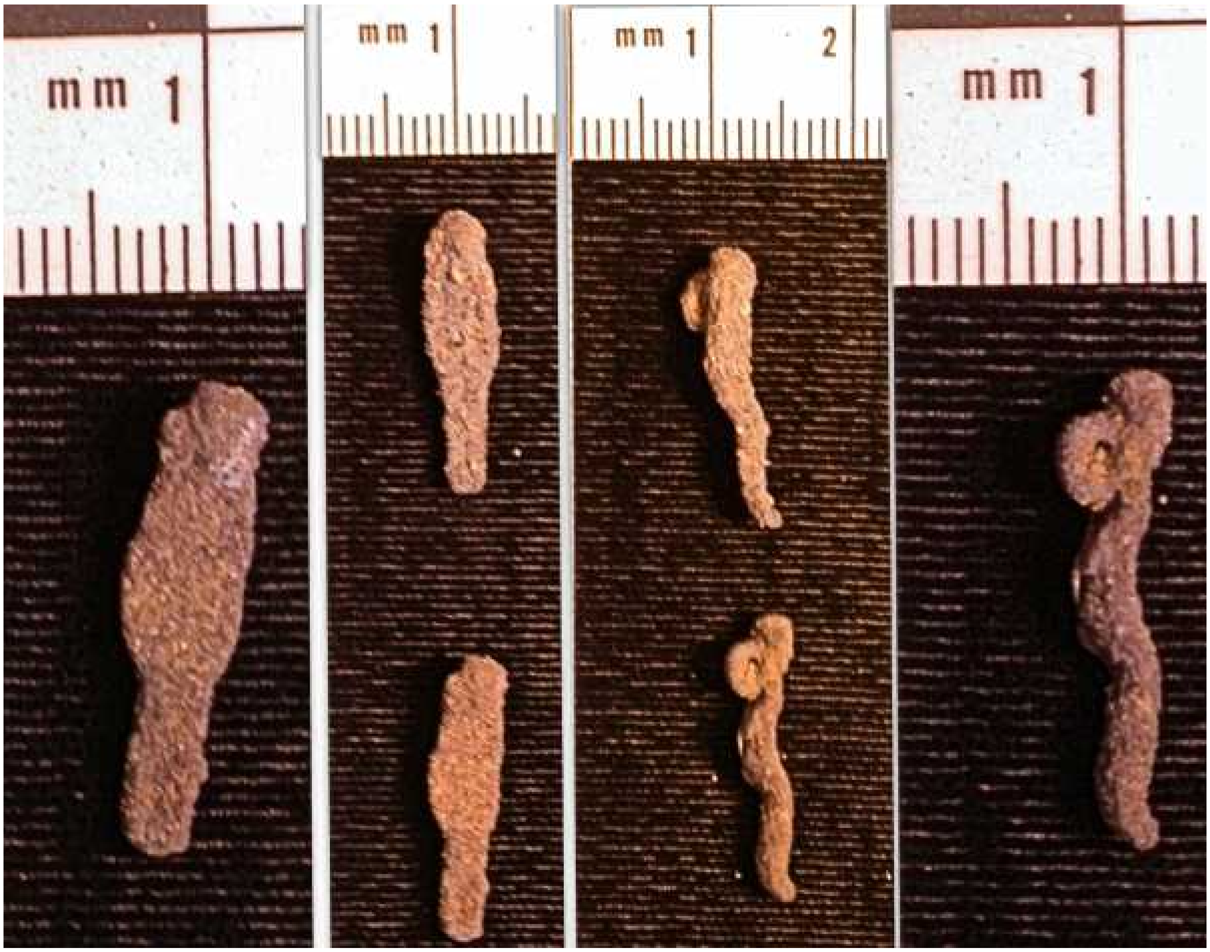
OBJECT 02-298d
Cowrie shell bead

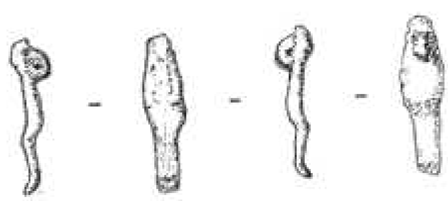




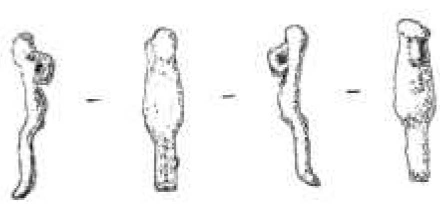
OBJECT 02-299b
2 Bronze bracelets with fragments of textile attached

BURIAL 288 (continued)



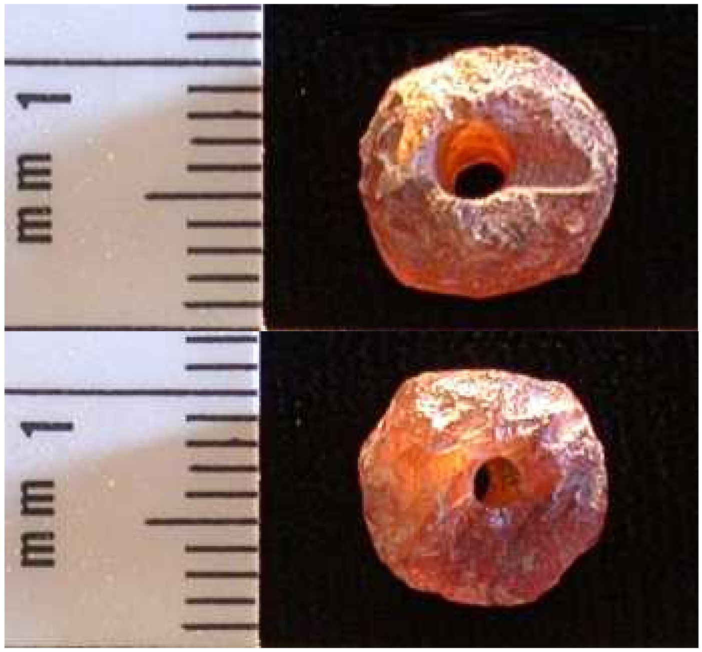


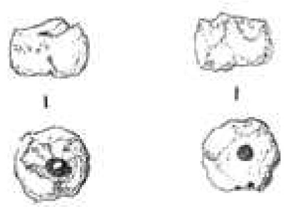
OBJECT 02-289a
Female figurine bead of metal



OBJECT 02-289b
Female figurine bead of metal

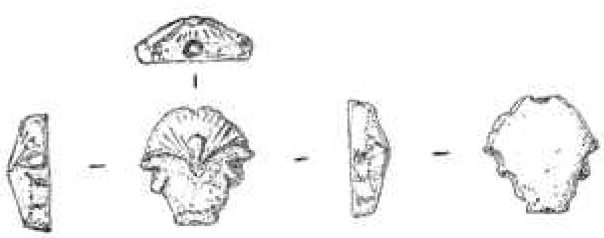
BURIAL 288 (continued)





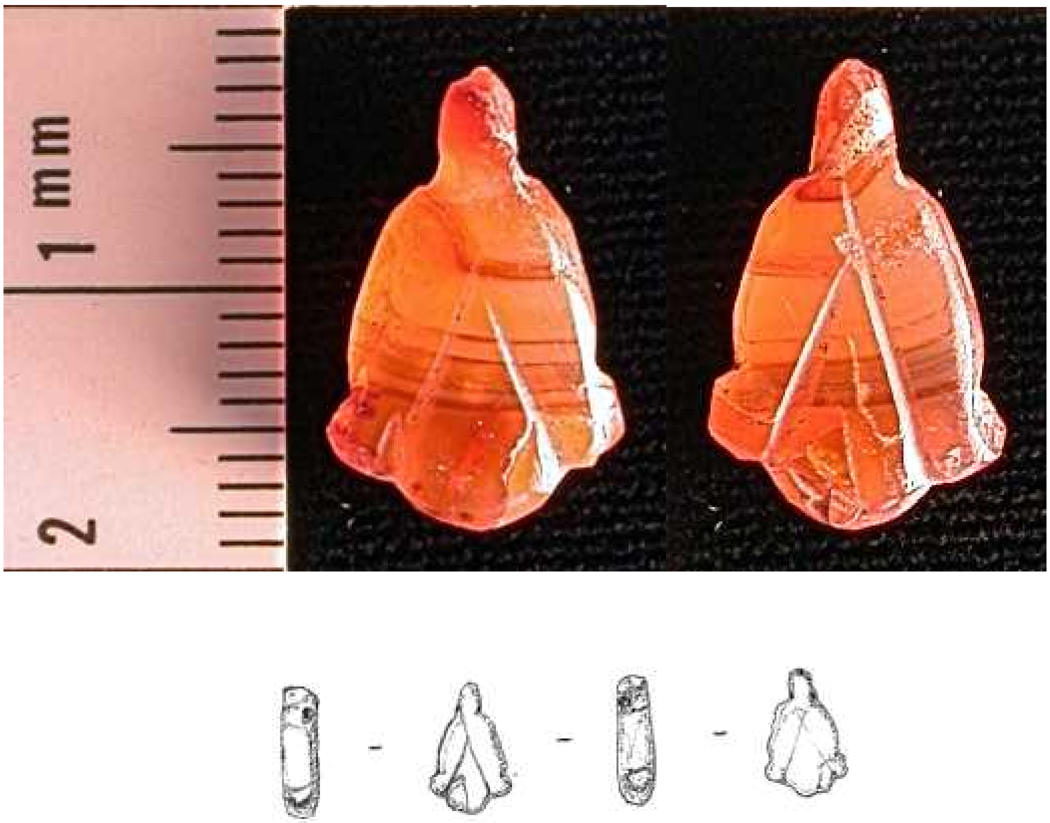
OBJECT 02-298e
Carved stone (cornelian) bead

BURIAL 288 (continued)



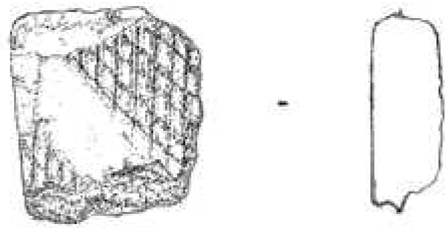
OBJECT 02-298f
Lotus shaped lapis bead

BURIAL 288 (continued)

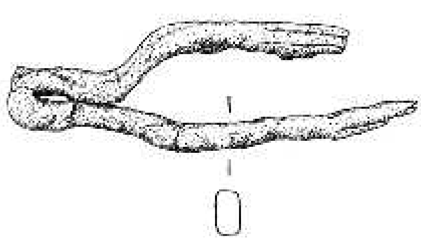


OBJECT 02-298g
Lotus shaped cornelian bead

BURIAL 293



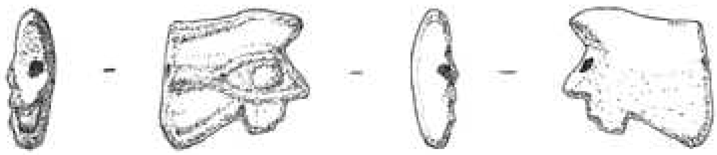
OBJECT 02-265
Faiece tile fragment



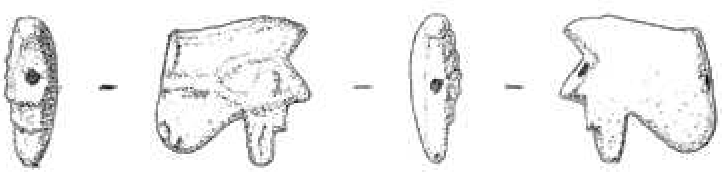
OBJECT 02-264
Iron tweezers

Appendix III: Object Catalogue

BURIAL 294



OBJECT 02-278a
Faience Horus eye amulet
(Found on pelvis among manus bones)



OBJECT 02-278b
Faience Horus eye amulet
(Found on pelvis among manus bones)

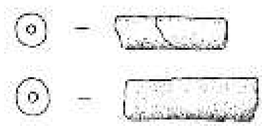
BURIAL 297

OBJECT 02-507
Faience bead

BURIAL 302

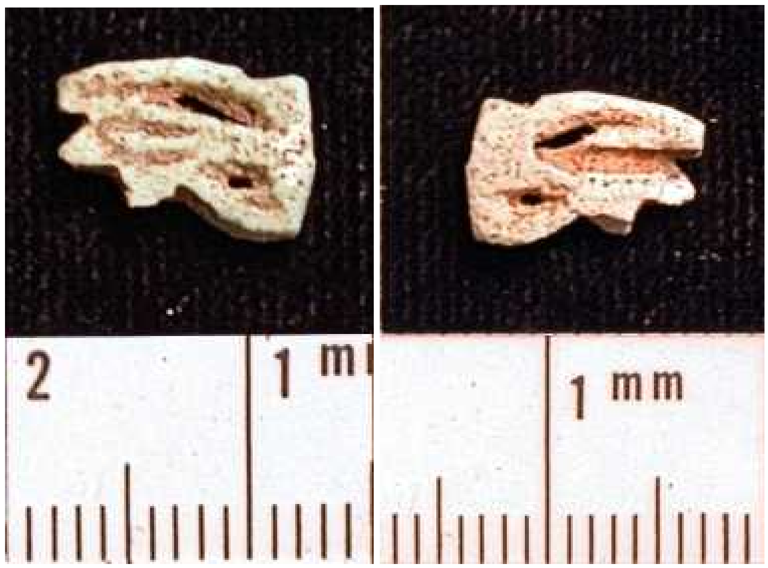
Vessel
AW 59479

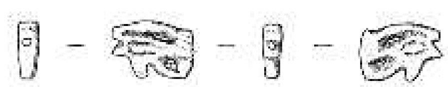
BURIAL 303



OBJECT 02-303
Faience tubular beads

BURIAL 313





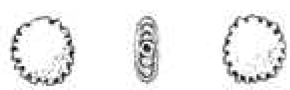
OBJECT 02-432
Faience horus eye bead

BURIAL 314

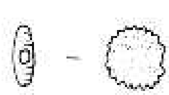
OBJECT 02-361
Faience tubular beads, 1:2

OBJECT 02-437
Faience tubular bead

OBJECT 02-337a,b
Faience Horus eye amulets



OBJECT 02-337
Faience sun disk bead

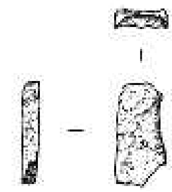


OBJECT 02-382
Faience sun disk beads, 1 of 3

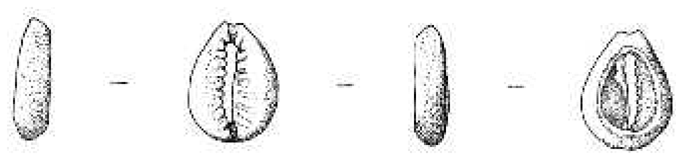
OBJECT 02-381
Faience beads, 1 of 3

OBJECT 02-373
Faience tubular bead

BURIAL 316 (continued)

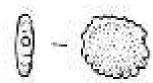


OBJECT 02-383
Copper-bronze object

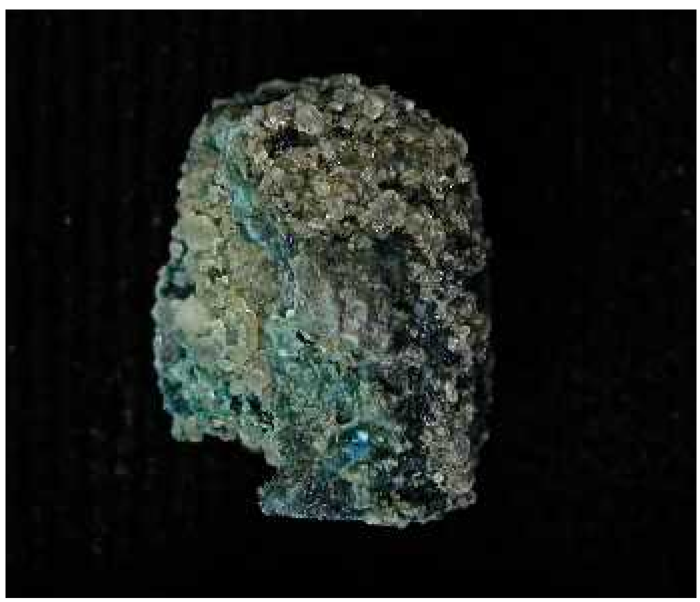


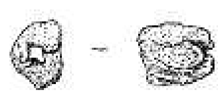
OBJECT 02-383
Cowrie shell bead

BURIAL 326



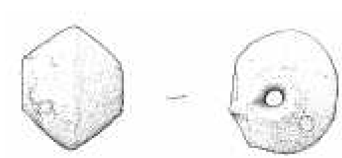
OBJECT 02-417b
Faience sun disk bead





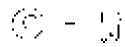
OBJECT 02-417a
Bronze bead

BURIAL 328



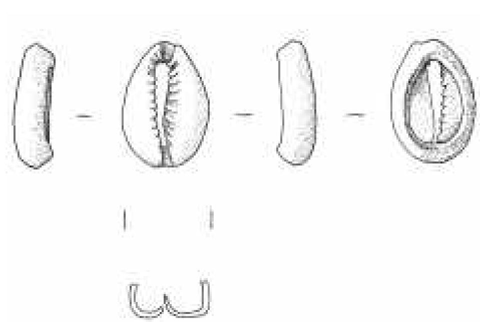
OBJECT 02-435
Faience biconal bead
(Found under skull)

BURIAL 329



OBJECT 02-431
Faience bead

OBJECT 02-419
Faience bead



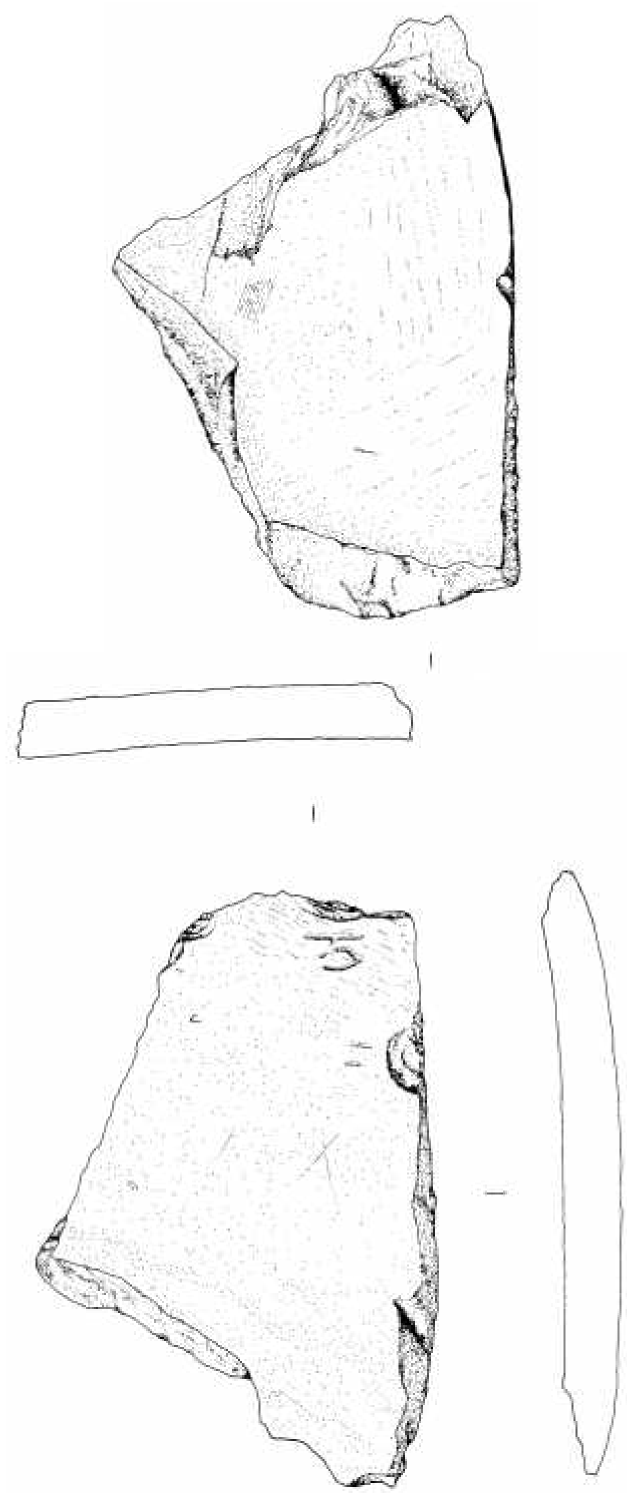
OBJECT 02-419
Cowrie shell beads, 1:26

OBJECT 02-418
Faience bead

BURIAL 333

OBJECT 02-501
Schist sherd (incised signs on outer surface - hieroglyphs?)

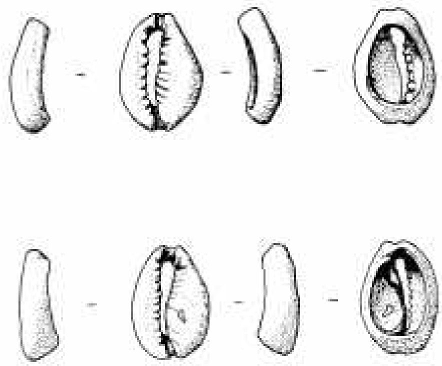
BURIAL 333 (continued)



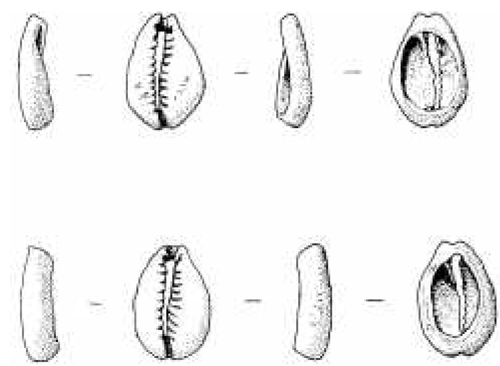
OBJECT 02-501
Schist sherd (incised signs on outer surface - hieroglyphs?)

APPENDIX III: OBJECT CATALOGUE

BURIAL 333 (continued)

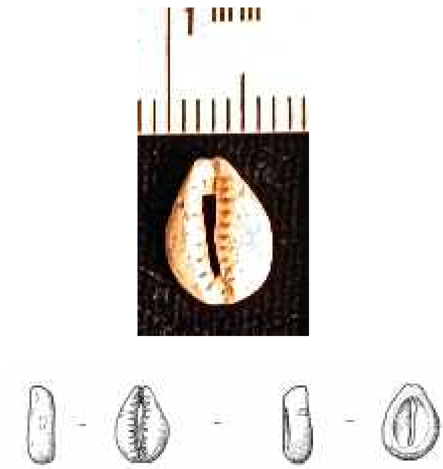


OBJECT 02-473
Cowrie shell beads, 2:5

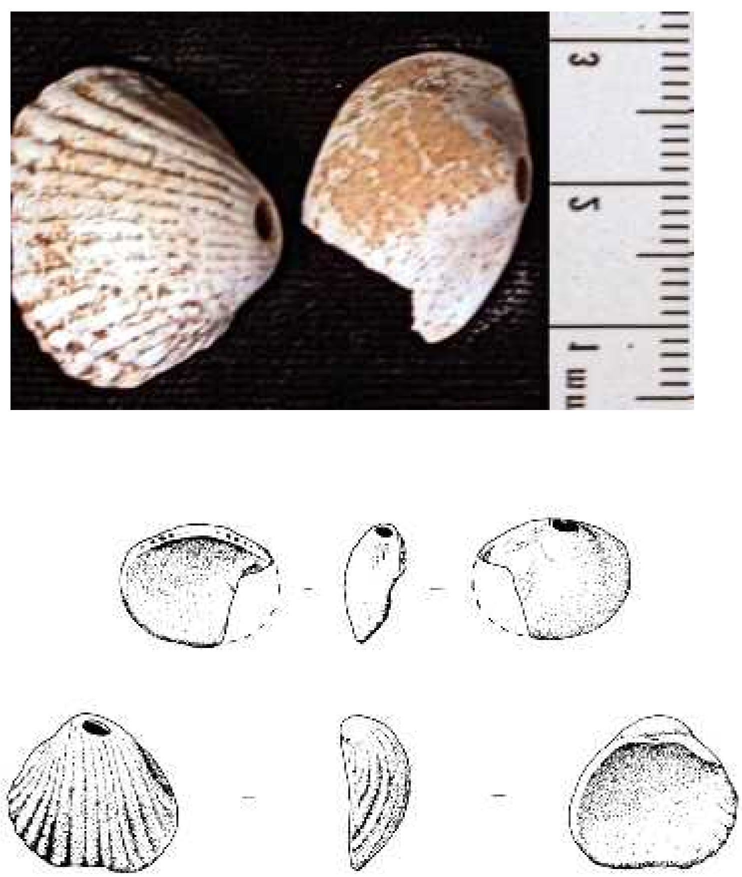


OBJECT 02-472
Cowrie shell beads

BURIAL 333 (continued)



OBJECT 02-505
Faience cowrie shell imitation



OBJECT 02-471
Shell beads

BURIAL 333 (continued)

Overview of object locations

BURIAL 335

OBJECT 02-504
Faience bead

BURIAL 410

Amun-Min amulets, found on left arm

APPENDIX III: OBJECT CATALOGUE

BURIAL 478

BURIAL 338

Obj 1209a

BURIAL 338 (continued)

Obj 1209b

Obj 1252

BURIAL 338 (continued)

No object number

BURIAL 340

Object 1200

Burial 340 (continued)

Object 1202

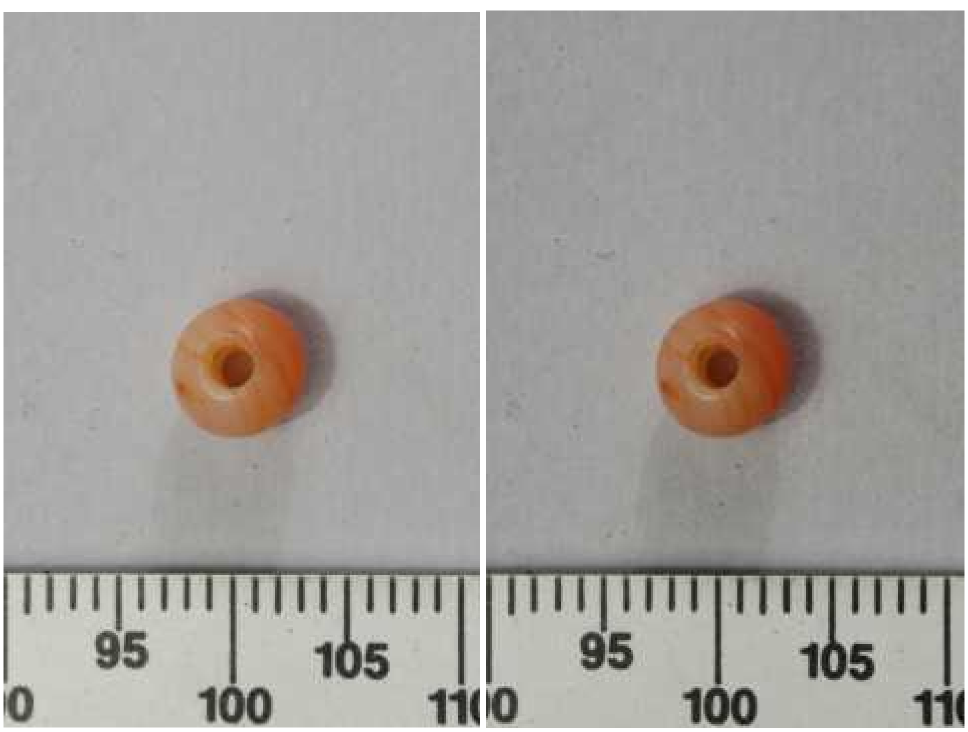
Burial 373

Object 1267

Object 1269

BURIAL 374

Object 1260a



Object 1260b

BURIAL 375

Object 1594: whet stone from fill (likely intrusive)

APPENDIX III: OBJECT CATALOGUE

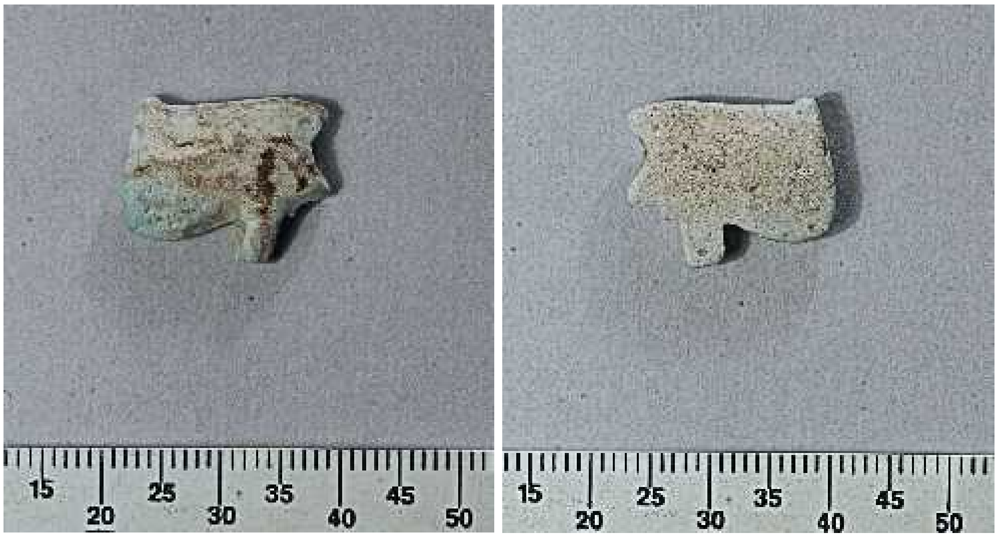
BURIAL 384

Vessel

BURIAL 386

Object 1320

BURIAL 387



Object 1291a

Object 1291b

Object 1291c

BURIAL 388

Vessel

APPENDIX III: OBJECT CATALOGUE

BURIAL 389

Object 1370

Object 1376b

BURIAL 389 (continued)

Object 1384

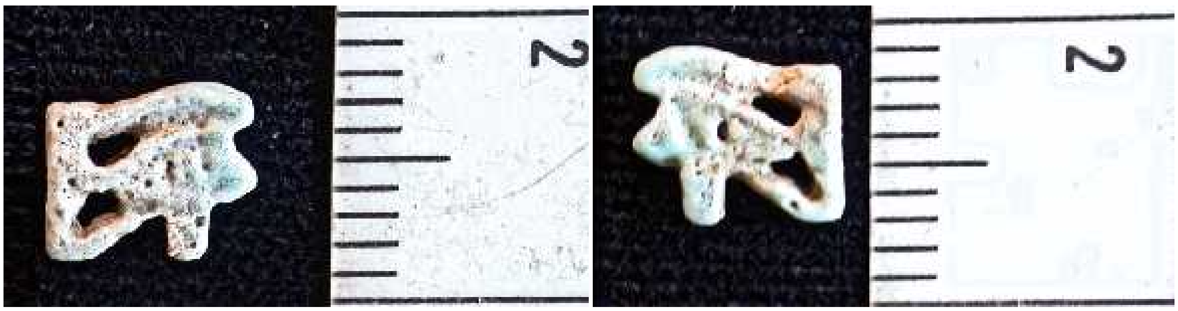
Object 1385g

APPENDIX III: OBJECT CATALOGUE

BURIAL 392

Object 1381a

Object 1381b



Object 1382a

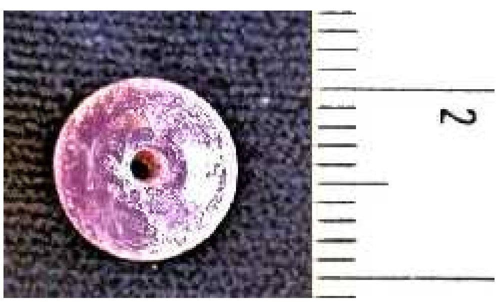
Object 1382b

Object 1383

APPENDIX III: OBJECT CATALOGUE

BURIAL 395

Object 1386a



Object 1386b

Object 1386c

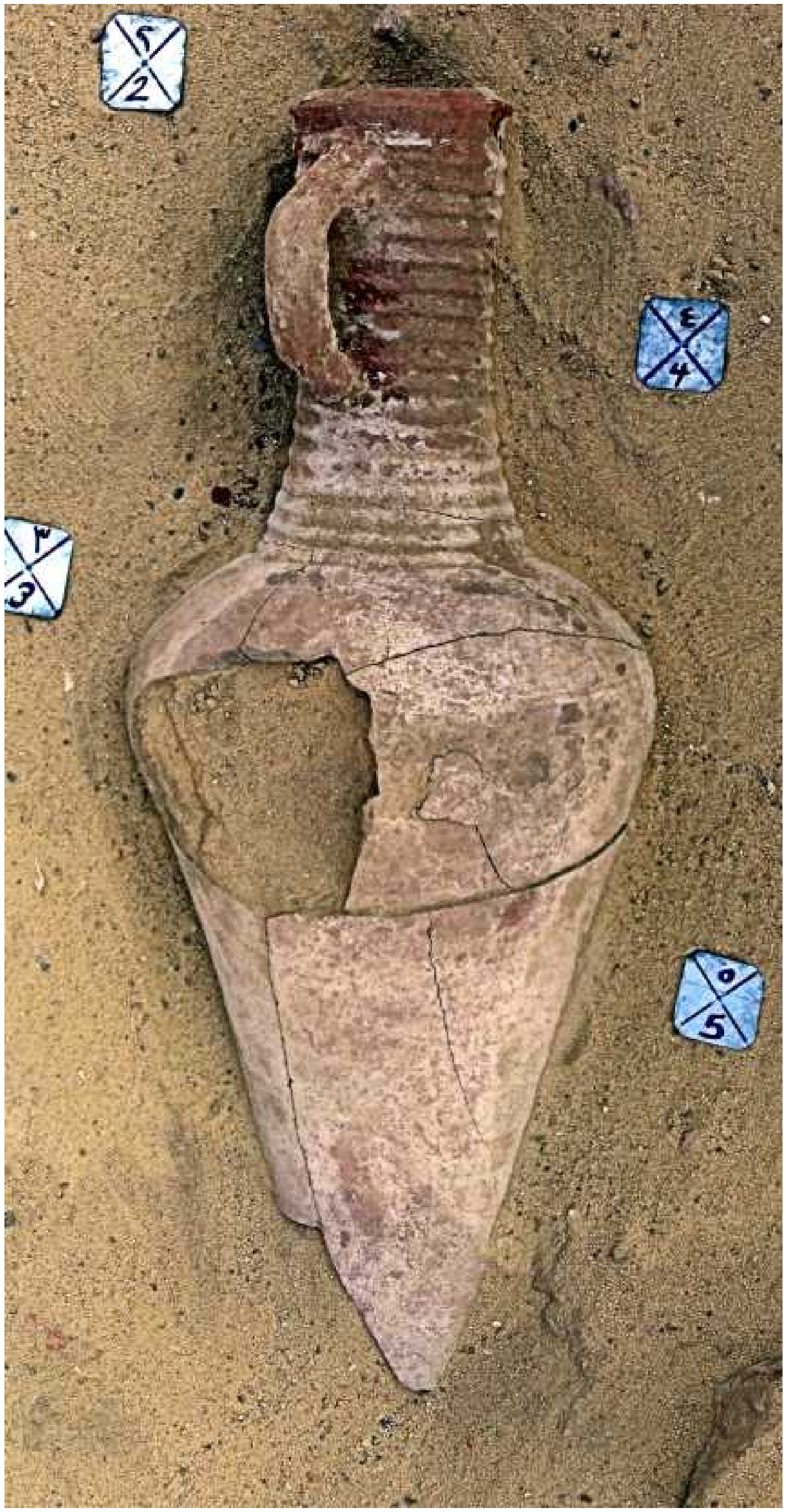
APPENDIX III: OBJECT CATALOGUE

BURIAL 410

Amun-Min amulets, found on left arm

APPENDIX III: OBJECT CATALOGUE

BURIAL 423



Vessel

BURIAL 424

Vessels

BURIAL 439

Object 2643

APPENDIX III: OBJECT CATALOGUE

BURIAL 439

Object 2644

Object 2830

BURIAL 444

Object 2646

BURIAL 444 (continued)

Object 2654

Object 2800

BURIAL 444 (continued)

Vessels (Pottery in fill of bur 444)

Vessel

APPENDIX III: OBJECT CATALOGUE

BURIAL 464

Vessel in fill (amphora, early Roman)

Burial: 129

Skeleton: 7970

Age Group: *Adultus* ***Sex:*** *M* ***P/S:*** *P*

Parietal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right		Superior Surface/Outer Table		1226

Trauma

Dislocation Traumatic

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Notes Porotic hyperostosis on both parietals and occipital

Porosis - Cranial

Ecto-cranial Location Superior vault in non-sutural areas

Diploic Hyperostosis Absent

Parietal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left		Superior Surface/Outer Table		1227

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Porosis - Cranial

Ecto-cranial Location Superior vault in non-sutural areas

Occipital	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Midline		Superior Surface/Outer Table		1229

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Porosis - Cranial

Ecto-cranial Location Other cranial location

Diploic Hyperostosis Absent

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 150

Skeleton: 7990			***Age Group:*** *Maturus*	***Sex:*** *M*	***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Mandible	Right	Proximal Epiphysis/Articular Surface		TMJ	1809

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

Eburnation (Degree) Polish only

	Side	Section	Aspect	Joint?	PathID
Humerus	Right	Proximal Epiphysis/Articular Surface		Shoulder	1811

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

	Side	Section	Aspect	Joint?	PathID
Hand Phalanges Distal	Left	Distal Epiphysis/Articular Surface	Circumferential Superior Surface/Outer Table		1814

Trauma

Fracture Type Compression/Crush/Torus

Healing Healing/Obliteration of fracture

Notes: Crushed and flattened (but healed) distal Ph manus III. Remaining phalanges not affected.

	Side	Section	Aspect	Joint?	PathID
Occipital	Left		Inferior Surface/Inner Table Lateral		1816

Abnormal Bone Loss

Location Endosteal surface or inner table

Extent <1/3 of area involved

Number of Foci Unifocal

Foci: Size 1-5 cm

Bony Response Localized destruction, boundaries well defined but no sclerosis

Notes Porotic and depressed lesion on endosteal surface of occipital bone along lambdoid suture on left side of lambda and above opisthocranium. See photos.

Burial: 138

Skeleton: 7978 — *Age Group:* Maturus — *Sex:* F — *P/S:* P

L2	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2376

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

L3	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2378

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

L4	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2379

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

L5	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2380

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 141

Skeleton: 7981 | ***Age Group:*** *Infansl* | ***Sex:*** *?* | ***P/S:*** *P*

Frontal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left		Superior Surface/Outer Table		2144

Porosis - General

Poresize Pinpoint porosity
Density 15-24: moderate
Activity Healing

Porosis - Cranial

Ecto-cranial Location Orbits

Hand Phalanges Distal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Distal Epiphysis/Articular Surface	Circumferential Superior Surface/Outer Table		1814

Trauma

Fracture Type Compression/Crush/Torus

Healing Healing/Obliteration of fracture

Notes: Crushed and flattened (but healed) distal Ph manus III. Remaining phalanges not affected.

Occipital	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left		Inferior Surface/Inner Table Lateral		1816

Abnormal Bone Loss

Location	Endosteal surface or inner table
Extent	<1/3 of area involved
Number of Foci	Unifocal
Foci: Size	1-5 cm
Bony Response	Localized destruction, boundaries well defined but no sclerosis
Notes	Porotic and depressed lesion on endosteal surface of occipital bone along lambdoid suture on left side of lambda and above opisthocranium. See photos.

Burial: 143

Skeleton: 7983 | ***Age Group:*** *Maturus* | ***Sex:*** *F?* | ***P/S:*** *P*

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Inferior Surface/Inner Table		2146

Vertebral Pathology

Vertebral Osteophytes — Barely discernible vertebral osteophytes

Notes — C3

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2147

Vertebral Pathology

Vertebral Osteophytes — Vertebral osteophytes with elevated rim

Notes — C4

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2148

Vertebral Pathology

Vertebral Osteophytes — Vertebral osteophytes with elevated rim

Notes — C5

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Inferior Surface/Inner Table Superior Surface/Outer Table		2149

Vertebral Pathology

Vertebral Osteophytes — Vertebral osteophytes with elevated rim

Notes — C6

C7	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Circumferential		2150

Vertebral Pathology

Vertebral Osteophytes — Vertebral osteophytes with elevated rim

Burial: 146

Skeleton: 7986 | ***Age Group:*** *Adultus* | ***Sex:*** *M* | ***P/S:*** *P*

Parietal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right		Superior Surface/Outer Table		1872

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Healing

Notes On both parietals near occipital angle

Porosis - Cranial

Ecto-cranial Location Superior vault near sutures

Parietal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left		Superior Surface/Outer Table		1873

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Healing

Notes On both parietals near occipital angle

Porosis - Cranial

Ecto-cranial Location Superior vault near sutures

Occipital	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Unsided		Superior Surface/Outer Table		1874

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Healing

Notes On occipital planum.

Porosis - Cranial

Ecto-cranial Location Superior vault near sutures

Burial: 149

Skeleton: 7989

Age Group: *Juvenilis* ***Sex:*** *F?* ***P/S:*** *P*

Frontal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Midline		Superior Surface/Outer Table		2151

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 25-50: high

Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

Burial: 150

Skeleton: 7990 | ***Age Group:*** *Maturus* | ***Sex:*** *M* | ***P/S:*** *P*

Mandible	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Proximal Epiphysis/Articular Surface		TMJ	1809

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

Eburnation (Degree) Polish only

Humerus	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Proximal Epiphysis/Articular Surface		Shoulder	1811

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

Hand Phalanges Distal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Distal Epiphysis/Articular Surface	Circumferential Superior Surface/Outer Table		1814

Trauma

Fracture Type Compression/Crush/Torus

Healing Healing/Obliteration of fracture

Notes: Crushed and flattened (but healed) distal Ph manus III. Remaining phalanges not affected.

Occipital	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left		Inferior Surface/Inner Table Lateral		1816

Abnormal Bone Loss

Location Endosteal surface or inner table

Extent <1/3 of area involved

Number of Foci Unifocal

Foci: Size 1-5 cm

Bony Response Localized destruction, boundaries well defined but no sclerosis

Notes Porotic and depressed lesion on endosteal surface of occipital bone along lambdoid suture on left side of lambda and above opisthocranium. See photos.

	Side	Section	Aspect	Joint?	PathID
C3-6		Body	Inferior Surface/Inner Table		1819

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

Notes Ve Ce 5. Corresponding to depression on Ve 6 cranially.

	Side	Section	Aspect	Joint?	PathID
C3-6		Body	Superior Surface/Outer Table		1820

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Ve Ce 6, cranial lesion. Corresponding to caudal lesion on Ve Ce 5.

	Side	Section	Aspect	Joint?	PathID
T 1-9		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1821

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Ve Th 7. Slight osteophytic lipping around margins of body, both cranial and caudal. **PathID**

	Side	Section	Aspect	Joint?	PathID
T 1-9			Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1822

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Ve Th 8. Slight osteophytic lipping around margins of body, both cranial and caudal.

	Side	Section	Aspect	Joint?	PathID
T 1-9		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1823

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Ve Th 9. Slight osteophytic lipping around margins of body, both cranial and caudal.

	Side	Section	Aspect	Joint?	PathID
T10		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1824

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Slight osteophytic lipping around margins of body, both cranial and caudal.

T11	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1825

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Slight osteophytic lipping around margins of body, both cranial and caudal.

T12	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1826

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Slight osteophytic lipping around margins of body, both cranial and caudal.

L5	Side	Section	Aspect	Joint?	PathID
		Body	Inferior Surface/Inner Table Medial		1827

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

Notes Caudally, against sacrum.

Sacrum	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table		1829

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

Notes On Promontorium, cranially, against L5

Burial: 160

Skeleton: 7996

Age Group: *Adultus* ***Sex:*** *M* ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Acetabulum	Left		Superior Surface/Outer Table	Hip	1839

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

Lipping (Degree) Barely discernible lipping

Erosion Clearly present erosion

Erosion (Extent) <1/3 of joint surface eroded

Notes Porosity and irregular surface on facies lunatum of left innominate.

	Side	Section	Aspect	Joint?	PathID
Foot Phalanges	Left	Distal Epiphysis/Articular Surface Proximal Epiphysis/Articular Surface	Superior Surface/Outer Table		1842

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) >2/3 of joint surface porous

Lipping (Degree) Fused

Lipping (Extent) >2/3 of circumference shows lipping

Notes Pedis sin: one intermediate and one distal phalanx are fused together. Basis against the proximal phalanx also deformed and lipped. Toe after fusing must have pointed downwards.

	Side	Section	Aspect	Joint?	PathID
T 1-9		Body			1846

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes On two fragments, Ve Th 1-7, specific vertebra undetermined.

	Side	Section	Aspect	Joint?	PathID
T 1-9		Body			1847

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes On two fragments, Ve Th 1-7, specific vertebra undetermined.

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Inferior Surface/Inner Table		1848

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

Notes Ve Th 1-7, fragmented, exact vert undetermined. Caudal lesion.

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table		1849

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

Notes Ve Th 1-7, fragmented, exact vert undetermined. Cranial lesion.

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body			1850

Vertebral Pathology

Abnormal Shape Scoliosis, right

Notes Two corpus (ve Th 7 and 8) have assymetric bodies with the main corpus shifted dx in relation to foramen vertebrale. Curvature also visible during excavation.

T12	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		1851

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Both cranial and caudal

L1	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table		1852

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

C7	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table		1854

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

Hand Phalanges Medial	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Middle Third	Superior Surface/Outer Table Circumferential		1855

Trauma

Fracture Type Simple (Transverse/Oblique)

Healing Healing/Obliteration of fracture

Complications Traumatic Myositis Ossificans

Notes: Extensive ossification of soft tissue on palmar aspect, smaller extension on dorsal side.

Femur	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Proximal Epiphysis/Articular Surface		Hip	1857

Abnormal Bone Loss

Location Periosteal or subchondral surface, external table

Extent <1/3 of area involved

Foci: Size <1 cm

Bony Response Localized destruction, margins not sharply defined

Notes Lytic defect (smooth depression), c. 1.6 cm above fovea capitis on capus femoris. Depression c. 0.5 cm in diam and 2 mm deep.

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 161

Skeleton: 7997 — ***Age Group:*** *Maturus* — ***Sex:*** *M* — ***P/S:*** *P*

Femur	Side	Section	Aspect	Joint?	PathID
	Left	Proximal Epiphysis/Articular Surface		Hip	2154

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) >2/3 of joint surface porous

Lipping (Degree) Rounded ridge

Lipping (Extent) 1/3 to 2/3 of circumference shows lipping

Notes Porotic surface and lipping around edges of caput femoris sin. Acetabulum too fragmented to assess.

Frontal	Side	Section	Aspect	Joint?	PathID
	Midline		Superior Surface/Outer Table		2156

Trauma

Fracture Type Depressed skull fracture, outer table

Perimortem Clearly Perimortem

Fracture Characteristics Edged/Sharp Force Trauma

Notes: Depressed skull fracture in glabella region, with outer table pressed into sinus cavity. Above the depression fracture are three oval penetrating fractures, the largest of which (22.7x7 mm) is c 5 cm above the left subraorbital margin, and the two smaller fractures (11.6x5mm and 17x10mm respectively) are above (c. 3cm) and on either side of the glabella. A simple linear fracture involving the outer table only runs from the edge of the smallest penetrating fracture to

Occipital	Side	Section	Aspect	Joint?	PathID
	Midline		Superior Surface/Outer Table Inferior Surface/Inner Table		2158

Trauma

Fracture Type Depressed skull fracture, outer and inner table

Perimortem Clearly Perimortem

Fracture Characteristics Edged/Sharp Force Trauma

Notes: In addition to multiple fractures on the frontal bone, there was also a penetrating fracture to the occipital (oval, 11.8x5 mm), just below lambda, and penetrating the skull at the top of the sagittal sulcus. As with the frontal bone fracture, the edges of the bone were rounded, indicating initial remodeling of bone at fracture site.

C2	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch Superior Articular Facet Inferior Articular Facet	Superior Surface/Outer Table Inferior Surface/Inner Table Dorsal/Posterior Ventral/Anterior		2161

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities on articular facets or processes

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch Superior Articular Facet Inferior Articular Facet	Circumferential Dorsal/Posterior		2162

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities on articular facets or processes
Notes	C3

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch Superior Articular Facet Inferior Articular Facet	Dorsal/Posterior Ventral/Anterior		2163

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities on articular facets or processes
Notes	C4

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch Superior Articular Facet Inferior Articular Facet	Superior Surface/Outer Table Inferior Surface/Inner Table Dorsal/Posterior Ventral/Anterior		2164

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities on articular facets or processes
Notes	C5

T10	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2165

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim

T11	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2166

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

T12	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2167

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

L3	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2168

Vertebral Pathology

Vertebral Osteophytes Curved spicules

L4	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2169

Vertebral Pathology

Vertebral Osteophytes Curved spicules

L5	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2170

Vertebral Pathology

Vertebral Osteophytes Curved spicules

Burial: 168

Skeleton: 8002

Age Group: *Senilis* ***Sex:*** *F* ***P/S:*** *P*

Femur	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Distal Epiphysis/Articular Surface		Knee	2178

Arthritis (Non-vertebral)

Surface Porosity:	Coalesced surface porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Lipping (Degree)	Sharp ridge, sometimes curled with spicules Rounded ridge
Lipping (Extent)	<1/3 of circumference shows lipping
Eburnation (Degree)	Polish with grooves
Eburnation (Extent)	>2/3 of surface shows eburnation
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Erosion	Clearly present erosion
Erosion (Extent)	>2/3 of joint surface eroded
Notes	Heavy eburnation on patella, with osteophytic growth along edges of bone. Curved spicules around tibial articular surface and porosis on the facets.

Patella	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left		Dorsal/Posterior	Knee	2180

Arthritis (Non-vertebral)

Surface Porosity:	Coalesced surface porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Lipping (Degree)	Sharp ridge, sometimes curled with spicules Rounded ridge
Lipping (Extent)	<1/3 of circumference shows lipping
Eburnation (Degree)	Polish with grooves
Eburnation (Extent)	>2/3 of surface shows eburnation
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Erosion	Clearly present erosion
Erosion (Extent)	>2/3 of joint surface eroded
Notes	Heavy eburnation on patella, with osteophytic growth along edges of bone. Curved spicules around tibial articular surface and porosis on the facets.

Tibia	Side	Section	Aspect	Joint?	PathID
	Left	Proximal Epiphysis/Articular Surface	Medial Lateral	Knee	2182

Arthritis (Non-vertebral)

Surface Porosity:	Coalesced surface porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Lipping (Degree)	Sharp ridge, sometimes curled with spicules Rounded ridge
Lipping (Extent)	<1/3 of circumference shows lipping
Eburnation (Degree)	Polish with grooves
Eburnation (Extent)	>2/3 of surface shows eburnation
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Erosion	Clearly present erosion
Erosion (Extent)	>2/3 of joint surface eroded
Notes	Heavy eburnation on patella, with osteophytic growth along edges of bone. Curved spicules around tibial articular surface and porosis on the facets.

Femur	Side	Section	Aspect	Joint?	PathID
	Right	Distal Epiphysis/Articular Surface	Medial Lateral	Knee	2184

Arthritis (Non-vertebral)

Surface Porosity:	Coalesced surface porosity
Surface Porosity: (Joint Portion)	>2/3 of joint surface porous
Lipping (Degree)	Sharp ridge, sometimes curled with spicules Rounded ridge
Lipping (Extent)	>2/3 of circumference shows lipping
Eburnation (Degree)	Polish with grooves
Eburnation (Extent)	>2/3 of surface shows eburnation
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Erosion	Clearly present erosion
Erosion (Extent)	>2/3 of joint surface eroded
Notes	Heavy eburnation on patella, with osteophytic growth along edges of bone. Curved spicules around tibial articular surface and porosis on the facets.

Patella	Side	Section	Aspect	Joint?	PathID
	Right		Dorsal/Posterior	Knee	2186

Arthritis (Non-vertebral)

Surface Porosity:	Coalesced surface porosity
Surface Porosity: (Joint Portion)	>2/3 of joint surface porous
Lipping (Degree)	Sharp ridge, sometimes curled with spicules Rounded ridge
Lipping (Extent)	>2/3 of circumference shows lipping
Eburnation (Degree)	Polish with grooves
Eburnation (Extent)	>2/3 of surface shows eburnation
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Erosion	Clearly present erosion
Erosion (Extent)	>2/3 of joint surface eroded
Notes	Heavy eburnation on patella, with osteophytic growth along edges of bone. Curved spicules around tibial articular surface and porosis on the facets.

APPENDIX IV: PATHOLOGY CATALOGUE

Tibia	Side	Section	Aspect	Joint?	PathID
	Right	Proximal Epiphysis/Articular Surface	Medial Lateral	Knee	2188

Arthritis (Non-vertebral)

Surface Porosity:	Coalesced surface porosity
Surface Porosity: (Joint Portion)	>2/3 of joint surface porous
Lipping (Degree)	Sharp ridge, sometimes curled with spicules Rounded ridge
Lipping (Extent)	>2/3 of circumference shows lipping
Eburnation (Degree)	Polish with grooves
Eburnation (Extent)	>2/3 of surface shows eburnation
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Erosion	Clearly present erosion
Erosion (Extent)	>2/3 of joint surface eroded
Notes	Heavy eburnation on patella, with osteophytic growth along edges of bone. Curved spicules around tibial articular surface and porosis on the facets.

Fibula	Side	Section	Aspect	Joint?	PathID
	Right	Proximal Epiphysis/Articular Surface	Medial		2191

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Lipping (Degree)	Rounded ridge
Lipping (Extent)	1/3 to 2/3 of circumference shows lipping
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes

C1	Side	Section	Aspect	Joint?	PathID
		Inferior Articular Facet			2193

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities on articular facets or processes
Notes	Porosity and osteophytic growth on inferior right facet

C2	Side	Section	Aspect	Joint?	PathID
		Inferior Articular Facet Superior Articular Facet Spinous Process			2194

Vertebral Pathology

Vertebral Osteophytes Curved spicules

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities on articular facets or processes

Notes Porosity and osteophytic growth on inferior right facet and on spinous process

C3-6	Side	Section	Aspect	Joint?	PathID
		Body Spinous Process Superior Articular Facet Inferior Articular Facet	Circumferential Dorsal/Posterior		2195

Vertebral Pathology

Vertebral Osteophytes Curved spicules

Porosities around margins Porosities within endplates
Porosities around margins of vertebral osteophytes

Notes C3

C3-6	Side	Section	Aspect	Joint?	PathID
		Body Spinous Process Superior Articular Facet Inferior Articular Facet			2196

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Curved spicules

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities within endplates

Notes C4

C3-6	Side	Section	Aspect	Joint?	PathID
		Body Spinous Process Superior Articular Facet Inferior Articular Facet			2197

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Curved spicules

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities within endplates

Notes C5

C3-6	Side	Section	Aspect	Joint?	PathID
		Superior Articular Facet Inferior Articular Facet Body			2198

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities on articular facets or processes

Notes C6

C7	Side	Section	Aspect	Joint?	PathID
		Body			2199

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Inferior Surface/Inner Table Superior Surface/Outer Table		2200

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Ligamentum flavum

Notes T1

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2201

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Curved spicules

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities within endplates

Notes T2

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table		2202

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Curved spicules

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities within endplates

Notes T3

L2	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2203

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities within endplates
Porosities around margins of vertebral osteophytes

L3	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2204

Vertebral Pathology

Vertebral Osteophytes Osteophytes with fusion of spicules
Curved spicules

Porosities around margins Porosities within endplates
Porosities around margins of vertebral osteophytes

L4	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2205

Vertebral Pathology

Vertebral Osteophytes Curved spicules
Osteophytes with fusion of spicules

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities within endplates

L5	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2206

Vertebral Pathology

Vertebral Osteophytes Curved spicules
Vertebral osteophytes with elevated rim

Porosities around margins Porosities within endplates
Porosities around margins of vertebral osteophytes

Femur	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Distal Epiphysis/Articular Surface	Medial Dorsal/Posterior		2207

Abnormal Bone Formation

Abnormal Matrix Deposition of woven bone

Ossified Tissue Other (including scrofula)

Notes Button-like oval abnormal bone formation on medial aspect of lateral condyle. Related to eburnation?

Burial: 169

Skeleton: 8003 | ***Age Group:*** *Maturus* | ***Sex:*** *F* | ***P/S:*** *P*

T10	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body			1684

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

T11	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body			1689

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

T12	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body			1690

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

C1	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Arch			1691

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Osteophytic growth on articular facet for dens

C2	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body			1692

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Osteophytic growth (mild, grade 0) on dens axis

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body			1693

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

Notes Ve Ce 3

C3-6	Side	Section	Aspect	Joint?	PathID
					1694

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

Notes Ve Ce 4

C3-6	Side	Section	Aspect	Joint?	PathID
		Body			1695

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Ve Ce 5 mild osteophytic growth (grade 0)

L1	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table		2372

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 191

Skeleton: 8025

Age Group: *Senilis* ***Sex:*** *M* ***P/S:*** *P*

Radius	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Proximal Third Proximal Epiphysis/Articular Surface	Superior Surface/Outer Table Medial		1902

Arthritis (Non-vertebral)

Lipping (Extent) 1/3 to 2/3 of circumference shows lipping

Notes Extensive medial lipping on tuberositas radii and on proximal epiphysis. Slight dislocation? Ulna too fragmented to assess.

T 1-9	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1903

Vertebral Pathology

Fractures Compression (nonpathological, but result of an accident)
Single end-plate depression with wedging

Notes T9: fused to T10 - compression fracture with wedging. (Right side compressed)

T10	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch	Lateral Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		1904

Vertebral Pathology

Fractures Compression (nonpathological, but result of an accident)
Single end-plate depression with wedging

Notes Fused to T9 - compression fracture with wedging. (Right side compressed)

Hallucial Phalanx Proximal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Unsided	Proximal Epiphysis/Articular Surface	Circumferential		1906

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

Lipping (Degree) Sharp ridge, sometimes curled with spicules

Lipping (Extent) 1/3 to 2/3 of circumference shows lipping

Surface Osteophytes (Extent) 1/3 to 2/3 of joint surface shows osteophytes

APPENDIX IV: PATHOLOGY CATALOGUE

Ulna	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Distal Epiphysis/Articular Surface Distal Third	Circumferential	Wrist	1908

Trauma

Fracture Type Other

Healing Healing/Obliteration of fracture

Complications Deformation

Notes: Fracture of distal third of Ulna and of styloid process, which has been remodeled.

L3	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		1912

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

L4	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		1913

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

L5	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		1914

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

CRANIUM	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Midline		Superior Surface/Outer Table Inferior Surface/Inner Table Ventral/Anterior		1916

Trauma

Fracture Type Other

Perimortem Ambiguous: possibly postmortem

Fracture Characteristics Edged/Sharp Force Trauma

Notes: Large cut extending from approx 10 cm above the orbit on the left frontal, across the glabella and right nasal bone, ending above the right upper canine. There is no evidence of healing, though the bone was not dry when the fracture occurred. If antemortem, the cut would likely have been deadly; perhaps a more reasonable explanayion is that it is evidence of mummifcation damage?

Burial: 207

Skeleton: 8038

Age Group: *Juvenilis* **Sex:** *F?* **P/S:** *P*

Frontal	Side	Section	Aspect	Joint?	PathID
	Midline		Superior Surface/Outer Table		2210

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

Parietal	Side	Section	Aspect	Joint?	PathID
	Right		Superior Surface/Outer Table		2211

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Active

Porosis - Cranial

Ecto-cranial Location Superior vault near sutures

Parietal	Side	Section	Aspect	Joint?	PathID
	Left		Superior Surface/Outer Table		2212

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Active

Porosis - Cranial

Ecto-cranial Location Superior vault near sutures

Burial: 208

Skeleton: 8039

Age Group: *Adultus* ***Sex:*** *M* ***P/S:*** *P*

Frontal	Side	Section	Aspect	Joint?	PathID
	Midline		Superior Surface/Outer Table		2216

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Healing

Porosis - Cranial

Ecto-cranial Location Orbits

Burial: 215

Skeleton: 8045

Age Group: *Adultus* **Sex:** *F* **P/S:** *P*

Femur	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Distal Epiphysis/Articular Surface	Superior Surface/Outer Table	Knee	2224

Size/Shape/Bone-Specific Anomaly: Long Bones

Long Bone Shape Other (describe in comments)

Notes Femoral anteversion of right leg - femur is rotated interiorly at 90 degrees. Trochanter minor on both femora is very large, probably a result of the misalignment. (cf bur 219)

Femur	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Distal Epiphysis/Articular Surface		Knee	2226

Size/Shape/Bone-Specific Anomaly: Long Bones

Long Bone Shape Other (describe in comments)

Notes Femoral anteversion of right leg - femur is rotated interiorly at 90 degrees. Trochanter minor on both femora is very large, probably a result of the misalignment. (cf bur 219)

T11	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2230

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

T12	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table		2231

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Burial: 218

Skeleton: 8048 — ***Age Group:*** *Adultus* — ***Sex:*** *M* — ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Frontal	Midline		Superior Surface/Outer Table		2233

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Active

Notes Cribra orbitalie in both orbits; porosity also on ectocranial aspect, abobe supraorbital margin.

Porosis - Cranial

Ecto-cranial Location Orbits

	Side	Section	Aspect	Joint?	PathID
L3		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2234

Vertebral Pathology

Vertebral Osteophytes Barely discernible vertebral osteophytes

Notes Slight lipping

	Side	Section	Aspect	Joint?	PathID
L4		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2235

Vertebral Pathology

Vertebral Osteophytes Barely discernible vertebral osteophytes

Notes Slight lipping

	Side	Section	Aspect	Joint?	PathID
L5		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2236

Vertebral Pathology

Vertebral Osteophytes Barely discernible vertebral osteophytes

Notes Slight lipping

Burial: 220

Skeleton: 8050 — ***Age Group:*** *InfansII* — ***Sex:*** *?* — ***P/S:*** *P*

Temporal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right		Lateral		2237

Porosis - General

Poresize Pinpoint porosity

Density 15-24: moderate

Activity Active

Notes Around and inside auditory meatus, with additional osteophytic growth around opening.

Porosis - Cranial

Ecto-cranial Location Other cranial location

Abnormal Bone Formation

Abnormal Matrix Deposition of woven bone

Bone Formation (Extent) < 1/3 affected

Ossified Tissue Other (including scrofula)

Notes Porosity around and inside auditory meatus, with additional osteophytic growth around opening.

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 221

Skeleton: 8051 | ***Age Group:*** *Maturus* | ***Sex:*** *M* | ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Humerus	Right	Middle Third Distal Third	Circumferential		2252

Trauma

Fracture Type Comminuted/Butterfly

Healing Healing/Obliteration of fracture

Complications Deformation

Notes: Healed fracture of humeral shaft, with anterior-posterior compression and widening of shaft. Shaft is bowed medially, and distracted compared to the left humerus.

	Side	Section	Aspect	Joint?	PathID
Scapula	Right		Lateral		2255

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 25-50: high

Activity Active

Notes Porosity on margo lateralis on right scapula - possibly related to the fracture of the right humerus?

	Side	Section	Aspect	Joint?	PathID
Temporal	Left		Lateral		2258

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Porosis - Cranial

Ecto-cranial Location Other cranial location

Notes Porosity around auditory meatus, possible ear infection?

	Side	Section	Aspect	Joint?	PathID
Fibula	Left	Middle Third Distal Third	Lateral Superior Surface/Outer Table		2260

Abnormal Bone Formation

Periosteal Surface Woven bone

Productive Reaction Type Solid

Surface Appearance Porous
Pitted

Abnormal Matrix Deposition of woven bone

Notes PNB on middle and distal third of fibular shaft, laterally

APPENDIX IV: PATHOLOGY CATALOGUE

Calcaneus	Side	Section	Aspect	Joint?	PathID
	Right		Superior Surface/Outer Table Inferior Surface/Inner Table		2262

Abnormal Bone Loss

Location Periosteal or subchondral surface, external table
Cortex, trabeculae or diploë
Number of Foci Unifocal
Foci: Size <1 cm
Bony Response Localized destruction, boundaries well defined but no sclerosis
Notes Perforation of calcaneus, round hole with smooth edges at sustentaculum tali, extending through the bone. Non-metric trait? Does not look traumatic.

Calcaneus	Side	Section	Aspect	Joint?	PathID
	Left		Superior Surface/Outer Table Inferior Surface/Inner Table		2263

Abnormal Bone Loss

Location Periosteal or subchondral surface, external table
Cortex, trabeculae or diploë
Number of Foci Unifocal
Foci: Size <1 cm
Bony Response Localized destruction, boundaries well defined but no sclerosis
Notes Perforation of calcaneus, round hole with smooth edges at sustentaculum tali, extending through the bone. Non-metric trait? Does not look traumatic.

L2	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential		2264

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Notes Lipping

L3	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential		2265

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

L4	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential		2266

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Scaphoid	Side	Section	Aspect	Joint?	PathID
	Left			Wrist	2270

Trauma

Fracture Type Comminuted/Butterfly
Healing Healing/Obliteration of fracture
Complications Deformation

Notes: Healed fracture of left scaphoid - bone is flattened and misshaped.

Burial: 225

Skeleton: 8055

Age Group: *Infansl* | **Sex:** *?* | **P/S:** *P*

Frontal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left		Superior Surface/Outer Table		2316

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

Burial: 227

Skeleton: 8057

Age Group: *Adultus* **Sex:** *F* **P/S:** *P*

	Side	Section	Aspect	Joint?	PathID
Scapula	Left		Lateral Superior Surface/Outer Table		2273

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Active

Notes Porosity inferior to glenoid fossa on lateral margin of scapula

	Side	Section	Aspect	Joint?	PathID
Femur	Left	Proximal Epiphysis/Articular Surface		Hip	2276

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

Lipping (Degree) Rounded ridge

Lipping (Extent) >2/3 of circumference shows lipping

Notes Porosity around fovea capitis; raised ridge around entire caput femoris

	Side	Section	Aspect	Joint?	PathID
Foot Phalanges Distal	Left	Proximal Epiphysis/Articular Surface	Superior Surface/Outer Table		2279

Arthritis (Non-vertebral)

Surface Osteophytes Clearly present osteophytes

Surface Osteophytes (Extent) 1/3 to 2/3 of joint surface shows osteophytes

Notes 3 distal phalanges pedis show osteophytic growth around joint facets (proximal)

Burial: 230

Skeleton: 8060

Age Group: *Maturus* **Sex:** *M* **P/S:** *P*

T 1-9	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2282

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes T8

T 1-9	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2283

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes T9

T10	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2284

Vertebral Pathology

Vertebral Osteophytes Curved spicules

T11	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2285

Vertebral Pathology

Vertebral Osteophytes Osteophytes with fusion of spicules
Vertebral osteophytes with elevated rim

Notes One larger fusion of spicules cranially, on anterior aspect of body. Remaining margins, superior and inferior, have moderate lipping. See photo.

T12	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2286

Vertebral Pathology

Vertebral Osteophytes Curved spicules

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table		2290

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

Notes T7

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Inferior Surface/Inner Table		2291

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

Notes T6

Burial: 231

Skeleton: 8061

Age Group: *Adultus* ***Sex:*** *M* ***P/S:*** *P*

T 1-9	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Inferior Surface/Inner Table		2292

Vertebral Pathology

Vertebral Pathology	Schmorl's nodes
Notes	T6

T 1-9	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2293

Vertebral Pathology

Vertebral Osteophytes	Curved spicules
Notes	T7

L4	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Arch Inferior Articular Facet	Dorsal/Posterior		2294

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities on articular facets or processes
Notes	On dx articular facet only

L5	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Arch Inferior Articular Facet	Dorsal/Posterior		2295

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities on articular facets or processes
Notes	On dx articular facet only

Burial: 232

Skeleton: 8062 | ***Age Group:*** *Maturus* | ***Sex:*** *M* | ***P/S:*** *P*

Tibia	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Proximal Third Middle Third Distal Third			2299

Abnormal Bone Formation

Periosteal Surface Woven bone
Productive Reaction Type Solid
Surface Appearance Porous
Striated
Bone Formation (Extent) 1/3 to 2/3 affected

Hallucial Phalanx Distal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Proximal Epiphysis/Articular Surface	Circumferential		2300

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity
Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous
Lipping (Degree) Sharp ridge, sometimes curled with spicules
Eburnation (Degree) Polish only
Surface Osteophytes (Extent) 1/3 to 2/3 of joint surface shows osteophytes

Foot Phalanges	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Proximal Epiphysis/Articular Surface Proximal Third	Circumferential		2301

Arthritis (Non-vertebral)

Lipping (Degree) Fused
Notes A medial phalanx and a distal phalanx are fused together.

T 1-9	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Ventral/Anterior		2302

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Porosities around margins Porosities around margins of vertebral osteophytes
Notes T2: Porosity on vert body and around osteophytes, anteriorly

	Side	Section	Aspect	Joint?	PathID
T 1-9		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Ventral/Anterior		2303

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

Notes T3: Porosity on vert body and around osteophytes, anteriorly

	Side	Section	Aspect	Joint?	PathID
T 1-9		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Ventral/Anterior		2304

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

Notes T4: Porosity on vert body and around osteophytes, anteriorly

	Side	Section	Aspect	Joint?	PathID
T 1-9		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Ventral/Anterior		2305

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

Notes T5: Porosity on vert body and around osteophytes, anteriorly

	Side	Section	Aspect	Joint?	PathID
T12		Body	Ventral/Anterior		2306

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Abnormal Shape Kyphosis (anterior-posterior)

Notes Slight wedging and bone loss in Th 12, osteophytes around margin of vertebral body

	Side	Section	Aspect	Joint?	PathID
L1		Body Inferior Articular Facet	Ventral/Anterior Inferior Surface/Inner Table		2307

Vertebral Pathology

Vertebral Osteophytes Curved spicules

Porosities around margins Porosities on articular facets or processes

Abnormal Shape Kyphosis (anterior-posterior)

Notes Slight wedging and bone loss in L1, osteophytes around margin of vertebral body. Also porosity on inferior articular facets.

	Side	Section	Aspect	Joint?	PathID
L2		Body Inferior Articular Facet	Inferior Surface/Inner Table Circumferential		2308

Vertebral Pathology

Vertebral Osteophytes Curved spicules

Porosities around margins Porosities on articular facets or processes

Abnormal Shape Kyphosis (anterior-posterior)

Notes Osteophytes around margin of vertebral body. Also porosity on inferior articular facets.

	Side	Section	Aspect	Joint?	PathID
L3		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2309

Vertebral Pathology

Vertebral Osteophytes Curved spicules

	Side	Section	Aspect	Joint?	PathID
L4		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2310

Vertebral Pathology

Vertebral Osteophytes Curved spicules

	Side	Section	Aspect	Joint?	PathID
L5		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2311

Vertebral Pathology

Vertebral Osteophytes Curved spicules

Burial: 235

Skeleton: 8065 | ***Age Group:*** *Maturus* | ***Sex:*** *F* | ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Pollical Phalanx Distal	Right	Proximal Epiphysis/Articular Surface	Superior Surface/Outer Table		1232

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Activity Active

Arthritis (Non-vertebral)

Surface Osteophytes Clearly present osteophytes
Surface Osteophytes (Extent) 1/3 to 2/3 of joint surface shows osteophytes
Erosion Clearly present erosion
Erosion (Extent) 1/3 to 2/3 of joint surface eroded

	Side	Section	Aspect	Joint?	PathID
Pollical Phalanx Proximal	Right	Proximal Epiphysis/Articular Surface	Superior Surface/Outer Table		1233

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Activity Active

Arthritis (Non-vertebral)

Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous
Surface Osteophytes Clearly present osteophytes
Surface Osteophytes (Extent) 1/3 to 2/3 of joint surface shows osteophytes
Erosion Clearly present erosion
Erosion (Extent) <1/3 of joint surface eroded

	Side	Section	Aspect	Joint?	PathID
Maxilla	Right		Inferior Surface/Inner Table		2297

Abnormal Bone Formation

Periosteal Surface Sclerotic reaction
Woven bone
Surface Appearance Porous
Striated
Abnormal Matrix Deposition of woven bone
Bone Formation (Extent) 1/3 to 2/3 affected
Notes Remodelling of right maxillary sinus, likley sinusitis (see photos)

Abnormal Bone Loss

Extent >2/3 of area involved
Foci: Size <1 cm

Burial: 241

Skeleton: 8068

Age Group: *InfansII* ***Sex:*** *?* ***P/S:*** *P*

Frontal	Side	Section	Aspect	Joint?	PathID
	Midline		Superior Surface/Outer Table		2312

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

Burial: 242

Skeleton: 8069

Age Group: *Maturus* ***Sex:*** *M* ***P/S:*** *P*

Frontal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Midline		Superior Surface/Outer Table		1243

Porosis - General

Poresize Coalesced

Density 25-50: high

Notes Porosity that looks like treponemal changes, but could be taphonomical.

Porosis - Cranial

Ecto-cranial Location Superior vault in non-sutural areas

Foot Phalanges	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Proximal Epiphysis/Articular Surface			1244

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

Lipping (Degree) Sharp ridge, sometimes curled with spicules

Surface Osteophytes Clearly present osteophytes

Surface Osteophytes (Extent) 1/3 to 2/3 of joint surface shows osteophytes

Notes Porosis and osteophytic growth around basis of Ph prox and int, (Mt 1)

Foot Phalanges Distal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Proximal Epiphysis/Articular Surface			1246

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

Lipping (Degree) Sharp ridge, sometimes curled with spicules

Surface Osteophytes Clearly present osteophytes

Surface Osteophytes (Extent) 1/3 to 2/3 of joint surface shows osteophytes

Notes Osteophytic groth around base of Ph dist pedis. (Mt 1)

MT I	Side	Section	Aspect	Joint?	PathID
	Right	Proximal Epiphysis/Articular Surface			1247

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Lipping (Degree)	Sharp ridge, sometimes curled with spicules
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Notes	Osteophytic growth around caput, Mt I.

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 265

Skeleton: 8094 | ***Age Group:*** *Maturus* | ***Sex:*** *M?* | ***P/S:*** *P*

C7	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Inferior Surface/Inner Table Superior Surface/Outer Table		1696

Vertebral Pathology

Vertebral Osteophytes Osteophytes with fusion of spicules

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities within endplates

Notes Severe osteophytic growth, porotic surface and eburnation of facies. Likely not the only affected Vert, cervicalis, but remaining vertebrae are too fragmented for assessment.

L2	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body			1698

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

Notes Slight lipping and osteophytic growth - remaining Vert Lumb too fragmented for assessment.

MT II	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Middle Third	Circumferential		1699

Trauma

Fracture Type Simple (Transverse/Oblique)

Healing Healing/Obliteration of fracture

Notes: Healed fracture of diaphys, MT II

Hallucial Phalanx Proximal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Distal Epiphysis/Articular Surface	Circumferential		1700

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) >2/3 of joint surface porous

Lipping (Degree) Rounded ridge

Notes Possibly related to fracture on MT?

Foot Phalanges Medial	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Proximal Epiphysis/Articular Surface Distal Epiphysis/Articular Surface			1702

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) >2/3 of joint surface porous

Lipping (Degree) Barely discernible lipping

Eburnation (Degree) Polish only

Eburnation (Extent) 1/3 to 2/3 of surface shows eburnation

Surface Osteophytes Clearly present osteophytes

Notes Intermediate phalanges pedis II-V: Osteophytes and porosity on proximal articular surface. Intermediate phalanges pedis III-V - also osteophytes, porotic surface and eburnation on distal articular surface.

Burial: 269

Skeleton: 8098

Age Group: *Infant* ***Sex:*** *?* ***P/S:*** *P*

Humerus	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Proximal Third	Superior Surface/Outer Table Medial		1704

Abnormal Bone Formation

Ossified Tissue Muscle (Myositis Ossificans)

Notes Small bone spurs bilaterally on medial aspect of proximal third of humeri, bilateral. Myositis ossificans?

Humerus	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Proximal Third	Medial Superior Surface/Outer Table		1705

Abnormal Bone Formation

Ossified Tissue Muscle (Myositis Ossificans)

Notes Small bone spurs bilaterally on medial aspect of proximal third of humeri, bilateral. Myositis ossificans?

Burial: 271

Skeleton: 8100			***Age Group:*** *Adultus*	***Sex:*** *F*	***P/S:*** *P*
T11	**Side**	**Section** Body	**Aspect** Dorsal/Posterior	**Joint?**	**PathID** 1713

Vertebral Pathology

Vertebral Pathology Other

Notes Deformed costal facet on T11, vertebral body "pinched" at articular facet, and articular facet enlarged.

Parietal	**Side** Left	**Section**	**Aspect** Superior Surface/Outer Table Inferior Surface/Inner Table	**Joint?**	**PathID** 2393

Trauma

Fracture Type Depressed skull fracture, outer and inner table

Perimortem Ambiguous: possibly postmortem

Fracture Characteristics Edged/Sharp Force Trauma

Burial: 275

Skeleton: 8104 | ***Age Group:*** *Adultus* | ***Sex:*** *M* | ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Ulna	Right	Proximal Third	Superior Surface/Outer Table		1629

Arthritis (Non-vertebral)

Surface Porosity: Barely discernible surface porosity

Lipping (Degree) Barely discernible lipping

Surface Osteophytes (Extent) <1/3 of joint surface shows osteophytes

Notes Osteophytic growth and lipping on ulnar tuberosity.

	Side	Section	Aspect	Joint?	PathID
Radius	Right	Proximal Third	Superior Surface/Outer Table		1631

Arthritis (Non-vertebral)

Surface Porosity: Barely discernible surface porosity

Lipping (Degree) Barely discernible lipping

Surface Osteophytes Barely discernible osteophytes

Notes Osteophytic growth and lipping on radial tuberosity.

Burial: 279

Skeleton: 8107 | ***Age Group:*** *Senilis* | ***Sex:*** *F* | ***P/S:*** *P*

Os Coxae (Innominate)	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Midline		Medial		1717

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) >2/3 of joint surface porous

Notes Porosity on both facies auricularis. Sacral facies auricularis too damaged to assess.

Temporal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right		Inferior Surface/Inner Table		1718

Abnormal Bone Formation

Abnormal Matrix Extension of cancellous bone

Notes Spicules on malleus dx

Maxilla	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right		Medial		1720

Abnormal Bone Loss

Location Endosteal surface or inner table
Periosteal or subchondral surface, external table

Number of Foci Unifocal

Foci: Size 1-5 cm

Bony Response Localized destruction, boundaries well defined but no sclerosis

Notes Abscess in maxilla dx, from sinus cavity, draining into nasal cavity

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		1721

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Curved spicules

Porosities around margins Porosities around margins of vertebral osteophytes

Notes Osteophytic growth, ve ce 5, cranial and caudal

C3-6	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		1722

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim Curved spicules
Porosities around margins	Porosities around margins of vertebral osteophytes Porosities within endplates
Notes	Osteophytic growth, ve ce 6, cranial and caudal

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table		1723

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim Curved spicules
Porosities around margins	Porosities around margins of vertebral osteophytes Porosities within endplates
Notes	Ve Th 4

T 1-9	Side	Section	Aspect	Joint?	PathID
			Superior Surface/Outer Table Inferior Surface/Inner Table		1724

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim Curved spicules
Porosities around margins	Porosities around margins of vertebral osteophytes Porosities within endplates
Notes	Ve Th 5

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		1725

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim Curved spicules
Porosities around margins	Porosities around margins of vertebral osteophytes Porosities within endplates
Notes	Ve Th 6

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		1726

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim Curved spicules
Porosities around margins	Porosities around margins of vertebral osteophytes Porosities within endplates
Notes	Ve Th 6

APPENDIX IV: PATHOLOGY CATALOGUE

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		1727

Vertebral Pathology

Vertebral Osteophytes Curved spicules
Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities within endplates

Notes Ve Th 7

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		1728

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Curved spicules

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities within endplates

Notes Ve Th 8

T10	Side	Section	Aspect	Joint?	PathID
		Body	Dorsal/Posterior Ventral/Anterior		1729

Vertebral Pathology

Vertebral Pathology Other

Notes Large cavity (abscess?) extending through corpus from dorsal aspect of body (inside vertebral foramen) with cavity 11 mm in diam on dorsal aspect, 2 mm on ventral aspect. Interior of cavity is irregular but smooth.

T12	Side	Section	Aspect	Joint?	PathID
		Body			1730

Vertebral Pathology

Fractures Compression (nonpathological, but result of an accident)

Notes Dx side of corpus 23.8 mm, sin side is 22.6 mm - wedge shaped corpus.

L4	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		1731

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

L5	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		1732

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 291

Skeleton: 8118			***Age Group:*** *Adultus*	***Sex:*** *F*	***P/S:*** *P*
Glenoid Fossa	**Side** Left	**Section**	**Aspect** Superior Surface/Outer Table	**Joint?** Shoulder	**PathID** 1748

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Active

Notes Porotic surface on glenoid cavity - humeral head and acromion not preserved, so unclear if more bones in joint were involved.

Parietal	**Side** Left	**Section**	**Aspect** Superior Surface/Outer Table	**Joint?**	**PathID** 1754

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Active

Porosis - Cranial

Ecto-cranial Location Superior vault in non-sutural areas

Parietal	**Side** Right	**Section**	**Aspect**	**Joint?**	**PathID** 1755

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Active

Porosis - Cranial

Ecto-cranial Location Superior vault near sutures

Frontal	**Side** Right	**Section**	**Aspect** Superior Surface/Outer Table Medial	**Joint?**	**PathID** 1758

Trauma

Fracture Type Depressed skull fracture, outer table

Perimortem Ambiguous: possibly postmortem

Fracture Characteristics Blunt Oval

Notes: Oval depression fracture at right edge of glabella. No evidence of healing, but bone apears to have been green when the fracture happened. Likely post-mortem.

Burial: 292

Skeleton: 8119 — ***Age Group:*** *Maturus* — ***Sex:*** *F?* — ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Rib 1	Left	Proximal Epiphysis/Articular Surface	Dorsal/Posterior		1236

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 25-50: high
Activity Active

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity
Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous
Surface Osteophytes Clearly present osteophytes
Surface Osteophytes (Extent) >2/3 of joint surface shows osteophytes

	Side	Section	Aspect	Joint?	PathID
Ribs 3-10	Left	Proximal Epiphysis/Articular Surface	Dorsal/Posterior		1237

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 25-50: high
Activity Active

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity
Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous
Surface Osteophytes Clearly present osteophytes
Surface Osteophytes (Extent) 1/3 to 2/3 of joint surface shows osteophytes
Notes Facies articularis vertebrae shows osteophytic growth and lipping.

	Side	Section	Aspect	Joint?	PathID
Foot Phalanges Medial	Left	Proximal Epiphysis/Articular Surface	Circumferential		1238

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity
Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous
Surface Osteophytes Clearly present osteophytes
Surface Osteophytes (Extent) >2/3 of joint surface shows osteophytes

Burial: 293

Skeleton: 8120 | ***Age Group:*** *InfansII* | ***Sex:*** *?* | ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Frontal	Left		Superior Surface/Outer Table		1761

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Activity Active

Notes Moderate Cribra, in left orbit only.

Porosis - Cranial

Ecto-cranial Location Orbits

Burial: 294

Skeleton: 8121

Age Group: *InfansII* ***Sex:*** *?* ***P/S:*** *P*

Tibia	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Proximal Third	Dorsal/Posterior		1763

Abnormal Bone Loss

Location	Periosteal or subchondral surface, external table
Extent	<1/3 of area involved
Foci: Size	>5 cm
Notes	Large sulci on posterior aspect of both tibiae. Groove begins c 3.5 cm from the proximal metaphyseal line and extends 7 cm down the shaft, fading out. Largest breadth is .8 cm, and depth is 4 mm. Groove replaces popliteal line on both bones.

Tibia	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Proximal Third	Dorsal/Posterior Superior Surface/Outer Table		1765

Abnormal Bone Loss

Location	Periosteal or subchondral surface, external table
Extent	<1/3 of area involved
Number of Foci	Unifocal
Foci: Size	>5 cm
Notes	Large sulci on posterior aspect of both tibiae. Groove begins c 3.5 cm from the proximal metaphyseal line and extends 7 cm down the shaft, fading out. Largest breadth is .8 cm, and depth is 4 mm. Groove replaces popliteal line on both bones.

Burial: 296

Skeleton: 8124

Age Group: *Infansl* ***Sex:*** *?* ***P/S:*** *P*

Temporal	Side	Section	Aspect	Joint?	PathID
	Left		Inferior Surface/Inner Table		1767

Abnormal Bone Formation

Abnormal Matrix Extension of cancellous bone

Notes Spicules on os malleus sin - ear infection? No porosity on temporal/petrous part.

Burial: 297

Skeleton: 8125 | ***Age Group:*** *Maturus* | ***Sex:*** *F* | ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Mandible	Left	Proximal Epiphysis/Articular Surface		TMJ	1769

Porosis - General

Poresize Pinpoint porosity

Density 15-24: moderate

Activity Active

Notes Porosity on left mandibular condyle, but no lipping or osteophytic growth.

	Side	Section	Aspect	Joint?	PathID
Tibia	Right	Proximal Third	Superior Surface/Outer Table Circumferential		1773

Trauma

Fracture Type Partial (Greenstick/Bowed)

Healing Callus formation, woven bone only

Notes: Callus formation on proximal third of tibia, well healed fracture, no deformation. Indicates partial fracture, since bone was so well set?

	Side	Section	Aspect	Joint?	PathID
Femur	Right	Distal Third	Superior Surface/Outer Table Circumferential		1774

Size/Shape/Bone-Specific Anomaly: Long Bones

Long Bone Shape Bowed (abnormal curvature)

Notes Right femur is bowed laterally - possibly result of early fracture that healed well, as proximal tibia has a large but well healed callus. Possibly fracture in childhood?

Burial: 299

Skeleton: 8127

Age Group: *Adultus* ***Sex:*** *M?* ***P/S:*** *P*

L4	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Ventral/Anterior		1776

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Lipping on ventral aspect of body

L5	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
					1778

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Lipping on ventral aspect of body

Burial: 301

Skeleton: 8129

Age Group: *Maturus* ***Sex:*** *F?* ***P/S:*** *P*

Occipital	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Midline		Superior Surface/Outer Table Dorsal/Posterior		1779

Trauma

Fracture Type Other

Fracture Characteristics Edged/Sharp Force Trauma

Healing Healing/Obliteration of fracture

Complications Infection

Notes: Healing fracture on occipital, just below lambda, and extending into parietal sin slightly. Fracture looks like a sideways "V", with the point of the V pointing right, and the two "legs" of the V pointing left, and extending over lamdoid suture into parietal. Caudal groove (i.e. lower "leg: of V) is 45 mm, cranial groove is 20 mm. Depth of groove is c. 4 mm. Some sclerotic bone at lambda (diam c. 1.5 cm) may be related to the healing of the fracture.

Foot Phalanges	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Proximal Epiphysis/Articular Surface Distal Epiphysis/Articular Surface	Superior Surface/Outer Table		1780

Arthritis (Non-vertebral)

Surface Osteophytes (Extent) 1/3 to 2/3 of joint surface shows osteophytes

Notes Several phalanges have osteophytic groth around both proximal and distal articular facets.

Foot Phalanges	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left				1781

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Osteophytes (Extent) 1/3 to 2/3 of joint surface shows osteophytes

Notes Several foot phalanges have osteophytic growth on both proximal and distal articular facets.

Fibula	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Proximal Third	Superior Surface/Outer Table Inferior Surface/Inner Table Medial		1782

Abnormal Bone Loss

Location Periosteal or subchondral surface, external table
Cortex, trabeculae or diploë

Extent 1/3 to 2/3 of area involved

Number of Foci 3-5 Foci

Foci: Size 1-5 cm

Bony Response Localized destruction, margins not sharply defined

Notes Osteomyelitis: Thickening and cloaca on left fibula. One large cloaca (c. 7 mm) and two smaller perforations (c. 3-4 mm)

Burial: 303

Skeleton: 8131			***Age Group:*** *Adultus*	***Sex:*** *M*	***P/S:*** *P*
Thoracic Vertebrae	**Side**	**Section** Body	**Aspect** Lateral	**Joint?**	**PathID** 1786

Vertebral Pathology

Vertebral Pathology	Other
Notes	A misshaped facies articularis costae on the right side of the body of one Ve Th 1-9, unknown which.

L5	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table		2318

Vertebral Pathology

Vertebral Osteophytes	Barely discernible vertebral osteophytes

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 308

Skeleton: 8136 | ***Age Group:*** *Senilis* | ***Sex:*** *F* | ***P/S:*** *P*

L1	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Inferior Surface/Inner Table		1789

Vertebral Pathology

Vertebral Osteophytes — Vertebral osteophytes with elevated rim

Porosities around margins — Porosities around margins of vertebral osteophytes

L2	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Inferior Surface/Inner Table Superior Surface/Outer Table		1790

Vertebral Pathology

Vertebral Osteophytes — Vertebral osteophytes with elevated rim

Porosities around margins — Porosities around margins of vertebral osteophytes

L3	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		1791

Vertebral Pathology

Vertebral Osteophytes — Vertebral osteophytes with elevated rim

Porosities around margins — Porosities around margins of vertebral osteophytes

L4	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table		1792

Vertebral Pathology

Vertebral Osteophytes — Vertebral osteophytes with elevated rim

Porosities around margins — Porosities within endplates
Porosities around margins of vertebral osteophytes

Burial: 311

Skeleton: 8139 — ***Age Group:*** *Adultus* — ***Sex:*** *F* — ***P/S:*** *P*

C3-6	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2136

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes C3

C3-6	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2137

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes C4

C3-6	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2138

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes C5

Burial: 312

Skeleton: 8140

Age Group: *Juvenilis* **Sex:** *M?* **P/S:** *P*

Frontal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Midline		Superior Surface/Outer Table		1793

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 25-50: high

Activity Active

Notes Bilateral cribra orbitalia.

Porosis - Cranial

Ecto-cranial Location Orbits

Humerus	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Distal Third	Ventral/Anterior		1796

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Active

Notes Porosity just above metaphyse on distal left humerus.

Burial: 314

Skeleton: 8142

Age Group: *Adultus* ***Sex:*** *F* ***P/S:*** *P*

Frontal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right		Superior Surface/Outer Table		1862

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

Parietal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right		Superior Surface/Outer Table		2320

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density < 15: low
Activity Healing

Burial: 326

Skeleton: 8154

Age Group: *Infansl* ***Sex:*** *?* ***P/S:*** *P*

Parietal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right		Superior Surface/Outer Table		1864

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Active

Notes By sphenoidal angle on both parietals, c 4 cm in diam area

Porosis - Cranial

Ecto-cranial Location Superior vault near sutures

Parietal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left		Superior Surface/Outer Table		1865

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Active

Notes By sphenoidal angle on both parietals, c 4 cm in diam area

Porosis - Cranial

Ecto-cranial Location Superior vault near sutures

Mandible	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Unsided		Superior Surface/Outer Table Medial Ventral/Anterior		1866

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Active

Notes Porosis on mandubular body, under anterior teeth on both sides

Temporal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left		Superior Surface/Outer Table Lateral		1869

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density < 15: low

Activity Active

Notes Slight lipping surrounding external auditory meatus, surrounded by porosity. Ear infection? See photo.

Porosis - Cranial

Ecto-cranial Location Other cranial location

Burial: 327

Skeleton: 8155

Age Group: *Adultus* **Sex:** *F?* **P/S:** *P*

Femur	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Distal Epiphysis/Articular Surface Proximal Epiphysis/Articular Surface		Knee	2082

Size/Shape/Bone-Specific Anomaly: Long Bones

Long Bone Shape Other (describe in comments)

Notes Femoral anteversion of both legs - femurs are rotated interiorly at 90 degrees. Trochanter minor on both femora is very large, probably a result of the misalignment. Tibiaevwere truncated below the epiphysis so it was not possible to determine if these bones were also affected. Patellae were normal. (cf bur 219, 215)

Femur	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Distal Epiphysis/Articular Surface Middle Third Distal Third	Circumferential	Knee	2086

Size/Shape/Bone-Specific Anomaly: Long Bones

Long Bone Shape Other (describe in comments)

Notes Femoral anteversion of both legs - femurs are rotated interiorly at 90 degrees. Trochanter minor on both femora is very large, probably a result of the misalignment. were truncated below the epiphysis it was not possible to determine if these bones were also affected. Patellae were normal. (cf bur 219)

Burial: 328

Skeleton: 8156 | ***Age Group:*** *Infansl* | ***Sex:*** *?* | ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Frontal	Midline		Superior Surface/Outer Table		1879

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

	Side	Section	Aspect	Joint?	PathID
Zygomatic	Right		Superior Surface/Outer Table		1880

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Active

Porosis - Cranial

Ecto-cranial Location Other cranial location

Burial: 329

Skeleton: 8157 | ***Age Group:*** *Infansl* | ***Sex:*** *?* | ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Frontal	Unsided		Superior Surface/Outer Table Lateral		1883

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

Notes Cribra Orbitalia in both orbits; also porosity on ectocranial surface, laterally above margo superciliaris.

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 330

Skeleton: 8158 | ***Age Group:*** *Maturus* | ***Sex:*** *M* | ***P/S:*** *P*

Foot Phalanges Distal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Distal Epiphysis/Articular Surface Proximal Epiphysis/Articular Surface			2115

Arthritis (Non-vertebral)

Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Notes	Ph I dist, both on articular facet and distally

L4	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Inferior Surface/Inner Table Circumferential		2116

Vertebral Pathology

Vertebral Osteophytes	Barely discernible vertebral osteophytes

L5	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2117

Vertebral Pathology

Vertebral Osteophytes	Curved spicules

Sacrum	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Circumferential		2118

Vertebral Pathology

Vertebral Osteophytes	Curved spicules
Notes	On promontorion, cranially, S1

L1	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2120

Vertebral Pathology

Vertebral Osteophytes	Barely discernible vertebral osteophytes

L2	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2121

Vertebral Pathology

Vertebral Osteophytes	Barely discernible vertebral osteophytes Vertebral osteophytes with elevated rim
Notes	Barely discernable - cranially, elevated rim caudally

APPENDIX IV: PATHOLOGY CATALOGUE

L3	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2122

Vertebral Pathology

Vertebral Osteophytes	Barely discernible vertebral osteophytes Vertebral osteophytes with elevated rim
Notes	Barely discernable caudally, elevated rim cranially

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2124

Vertebral Pathology

Vertebral Osteophytes	Barely discernible vertebral osteophytes
Notes	T1

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2125

Vertebral Pathology

Vertebral Osteophytes	Barely discernible vertebral osteophytes
Notes	T2

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2126

Vertebral Pathology

Vertebral Osteophytes	Barely discernible vertebral osteophytes
Notes	T3

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2127

Vertebral Pathology

Vertebral Osteophytes	Barely discernible vertebral osteophytes
Notes	T4

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2128

Vertebral Pathology

Vertebral Osteophytes	Barely discernible vertebral osteophytes
Notes	T5

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2129

Vertebral Pathology

Vertebral Osteophytes	Barely discernible vertebral osteophytes
Notes	T6

T 1-9	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2130

Vertebral Pathology

Vertebral Osteophytes	Barely discernible vertebral osteophytes
Notes	T7

T 1-9	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2131

Vertebral Pathology

Vertebral Osteophytes	Barely discernible vertebral osteophytes
Notes	T8

T 1-9	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2132

Vertebral Pathology

Vertebral Osteophytes	Barely discernible vertebral osteophytes
Notes	T9

T10	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2133

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim

T11	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2134

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim

T12	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2135

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 331

Skeleton: 8159 | ***Age Group:*** *Maturus* | ***Sex:*** *F* | ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Frontal	Midline		Superior Surface/Outer Table		1887

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

	Side	Section	Aspect	Joint?	PathID
Tibia	Right	Distal Third	Superior Surface/Outer Table Circumferential		1888

Abnormal Bone Formation

Periosteal Surface Woven bone
Productive Reaction Type Solid
Surface Appearance Striated
Porous
Bone Formation (Extent) > 2/3 affected

Notes Distal third of tibial shaft thickened

	Side	Section	Aspect	Joint?	PathID
Fibula	Right	Distal Third	Superior Surface/Outer Table Circumferential		1889

Abnormal Bone Formation

Periosteal Surface Woven bone
Productive Reaction Type Solid
Surface Appearance Porous
Striated
Bone Formation (Extent) > 2/3 affected

Notes Distal third of fibular shaft thickened

	Side	Section	Aspect	Joint?	PathID
Ulna	Right	Distal Epiphysis/Articular Surface	Dorsal/Posterior	Wrist	1892

Trauma

Fracture Type Other
Fracture Characteristics Other
Healing Healing/Obliteration of fracture

Notes: Possible fracture on ulna dx - styloid process is missing but healed over. Colles fracture?

APPENDIX IV: PATHOLOGY CATALOGUE

Sacrum	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table		1895

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

Notes Slight osteophyte formation and lipping on S1 cranial aspect

L1	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		1896

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

L2	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		1897

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

L3	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		1898

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

L4	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		1899

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

L5	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		1900

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

T 1-9	Side	Section	Aspect	Joint?	PathID
		Arch			2114

Vertebral Pathology

Vertebral Osteophytes Ligamentum flavum

Notes Three Th Arcus fragments have ligamenta flava

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 332

Skeleton: 8160

Age Group: *Adultus* ***Sex:*** *M* ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Frontal	Midline		Superior Surface/Outer Table		1953

Porosis - General

Poresize Pinpoint porosity
Density 15-24: moderate
Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

	Side	Section	Aspect	Joint?	PathID
C3-6		Body Transverse Process	Circumferential Dorsal/Posterior Superior Surface/Outer Table		1956

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Notes Ve Ce 3

	Side	Section	Aspect	Joint?	PathID
C3-6		Body Transverse Process	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential Dorsal/Posterior		1958

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Notes Ve Ce 4

	Side	Section	Aspect	Joint?	PathID
C3-6		Body Transverse Process	Superior Surface/Outer Table Inferior Surface/Inner Table Dorsal/Posterior Circumferential		1959

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Notes Ve Ce 5

	Side	Section	Aspect	Joint?	PathID
C3-6		Body Transverse Process	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential Dorsal/Posterior		1960

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Notes Ve Ce 6

C7	Side	Section	Aspect	Joint?	PathID
		Body Transverse Process	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential Dorsal/Posterior		1961

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

T 1-9	Side	Section	Aspect	Joint?	PathID
		Transverse Process Body	Superior Surface/Outer Table Inferior Surface/Inner Table Lateral		1962

Vertebral Pathology

Porosities around margins Porosities within endplates

Notes T1: Porosity on body as well as facies articularis costae (transverse process)

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body Transverse Process	Superior Surface/Outer Table Inferior Surface/Inner Table Lateral		1963

Vertebral Pathology

Porosities around margins Porosities around margins of vertebral osteophytes

Notes T2: Porosity on body as well as facies articularis costae (transverse process)

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body Transverse Process	Superior Surface/Outer Table Inferior Surface/Inner Table Lateral		1964

Vertebral Pathology

Porosities around margins Porosities within endplates

Notes T3: Porosity on body as well as facies articularis costae (transverse process)

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body Transverse Process	Superior Surface/Outer Table Inferior Surface/Inner Table Lateral		1965

Vertebral Pathology

Porosities around margins Porosities within endplates

Notes T4: Porosity on body as well as facies articularis costae (transverse process)

T 1-9	Side	Section	Aspect	Joint?	PathID
		Arch	Dorsal/Posterior		1966

Vertebral Pathology

Vertebral Osteophytes Ligamentum flavum

Notes T1

Burial: 333

Skeleton: 8161

Age Group: *Infansl* ***Sex:*** *?* ***P/S:*** *P*

Frontal	Side	Section	Aspect	Joint?	PathID
	Midline		Superior Surface/Outer Table		1967

Porosis - General

Density 15-24: moderate

Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 335

Skeleton: 8163

Age Group: Maturus | *Sex:* M | *P/S:* P

Ribs 3-10	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Middle Third	Lateral		1923

Trauma

Fracture Type Simple (Transverse/Oblique)
Healing Healing/Obliteration of fracture

Notes: Healed fracture on Costae dx # 6. Fracture completely healed.

C1	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Arch Superior Articular Process Inferior Articular Process	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1924

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Notes Osteophytes Brothwell Grade 0 on entire spine

C2	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		1925

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Notes Osteophytes Brothwell Grade 0 on entire spine (also on dens axis)

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1926

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Notes Ve Ce 3; Osteophytes Brothwell Grade 0 on entire spine

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Inferior Surface/Inner Table Superior Surface/Outer Table Circumferential		1927

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Notes Ve Ce 4: Osteophytes Brothwell Grade 0 on entire spine

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1928

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Notes Ve Ce 5: Osteophytes Brothwell Grade 0 on entire spine

C3-6	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1929

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Ve Ce 6: Osteophytes Brothwell Grade 0 on entire spine

C7	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1930

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Osteophytes Brothwell Grade 0 on entire spine

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1931

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes T1: Osteophytes Brothwell Grade 0 on entire spine

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1932

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes T2: Osteophytes Brothwell Grade 0 on entire spine

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1933

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes T3: Osteophytes Brothwell Grade 0 on entire spine

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1934

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes T4: Osteophytes Brothwell Grade 0 on entire spine

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1935

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes T5: Osteophytes Brothwell Grade 0 on entire spine

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1937

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes T6: Osteophytes Brothwell Grade 0 on entire spine

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1938

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes T7: Osteophytes Brothwell Grade 0 on entire spine

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1939

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes T8: Osteophytes Brothwell Grade 0 on entire spine

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1940

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes T9: Osteophytes Brothwell Grade 0 on entire spine

APPENDIX IV: PATHOLOGY CATALOGUE

T10	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1941

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Osteophytes Brothwell Grade 0 on entire spine

T11	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1942

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Osteophytes Brothwell Grade 0 on entire spine

T12	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1943

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Osteophytes Brothwell Grade 0 on entire spine

L1	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1944

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Osteophytes Brothwell Grade 0 on entire spine

L2	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1945

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Osteophytes Brothwell Grade 0 on entire spine

L3	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1946

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Osteophytes Brothwell Grade 0 on entire spine

L4	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		1947

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Osteophytes Brothwell Grade 0 on entire spine

L5	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		1948

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Osteophytes Brothwell Grade 0 on entire spine

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Inferior Surface/Inner Table		1950

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

Notes Caudal: T8

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table		1951

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

Notes T9: Cranial

Burial: 336

Skeleton: 8164

Age Group: *Infansl* ***Sex:*** *?* ***P/S:*** *P*

Frontal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Midline		Superior Surface/Outer Table		1969

Porosis - General

Density < 15: low

Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 337

Skeleton: 8165

Age Group: Maturus *Sex:* F *P/S:* P

C3-6	Side	Section	Aspect	Joint?	PathID
		Superior Articular Process Inferior Articular Process Arch	Superior Surface/Outer Table Inferior Surface/Inner Table Dorsal/Posterior		1971

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Ve Ce 4

C3-6	Side	Section	Aspect	Joint?	PathID
		Arch Superior Articular Process Inferior Articular Process	Superior Surface/Outer Table Inferior Surface/Inner Table Dorsal/Posterior		1973

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Ve Ce 5

C3-6	Side	Section	Aspect	Joint?	PathID
		Arch Superior Articular Process Inferior Articular Process	Superior Surface/Outer Table Inferior Surface/Inner Table Dorsal/Posterior		1974

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes Ve Ce 6

C7	Side	Section	Aspect	Joint?	PathID
		Arch Superior Articular Process Inferior Articular Process	Superior Surface/Outer Table Inferior Surface/Inner Table Dorsal/Posterior		1975

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

T10	Side	Section	Aspect	Joint?	PathID
		Arch Superior Articular Process Inferior Articular Process	Superior Surface/Outer Table Inferior Surface/Inner Table Dorsal/Posterior		1976

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

T11	Side	Section	Aspect	Joint?	PathID
		Arch Superior Articular Process Inferior Articular Process	Superior Surface/Outer Table Inferior Surface/Inner Table Dorsal/Posterior		1977

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

T12	Side	Section	Aspect	Joint?	PathID
		Arch Superior Articular Process Inferior Articular Process	Superior Surface/Outer Table Inferior Surface/Inner Table Dorsal/Posterior		1978

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Burial: 339

Skeleton: 20507

Age Group: *Maturus* ***Sex:*** *M* ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Ribs 3-10	Right	Middle Third	Circumferential		1980

Trauma

Fracture Type Simple (Transverse/Oblique)

Healing Healing/Obliteration of fracture

Notes: Well healed fracture on rib 8 dx, mid-rib, fracture would have been ventral on the lateral trunk

	Side	Section	Aspect	Joint?	PathID
T11		Body	Inferior Surface/Inner Table		1981

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

	Side	Section	Aspect	Joint?	PathID
T12		Body	Inferior Surface/Inner Table		1982

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

	Side	Section	Aspect	Joint?	PathID
L4		Body	Inferior Surface/Inner Table		1983

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

	Side	Section	Aspect	Joint?	PathID
L5		Body	Superior Surface/Outer Table		1984

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

	Side	Section	Aspect	Joint?	PathID
Femur	Left	Proximal Third	Circumferential		1985

Size/Shape/Bone-Specific Anomaly: Long Bones

Long Bone Shape Other (describe in comments)

Notes Linea glutea on Femur sin is pronounced and extensive (muscle strain on gluteus maximus muscle). The diaphysis is flattened anterior-posterior in level with linea glutea.

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 344

Skeleton: 20450 — ***Age Group:*** *Adultus* — ***Sex:*** *M* — ***P/S:*** *P*

Frontal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Midline		Superior Surface/Outer Table		2018

Porosis - General

Poresize Pinpoint porosity
Density 15-24: moderate
Activity Healing

Porosis - Cranial

Ecto-cranial Location Orbits

Temporal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left		Superior Surface/Outer Table		2019

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Healing

Porosis - Cranial

Ecto-cranial Location Other cranial location

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body			2020

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Notes C3

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body			2021

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Notes C4

C1	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Superior Articular Process Inferior Articular Facet			2023

Vertebral Pathology

Vertebral Pathology Other
Vertebral Osteophytes Vertebral osteophytes with elevated rim
Notes Eburnation and porosity of inferior articular facet sin, with osteophytes around margins

APPENDIX IV: PATHOLOGY CATALOGUE

	Side	Section	Aspect	Joint?	PathID
C2		Superior Articular Facet			2024

Vertebral Pathology

Vertebral Pathology	Other
Porosities around margins	Porosities on articular facets or processes
Notes	Extensive porosity and remodeling of superior articular facet sin

	Side	Section	Aspect	Joint?	PathID
T 1-9		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2026

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Notes	T1

	Side	Section	Aspect	Joint?	PathID
T 1-9		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2027

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Notes	T2

	Side	Section	Aspect	Joint?	PathID
T 1-9		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2028

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Notes	T3

	Side	Section	Aspect	Joint?	PathID
T 1-9		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2029

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Notes	T4

T 1-9	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2030

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes T5

T 1-9	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2031

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes T6

T 1-9	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2032

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes T7

T 1-9	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2033

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes T8

T 1-9	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2034

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Notes T9

APPENDIX IV: PATHOLOGY CATALOGUE

T10	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2035

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

T11	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2036

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

T12	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2037

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body			2039

Vertebral Pathology

Vertebral Pathology Other

Vertebral Osteophytes Osteophytes with fusion of spicules

Notes T6 and T7 fused together

L3	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Inferior Surface/Inner Table Superior Surface/Outer Table		2040

Vertebral Pathology

Vertebral Osteophytes Barely discernible vertebral osteophytes

L4	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2041

Vertebral Pathology

Vertebral Osteophytes Barely discernible vertebral osteophytes

APPENDIX IV: PATHOLOGY CATALOGUE

	Side	Section	Aspect	Joint?	PathID
L5		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2042

Vertebral Pathology

Vertebral Osteophytes Barely discernible vertebral osteophytes

	Side	Section	Aspect	Joint?	PathID
L4		Body	Inferior Surface/Inner Table		2043

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

Notes Mild depression, caudal on right aspect of inferior surface

	Side	Section	Aspect	Joint?	PathID
L5		Body	Inferior Surface/Inner Table		2044

Vertebral Pathology

Vertebral Pathology Schmorl's nodes

Notes Caudal, on right section of inferior surface

	Side	Section	Aspect	Joint?	PathID
Humerus	Left	Proximal Third	Medial		2105

Abnormal Bone Formation

Ossified Tissue Muscle (Myositis Ossificans)

Notes Medially, on distal metaphyse

	Side	Section	Aspect	Joint?	PathID
Glenoid Fossa	Left		Superior Surface/Outer Table	Shoulder	2108

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

Lipping (Degree) Rounded ridge

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body			2110

Vertebral Pathology

Vertebral Pathology Other

Notes T1: marked depression in the lateral aspect (Dx) of the corpus, 10.15mm at greatest diameter. The defect was smooth edged due to osteological reaction. Possibly result of a rib disarticulation/fracture. The costal articulation on that side appeared to have remodeled itself into a new position, and as a fractured Dx costae was noted, this seems a viable explanation.

Ribs 3-10	Side	Section	Aspect	Joint?	PathID
	Right	Middle Third			2111

Trauma

Fracture Type Simple (Transverse/Oblique)

Notes: One undetermined rib 3-10 dx has a healed fracture.

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 345

Skeleton: 21005 | ***Age Group:*** *Senilis* | ***Sex:*** *M* | ***P/S:*** *P*

Humerus	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Proximal Epiphysis/Articular Surface		Shoulder	2045

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Eburnation (Degree)	Barely discernible eburnation
Erosion	Clearly present erosion
Erosion (Extent)	<1/3 of joint surface eroded

Humerus	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Proximal Epiphysis/Articular Surface		Shoulder	2047

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	>2/3 of joint surface porous
Eburnation (Degree)	Polish with grooves
Eburnation (Extent)	1/3 to 2/3 of surface shows eburnation
Erosion	Clearly present erosion
Erosion (Extent)	1/3 to 2/3 of joint surface eroded

Acetabulum	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left			Hip	2049

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	<1/3 of joint surface porous
Lipping (Degree)	Sharp ridge, sometimes curled with spicules
Lipping (Extent)	1/3 to 2/3 of circumference shows lipping
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	<1/3 of joint surface shows osteophytes

APPENDIX IV: PATHOLOGY CATALOGUE

Ulna	Side	Section	Aspect	Joint?	PathID
	Left	Proximal Epiphysis/Articular Surface		Elbow	2051

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

Lipping (Degree) Rounded ridge

Lipping (Extent) 1/3 to 2/3 of circumference shows lipping

Scaphoid	Side	Section	Aspect	Joint?	PathID
	Left			Wrist	2053

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

Lipping (Degree) Rounded ridge

Lipping (Extent) 1/3 to 2/3 of circumference shows lipping

Notes Porosity and lippping on distal radius and scaphoid

Radius	Side	Section	Aspect	Joint?	PathID
	Left	Distal Epiphysis/Articular Surface		Wrist	2055

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

Lipping (Degree) Rounded ridge

Lipping (Extent) 1/3 to 2/3 of circumference shows lipping

Notes Porosity and lippping on distal radius and scaphoid

Frontal	Side	Section	Aspect	Joint?	PathID
	Midline		Superior Surface/Outer Table		2058

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

C3-6	Side	Section	Aspect	Joint?	PathID
		Body Arch Superior Articular Facet Inferior Articular Facet	Circumferential Dorsal/Posterior Ventral/Anterior Superior Surface/Outer Table		2059

Vertebral Pathology

Vertebral Osteophytes Osteophytes with fusion of spicules

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities within endplates

Notes C3

C3-6	Side	Section	Aspect	Joint?	PathID
		Body Arch Superior Articular Facet Inferior Articular Facet	Circumferential Dorsal/Posterior Ventral/Anterior Superior Surface/Outer Table		2060

Vertebral Pathology

Vertebral Osteophytes Osteophytes with fusion of spicules

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities within endplates

Notes C4 - also fused with C5

C3-6	Side	Section	Aspect	Joint?	PathID
		Body Arch Superior Articular Facet Inferior Articular Facet	Circumferential Dorsal/Posterior Ventral/Anterior Superior Surface/Outer Table		2061

Vertebral Pathology

Vertebral Osteophytes Osteophytes with fusion of spicules

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities within endplates

Notes C5 - also fused with C4

C3-6	Side	Section	Aspect	Joint?	PathID
					2063

Vertebral Pathology

Vertebral Pathology Other

Vertebral Osteophytes Osteophytes with fusion of spicules

Notes ve Ce 4 and 5 fused along anterior aspect of body

Sacrum	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table		2064

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities within endplates
Notes	On promontorium

L4	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table		2065

Vertebral Pathology

Porosities around margins	Porosities within endplates

C3-6	Side	Section	Aspect	Joint?	PathID
		Body Arch	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential Dorsal/Posterior		2066

Vertebral Pathology

Vertebral Osteophytes	Curved spicules
Porosities around margins	Porosities around margins of vertebral osteophytes
Notes	C6

C7	Side	Section	Aspect	Joint?	PathID
		Body Arch	Superior Surface/Outer Table Inferior Surface/Inner Table Dorsal/Posterior Ventral/Anterior		2067

Vertebral Pathology

Vertebral Osteophytes	Curved spicules
Porosities around margins	Porosities around margins of vertebral osteophytes

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body Arch	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential Dorsal/Posterior		2069

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Notes	T6

	Side	Section	Aspect	Joint?	PathID
T 1-9		Body Arch	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential Dorsal/Posterior		2070

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Notes	T7

	Side	Section	Aspect	Joint?	PathID
T 1-9		Body Arch	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential Dorsal/Posterior		2071

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Notes	T8

	Side	Section	Aspect	Joint?	PathID
T 1-9		Body Arch	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential Dorsal/Posterior		2072

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Notes	T9

	Side	Section	Aspect	Joint?	PathID
T10		Body Arch	Superior Surface/Outer Table Inferior Surface/Inner Table Dorsal/Posterior Ventral/Anterior		2074

Vertebral Pathology

Vertebral Osteophytes	Curved spicules
Porosities around margins	Porosities around margins of vertebral osteophytes

APPENDIX IV: PATHOLOGY CATALOGUE

T11	Side	Section	Aspect	Joint?	PathID
		Body Arch	Dorsal/Posterior Ventral/Anterior Circumferential Superior Surface/Outer Table		2075

Vertebral Pathology

Vertebral Osteophytes Curved spicules
Porosities around margins Porosities around margins of vertebral osteophytes

T12	Side	Section	Aspect	Joint?	PathID
		Body Arch	Superior Surface/Outer Table Inferior Surface/Inner Table Dorsal/Posterior Ventral/Anterior		2076

Vertebral Pathology

Vertebral Osteophytes Curved spicules
Porosities around margins Porosities around margins of vertebral osteophytes

L1	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2077

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

L2	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2078

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

L3	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2079

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

L5	Side	Section	Aspect	Joint?	PathID
		Body	Inferior Surface/Inner Table		2080

Vertebral Pathology

Porosities around margins Porosities within endplates

Burial: 348

Skeleton: 20474 | ***Age Group:*** *Senilis* | ***Sex:*** *M* | ***P/S:*** *P*

Humerus	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Proximal Third	Lateral		1635

Abnormal Bone Formation

Periosteal Surface	Compact/Remodeled
Productive Reaction Type	Solid
Surface Appearance	Smooth
Abnormal Matrix	Deposition of woven bone
Bone Formation (Extent)	< 1/3 affected
Specific Structures	Cloaca

Notes Small cloaca on lateral aspect of proximal third of humeral shaft. Marrow cavity not visible. No evidence of fracture.

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body			1636

Vertebral Pathology

Vertebral Osteophytes	Barely discernible vertebral osteophytes
Porosities around margins	Porosities within endplates
Notes	C3

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch Superior Articular Process Inferior Articular Process	Circumferential		1637

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim Curved spicules
Porosities around margins	Porosities around margins of vertebral osteophytes Porosities within endplates
Notes	C4 - extensive osteophytic growth, on both body and superior and inferior articular processes

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential		1638

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim Curved spicules
Porosities around margins	Porosities within endplates
Notes	Moderate osteophytic growth on body of vertebrae - C5

APPENDIX IV: PATHOLOGY CATALOGUE

C3-6	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential		1639

Vertebral Pathology

Vertebral Osteophytes — Vertebral osteophytes with elevated rim
Curved spicules

Notes — Moderate osteophytic growth on body of vertebrae - C6

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential		1640

Vertebral Pathology

Vertebral Osteophytes — Vertebral osteophytes with elevated rim

Porosities around margins — Porosities within endplates

Notes — Slight lipping on body of vert thor 3

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential		1641

Vertebral Pathology

Vertebral Osteophytes — Vertebral osteophytes with elevated rim

Porosities around margins — Porosities within endplates

Notes — Slight lipping on body of vert thor 4

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential		1642

Vertebral Pathology

Vertebral Osteophytes — Vertebral osteophytes with elevated rim

Porosities around margins — Porosities within endplates

Notes — Slight lipping on body of vert thor 5

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body Arch	Ventral/Anterior Circumferential		1643

Vertebral Pathology

Vertebral Osteophytes — Vertebral osteophytes with elevated rim
Ligamentum flavum

Porosities around margins — Porosities within endplates

Notes — Slight lipping on body of vert thor 8, plus ligamentum flavum on ventral aspect of arch

T 1-9	Side	Section	Aspect	Joint?	PathID
					1644

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Curved spicules

Porosities around margins Porosities within endplates

Notes Slight lipping on body of vert thor 9

T11	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential		1645

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities within endplates

T12	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential		1646

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities within endplates

Burial: 349					
Skeleton: 20458			***Age Group:*** *Adultus*	***Sex:*** *F*	***P/S:*** *P*
Frontal	**Side** Midline	**Section**	**Aspect** Superior Surface/Outer Table	**Joint?**	**PathID** 1648

Porosis - General

Poresize Pinpoint porosity
Density 15-24: moderate
Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

T 1-9	**Side**	**Section** Body	**Aspect**	**Joint?**	**PathID** 1649

Vertebral Pathology

Vertebral Osteophytes Ligamentum flavum

Notes V Thor 1

Burial: 351

Skeleton: 21002 — *Age Group:* Senilis — *Sex:* M — *P/S:* P

Femur	Side	Section	Aspect	Joint?	PathID
	Left	Distal Epiphysis/Articular Surface		Knee	1665

Arthritis (Non-vertebral)

Eburnation (Degree) Polish only
Eburnation (Extent) 1/3 to 2/3 of surface shows eburnation

Patella	Side	Section	Aspect	Joint?	PathID
	Left			Knee	1667

Arthritis (Non-vertebral)

Eburnation (Degree) Polish only
Eburnation (Extent) 1/3 to 2/3 of surface shows eburnation

Femur	Side	Section	Aspect	Joint?	PathID
	Left	Proximal Epiphysis/Articular Surface		Hip	1669

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity
Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Circumferential		1672

Vertebral Pathology

Vertebral Osteophytes Osteophytes with fusion of spicules
Porosities around margins Porosities around margins of vertebral osteophytes
Porosities within endplates
Notes Ve Th 2

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body Arch Superior Articular Process Inferior Articular Process			1673

Vertebral Pathology

Vertebral Osteophytes Osteophytes with fusion of spicules
Curved spicules
Porosities around margins Porosities within endplates
Porosities around margins of vertebral osteophytes
Notes Ve Th 3

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body Arch Superior Articular Process Inferior Articular Process			1674

Vertebral Pathology

Vertebral Osteophytes	Curved spicules Osteophytes with fusion of spicules
Porosities around margins	Porosities around margins of vertebral osteophytes Porosities within endplates
Notes	Ve Th 4

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body Arch Superior Articular Process Inferior Articular Process	Circumferential		1675

Vertebral Pathology

Vertebral Osteophytes	Osteophytes with fusion of spicules Curved spicules
Porosities around margins	Porosities within endplates Porosities around margins of vertebral osteophytes
Notes	Ve Th 5

T10	Side	Section	Aspect	Joint?	PathID
		Body Arch	Circumferential		1676

Vertebral Pathology

Vertebral Osteophytes	Curved spicules Osteophytes with fusion of spicules
Porosities around margins	Porosities around margins of vertebral osteophytes Porosities within endplates

T11	Side	Section	Aspect	Joint?	PathID
		Body Arch Superior Articular Process Inferior Articular Process	Circumferential		1677

Vertebral Pathology

Vertebral Osteophytes	Curved spicules Osteophytes with fusion of spicules
Porosities around margins	Porosities around margins of vertebral osteophytes Porosities within endplates

APPENDIX IV: PATHOLOGY CATALOGUE

	Side	Section	Aspect	Joint?	PathID
T12		Body Arch Superior Articular Process Inferior Articular Process	Circumferential		1678

Vertebral Pathology

Vertebral Osteophytes	Curved spicules Osteophytes with fusion of spicules
Porosities around margins	Porosities around margins of vertebral osteophytes Porosities within endplates

	Side	Section	Aspect	Joint?	PathID
L2		Body			1679

Vertebral Pathology

Vertebral Osteophytes	Osteophytes with fusion of spicules Curved spicules
Porosities around margins	Porosities within endplates
Notes	L2 fused to L3, extensive osteophytic growth

	Side	Section	Aspect	Joint?	PathID
L3		Body			1680

Vertebral Pathology

Vertebral Osteophytes	Osteophytes with fusion of spicules Curved spicules
Porosities around margins	Porosities within endplates Porosities around margins of vertebral osteophytes
Notes	L3 fused to L2, extensive porosity and osteophytic growth

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 352

Skeleton: 20472

Age Group: *Infansl* ***Sex:*** *?* ***P/S:*** *P*

Frontal	Side	Section	Aspect	Joint?	PathID
	Midline		Superior Surface/Outer Table		1651

Porosis - General

Poresize Pinpoint porosity

Density 15-24: moderate

Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

Burial: 353

Skeleton: 20469 | ***Age Group:*** *Adultus* | ***Sex:*** *F* | ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Frontal	Left		Superior Surface/Outer Table		1578

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

	Side	Section	Aspect	Joint?	PathID
Occipital					1579

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Healing

Notes Along lambdoid suture towards parietals. Porotic Hyperostosis

Porosis - Cranial

Ecto-cranial Location Other cranial location

	Side	Section	Aspect	Joint?	PathID
Hallucial Phalanx Proximal	Left	Distal Epiphysis/Articular Surface	Circumferential		1580

Arthritis (Non-vertebral)

Surface Osteophytes Clearly present osteophytes

Surface Osteophytes (Extent) 1/3 to 2/3 of joint surface shows osteophytes

	Side	Section	Aspect	Joint?	PathID
Foot Phalanges Medial	Right	Distal Epiphysis/Articular Surface			1581

Arthritis (Non-vertebral)

Surface Osteophytes Clearly present osteophytes

Surface Osteophytes (Extent) 1/3 to 2/3 of joint surface shows osteophytes

Notes One medial phalang pedis dx shows osteophytic growth and arthritic changes.

Foot Phalanges Proximal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Middle Third	Circumferential		1582

Trauma

Fracture Type Simple (Transverse/Oblique)

Notes: One healed fracture on a Ph Ped prox dx.

Healing Callus formation, woven bone only

Thoracic Vertebrae	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch	Circumferential Dorsal/Posterior Superior Surface/Outer Table Inferior Surface/Inner Table		1583

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Syndesmophytes Syndesmophytes with fusion of spicules

Notes Ligamenta flava, undetermined Ve Th (present on 4 separate Ve Th). Also osteophytic growth around endplates.

Thoracic Vertebrae	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch	Circumferential Dorsal/Posterior Superior Surface/Outer Table Inferior Surface/Inner Table		1584

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Syndesmophytes Extended spicules
Syndesmophytes with elevated rim

Notes Ligamenta flava, undetermined Ve Th (present on 4 separate Ve Th). Also osteophytic growth around endplates.

Thoracic Vertebrae	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch	Dorsal/Posterior Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		1585

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Syndesmophytes Syndesmophytes with elevated rim
Extended spicules

Notes Ligamenta flava, undetermined Ve Th (present on 4 separate Ve Th). Also osteophytic growth around endplates.

Thoracic Vertebrae	Side	Section	Aspect	Joint?	PathID
			Dorsal/Posterior Circumferential Inferior Surface/Inner Table Superior Surface/Outer Table		1586

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Syndesmophytes Extended spicules
Syndesmophytes with elevated rim

Notes Ligamenta flava, undetermined Ve Th (present on 4 separate Ve Th). Also osteophytic growth around endplates.

Burial: 367

Skeleton: 20509

Age Group: *Maturus* **Sex:** *M* **P/S:** *P*

	Side	Section	Aspect	Joint?	PathID
Foot Phalanges Distal	Unsided	Distal Epiphysis/Articular Surface			1550

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity
Lipping (Extent) 1/3 to 2/3 of circumference shows lipping
Surface Osteophytes (Extent) 1/3 to 2/3 of joint surface shows osteophytes
Notes Lipping and osteophytic growth on 2 Ph pedis distal

	Side	Section	Aspect	Joint?	PathID
Tibia	Left	Distal Epiphysis/Articular Surface	Medial		1551

Trauma

Fracture Type Compression/Crush/Torus
Fracture Characteristics Other
Healing Healing/Obliteration of fracture

Notes: Pressure fracture on medial aspect of distal epiphysis, triangular depression. Fiibula dx has PNB in corresponding area.

	Side	Section	Aspect	Joint?	PathID
Fibula	Left	Distal Epiphysis/Articular Surface Distal Third	Superior Surface/Outer Table Circumferential		1552

Abnormal Bone Formation

Periosteal Surface Woven bone, Sclerotic reaction
Productive Reaction Type Solid
Surface Appearance Other/Irregular, Striated
Bone Formation (Extent) 1/3 to 2/3 affected
Ossified Tissue Enthesophyte
Notes Rough and porous surface on distal fibula, particularly in medial aspect, corresponding to location of pressure fracture on tibia.

	Side	Section	Aspect	Joint?	PathID
Acromion	Left		Superior Surface/Outer Table		1553

Abnormal Bone Formation

Periosteal Surface Sclerotic reaction
Surface Appearance Porous, Other/Irregular
Bone Formation (Extent) < 1/3 affected
Notes Porosity and rough surface on cranial aspect of acromion.

C3-6	Side	Section	Aspect	Joint?	PathID
		Body Arch	Inferior Surface/Inner Table Dorsal/Posterior		1554

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Porosities around margins Porosities within endplates
Notes C5

C3-6	Side	Section	Aspect	Joint?	PathID
		Body Arch	Superior Surface/Outer Table Inferior Surface/Inner Table Dorsal/Posterior		1555

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Curved spicules
Notes C6

C7	Side	Section	Aspect	Joint?	PathID
		Body Arch	Superior Surface/Outer Table Inferior Surface/Inner Table Dorsal/Posterior		1556

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Curved spicules
Porosities around margins Porosities within endplates

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body Arch	Inferior Surface/Inner Table Dorsal/Posterior		1557

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Porosities around margins Porosities around margins of vertebral osteophytes
Notes T9

T10	Side	Section	Aspect	Joint?	PathID
		Body Arch	Superior Surface/Outer Table Inferior Surface/Inner Table		1558

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Curved spicules
Porosities around margins Porosities around margins of vertebral osteophytes

T11	Side	Section	Aspect	Joint?	PathID
		Body Arch	Superior Surface/Outer Table Inferior Surface/Inner Table Dorsal/Posterior		1559

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities around margins of vertebral osteophytes

T12	Side	Section	Aspect	Joint?	PathID
		Body Arch	Superior Surface/Outer Table Dorsal/Posterior		1560

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities around margins of vertebral osteophytes

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 369

Skeleton: 21026 — ***Age Group:*** *Maturus* — ***Sex:*** *M* — ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Frontal	Right		Superior Surface/Outer Table Ventral/Anterior		1503

Trauma

Fracture Type Depressed skull fracture, outer table
Fracture Characteristics Blunt Round
Healing Healing/Obliteration of fracture

Notes: Between arcus superciliaris and margo supraorbitalia.

	Side	Section	Aspect	Joint?	PathID
Rib 1	Right	Proximal Epiphysis/Articular Surface	Medial		1504

Arthritis (Non-vertebral)

Surface Porosity:	Coalesced surface porosity
Surface Porosity: (Joint Portion)	>2/3 of joint surface porous
Lipping (Degree)	Sharp ridge, sometimes curled with spicules
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Erosion	Clearly present erosion
Notes	Medial aspect (sternum joint) of clavicle has severe arthritic changes with osteophytic growth and porotic changes.

	Side	Section	Aspect	Joint?	PathID
Humerus	Right	Proximal Epiphysis/Articular Surface		Shoulder	1506

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Lipping (Degree)	Sharp ridge, sometimes curled with spicules
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes

Notes Arthritic changes of shoulder, involves both humerus and scapula.

	Side	Section	Aspect	Joint?	PathID
Acromion	Right			Shoulder	1508

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Lipping (Degree)	Sharp ridge, sometimes curled with spicules
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Notes	Arthritic changes of shoulder, involves both humerus and scapula.

Ribs 3-10	Side	Section	Aspect	Joint?	PathID
	Right	Distal Third	Circumferential		1517

Trauma

Fracture Type Simple (Transverse/Oblique)

Healing Healing/Obliteration of fracture

Notes: Rib 8, well healed fracture

Ribs 3-10	Side	Section	Aspect	Joint?	PathID
	Right	Distal Third Middle Third	Circumferential		1518

Trauma

Fracture Type Simple (Transverse/Oblique)

Healing Healing/Obliteration of fracture

Notes: Rib 9, well-healed fracture

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body Arch	Circumferential		1519

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities within endplates

Notes T8, Brothwell Phase II

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body Arch Spinous Process Transverse Process	Circumferential		1520

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities within endplates

Notes Th 9, Brothwell Ph II

T10	Side	Section	Aspect	Joint?	PathID
		Body Arch Transverse Process Spinous Process	Circumferential Dorsal/Posterior		1521

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities within endplates

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Porosities around margins Porosities within endplates

T11	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch Spinous Process Transverse Process	Circumferential Dorsal/Posterior		1522

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Porosities around margins Porosities within endplates

T12	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch Spinous Process Transverse Process	Dorsal/Posterior Circumferential		1523

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Porosities around margins Porosities within endplates

L1	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch Superior Articular Process Inferior Articular Process	Circumferential Dorsal/Posterior		1524

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Porosities around margins Porosities within endplates

L2	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch Superior Articular Process Inferior Articular Process	Dorsal/Posterior Circumferential		1525

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Porosities around margins Porosities within endplates

L3	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch Superior Articular Process Inferior Articular Process	Dorsal/Posterior Circumferential		1526

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Curved spicules
Porosities around margins Porosities within endplates

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 370

Skeleton: 21013

Age Group: *Senilis* ***Sex:*** *F* ***P/S:*** *P*

Clavicle	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Distal Third	Lateral		1486

Trauma

Fracture Type Simple (Transverse/Oblique)
Healing Healing/Obliteration of fracture
Complications Deformation

Acetabulum	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left			Hip	1490

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity
Lipping (Degree) Sharp ridge, sometimes curled with spicules
Lipping (Extent) >2/3 of circumference shows lipping
Eburnation (Degree) Barely discernible eburnation
Eburnation (Extent) <1/3 of surface shows eburnation
Erosion Clearly present erosion
Erosion (Extent) 1/3 to 2/3 of joint surface eroded

C1	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Superior Articular Process Body	Ventral/Anterior Dorsal/Posterior		1493

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Porosities around margins Porosities within endplates

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Superior Articular Process			1494

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Porosities around margins Porosities within endplates

T 1-9	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch	Dorsal/Posterior		1495

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Curved spicules
Porosities around margins Porosities within endplates
Notes At least 4 ve Th show osteophytic growth - fragmented, exact vertebra undetermined.

APPENDIX IV: PATHOLOGY CATALOGUE

	Side	Section	Aspect	Joint?	PathID
L1		Body Spinous Process Transverse Process			1496

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities within endplates

	Side	Section	Aspect	Joint?	PathID
L2		Body Arch Spinous Process Transverse Process			1497

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities within endplates

	Side	Section	Aspect	Joint?	PathID
L3		Body Arch Spinous Process Transverse Process			1498

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim Osteophytes with fusion of spicules
Porosities around margins	Porosities within endplates

	Side	Section	Aspect	Joint?	PathID
L4		Body Arch Spinous Process Transverse Process			1499

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities within endplates

	Side	Section	Aspect	Joint?	PathID
L5		Body Arch Spinous Process Transverse Process			1500

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities within endplates

Burial: 372

Skeleton: 21034

Age Group: *Juvenilis* ***Sex:*** *M?* ***P/S:*** *P*

Frontal	Side	Section	Aspect	Joint?	PathID
	Unsided		Superior Surface/Outer Table		1484

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

Burial: 375

Skeleton: 21033 | ***Age Group:*** *Maturus* | ***Sex:*** *M* | ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Ulna	Left	Middle Third	Circumferential		1455

Trauma

Fracture Type Simple (Transverse/Oblique)

Healing Healing/Obliteration of fracture

Notes: Healed fracture slightly below midshaft, callus 2.04 cm in diameter at largest extent (anterior-posterior)

	Side	Section	Aspect	Joint?	PathID
Radius	Left	Middle Third	Circumferential		1456

Trauma

Fracture Type Simple (Transverse/Oblique)

Healing Healing/Obliteration of fracture

Notes: Healed fracture slightly below midshaft.

	Side	Section	Aspect	Joint?	PathID
Hallucial Phalanx Proximal	Left	Proximal Epiphysis/Articular Surface	Dorsal/Posterior		1457

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

Lipping (Degree) Sharp ridge, sometimes curled with spicules

Lipping (Extent) <1/3 of circumference shows lipping

	Side	Section	Aspect	Joint?	PathID
Hallucial Phalanx Proximal	Right	Proximal Epiphysis/Articular Surface	Dorsal/Posterior Ventral/Anterior		1458

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) >2/3 of joint surface porous

Lipping (Degree) Sharp ridge, sometimes curled with spicules

Lipping (Extent) >2/3 of circumference shows lipping

Surface Osteophytes Clearly present osteophytes

Surface Osteophytes (Extent) 1/3 to 2/3 of joint surface shows osteophytes

Foot Phalanges Proximal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Proximal Epiphysis/Articular Surface Distal Epiphysis/Articular Surface	Dorsal/Posterior		1459

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Lipping (Degree)	Sharp ridge, sometimes curled with spicules
Lipping (Extent)	1/3 to 2/3 of circumference shows lipping
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Notes	Ph 1:2 dx

C3-6	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Inferior Surface/Inner Table Superior Surface/Outer Table		1460

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities within endplates
Notes	Extensive porosity on inferior surface, osteophytic growth on superior rim c. 3 mm tall.

Thoracic Vertebrae	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Superior Articular Process	Superior Surface/Outer Table Dorsal/Posterior		1461

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities around margins of vertebral osteophytes
Notes	Thoracic 2

T12	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential		1462

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim

Lumbar Vertebrae	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body			1463

Vertebral Pathology

Porosities around margins	Porosities within endplates
Notes	Slight porosity on 2 Ve Lu fragments, exact vert undetermined

Glenoid Fossa	Side	Section	Aspect	Joint?	PathID
	Right			Shoulder	1465

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Active

Notes Posrosity on glenoid cavity surface. Humeral head not preserved well enough to identify ev. porosity.

Burial: 384

Skeleton: 21082

Age Group: *Adultus* ***Sex:*** *M* ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Humerus	Left	Distal Epiphysis/Articular Surface		Elbow	1399

Trauma

Fracture Type Comminuted/Butterfly

Fracture Characteristics Other

Healing Healing/Obliteration of fracture

Complications Traumatic arthritis

Notes: Humerus: Medial epicondyle gone and new articular facet formed on medial aspect of capitulum. Ulna: Olecranon gone, remaining prox epi remodelled. Coronoid process elongated. Must have had limited mobility, but bones not atrofied, so probably still used the arm.

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) >2/3 of joint surface porous

	Side	Section	Aspect	Joint?	PathID
Ulna	Right	Proximal Epiphysis/Articular Surface		Elbow	1401

Trauma

Fracture Type Comminuted/Butterfly

Fracture Characteristics Other

Healing Healing/Obliteration of fracture

Complications Traumatic arthritis

Notes: Humerus: Lateral epicondyle gone and new articular facet formed on medial aspect of capitulum. Ulna: Olecranon gone, remaining prox epi remodelled. Coronoid process elongated. Must have had limited mobility, but bones not atrofied, so probably still used the arm.

Right hand was at a strange angle as found, pointing away from the body. Possible

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) >2/3 of joint surface porous

	Side	Section	Aspect	Joint?	PathID
L3		Body			1403

Vertebral Pathology

Vertebral Pathology Notes Schmorl's nodes
On caudal surface only. Nothing on L4.

Scapula	Side	Section	Aspect	Joint?	PathID
	Right		Lateral	Shoulder	1408

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Lipping (Degree)	Rounded ridge
Lipping (Extent)	1/3 to 2/3 of circumference shows lipping

Notes Slight marginal lipping on cavitas glenoidalis - possibly as a result of the severe elbow fracture.

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 388

Skeleton: 21083 — *Age Group: Adultus* — *Sex: F* — *P/S: P*

Clavicle	Side	Section	Aspect	Joint?	PathID
	Right	Middle Third			2482

Trauma

Fracture Type Simple (Transverse/Oblique)

Healing Callus formation, sclerotic reaction

Notes: Healed fracture of midshaft, with callus formation.

Burial: 390

Skeleton: 21090

Age Group: *Juvenilis* ***Sex:*** *F?* ***P/S:*** *P*

Frontal	Side	Section	Aspect	Joint?	PathID
	Midline		Superior Surface/Outer Table		1437

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm

Density 15-24: moderate

Activity Active

Porosis - Cranial

Ecto-cranial Location Orbits

Burial: 393

Skeleton: 21274

Age Group: *Senilis* ***Sex:*** *M* ***P/S:*** *P*

L2	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table		1425

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

L3	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Superior Surface/Outer Table		1426

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

L5	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Inferior Surface/Inner Table		1427

Vertebral Pathology

Notes Strange bumps on intervertebral surface, possibly pseudopathology.

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 398

Skeleton: 23715 | ***Age Group:*** *Senilis* | ***Sex:*** *F* | ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Hallucial Phalanx Proximal	Left	Proximal Epiphysis/Articular Surface	Medial		1340

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity
Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous
Surface Osteophytes Clearly present osteophytes
Surface Osteophytes (Extent) 1/3 to 2/3 of joint surface shows osteophytes

	Side	Section	Aspect	Joint?	PathID
Hallucial Phalanx Proximal	Right	Distal Epiphysis/Articular Surface Distal Third	Circumferential		1341

Trauma

Fracture Type Compression/Crush/Torus
Healing Healing/Obliteration of fracture
Complications Deformation

Notes: Healed crush fracture on proximal hallucial phalanx. Distal phalanx not recovered.

	Side	Section	Aspect	Joint?	PathID
Lateral (Third) Cuneiform	Right	Distal Epiphysis/Articular Surface	Superior Surface/Outer Table		1342

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity
Surface Porosity: (Joint Portion) <1/3 of joint surface porous
Lipping (Degree) Rounded ridge
Lipping (Extent) 1/3 to 2/3 of circumference shows lipping
Surface Osteophytes Clearly present osteophytes
Surface Osteophytes (Extent) 1/3 to 2/3 of joint surface shows osteophytes
Notes OSteophytic growth on facets towards MT.

	Side	Section	Aspect	Joint?	PathID
Frontal	Midline		Inferior Surface/Inner Table		1343

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Healing

Porosis - Cranial

Ecto-cranial Location Orbits
Other Features Pitting

Notes Cribra orbitalia; healing; small discrete patches in both orbits.

APPENDIX IV: PATHOLOGY CATALOGUE

Parietal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right				1346

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 25-50: high
Activity Active

Porosis - Cranial

Ecto-cranial Location Other cranial location
Other Features Pitting

Notes Porotic/inflammatory changes on central portion of right parietal.

Frontal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Midline		Inferior Surface/Inner Table Superior Surface/Outer Table Medial Lateral		1347

Porosis - Cranial

Diploic Hyperostosis Definite diploic expansion
Other Features Undulations/Irregular thickening
Vascular Location Endocranial
Vascular Appearance Very fine and shallow
Vascular Density Channels disrupt <25% of the lamina in the

Notes Three small lesions, oblong in shape and raised, on the endocranial surface of the right frontal.

Abnormal Bone Formation

Periosteal Surface Compact/Remodeled

Tibia	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Middle Third	Dorsal/Posterior		1349

Abnormal Bone Formation

Periosteal Surface Woven bone
Productive Reaction Type Lamellated (onion skin)
Surface Appearance Porous
Striated
Notes PNB on mid diaphysis

Humerus	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Proximal Epiphysis/Articular Surface		Shoulder	1353

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Active

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity
Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

Abnormal Bone Formation

Periosteal Surface Woven bone
Productive Reaction Type Lamellated (onion skin)
Surface Appearance Smooth Other/Irregular
Abnormal Matrix Deposition of woven bone
Specific Structures Cloaca

Notes
Cloaca on Humerus, anterior aspect of prox epi. Bone thickened on lateral aspect of diaphysis.

Glenoid Fossa	Side	Section	Aspect	Joint?	PathID
	Right			Shoulder	1355

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Active

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Lipping (Degree)	Rounded ridge
Lipping (Extent)	<1/3 of circumference shows lipping
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Notes	Lipping and osteophytic growth on anterior/inferior aspect of glenoid cavity.

C3	Side	Section	Aspect	Joint?	PathID
		Body			1359

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

C4	Side	Section	Aspect	Joint?	PathID
					1360

Vertebral Pathology

Vertebral Osteophytes Curved spicules
Porosities around margins Porosities around margins of vertebral osteophytes

C5	Side	Section	Aspect	Joint?	PathID
					1362

Vertebral Pathology

Vertebral Osteophytes Curved spicules
Porosities around margins Porosities around margins of vertebral osteophytes

C6	Side	Section	Aspect	Joint?	PathID
					1363

Vertebral Pathology

Vertebral Osteophytes Curved spicules
Porosities around margins Porosities around margins of vertebral osteophytes

C7	Side	Section	Aspect	Joint?	PathID
					1364

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

T2	Side	Section	Aspect	Joint?	PathID
					1365

Vertebral Pathology

Vertebral Osteophytes Barely discernible vertebral osteophytes

T3	Side	Section	Aspect	Joint?	PathID
					1366

Vertebral Pathology

Vertebral Osteophytes Barely discernible vertebral osteophytes

T4	Side	Section	Aspect	Joint?	PathID
					1367

Vertebral Pathology

Vertebral Osteophytes Barely discernible vertebral osteophytes

T5	Side	Section	Aspect	Joint?	PathID
					1368

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

T6	Side	Section	Aspect	Joint?	PathID
					1369

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

T7	Side	Section	Aspect	Joint?	PathID
					1370

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

T8	Side	Section	Aspect	Joint?	PathID
					1371

Vertebral Pathology

Vertebral Osteophytes Curved spicules

Porosities around margins Porosities around margins of vertebral osteophytes

T9	Side	Section	Aspect	Joint?	PathID
					1372

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

T10	Side	Section	Aspect	Joint?	PathID
					1373

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Porosities around margins Porosities around margins of vertebral osteophytes

T11	Side	Section	Aspect	Joint?	PathID
					1374

Vertebral Pathology

Vertebral Osteophytes Barely discernible vertebral osteophytes

L1	Side	Section	Aspect	Joint?	PathID
					1375

Vertebral Pathology

Vertebral Osteophytes Barely discernible vertebral osteophytes

L2	Side	Section	Aspect	Joint?	PathID
					1376

Vertebral Pathology

Vertebral Osteophytes Barely discernible vertebral osteophytes

L3	Side	Section	Aspect	Joint?	PathID
					1377

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities around margins of vertebral osteophytes

L4	Side	Section	Aspect	Joint?	PathID
					1378

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Porosities around margins	Porosities around margins of vertebral osteophytes

L5	Side	Section	Aspect	Joint?	PathID
					1379

Vertebral Pathology

Vertebral Osteophytes	Barely discernible vertebral osteophytes

Burial: 399

Skeleton: 23713

Age Group: *Adultus* ***Sex:*** *F* ***P/S:*** *P*

L2	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Body Arch	Dorsal/Posterior		1333

Vertebral Pathology

Spondylolysis	Complete fracture, no reattachment
Notes	On left arcus only.

L4	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body Arch	Dorsal/Posterior		1334

Vertebral Pathology

Spondylolysis	Complete fracture, no reattachment
Notes	Neural arch completely detached on both sin and dx side

Burial: 401

Skeleton: 23738 | ***Age Group:*** *Senilis* | ***Sex:*** *M* | ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Lumbar Vertebrae	Midline	Body	Superior Surface/Outer Table		1323

Vertebral Pathology

Vertebral Osteophytes — Osteophytes with fusion of spicules

Porosities around margins — Porosities around margins of vertebral osteophytes
Porosities within endplates

	Side	Section	Aspect	Joint?	PathID
Rib 1	Right	Proximal Epiphysis/Articular Surface			1326

Abnormal Bone Formation

Abnormal Matrix — Deposition of woven bone
Extension of cancellous bone

Ossified Tissue — Enthesophyte

Notes Extensice remodelling of Costae 1 dx, see photo

	Side	Section	Aspect	Joint?	PathID
Ribs 3-10	Unsided	Middle Third	Superior Surface/Outer Table		1328

Abnormal Bone Formation

Ossified Tissue — Enthesophyte

Notes Entheses on an unsided costae fragment, not close to articular facet, mid-rib (see photo)

	Side	Section	Aspect	Joint?	PathID
L5		Body			1329

Vertebral Pathology

Fractures — Compression (nonpathological, but result of an accident)
Single end-plate depression with wedging

Burial: 402

Skeleton: 23739 | ***Age Group:*** *Maturus* | ***Sex:*** *M* | ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
Ribs 3-10	Right	Middle Third	Circumferential		1287

Trauma

Fracture Type Simple (Transverse/Oblique)

Healing Callus formation, sclerotic reaction

Complications Traumatic Enthesopathy

Notes: One fractured costae 3-10; well healed but with enthesophytes and porosity at fracture site (see photo)

	Side	Section	Aspect	Joint?	PathID
L1		Body			1289

Vertebral Pathology

Vertebral Osteophytes Curved spicules

Porosities around margins Porosities around margins of vertebral osteophytes

	Side	Section	Aspect	Joint?	PathID
L2		Body			1290

Vertebral Pathology

Vertebral Osteophytes Curved spicules

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities within endplates

	Side	Section	Aspect	Joint?	PathID
L3		Body			1291

Vertebral Pathology

Vertebral Osteophytes Curved spicules

Porosities around margins Porosities within endplates
Porosities around margins of vertebral osteophytes

	Side	Section	Aspect	Joint?	PathID
L4		Body			1292

Vertebral Pathology

Vertebral Osteophytes Curved spicules

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities within endplates

Notes Vertabrae appears compressed, but not fractured

	Side	Section	Aspect	Joint?	PathID
L5		Body			1293

Vertebral Pathology

Vertebral Osteophytes Osteophytes with fusion of spicules

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities within endplates

Notes Body appears compressed (see photo)

APPENDIX IV: PATHOLOGY CATALOGUE

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body			1294

Vertebral Pathology

Vertebral Osteophytes Osteophytes with fusion of spicules

Porosities around margins Porosities around margins of vertebral osteophytes

Notes Ve Th 9 and 10 are fused together

T10	Side	Section	Aspect	Joint?	PathID
		Body			1295

Vertebral Pathology

Vertebral Osteophytes Curved spicules
Osteophytes with fusion of spicules

Porosities around margins Porosities around margins of vertebral osteophytes

Notes Ve Th 9 and 10 are fused together

T11	Side	Section	Aspect	Joint?	PathID
		Body			1296

Vertebral Pathology

Vertebral Osteophytes Curved spicules

Porosities around margins Porosities around margins of vertebral osteophytes
Porosities within endplates

T12	Side	Section	Aspect	Joint?	PathID
		Body			1297

Vertebral Pathology

Vertebral Osteophytes Curved spicules
Osteophytes with fusion of spicules

Porosities around margins Porosities within endplates
Porosities around margins of vertebral osteophytes

Ribs 3-10	Side	Section	Aspect	Joint?	PathID
	Right	Proximal Epiphysis/Articular Surface			1298

Arthritis (Non-vertebral)

Surface Osteophytes Clearly present osteophytes

Notes Several costae fragments (un-numbered) with osteophytic growth around facies articularis. Same side as costae fracture - maybe related?

Humerus	Side	Section	Aspect	Joint?	PathID
	Right	Distal Epiphysis/Articular Surface		Elbow	1302

Arthritis (Non-vertebral)

Surface Porosity: Clearly present porosity

Surface Porosity: (Joint Portion) 1/3 to 2/3 of joint surface porous

Surface Osteophytes Clearly present osteophytes

Surface Osteophytes (Extent) <1/3 of joint surface shows osteophytes

APPENDIX IV: PATHOLOGY CATALOGUE

Radius	Side	Section	Aspect	Joint?	PathID
	Right	Proximal Epiphysis/Articular Surface		Elbow	1304

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	<1/3 of joint surface shows osteophytes

Ulna	Side	Section	Aspect	Joint?	PathID
	Right	Proximal Epiphysis/Articular Surface		Elbow	1306

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	<1/3 of joint surface shows osteophytes

Trapezium	Side	Section	Aspect	Joint?	PathID
	Right				1308

Arthritis (Non-vertebral)

Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes

Trapezium	Side	Section	Aspect	Joint?	PathID
	Left				1309

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes

Femur	Side	Section	Aspect	Joint?	PathID
	Left	Proximal Epiphysis/Articular Surface		Hip	1311

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	>2/3 of joint surface porous
Surface Osteophytes	Barely discernible osteophytes

Patella	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right	Proximal Epiphysis/Articular Surface			1313

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes

Patella	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Proximal Epiphysis/Articular Surface			1314

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Lipping (Degree)	Barely discernible lipping
Surface Osteophytes	Barely discernible osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes

Calcaneus	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left				1315

Arthritis (Non-vertebral)

Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Notes	Plantar osteophytic growth

Talus	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Distal Epiphysis/Articular Surface			1316

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Surface Osteophytes	Barely discernible osteophytes
Notes	Porosity and osteophytic growth at articulation with calcaneus

MT I	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Proximal Epiphysis/Articular Surface			1317

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Notes	Pseudo arthrosis (extra facies articularis) proximally

MT IV	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Distal Epiphysis/Articular Surface			1318

Arthritis (Non-vertebral)

Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Eburnation (Degree)	Polish with grooves
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes

Foot Phalanges Proximal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Proximal Epiphysis/Articular Surface Distal Epiphysis/Articular Surface			1319

Arthritis (Non-vertebral)

Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Notes	On 4 Ph Prox

Foot Phalanges Medial	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Proximal Epiphysis/Articular Surface Distal Epiphysis/Articular Surface			1320

Arthritis (Non-vertebral)

Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Notes	On all medial phalanges

Foot Phalanges Distal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left	Proximal Epiphysis/Articular Surface Distal Epiphysis/Articular Surface			1321

Arthritis (Non-vertebral)

Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Notes	On all distal phalanges

Burial: 404

Skeleton: 23740 — *Age Group:* Senilis — *Sex:* F — *P/S:* P

	Side	Section	Aspect	Joint?	PathID
Ulna	Right	Proximal Epiphysis/Articular Surface Proximal Third Distal Epiphysis/Articular	Superior Surface/Outer Table Medial		1273

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Active

Notes Small discrete patches, but both proximal and distal, of periosteitic lesions

	Side	Section	Aspect	Joint?	PathID
Ulna	Left	Proximal Epiphysis/Articular Surface Proximal Third Distal Third	Superior Surface/Outer Table Circumferential		1276

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Active

Notes Small discrete patches, but both proximal and distal, of periosteitic lesions

	Side	Section	Aspect	Joint?	PathID
Radius	Right	Proximal Epiphysis/Articular Surface Proximal Third	Superior Surface/Outer Table		1277

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Active

Notes Porosity around facies and raised ridge around epiphyse

	Side	Section	Aspect	Joint?	PathID
Radius	Left	Proximal Epiphysis/Articular Surface Proximal Third			1278

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Active

Notes Porosity around facies and raised ridge around epiphyse

	Side	Section	Aspect	Joint?	PathID
Ribs 3-10	Left	Middle Third	Circumferential		1279

Trauma

Fracture Type Simple (Transverse/Oblique)
Healing Healing/Obliteration of fracture

Notes: Well healed fracture on Costae 9 sin. (See photo)

APPENDIX IV: PATHOLOGY CATALOGUE

TMJ	Side	Section	Aspect	Joint?	PathID
	Right	Proximal Epiphysis/Articular Surface	Superior Surface/Outer Table		1281

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	>2/3 of joint surface porous
Lipping (Extent)	<1/3 of circumference shows lipping
Eburnation (Degree)	Polish with grooves
Eburnation (Extent)	<1/3 of surface shows eburnation
Erosion	Clearly present erosion
Erosion (Extent)	<1/3 of joint surface eroded
Notes	Porotic caput mandibulae, signs of new bone formation and eburnation.

TMJ	Side	Section	Aspect	Joint?	PathID
	Left	Proximal Epiphysis/Articular Surface	Superior Surface/Outer Table		1282

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	<1/3 of joint surface porous
Lipping (Extent)	<1/3 of circumference shows lipping
Eburnation (Degree)	Polish with grooves
Eburnation (Extent)	<1/3 of surface shows eburnation
Surface Osteophytes (Extent)	<1/3 of joint surface shows osteophytes
Erosion	Clearly present erosion
Erosion (Extent)	<1/3 of joint surface eroded
Notes	Porotic caput mandibulae, signs of new bone formation and eburnation.

Tibia	Side	Section	Aspect	Joint?	PathID
	Right	Distal Third	Superior Surface/Outer Table		1283

Abnormal Bone Formation

Periosteal Surface	Woven bone
Productive Reaction Type	Lamellated (onion skin)
Surface Appearance	Porous Striated

Fibula	Side	Section	Aspect	Joint?	PathID
	Left	Distal Third	Superior Surface/Outer Table		1284

Abnormal Bone Formation

Periosteal Surface	Sclerotic reaction
Productive Reaction Type	Lamellated (onion skin)
Surface Appearance	Other/Irregular
Bone Formation (Extent)	< 1/3 affected
Notes	Rough and spiculed patch of bone just cranial to distal epiphysis.

Burial: 405

Skeleton: 23736

Age Group: *Senilis* ***Sex:*** *F* ***P/S:*** *P*

Radius	Side	Section	Aspect	Joint?	PathID
	Left	Distal Third Distal Epiphysis/Articular Surface			2403

Trauma

Fracture Type Compression/Crush/Torus

Notes: Healed Colles' fracture

Healing Healing/Obliteration of fracture

Ulna	Side	Section	Aspect	Joint?	PathID
	Left	Distal Epiphysis/Articular Surface			2404

Trauma

Fracture Type Compression/Crush/Torus

Notes: Healed Colles' fracture

Healing Healing/Obliteration of fracture

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 413

Skeleton: 26192 | *Age Group:* Senilis | *Sex:* F | *P/S:* P

	Side	Section	Aspect	Joint?	PathID
Mandible	Right		Superior Surface/Outer Table Inferior Surface/Inner Table		1992

Trauma

Fracture Type Other

Complications Nonunion

Notes: Mandible is fractured in line with where P1 and P2 dx would have been. Pseudoarthrosis had formed, with two contact points (see photos). Only three teeth (18, 30 and 31) remain, all other teeth lost premortem with extensive resorption of bone. High level of attrition (5++/5+). 30 and 31 also had extensive calculus. Type of fracture uncertain because of remodeling - perhaps stress fracture from using teeth as tools?

	Side	Section	Aspect	Joint?	PathID
MT I	Right	Distal Third Distal Epiphysis/Articular Surface	Superior Surface/Outer Table		1993

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Lipping (Degree)	Sharp ridge, sometimes curled with spicules
Lipping (Extent)	1/3 to 2/3 of circumference shows lipping
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	>2/3 of joint surface shows osteophytes
Erosion	Clearly present erosion
Erosion (Extent)	1/3 to 2/3 of joint surface eroded

Notes Extensive osteophytic growth on distal articular facet and plantar aspect of distal third.

	Side	Section	Aspect	Joint?	PathID
MT III	Left	Distal Third Distal Epiphysis/Articular Surface	Superior Surface/Outer Table		1995

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Lipping (Degree)	Sharp ridge, sometimes curled with spicules
Lipping (Extent)	>2/3 of circumference shows lipping
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	>2/3 of joint surface shows osteophytes
Erosion	Clearly present erosion
Erosion (Extent)	>2/3 of joint surface eroded

Notes Extensive osteophytic growth on distal articular facet and plantar aspect of distal third.

APPENDIX IV: PATHOLOGY CATALOGUE

MT IV	Side	Section	Aspect	Joint?	PathID
	Left	Distal Third Distal Epiphysis/Articular Surface	Superior Surface/Outer Table		1996

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Lipping (Degree)	Sharp ridge, sometimes curled with spicules
Lipping (Extent)	1/3 to 2/3 of circumference shows lipping
Surface Osteophytes	Clearly present osteophytes
Surface Osteophytes (Extent)	1/3 to 2/3 of joint surface shows osteophytes
Erosion	Clearly present erosion
Erosion (Extent)	1/3 to 2/3 of joint surface eroded
Notes	Extensive osteophytic growth on distal articular facet and plantar aspect of distal third.

Femur	Side	Section	Aspect	Joint?	PathID
	Right	Distal Epiphysis/Articular Surface	Superior Surface/Outer Table Lateral	Knee	1998

Trauma

Fracture Type Other
Dislocation Cause ambiguous
Fracture Characteristics Other
Complications Tissue necrosis

Notes: Osteochondritis dissecans, lateral condyle distal femur

Femur	Side	Section	Aspect	Joint?	PathID
	Left	Distal Epiphysis/Articular Surface	Superior Surface/Outer Table Lateral	Knee	2000

Trauma

Fracture Type Other
Dislocation Cause ambiguous
Fracture Characteristics Other
Complications Tissue necrosis

Notes: Osteochondritis dissecans, lateral condyle distal femur

Tibia	Side	Section	Aspect	Joint?	PathID
	Right	Distal Third	Superior Surface/Outer Table Lateral		2002

Abnormal Bone Formation

Periosteal Surface	Woven bone
Productive Reaction Type	Solid
Surface Appearance	Porous Striated
Abnormal Matrix	Deposition of woven bone
Bone Formation (Extent)	1/3 to 2/3 affected

Notes PNB on lateral aspect of distal third of epiphysis, against fibula (which was more severely affected)

	Side	Section	Aspect	Joint?	PathID
Tibia	Left	Distal Third	Lateral		2003

Abnormal Bone Formation

Periosteal Surface Woven bone
Productive Reaction Type Solid
Surface Appearance Porous
Striated
Abnormal Matrix Deposition of woven bone
Bone Formation (Extent) 1/3 to 2/3 affected
Notes PNB on lateral aspect of distal third of epiphysis, against fibula (which was more severely affected)

	Side	Section	Aspect	Joint?	PathID
Fibula	Right	Distal Third Distal Epiphysis/Articular Surface	Medial		2004

Abnormal Bone Formation

Periosteal Surface Woven bone
Sclerotic reaction
Productive Reaction Type Solid
Surface Appearance Porous
Striated
Abnormal Matrix Deposition of woven bone
Bone Formation (Extent) > 2/3 affected
Notes Extensive PNB formation on medial aspect of fibula, against tibia (which was also affected but not as severely). Distal third as well as distal epiphysis are thickened.

	Side	Section	Aspect	Joint?	PathID
Fibula	Left		Medial		2005

Abnormal Bone Formation

Periosteal Surface Woven bone
Sclerotic reaction
Productive Reaction Type Solid
Surface Appearance Porous
Striated
Abnormal Matrix Deposition of woven bone
Bone Formation (Extent) > 2/3 affected
Notes Extensive PNB formation on medial aspect of fibula, against tibia (which was also affected but not as severely). Distal third as well as distal epiphysis are thickened.

	Side	Section	Aspect	Joint?	PathID
C3-6		Arch Inferior Articular Process	Inferior Surface/Inner Table Dorsal/Posterior		2006

Vertebral Pathology

Porosities around margins Porosities on articular facets
Porosities on articular facets or processes
Notes C3 - porosity on facies articularis inferior sin

C3-6	Side	Section	Aspect	Joint?	PathID
		Arch Superior Articular Process	Superior Surface/Outer Table Dorsal/Posterior		2007

Vertebral Pathology

Porosities around margins	Porosities on articular facets or processes
Notes	C4: Porotic facies articularis superior sin

C7	Side	Section	Aspect	Joint?	PathID
		Arch Inferior Articular Process	Inferior Surface/Inner Table Dorsal/Posterior		2008

Vertebral Pathology

Porosities around margins	Porosities on articular facets or processes
Notes	Porotic facies articularis inferior sin

T 1-9	Side	Section	Aspect	Joint?	PathID
		Arch Superior Articular Process	Superior Surface/Outer Table Dorsal/Posterior		2009

Vertebral Pathology

Porosities around margins	Porosities on articular facets or processes
Notes	T1: C4: Porotic facies articularis superior sin

T 1-9	Side	Section	Aspect	Joint?	PathID
		Arch Inferior Articular Process	Inferior Surface/Inner Table Dorsal/Posterior		2010

Vertebral Pathology

Porosities around margins	Porosities on articular facets or processes
Notes	T4: Porotic facies articularis inferior dx

T 1-9	Side	Section	Aspect	Joint?	PathID
		Arch Superior Articular Process	Superior Surface/Outer Table Dorsal/Posterior		2011

Vertebral Pathology

Porosities around margins	Porosities on articular facets or processes
Notes	T5: Porotic facies articularis superior dx

T 1-9	Side	Section	Aspect	Joint?	PathID
		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2012

Vertebral Pathology

Vertebral Osteophytes	Vertebral osteophytes with elevated rim
Notes	T9: Lipping on vertebral body

	Side	Section	Aspect	Joint?	PathID
L3		Body	Superior Surface/Outer Table Inferior Surface/Inner Table Circumferential		2013

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

	Side	Section	Aspect	Joint?	PathID
T10		Inferior Articular Process	Inferior Surface/Inner Table Dorsal/Posterior		2014

Vertebral Pathology

Vertebral Osteophytes Curved spicules

Notes Osteophytic growth on facies articularis inferior dx

	Side	Section	Aspect	Joint?	PathID
L4		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2015

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

	Side	Section	Aspect	Joint?	PathID
L5		Body	Superior Surface/Outer Table Inferior Surface/Inner Table		2016

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Burial: 418

Skeleton: 26213

Age Group: *Adultus* ***Sex:*** *M* ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
L3		Body	Circumferential		2141

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

	Side	Section	Aspect	Joint?	PathID
L4		Body	Circumferential		2142

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

	Side	Section	Aspect	Joint?	PathID
L5		Body	Circumferential		2143

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Burial: 434

Skeleton: 27220 | ***Age Group:*** *Adultus* | ***Sex:*** *M* | ***P/S:*** *P*

Parietal

Side	Section	Aspect	Joint?	PathID
Right		Superior Surface/Outer Table		2326

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Healing

Porosis - Cranial

Ecto-cranial Location Superior vault near sutures

Parietal

Side	Section	Aspect	Joint?	PathID
Left		Superior Surface/Outer Table		2327

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Healing

Porosis - Cranial

Ecto-cranial Location Superior vault near sutures

Occipital

Side	Section	Aspect	Joint?	PathID
Midline		Superior Surface/Outer Table		2328

Porosis - General

Poresize Porosity between pinpoint and 0.5 mm
Density 15-24: moderate
Activity Healing

Notes Porosity around nuchal crest

Porosis - Cranial

Ecto-cranial Location Other cranial location

Femur

Side	Section	Aspect	Joint?	PathID
Right	Middle Third	Dorsal/Posterior Superior Surface/Outer Table		2329

Trauma

Fracture Type Other
Perimortem Ambiguous: possibly postmortem
Fracture Characteristics Edged/Sharp Force Trauma

Notes: Depression/cut mark across linea aspera on posterior dx femur, middle third. Mummification damage?

Tibia

Side	Section	Aspect	Joint?	PathID
Left	Distal Third	Circumferential		2331

Trauma

Fracture Type Comminuted/Butterfly
Healing Healing/Obliteration of fracture
Complications Deformation

Notes: Healed fracture on distal third of left tibia. Shaft is deformed and thickened, with striations on surface.

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 442

Skeleton: 28281

Age Group: *Infansl* **Sex:** *?* **P/S:** *P*

Tibia	Side	Section	Aspect	Joint?	PathID
	Right	Middle Third	Superior Surface/Outer Table		2351

Abnormal Bone Formation

Periosteal Surface Woven bone

Productive Reaction Type Solid

Surface Appearance Striated
Porous

Skeleton: 28294

Age Group: *Maturus* **Sex:** *M* **P/S:** *P*

Tibia	Side	Section	Aspect	Joint?	PathID
	Right	Middle Third	Superior Surface/Outer Table		2348

Abnormal Bone Formation

Periosteal Surface Woven bone
Compact/Remodeled

Productive Reaction Type Solid

Surface Appearance Striated

Notes Mild PNB on right tibia, middle third of shaft

Scaphoid	Side	Section	Aspect	Joint?	PathID
	Right		Superior Surface/Outer Table		2349

Abnormal Bone Loss

Location Periosteal or subchondral surface, external table

Extent <1/3 of area involved

Number of Foci Unifocal

Foci: Size <1 cm

Bony Response Localized destruction, boundaries well defined but no sclerosis

Notes Small lytic lesion on right scaphoid, possible beginning necrosis

Burial: 444

Skeleton: 28297

Age Group: *Adultus* ***Sex:*** *M?* ***P/S:*** *P*

	Side	Section	Aspect	Joint?	PathID
T10		Body	Circumferential		2354

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

	Side	Section	Aspect	Joint?	PathID
T11		Body	Circumferential		2355

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

Burial: 466

Skeleton: 31422

Age Group: *Senilis* **Sex:** *M?* **P/S:** *P*

Zygomatic	Side	Section	Aspect	Joint?	PathID
	Right		Superior Surface/Outer Table Inferior Surface/Inner Table Lateral		2357

Abnormal Bone Loss

Location	Cortex, trabeculae or diploë
Extent	1/3 to 2/3 of area involved
Number of Foci	Unifocal
Foci: Size	1-5 cm
Bony Response	Localized destruction, circumscription, sclerotic reaction
Notes	Large lesion on central zygomatic bone where it attaches to maxilla. Bone eroded, and a c. 3 cm circular void developed in the bone. Sinusitis?

Temporal	Side	Section	Aspect	Joint?	PathID
	Left		Lateral		2358

Abnormal Bone Loss

Location	Cortex, trabeculae or diploë
Extent	>2/3 of area involved
Number of Foci	>10 Foci
Foci: Size	<1 cm
Bony Response	Moth-eaten destruction (numerous foci)
Notes	Infection of mastoid process, appears to have been active at time of detah

Frontal	Side	Section	Aspect	Joint?	PathID
	Midline		Superior Surface/Outer Table		2359

Porosis - General

Poresize	Pinpoint porosity
Density	15-24: moderate
Activity	Active

Notes In both orbits, and on frontal bone laterally on both sides above supraorbital ridge

Porosis - Cranial

Ecto-cranial Location Orbits

Metatarsals	Side	Section	Aspect	Joint?	PathID
	Left	Proximal Epiphysis/Articular Surface	Superior Surface/Outer Table		2360

Arthritis (Non-vertebral)

Surface Porosity:	Clearly present porosity
Surface Porosity: (Joint Portion)	1/3 to 2/3 of joint surface porous
Eburnation (Degree)	Polish with grooves
Eburnation (Extent)	1/3 to 2/3 of surface shows eburnation
Notes	Two metatarsals (undetermined which) show extensive eburnation of proximal articular surface, with associated sesamoid bones (2st)

APPENDIX IV: PATHOLOGY CATALOGUE

Burial: 467

Skeleton: 31360 — ***Age Group:*** *Adultus* — ***Sex:*** *F* — ***P/S:*** *P*

Parietal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Left		Superior Surface/Outer Table		2362

Porosis - General

Poresize Pinpoint porosity
Density 15-24: moderate
Activity Healing

Porosis - Cranial

Ecto-cranial Location Superior vault in non-sutural areas

Parietal	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Right		Superior Surface/Outer Table		2363

Porosis - General

Poresize Pinpoint porosity
Density 15-24: moderate
Activity Healing

Porosis - Cranial

Ecto-cranial Location Superior vault in non-sutural areas

Occipital	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
	Midline		Superior Surface/Outer Table		2364

Porosis - General

Poresize Pinpoint porosity
Density 15-24: moderate
Activity Healing

Porosis - Cranial

Ecto-cranial Location Superior vault in non-sutural areas

L1	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2365

Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim
Curved spicules

L2	**Side**	**Section**	**Aspect**	**Joint?**	**PathID**
		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2366

Vertebral Pathology

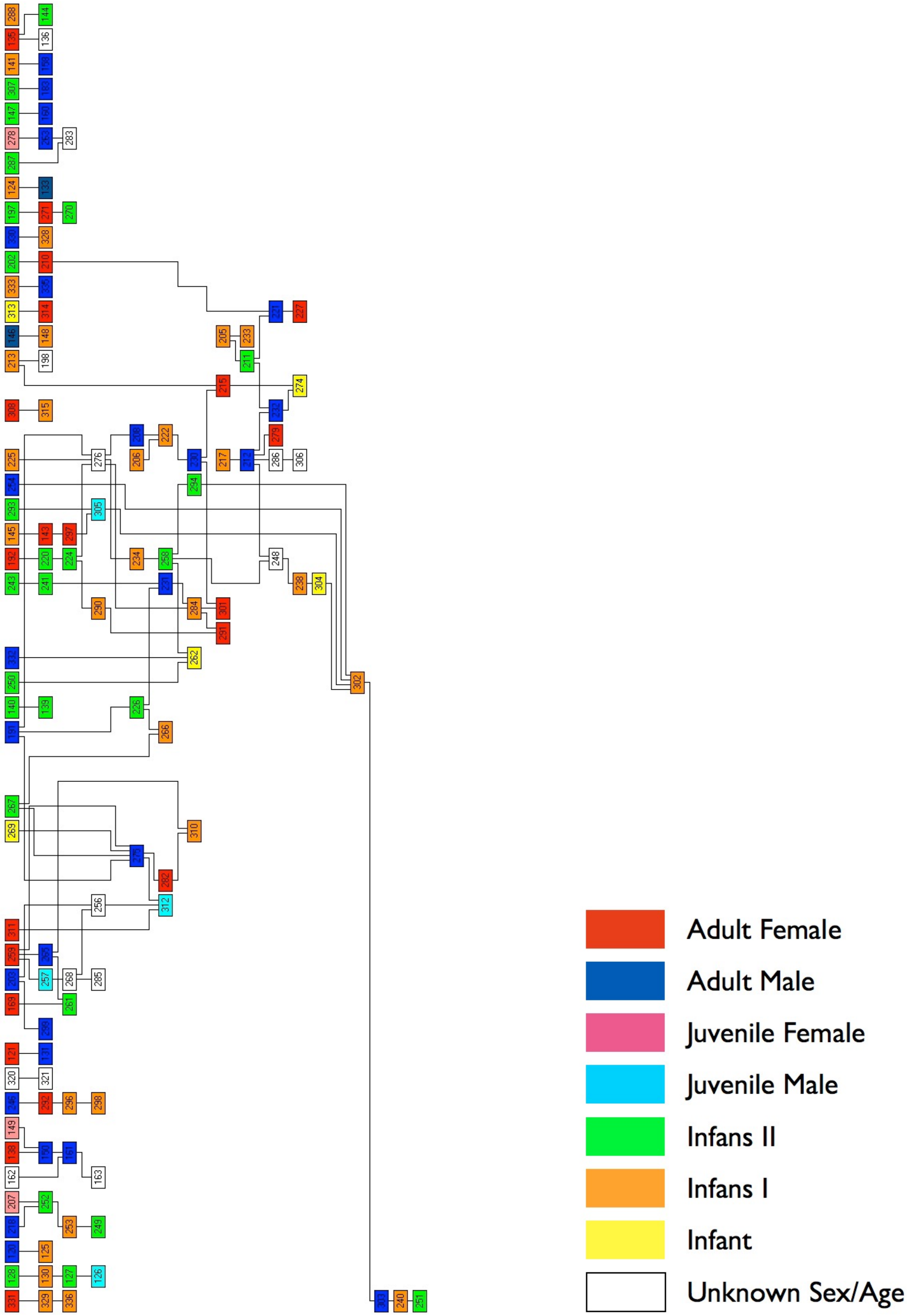
Vertebral Osteophytes Vertebral osteophytes with elevated rim

	Side	Section	Aspect	Joint?	PathID
L3		Body	Circumferential Superior Surface/Outer Table Inferior Surface/Inner Table		2367

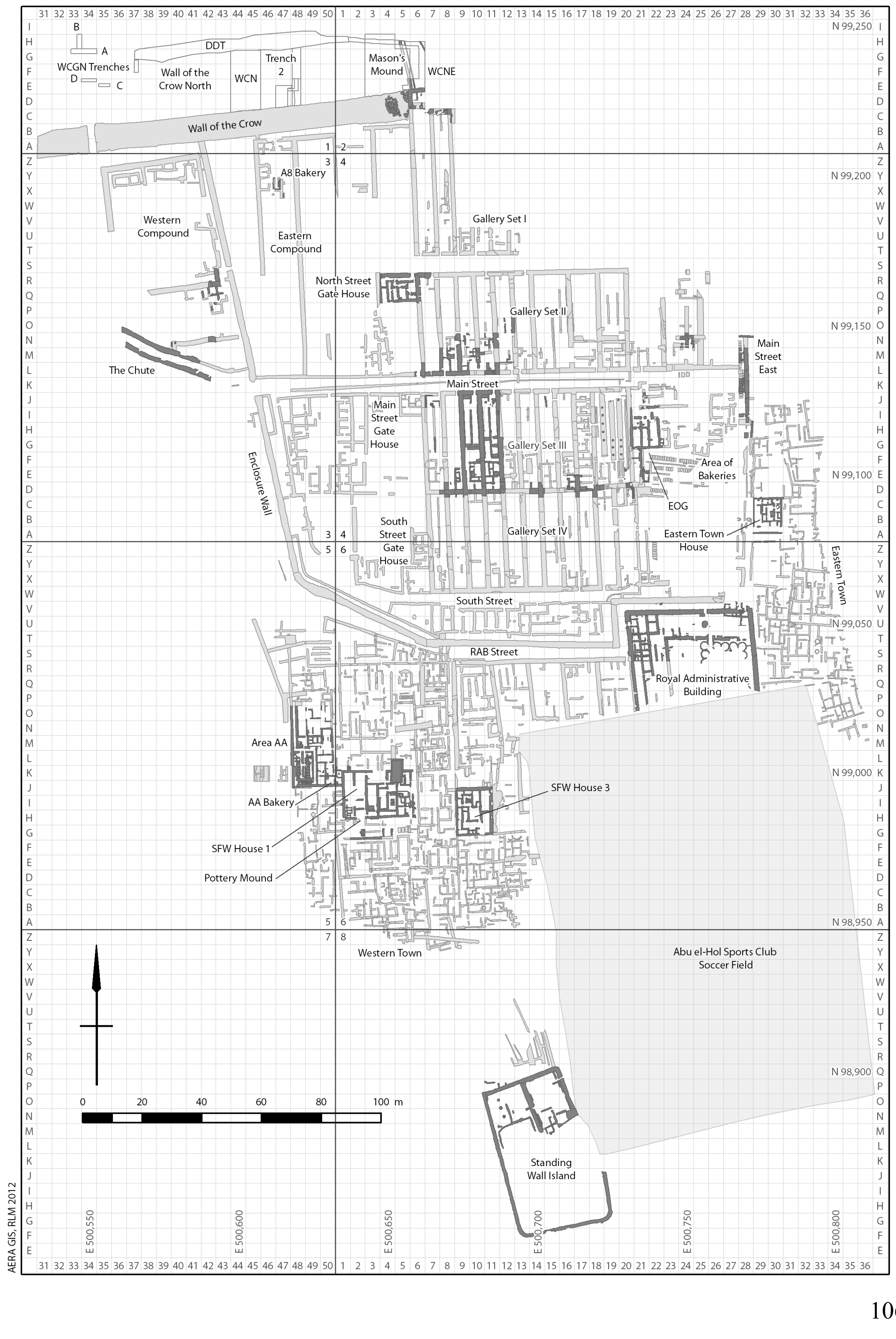
Vertebral Pathology

Vertebral Osteophytes Vertebral osteophytes with elevated rim

APPENDIX V: HARRIS MATRIX



APPENDIX VI: SITE MAP



APPENDIX VII: CODING KEYS

Notes

Resources	Processor Time	00:00:00.29
	Elapsed Time	00:00:00.00

File Information

File Name		CodeBook.sav
Number of Cases	Unweighted	228
	Weighted	228

SkeletonID

		Value
Standard Attributes	Position	1
	Label	SkeletonID
	Type	Numeric
	Format	F6
	Measurement	Nominal
	Role	Input

Phase

		Value	Count	Percent
Standard Attributes	Position	2		
	Label	Phase		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Saite	165	72.4%
	2	Roman	63	27.6%

Sex_All

		Value	Count	Percent
Standard Attributes	Position	3		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Female	38	16.7%
	2	Probable Female	15	6.6%
	3	Undetermined	101	44.3%
	4	Probable Male	16	7.0%
	5	Male	58	25.4%

APPENDIX VII: CODING KEYS

Sex_Collapsed

		Value	Count	Percent
Standard Attributes	Position	4		
	Label	Sex012		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Female	53	23.2%
	1	Male	74	32.5%
	2	Undetermined	101	44.3%

WeightedSexA_Score

		Value
Standard Attributes	Position	5
	Label	<none>
	Type	Numeric
	Format	F11.3
	Measurement	Scale
	Role	Input
N	Valid	228
	Missing	0
Central Tendency and Dispersion	Mean	1.85803
	Standard Deviation	2.083525
	Percentile 25	.00000
	Percentile 50	1.06452
	Percentile 75	4.59310

WeightedSexA

		Value	Count	Percent
Standard Attributes	Position	6		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Female	53	23.2%
	2	Probable Female	2	0.9%
	3	Undetermined	98	43.0%
	4	Probable Male	5	2.2%
	5	Male	70	30.7%

APPENDIX VII: CODING KEYS

SexACollapsed

		Value	Count	Percent
Standard Attributes	Position	7		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Female	55	24.1%
	2	Male	75	32.9%
	3	Undetermined	98	43.0%

WeightedSexB_Score

		Value
Standard Attributes	Position	8
	Label	<none>
	Type	Numeric
	Format	F11.3
	Measurement	Scale
	Role	Input
N	Valid	228
	Missing	0
Central Tendency and Dispersion	Mean	1.96024
	Standard Deviation	1.838974
	Percentile 25	.00000
	Percentile 50	1.67742
	Percentile 75	3.90323

WeightedSexB

		Value	Count	Percent
Standard Attributes	Position	9		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Female	32	14.0%
	2	Probable Female	18	7.9%
	3	Undetermined	106	46.5%
	4	Probable Male	22	9.6%
	5	Male	50	21.9%

APPENDIX VII: CODING KEYS

SexBCollapsed

		Value	Count	Percent
Standard Attributes	Position	10		
	Label	<none>		
	Type	Numeric		
	Format	F8.2		
	Measurement	Nominal		
	Role	Input		
Valid Values	1.00		50	21.9%
	2.00		72	31.6%
	3.00		106	46.5%

AgeGroup

		Value	Count	Percent
Standard Attributes	Position	11		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Infant	22	9.6%
	2	Infans I	46	20.2%
	3	Infans II	21	9.2%
	4	Juvenilis	24	10.5%
	5	Adultus	50	21.9%
	6	Adult	8	3.5%
	7	Maturus	36	15.8%
	8	Senilis	21	9.2%
	9	Undetermined	0	0.0%

AgeGroupCollA

		Value	Count	Percent
Standard Attributes	Position	12		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Infant (<1)	22	9.6%
	2	Child (2-12)	67	29.4%
	3	Adolescent (12-18)	24	10.5%
	4	Young Adult (18-35)	50	21.9%
	5	Mature Adult (35-50)	37	16.2%
	6	Old Adult (50+)	20	8.8%
	7	Adult (18-79)	8	3.5%
	8	Undetermined	0	0.0%

APPENDIX VII: CODING KEYS

AgeGroupCollB

		Value	Count	Percent
Standard Attributes	Position	13		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Infant (<1)	22	9.6%
	2	Child (2-12)	67	29.4%
	3	Adolescent (12–18)	24	10.5%
	4	Adult	115	50.4%
	5	Undetermine d	0	0.0%

AgeGroupCollC

		Value	Count	Percent
Standard Attributes	Position	14		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Subadult	113	49.6%
	2	Adult	115	50.4%
	3	Undetermine d	0	0.0%

AgeRange

		Value	Count	Percent
Standard Attributes	Position	15		
	Label	<none>		
	Type	String		
	Format	A11		
	Measurement	Nominal		
	Role	Input		
Valid Values	.25-.75		5	2.2%
	.5-1		6	2.6%
	.5-1.5		1	0.4%
	.665-1.335		3	1.3%
	.75-1		1	0.4%
	.75-1.3		1	0.4%
	0-.1675		1	0.4%
	0-.2		1	0.4%
	0-7		1	0.4%
	0.25-0.75		1	0.4%
	0.5-1		3	1.3%
	0.5-1.5		1	0.4%
	1-2		8	3.5%
	1.335-2.665		3	1.3%
	1.5-2.5		3	1.3%
	10-11		1	0.4%
	10-12		1	0.4%
	10-15		1	0.4%
	11-12		1	0.4%
	11-15		1	0.4%
	12-15		6	2.6%
	12-17		2	0.9%
	12-18		2	0.9%
	13-16		2	0.9%
	14-17		1	0.4%
	14-18		2	0.9%
	15-17		1	0.4%
	15-18		5	2.2%
	16-18		1	0.4%
	16-23		1	0.4%
	17-24		1	0.4%
	17-25		4	1.8%
	17-30		1	0.4%
	18-20		2	0.9%
	18-21		1	0.4%
	18-23		3	1.3%
	18-25		6	2.6%
	18-35		1	0.4%
	18-79		8	3.5%
	19-23		1	0.4%
	19-24		1	0.4%

APPENDIX VII: CODING KEYS

AgeRange

	Value	Count	Percent
2-3		2	0.9%
2-4		13	5.7%
20-25		4	1.8%
20-27		1	0.4%
20-30		2	0.9%
21-23		1	0.4%
21-35		1	0.4%
25-30		2	0.9%
25-35		15	6.6%
3-4		1	0.4%
3-5		10	4.4%
3.5-4.5		1	0.4%
3.665-6.335		3	1.3%
30-35		2	0.9%
33-45		11	4.8%
33-49		1	0.4%
35-40		1	0.4%
35-45		10	4.4%
35-50		2	0.9%
35-55		2	0.9%
4-8		8	3.5%
4.5-9		1	0.4%
40-45		3	1.3%
40-50		1	0.4%
45-50		4	1.8%
45-55		2	0.9%
45-59		1	0.4%
45-60		8	3.5%
45-65		3	1.3%
45-66		1	0.4%
45-70		1	0.4%
49-65		1	0.4%
5-10		1	0.4%
5-9		3	1.3%
50-59		1	0.4%
50-60		1	0.4%
50-74		2	0.9%
60-79		1	0.4%
7-10		1	0.4%
7-9		2	0.9%
9-11		1	0.4%

APPENDIX VII: CODING KEYS

AgePoint

		Value
Standard Attributes	Position	16
	Label	<none>
	Type	Numeric
	Format	F4.1
	Measurement	Scale
	Role	Input
N	Valid	228
	Missing	0
Central Tendency and Dispersion	Mean	21.700
	Standard Deviation	18.4687
	Percentile 25	4.000
	Percentile 50	19.000
	Percentile 75	39.000

Coffin

		Value	Count	Percent
Standard Attributes	Position	17		
	Label	Coffin		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	No Coffin	90	39.5%
	1	Has Coffin	138	60.5%

CoffinType

		Value	Count	Percent
Standard Attributes	Position	18		
	Label	Coffin Type		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Mudcoffin, plain	36	15.8%
	2	Mudcoffin, painted	97	42.5%
	3	Wood coffin	2	0.9%
	4	Other	1	0.4%
	5	Undetermined	2	0.9%
Missing Values	System		90	39.5%

APPENDIX VII: CODING KEYS

CoffinShape

		Value	Count	Percent
Standard Attributes	Position	19		
	Label	Coffin Shape		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Anthropoid	47	20.6%
	2	Irregular Hexagon	11	4.8%
	3	Rectangular	33	14.5%
	4	Subrectangular	14	6.1%
	5	Oval	2	0.9%
	6	Other	3	1.3%
	7	Undetermined	28	12.3%
Missing Values	System		90	39.5%

BurialOrientation

		Value	Count	Percent
Standard Attributes	Position	20		
	Label	<none>		
	Type	Numeric		
	Format	F3		
	Measurement	Nominal		
	Role	Input		
Valid Values	0		7	3.1%
	5		1	0.4%
	10		2	0.9%
	20		1	0.4%
	22		2	0.9%
	30		2	0.9%
	32		1	0.4%
	40		1	0.4%
	45		3	1.3%
	48		1	0.4%
	60		1	0.4%
	63		1	0.4%
	66		2	0.9%
	67		1	0.4%
	70		1	0.4%
	72		1	0.4%
	78		6	2.6%
	79		2	0.9%
	80		3	1.3%
	82		1	0.4%
	83		1	0.4%
	84		1	0.4%
	85		3	1.3%

APPENDIX VII: CODING KEYS

BurialOrientation

	Value	Count	Percent
86		2	0.9%
87		2	0.9%
88		1	0.4%
90		43	18.9%
91		1	0.4%
92		1	0.4%
93		4	1.8%
94		11	4.8%
95		1	0.4%
96		5	2.2%
97		3	1.3%
98		4	1.8%
99		5	2.2%
100		12	5.3%
101		1	0.4%
102		1	0.4%
104		4	1.8%
105		7	3.1%
106		1	0.4%
108		5	2.2%
109		1	0.4%
110		8	3.5%
112		1	0.4%
114		2	0.9%
115		3	1.3%
117		2	0.9%
119		1	0.4%
120		7	3.1%
121		1	0.4%
124		2	0.9%
125		1	0.4%
127		2	0.9%
130		2	0.9%
135		4	1.8%
144		1	0.4%
150		3	1.3%
165		1	0.4%
170		1	0.4%
173		1	0.4%
180		6	2.6%
208		1	0.4%
230		1	0.4%
265		1	0.4%
270		1	0.4%
272		1	0.4%
275		1	0.4%
282		1	0.4%
318		1	0.4%

APPENDIX VII: CODING KEYS

BurialOrientation

		Value	Count	Percent
	340		1	0.4%
	348		1	0.4%
	350		2	0.9%
	353		1	0.4%
Missing Values	System		6	2.6%

BuriaPosition

		Value	Count	Percent
Standard Attributes	Position	21		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Extended supine	215	94.3%
	2	Extended down	1	0.4%
	3	Flexed on back	0	0.0%
	4	LFL	2	0.9%
	5	LFR	1	0.4%
	6	Extended left	3	1.3%
Missing Values	System		6	2.6%

HeadOrientation

		Value	Count	Percent
Standard Attributes	Position	22		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Ant. up	75	32.9%
	2	Ant. down	0	0.0%
	3	Ant up, chin on chest	55	24.1%
	4	Crown W, Face N	18	7.9%
	5	Crown W, Face S	30	13.2%
Missing Values	System		50	21.9%

APPENDIX VII: CODING KEYS

HandPlacement

		Value	Count	Percent
Standard Attributes	Position	23		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Pelvis/femur	115	50.4%
	2	Crossed pelvis/femur	10	4.4%
	3	Left on pelv, right ext	12	5.3%
	4	Right on pelv, left ext	7	3.1%
	5	At sides	18	7.9%
	6	Crossed chest, left over right	0	0.0%
	7	Crossed chest, right over left	0	0.0%
Missing Values	System		66	28.9%

FeetPlacement

		Value	Count	Percent
Standard Attributes	Position	24		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Extended	122	53.5%
	2	Crossed	12	5.3%
	3	To side	10	4.4%
	6		3	1.3%
Missing Values	System		81	35.5%

ItemYN

		Value	Count	Percent
Standard Attributes	Position	25		
	Label	Items		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	139	61.0%
	1	Present	89	39.0%

APPENDIX VII: CODING KEYS

VesselYN

		Value	Count	Percent
Standard Attributes	Position	26		
	Label	Vessels		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	201	88.2%
	1	Present	27	11.8%

Scarab

		Value	Count	Percent
Standard Attributes	Position	27		
	Label	Scarab		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	224	98.2%
	1	Present	4	1.8%

Amulet

		Value	Count	Percent
Standard Attributes	Position	28		
	Label	Amulet		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	202	88.6%
	1	Present	26	11.4%

Jewelry

		Value	Count	Percent
Standard Attributes	Position	29		
	Label	Jewelry		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	206	90.4%
	1	Present	22	9.6%

APPENDIX VII: CODING KEYS

Cowrie

		Value	Count	Percent
Standard Attributes	Position	30		
	Label	Cowrie		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	196	86.0%
	1	Present	32	14.0%

Bead_Single

		Value	Count	Percent
Standard Attributes	Position	31		
	Label	Single Bead		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	205	89.9%
	1	Present	23	10.1%

Bead_Multi

		Value	Count	Percent
Standard Attributes	Position	32		
	Label	Multiple Beads		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	191	83.8%
	1	Present	37	16.2%

Vessel

		Value	Count	Percent
Standard Attributes	Position	33		
	Label	Pottery Vessel		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	201	88.2%
	1	Present	27	11.8%

APPENDIX VII: CODING KEYS

Item_Other

		Value	Count	Percent
Standard Attributes	Position	34		
	Label	Item (Other)		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	220	96.5%
	1	Present	8	3.5%

Stature

		Value
Standard Attributes	Position	35
	Label	<none>
	Type	Numeric
	Format	F11.2
	Measurement	Scale
	Role	Input
N	Valid	91
	Missing	137
Central Tendency and Dispersion	Mean	159.0459
	Standard Deviation	7.98611
	Percentile 25	153.1500
	Percentile 50	159.6300
	Percentile 75	165.3400

Index_DT

		Value
Standard Attributes	Position	36
	Label	Decayed Teeth Index
	Type	Numeric
	Format	F6.3
	Measurement	Scale
	Role	Input
N	Valid	139
	Missing	89
Central Tendency and Dispersion	Mean	.04674
	Standard Deviation	.123053
	Percentile 25	.00000
	Percentile 50	.00000
	Percentile 75	.04500

APPENDIX VII: CODING KEYS

Index_AT

		Value
Standard Attributes	Position	37
	Label	Abscessed teeth Index
	Type	Numeric
	Format	F6.3
	Measurement	Scale
	Role	Input
N	Valid	139
	Missing	89
Central Tendency and Dispersion	Mean	.00803
	Standard Deviation	.025956
	Percentile 25	.00000
	Percentile 50	.00000
	Percentile 75	.00000

Index_MT

		Value
Standard Attributes	Position	38
	Label	Missing Teeth Index
	Type	Numeric
	Format	F6.3
	Measurement	Scale
	Role	Input
N	Valid	185
	Missing	43
Central Tendency and Dispersion	Mean	.05668
	Standard Deviation	.125150
	Percentile 25	.00000
	Percentile 50	.00000
	Percentile 75	.03100

Index_Total

		Value
Standard Attributes	Position	39
	Label	<none>
	Type	Numeric
	Format	F11.5
	Measurement	Scale
	Role	Input
N	Valid	228
	Missing	0
Central Tendency and Dispersion	Mean	.0794349
	Standard Deviation	.17974282
	Percentile 25	0E-7
	Percentile 50	0E-7
	Percentile 75	.0693385

APPENDIX VII: CODING KEYS

LEH6

		Value	Count	Percent
Standard Attributes	Position	40		
	Label	LEH 6		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	73	32.0%
	1	One LEH	3	1.3%
	2	Two or more LEH	12	5.3%
Missing Values	System		140	61.4%

LEH7

		Value	Count	Percent
Standard Attributes	Position	41		
	Label	LEH 7		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	75	32.9%
	1	One LEH	1	0.4%
	2	Two or more LEH	8	3.5%
Missing Values	System		144	63.2%

LEH8

		Value	Count	Percent
Standard Attributes	Position	42		
	Label	LEH 8		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	71	31.1%
	1	One LEH	1	0.4%
	2	Two or more LEH	19	8.3%
Missing Values	System		137	60.1%

APPENDIX VII: CODING KEYS

LEH9

		Value	Count	Percent
Standard Attributes	Position	43		
	Label	LEH 9		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	76	33.3%
	1	One LEH	3	1.3%
	2	Two or more LEH	19	8.3%
Missing Values	System		130	57.0%

LEH10

		Value	Count	Percent
Standard Attributes	Position	44		
	Label	LEH 10		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	81	35.5%
	1	One LEH	1	0.4%
	2	Two or more LEH	7	3.1%
Missing Values	System		139	61.0%

LEH11

		Value	Count	Percent
Standard Attributes	Position	45		
	Label	LEH 11		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	81	35.5%
	1	One LEH	2	0.9%
	2	Two or more LEH	11	4.8%
Missing Values	System		134	58.8%

APPENDIX VII: CODING KEYS

LEH22

		Value	Count	Percent
Standard Attributes	Position	46		
	Label	LEH 22		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	90	39.5%
	1	One LEH	4	1.8%
	2	Two or more LEH	13	5.7%
Missing Values	System		121	53.1%

LEH23

		Value	Count	Percent
Standard Attributes	Position	47		
	Label	LEH 23		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	105	46.1%
	1	One LEH	2	0.9%
	2	Two or more LEH	7	3.1%
Missing Values	System		114	50.0%

LEH24

		Value	Count	Percent
Standard Attributes	Position	48		
	Label	LEH 24		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	103	45.2%
	1	One LEH	3	1.3%
	2	Two or more LEH	8	3.5%
Missing Values	System		114	50.0%

LEH25

		Value	Count	Percent
Standard Attributes	Position	49		
	Label	LEH 25		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	103	45.2%
	1	One LEH	2	0.9%
	2	Two or more LEH	9	3.9%
Missing Values	System		114	50.0%

LEH26

		Value	Count	Percent
Standard Attributes	Position	50		
	Label	LEH 26		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	102	44.7%
	1	One LEH	3	1.3%
	2	Two or more LEH	8	3.5%
Missing Values	System		115	50.4%

LEH27

		Value	Count	Percent
Standard Attributes	Position	51		
	Label	LEH 27		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	94	41.2%
	1	One LEH	3	1.3%
	2	Two or more LEH	10	4.4%
Missing Values	System		121	53.1%

APPENDIX VII: CODING KEYS

LEH_Ind_Sever

		Value	Count	Percent
Standard Attributes	Position	52		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	60	26.3%
	1	One LEH	7	3.1%
	2	Two or more LEH	31	13.6%
Missing Values	System		130	57.0%

LEHInd_AbsPr

		Value	Count	Percent
Standard Attributes	Position	53		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	60	26.3%
	1	Present	38	16.7%
Missing Values	System		130	57.0%

LEH6_AbsPr

		Value	Count	Percent
Standard Attributes	Position	54		
	Label	LEH6_AbsPr		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	73	32.0%
	1	Present	15	6.6%
Missing Values	System		140	61.4%

LEH7_AbsPr

		Value	Count	Percent
Standard Attributes	Position	55		
	Label	LEH7_AbsPr		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	75	32.9%
	1	Present	9	3.9%
Missing Values	System		144	63.2%

APPENDIX VII: CODING KEYS

LEH8_AbsPr

		Value	Count	Percent
Standard Attributes	Position	56		
	Label	LEH8_AbsPr		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	71	31.1%
	1	Present	20	8.8%
Missing Values	System		137	60.1%

LEH9_AbsPr

		Value	Count	Percent
Standard Attributes	Position	57		
	Label	LEH9_AbsPr		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	76	33.3%
	1	Present	22	9.6%
Missing Values	System		130	57.0%

LEH10_AbsPr

		Value	Count	Percent
Standard Attributes	Position	58		
	Label	LEH10_AbsPr		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	81	35.5%
	1	Present	8	3.5%
Missing Values	System		139	61.0%

LEH11_AbsPr

		Value	Count	Percent
Standard Attributes	Position	59		
	Label	LEH11_AbsPr		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	81	35.5%
	1	Present	13	5.7%
Missing Values	System		134	58.8%

APPENDIX VII: CODING KEYS

LEH22_AbsPr

		Value	Count	Percent
Standard Attributes	Position	60		
	Label	LEH22_AbsPr		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	90	39.5%
	1	Present	17	7.5%
Missing Values	System		121	53.1%

LEH23_AbsPr

		Value	Count	Percent
Standard Attributes	Position	61		
	Label	LEH23_AbsPr		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	105	46.1%
	1	Present	9	3.9%
Missing Values	System		114	50.0%

LEH24_AbsPr

		Value	Count	Percent
Standard Attributes	Position	62		
	Label	LEH24_AbsPr		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	103	45.2%
	1	Present	11	4.8%
Missing Values	System		114	50.0%

LEH25_AbsPr

		Value	Count	Percent
Standard Attributes	Position	63		
	Label	LEH25_AbsPr		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	103	45.2%
	1	Present	11	4.8%
Missing Values	System		114	50.0%

APPENDIX VII: CODING KEYS

LEH26_AbsPr

		Value	Count	Percent
Standard Attributes	Position	64		
	Label	LEH26_AbsPr		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	102	44.7%
	1	Present	11	4.8%
Missing Values	System		115	50.4%

LEH27_AbsPr

		Value	Count	Percent
Standard Attributes	Position	65		
	Label	LEH27_AbsPr		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	94	41.2%
	1	Present	13	5.7%
Missing Values	System		121	53.1%

LEHbyIndividual

		Value	Count	Percent
Standard Attributes	Position	66		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	0	0.0%
	1	Present	40	17.5%
Missing Values	System		188	82.5%

LEHIndAbsPr

		Value	Count	Percent
Standard Attributes	Position	67		
	Label	LEHIndAbsPr		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0		179	78.5%
	1	Present	40	17.5%
	2	Absent	0	0.0%
	3	Not Assessed	0	0.0%
Missing Values	System		9	3.9%

APPENDIX VII: CODING KEYS

Caries_1

		Value	Count	Percent
Standard Attributes	Position	68		
	Label	Caries_1		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	56	24.6%
	1	Present	4	1.8%
Missing Values	System		168	73.7%

Caries_2

		Value	Count	Percent
Standard Attributes	Position	69		
	Label	Caries_2		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	80	35.1%
	1	Present	6	2.6%
Missing Values	System		142	62.3%

Caries_3

		Value	Count	Percent
Standard Attributes	Position	70		
	Label	Caries_3		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	87	38.2%
	1	Present	4	1.8%
Missing Values	System		137	60.1%

Caries_4

		Value	Count	Percent
Standard Attributes	Position	71		
	Label	Caries_4		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	75	32.9%
	1	Present	2	0.9%
Missing Values	System		151	66.2%

APPENDIX VII: CODING KEYS

Caries_5

		Value	Count	Percent
Standard Attributes	Position	72		
	Label	Caries_5		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	75	32.9%
	1	Present	1	0.4%
Missing Values	System		152	66.7%

Caries_6

		Value	Count	Percent
Standard Attributes	Position	73		
	Label	Caries_6		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	83	36.4%
	1	Present	1	0.4%
Missing Values	System		144	63.2%

Caries_7

		Value	Count	Percent
Standard Attributes	Position	74		
	Label	Caries_7		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	76	33.3%
	1	Present	0	0.0%
Missing Values	System		152	66.7%

Caries_8

		Value	Count	Percent
Standard Attributes	Position	75		
	Label	Caries_8		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	79	34.6%
	1	Present	1	0.4%
Missing Values	System		148	64.9%

APPENDIX VII: CODING KEYS

Caries_9

		Value	Count	Percent
Standard Attributes	Position	76		
	Label	Caries_9		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	84	36.8%
	1	Present	1	0.4%
Missing Values	System		143	62.7%

Caries_10

		Value	Count	Percent
Standard Attributes	Position	77		
	Label	Caries_10		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	82	36.0%
	1	Present	0	0.0%
Missing Values	System		146	64.0%

Caries_11

		Value	Count	Percent
Standard Attributes	Position	78		
	Label	Caries_11		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	85	37.3%
	1	Present	1	0.4%
Missing Values	System		142	62.3%

Caries_12

		Value	Count	Percent
Standard Attributes	Position	79		
	Label	Caries_12		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	77	33.8%
	1	Present	1	0.4%
Missing Values	System		150	65.8%

APPENDIX VII: CODING KEYS

Caries_13

		Value	Count	Percent
Standard Attributes	Position	80		
	Label	Caries_13		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	78	34.2%
	1	Present	2	0.9%
Missing Values	System		148	64.9%

Caries_14

		Value	Count	Percent
Standard Attributes	Position	81		
	Label	Caries_14		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	89	39.0%
	1	Present	5	2.2%
Missing Values	System		134	58.8%

Caries_15

		Value	Count	Percent
Standard Attributes	Position	82		
	Label	Caries_15		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	79	34.6%
	1	Present	6	2.6%
Missing Values	System		143	62.7%

Caries_16

		Value	Count	Percent
Standard Attributes	Position	83		
	Label	Caries_16		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	55	24.1%
	1	Present	4	1.8%
Missing Values	System		169	74.1%

APPENDIX VII: CODING KEYS

Caries_17

		Value	Count	Percent
Standard Attributes	Position	84		
	Label	Caries_17		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	63	27.6%
	1	Present	4	1.8%
Missing Values	System		161	70.6%

Caries_18

		Value	Count	Percent
Standard Attributes	Position	85		
	Label	Caries_18		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	93	40.8%
	1	Present	9	3.9%
Missing Values	System		126	55.3%

Caries_19

		Value	Count	Percent
Standard Attributes	Position	86		
	Label	Caries_19		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	95	41.7%
	1	Present	6	2.6%
Missing Values	System		127	55.7%

Caries_20

		Value	Count	Percent
Standard Attributes	Position	87		
	Label	Caries_20		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	93	40.8%
	1	Present	4	1.8%
Missing Values	System		131	57.5%

APPENDIX VII: CODING KEYS

Caries_21

		Value	Count	Percent
Standard Attributes	Position	88		
	Label	Caries_21		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	99	43.4%
	1	Present	2	0.9%
Missing Values	System		127	55.7%

Caries_22

		Value	Count	Percent
Standard Attributes	Position	89		
	Label	Caries_22		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	98	43.0%
	1	Present	0	0.0%
Missing Values	System		130	57.0%

Caries_23

		Value	Count	Percent
Standard Attributes	Position	90		
	Label	Caries_23		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	104	45.6%
	1	Present	0	0.0%
Missing Values	System		124	54.4%

Caries_24

		Value	Count	Percent
Standard Attributes	Position	91		
	Label	Caries_24		
	Type	Numeric		
	Format	F2		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	100	43.9%
	1	Present	2	0.9%
Missing Values	System		126	55.3%

APPENDIX VII: CODING KEYS

Caries_25

		Value	Count	Percent
Standard Attributes	Position	92		
	Label	Caries_25		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	98	43.0%
	1	Present	2	0.9%
Missing Values	System		128	56.1%

Caries_26

		Value	Count	Percent
Standard Attributes	Position	93		
	Label	Caries_26		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	101	44.3%
	1	Present	0	0.0%
Missing Values	System		127	55.7%

Caries_27

		Value	Count	Percent
Standard Attributes	Position	94		
	Label	Caries_27		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	94	41.2%
	1	Present	0	0.0%
Missing Values	System		134	58.8%

Caries_28

		Value	Count	Percent
Standard Attributes	Position	95		
	Label	Caries_28		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	93	40.8%
	1	Present	1	0.4%
Missing Values	System		134	58.8%

APPENDIX VII: CODING KEYS

Caries_29

		Value	Count	Percent
Standard Attributes	Position	96		
	Label	Caries_29		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	91	39.9%
	1	Present	2	0.9%
Missing Values	System		135	59.2%

Caries_30

		Value	Count	Percent
Standard Attributes	Position	97		
	Label	Caries_30		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	99	43.4%
	1	Present	11	4.8%
Missing Values	System		118	51.8%

Caries_31

		Value	Count	Percent
Standard Attributes	Position	98		
	Label	Caries_31		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	90	39.5%
	1	Present	5	2.2%
Missing Values	System		133	58.3%

Caries_32

		Value	Count	Percent
Standard Attributes	Position	99		
	Label	Caries_32		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	68	29.8%
	1	Present	4	1.8%
Missing Values	System		156	68.4%

APPENDIX VII: CODING KEYS

Caries_Sum

		Value
Standard Attributes	Position	100
	Label	Caries by Skeleton
	Type	Numeric
	Format	F3
	Measurement	Scale
	Role	Input
N	Valid	48
	Missing	180
Central Tendency and Dispersion	Mean	1.90
	Standard Deviation	1.153
	Percentile 25	1.00
	Percentile 50	1.00
	Percentile 75	3.00

ToothObs_1

		Value	Count	Percent
Standard Attributes	Position	101		
	Label	ToothObs_1		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	60	26.3%
Missing Values	System		168	73.7%

ToothObs_2

		Value	Count	Percent
Standard Attributes	Position	102		
	Label	ToothObs_2		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	86	37.7%
Missing Values	System		142	62.3%

ToothObs_3

		Value	Count	Percent
Standard Attributes	Position	103		
	Label	ToothObs_3		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	91	39.9%
Missing Values	System		137	60.1%

APPENDIX VII: CODING KEYS

ToothObs_4

		Value	Count	Percent
Standard Attributes	Position	104		
	Label	ToothObs_4		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	77	33.8%
Missing Values	System		151	66.2%

ToothObs_5

		Value	Count	Percent
Standard Attributes	Position	105		
	Label	ToothObs_5		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	76	33.3%
Missing Values	System		152	66.7%

ToothObs_6

		Value	Count	Percent
Standard Attributes	Position	106		
	Label	ToothObs_6		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	84	36.8%
Missing Values	System		144	63.2%

ToothObs_7

		Value	Count	Percent
Standard Attributes	Position	107		
	Label	ToothObs_7		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	76	33.3%
Missing Values	System		152	66.7%

APPENDIX VII: CODING KEYS

ToothObs_8

		Value	Count	Percent
Standard Attributes	Position	108		
	Label	ToothObs_8		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	80	35.1%
Missing Values	System		148	64.9%

ToothObs_9

		Value	Count	Percent
Standard Attributes	Position	109		
	Label	ToothObs_9		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	85	37.3%
Missing Values	System		143	62.7%

ToothObs_10

		Value	Count	Percent
Standard Attributes	Position	110		
	Label	ToothObs_10		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	82	36.0%
Missing Values	System		146	64.0%

ToothObs_11

		Value	Count	Percent
Standard Attributes	Position	111		
	Label	ToothObs_11		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	86	37.7%
Missing Values	System		142	62.3%

APPENDIX VII: CODING KEYS

ToothObs_12

		Value	Count	Percent
Standard Attributes	Position	112		
	Label	ToothObs_12		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	78	34.2%
Missing Values	System		150	65.8%

ToothObs_13

		Value	Count	Percent
Standard Attributes	Position	113		
	Label	ToothObs_13		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	80	35.1%
Missing Values	System		148	64.9%

ToothObs_14

		Value	Count	Percent
Standard Attributes	Position	114		
	Label	ToothObs_14		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	94	41.2%
Missing Values	System		134	58.8%

ToothObs_15

		Value	Count	Percent
Standard Attributes	Position	115		
	Label	ToothObs_15		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	85	37.3%
Missing Values	System		143	62.7%

APPENDIX VII: CODING KEYS

ToothObs_16

		Value	Count	Percent
Standard Attributes	Position	116		
	Label	ToothObs_16		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	59	25.9%
Missing Values	System		169	74.1%

ToothObs_17

		Value	Count	Percent
Standard Attributes	Position	117		
	Label	ToothObs_17		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	67	29.4%
Missing Values	System		161	70.6%

ToothObs_18

		Value	Count	Percent
Standard Attributes	Position	118		
	Label	ToothObs_18		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	102	44.7%
Missing Values	System		126	55.3%

ToothObs_19

		Value	Count	Percent
Standard Attributes	Position	119		
	Label	ToothObs_19		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	101	44.3%
Missing Values	System		127	55.7%

APPENDIX VII: CODING KEYS

ToothObs_20

		Value	Count	Percent
Standard Attributes	Position	120		
	Label	ToothObs_20		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	97	42.5%
Missing Values	System		131	57.5%

ToothObs_21

		Value	Count	Percent
Standard Attributes	Position	121		
	Label	ToothObs_21		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	101	44.3%
Missing Values	System		127	55.7%

ToothObs_22

		Value	Count	Percent
Standard Attributes	Position	122		
	Label	ToothObs_22		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	98	43.0%
Missing Values	System		130	57.0%

ToothObs_23

		Value	Count	Percent
Standard Attributes	Position	123		
	Label	ToothObs_23		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	104	45.6%
Missing Values	System		124	54.4%

APPENDIX VII: CODING KEYS

ToothObs_24

		Value	Count	Percent
Standard Attributes	Position	124		
	Label	ToothObs_24		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	102	44.7%
Missing Values	System		126	55.3%

ToothObs_25

		Value	Count	Percent
Standard Attributes	Position	125		
	Label	ToothObs_25		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	100	43.9%
Missing Values	System		128	56.1%

ToothObs_26

		Value	Count	Percent
Standard Attributes	Position	126		
	Label	ToothObs_26		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	101	44.3%
Missing Values	System		127	55.7%

ToothObs_27

		Value	Count	Percent
Standard Attributes	Position	127		
	Label	ToothObs_27		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	94	41.2%
Missing Values	System		134	58.8%

APPENDIX VII: CODING KEYS

ToothObs_28

		Value	Count	Percent
Standard Attributes	Position	128		
	Label	ToothObs_28		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	94	41.2%
Missing Values	System		134	58.8%

ToothObs_29

		Value	Count	Percent
Standard Attributes	Position	129		
	Label	ToothObs_29		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	93	40.8%
Missing Values	System		135	59.2%

ToothObs_30

		Value	Count	Percent
Standard Attributes	Position	130		
	Label	ToothObs_30		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	110	48.2%
Missing Values	System		118	51.8%

ToothObs_31

		Value	Count	Percent
Standard Attributes	Position	131		
	Label	ToothObs_31		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	95	41.7%
Missing Values	System		133	58.3%

APPENDIX VII: CODING KEYS

ToothObs_32

		Value	Count	Percent
Standard Attributes	Position	132		
	Label	ToothObs_32		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Present	72	31.6%
Missing Values	System		156	68.4%

SumToothObs

		Value
Standard Attributes	Position	133
	Label	Teeth by Skeleton
	Type	Numeric
	Format	F3
	Measurement	Scale
	Role	Input
N	Valid	139
	Missing	89
Central Tendency and Dispersion	Mean	20.22
	Standard Deviation	9.928
	Percentile 25	12.00
	Percentile 50	23.00
	Percentile 75	29.00

CO_Score

		Value	Count	Percent
Standard Attributes	Position	134		
	Label	Cribra Orbitalia		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	98	43.0%
	1	Mild	30	13.2%
	2	Severe	9	3.9%
Missing Values	System		91	39.9%

APPENDIX VII: CODING KEYS

CO_ScoreColl

		Value	Count	Percent
Standard Attributes	Position	135		
	Label	COScore_Collapsed		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	39	17.1%
	1	Present	0	0.0%
Missing Values	System		189	82.9%

CO_ScoreCollapsed2

		Value	Count	Percent
Standard Attributes	Position	136		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	98	43.0%
	1	Present	39	17.1%
Missing Values	System		91	39.9%

CO_Activity_Full

		Value	Count	Percent
Standard Attributes	Position	137		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	98	43.0%
	1	Active	25	11.0%
	2	Healed	7	3.1%
	3	Mixed	7	3.1%
Missing Values	System		91	39.9%

APPENDIX VII: CODING KEYS

CO_Activity

		Value	Count	Percent
Standard Attributes	Position	138		
	Label	CO_Activity		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Active	32	14.0%
	2	Healed	5	2.2%
	3	Mixed	2	0.9%
Missing Values	System		189	82.9%

PH_Score

		Value	Count	Percent
Standard Attributes	Position	139		
	Label	Porotic Hyperostosis		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Parietals absent	62	27.2%
	1	Absent	154	67.5%
	2	Mild	12	5.3%
	3	Severe	0	0.0%

PHScore_Coll

		Value	Count	Percent
Standard Attributes	Position	140		
	Label	PHScoreColl		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	154	67.5%
	1	Present	12	5.3%
Missing Values	System		62	27.2%

APPENDIX VII: CODING KEYS

PH_Activity

		Value	Count	Percent
Standard Attributes	Position	141		
	Label	PH_Activity		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Active	6	2.6%
	2	Healed	2	0.9%
	3	Mixed	2	0.9%
Missing Values	System		218	95.6%

PNB_General

		Value	Count	Percent
Standard Attributes	Position	142		
	Label	PNB_General		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	189	82.9%
	1	Present	23	10.1%
Missing Values	System		16	7.0%

PNB_AbsPr_Combined

		Value	Count	Percent
Standard Attributes	Position	143		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	182	79.8%
	1	Present	31	13.6%
Missing Values	System		15	6.6%

APPENDIX VII: CODING KEYS

PNB_HumL

		Value	Count	Percent
Standard Attributes	Position	144		
	Label	PNB_HumL		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	148	64.9%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	3	1.3%
	4	Moderate involvement	0	0.0%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	0	0.0%
	9	Unobservabl e	63	27.6%
Missing Values	System		14	6.1%

PNB_HumR

		Value	Count	Percent
Standard Attributes	Position	145		
	Label	PNB_HumR		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	148	64.9%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	1	0.4%
	4	Moderate involvement	1	0.4%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	0	0.0%
	9	Unobservabl e	64	28.1%
Missing Values	System		14	6.1%

APPENDIX VII: CODING KEYS

PNB_RadL

		Value	Count	Percent
Standard Attributes	Position	146		
	Label	PNB_RadL		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	139	61.0%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	1	0.4%
	4	Moderate involvement	0	0.0%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	1	0.4%
	9	Unobservabl e	73	32.0%
Missing Values	System		14	6.1%

PNB_RadR

		Value	Count	Percent
Standard Attributes	Position	147		
	Label	PNB_RadR		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	137	60.1%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	1	0.4%
	4	Moderate involvement	0	0.0%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	0	0.0%
	9	Unobservabl e	76	33.3%
Missing Values	System		14	6.1%

APPENDIX VII: CODING KEYS

PNB_UlnL

		Value	Count	Percent
Standard Attributes	Position	148		
	Label	PNB_UlnL		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	138	60.5%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	2	0.9%
	4	Moderate involvement	0	0.0%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	1	0.4%
	9	Unobservable	73	32.0%
Missing Values	System		14	6.1%

PNB_UlnR

		Value	Count	Percent
Standard Attributes	Position	149		
	Label	PNB_UlnR		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	133	58.3%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	1	0.4%
	4	Moderate involvement	0	0.0%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	0	0.0%
	9	Unobservable	80	35.1%
Missing Values	System		14	6.1%

APPENDIX VII: CODING KEYS

PNB_FemL

		Value	Count	Percent
Standard Attributes	Position	150		
	Label	PNB_FemL		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	159	69.7%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	2	0.9%
	4	Moderate involvement	0	0.0%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	0	0.0%
	9	Unobservabl e	53	23.2%
Missing Values	System		14	6.1%

PNB_FemR

		Value	Count	Percent
Standard Attributes	Position	151		
	Label	PNB_FemR		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	162	71.1%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	1	0.4%
	4	Moderate involvement	0	0.0%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	0	0.0%
	9	Unobservabl e	51	22.4%
Missing Values	System		14	6.1%

APPENDIX VII: CODING KEYS

PNB_TibL

		Value	Count	Percent
Standard Attributes	Position	152		
	Label	PNB_TibL		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	142	62.3%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	1	0.4%
	4	Moderate involvement	2	0.9%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	1	0.4%
	9	Unobservable	68	29.8%
Missing Values	System		14	6.1%

PNB_TibR

		Value	Count	Percent
Standard Attributes	Position	153		
	Label	PNB_TibR		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	144	63.2%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	5	2.2%
	4	Moderate involvement	2	0.9%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	1	0.4%
	9	Unobservable	62	27.2%
Missing Values	System		14	6.1%

APPENDIX VII: CODING KEYS

PNB_FibL

		Value	Count	Percent
Standard Attributes	Position	154		
	Label	PNB_FibL		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	125	54.8%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	1	0.4%
	4	Moderate involvement	3	1.3%
	5	Extensive reaction	1	0.4%
	6	PNB associated with fracture	1	0.4%
	9	Unobservable	83	36.4%
Missing Values	System		14	6.1%

PNB_FibR

		Value	Count	Percent
Standard Attributes	Position	155		
	Label	PNB_FibR		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	125	54.8%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	1	0.4%
	4	Moderate involvement	2	0.9%
	5	Extensive reaction	1	0.4%
	6	PNB associated with fracture	0	0.0%
	9	Unobservable	85	37.3%
Missing Values	System		14	6.1%

APPENDIX VII: CODING KEYS

PNB_HumLCol

		Value	Count	Percent
Standard Attributes	Position	156		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	148	64.9%
	1	Present	3	1.3%
Missing Values	System		77	33.8%

PNB_HumRCol

		Value	Count	Percent
Standard Attributes	Position	157		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	148	64.9%
	1	Present	2	0.9%
Missing Values	System		78	34.2%

PNB_RadLCol

		Value	Count	Percent
Standard Attributes	Position	158		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	139	61.0%
	1	Present	2	0.9%
Missing Values	System		87	38.2%

PNB_RadRCol

		Value	Count	Percent
Standard Attributes	Position	159		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	137	60.1%
	1	Present	1	0.4%
Missing Values	System		90	39.5%

APPENDIX VII: CODING KEYS

PNB_UlnLCol

		Value	Count	Percent
Standard Attributes	Position	160		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	138	60.5%
	1	Present	3	1.3%
Missing Values	System		87	38.2%

PNB_UlnRCol

		Value	Count	Percent
Standard Attributes	Position	161		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	133	58.3%
	1	Present	1	0.4%
Missing Values	System		94	41.2%

PNB_FemLCol

		Value	Count	Percent
Standard Attributes	Position	162		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	159	69.7%
	1	Present	2	0.9%
Missing Values	System		67	29.4%

PNB_FemRCol

		Value	Count	Percent
Standard Attributes	Position	163		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	162	71.1%
	1	Present	1	0.4%
Missing Values	System		65	28.5%

APPENDIX VII: CODING KEYS

PNB_TibLCol

		Value	Count	Percent
Standard Attributes	Position	164		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	142	62.3%
	1	Present	4	1.8%
Missing Values	System		82	36.0%

PNB_TibRCol

		Value	Count	Percent
Standard Attributes	Position	165		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	144	63.2%
	1	Present	8	3.5%
Missing Values	System		76	33.3%

PNB_FibLCol

		Value	Count	Percent
Standard Attributes	Position	166		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	125	54.8%
	1	Present	6	2.6%
Missing Values	System		97	42.5%

PNB_FibRCol

		Value	Count	Percent
Standard Attributes	Position	167		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	125	54.8%
	1	Present	4	1.8%
Missing Values	System		99	43.4%

APPENDIX VII: CODING KEYS

PNBbySkeleton_Count

		Value
Standard Attributes	Position	168
	Label	PNBbySkeleton_CountOccurences
	Type	Numeric
	Format	F3
	Measurement	Scale
	Role	Input
N	Valid	213
	Missing	15
Central Tendency and Dispersion	Mean	.30
	Standard Deviation	.907
	Percentile 25	.00
	Percentile 50	.00
	Percentile 75	.00

PNBbySkeleton_AbsPr

		Value	Count	Percent
Standard Attributes	Position	169		
	Label	PNBbySkeleton_AbsPr		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	182	79.8%
	1	Present	31	13.6%
Missing Values	System		15	6.6%

PNB_AbsPr_LongBone

		Value	Count	Percent
Standard Attributes	Position	170		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	182	79.8%
	1	Present	18	7.9%
Missing Values	System		28	12.3%

APPENDIX VII: CODING KEYS

DJD_ShoulderL

		Value	Count	Percent
Standard Attributes	Position	171		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	95	41.7%
	1	Slight lipping	3	1.3%
	2	Severe lipping	0	0.0%
	3	Destruction	0	0.0%
	4	Synostosis	0	0.0%
Missing Values	System		130	57.0%

DJD_ShoulderR

		Value	Count	Percent
Standard Attributes	Position	172		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	96	42.1%
	1	Slight lipping	4	1.8%
	2	Severe lipping	3	1.3%
	3	Destruction	0	0.0%
	4	Synostosis	0	0.0%
Missing Values	System		125	54.8%

DJD_ElbowL

		Value	Count	Percent
Standard Attributes	Position	173		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	104	45.6%
	1	Slight lipping	0	0.0%
	2	Severe lipping	0	0.0%
	3	Destruction	0	0.0%
	4	Synostosis	0	0.0%
Missing Values	System		124	54.4%

APPENDIX VII: CODING KEYS

DJD_ElbowR

		Value	Count	Percent
Standard Attributes	Position	174		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	101	44.3%
	1	Slight lipping	5	2.2%
	2	Severe lipping	1	0.4%
	3	Destruction	0	0.0%
	4	Synostosis	0	0.0%
Missing Values	System		121	53.1%

DJD_WristL

		Value	Count	Percent
Standard Attributes	Position	175		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	96	42.1%
	1	Slight lipping	3	1.3%
	2	Severe lipping	1	0.4%
	3	Destruction	0	0.0%
	4	Synostosis	0	0.0%
Missing Values	System		128	56.1%

DJD_WristR

		Value	Count	Percent
Standard Attributes	Position	176		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	105	46.1%
	1	Slight lipping	0	0.0%
	2	Severe lipping	1	0.4%
	3	Destruction	0	0.0%
	4	Synostosis	0	0.0%
Missing Values	System		122	53.5%

APPENDIX VII: CODING KEYS

DJD_HipL

		Value	Count	Percent
Standard Attributes	Position	177		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	96	42.1%
	1	Slight lipping	6	2.6%
	2	Severe lipping	3	1.3%
	3	Destruction	0	0.0%
	4	Synostosis	0	0.0%
Missing Values	System		123	53.9%

DJD_HipR

		Value	Count	Percent
Standard Attributes	Position	178		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	110	48.2%
	1	Slight lipping	1	0.4%
	2	Severe lipping	0	0.0%
	3	Destruction	0	0.0%
	4	Synostosis	0	0.0%
Missing Values	System		117	51.3%

DJD_KneeL

		Value	Count	Percent
Standard Attributes	Position	179		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	104	45.6%
	1	Slight lipping	1	0.4%
	2	Severe lipping	2	0.9%
	3	Destruction	0	0.0%
	4	Synostosis	0	0.0%
Missing Values	System		121	53.1%

APPENDIX VII: CODING KEYS

DJD_KneeR

		Value	Count	Percent
Standard Attributes	Position	180		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	106	46.5%
	1	Slight lipping	0	0.0%
	2	Severe lipping	1	0.4%
	3	Destruction	0	0.0%
	4	Synostosis	0	0.0%
Missing Values	System		121	53.1%

DJD_AnkleL

		Value	Count	Percent
Standard Attributes	Position	181		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	98	43.0%
	1	Slight lipping	2	0.9%
	2	Severe lipping	0	0.0%
	3	Destruction	0	0.0%
	4	Synostosis	0	0.0%
Missing Values	System		128	56.1%

DJD_AnkleR

		Value	Count	Percent
Standard Attributes	Position	182		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	100	43.9%
	1	Slight lipping	0	0.0%
	2	Severe lipping	0	0.0%
	3	Destruction	0	0.0%
	4	Synostosis	0	0.0%
Missing Values	System		128	56.1%

APPENDIX VII: CODING KEYS

DJD_ShoulderL_Col

		Value	Count	Percent
Standard Attributes	Position	183		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	95	41.7%
	1	Present	3	1.3%
Missing Values	System		130	57.0%

DJD_ShoulderR_Col

		Value	Count	Percent
Standard Attributes	Position	184		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	96	42.1%
	1	Present	7	3.1%
Missing Values	System		125	54.8%

DJD_ElbowL_Col

		Value	Count	Percent
Standard Attributes	Position	185		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	104	45.6%
	1	Present	0	0.0%
Missing Values	System		124	54.4%

DJD_ElbowR_Col

		Value	Count	Percent
Standard Attributes	Position	186		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	101	44.3%
	1	Present	6	2.6%
Missing Values	System		121	53.1%

APPENDIX VII: CODING KEYS

DJD_WristL_Col

		Value	Count	Percent
Standard Attributes	Position	187		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	96	42.1%
	1	Present	4	1.8%
Missing Values	System		128	56.1%

DJD_WristR_Col

		Value	Count	Percent
Standard Attributes	Position	188		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	105	46.1%
	1	Present	1	0.4%
Missing Values	System		122	53.5%

DJD_HipL_Col

		Value	Count	Percent
Standard Attributes	Position	189		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	96	42.1%
	1	Present	9	3.9%
Missing Values	System		123	53.9%

DJD_HipR_Col

		Value	Count	Percent
Standard Attributes	Position	190		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	110	48.2%
	1	Present	1	0.4%
Missing Values	System		117	51.3%

APPENDIX VII: CODING KEYS

DJD_KneeL_Col

		Value	Count	Percent
Standard Attributes	Position	191		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	104	45.6%
	1	Present	3	1.3%
Missing Values	System		121	53.1%

DJD_KneeR_Col

		Value	Count	Percent
Standard Attributes	Position	192		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	106	46.5%
	1	Present	1	0.4%
Missing Values	System		121	53.1%

DJD_AnkleL_Col

		Value	Count	Percent
Standard Attributes	Position	193		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	98	43.0%
	1	Present	2	0.9%
Missing Values	System		128	56.1%

DJD_AnkleR_Col

		Value	Count	Percent
Standard Attributes	Position	194		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	100	43.9%
	1	Present	0	0.0%
Missing Values	System		128	56.1%

APPENDIX VII: CODING KEYS

DJD_Cervical

		Value	Count	Percent
Standard Attributes	Position	195		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	73	32.0%
	1	Osteophytes on 1 or more vertebra	18	7.9%
	2	Extensive osteophytes on one or more vertebra	11	4.8%
Missing Values	System		126	55.3%

DJD_Thoracic

		Value	Count	Percent
Standard Attributes	Position	196		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	57	25.0%
	1	Osteophytes on 1 or more vertebra	27	11.8%
	2	Extensive osteophytes on one or more vertebra	13	5.7%
Missing Values	System		131	57.5%

APPENDIX VII: CODING KEYS

DJD_Lumbar

		Value	Count	Percent
Standard Attributes	Position	197		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	56	24.6%
	1	Osteophytes on 1 or more vertebra	29	12.7%
	2	Extensive osteophytes on one or more vertebra	14	6.1%
Missing Values	System		129	56.6%

DJD_Cervical_AbsPr

		Value	Count	Percent
Standard Attributes	Position	198		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	73	32.0%
	1	Present	29	12.7%
Missing Values	System		126	55.3%

DJD_Thoracic_AbsPr

		Value	Count	Percent
Standard Attributes	Position	199		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	57	25.0%
	1	Present	40	17.5%
Missing Values	System		131	57.5%

APPENDIX VII: CODING KEYS

DJD_Lumbar_AbsPr

		Value	Count	Percent
Standard Attributes	Position	200		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	56	24.6%
	1	Present	43	18.9%
Missing Values	System		129	56.6%

DJD_IND

		Value	Count	Percent
Standard Attributes	Position	201		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	53	23.2%
	1	Present	26	11.4%
Missing Values	System		149	65.4%

DJD_Shoulder

		Value	Count	Percent
Standard Attributes	Position	202		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	87	38.2%
	1	Left	2	0.9%
	2	Right	6	2.6%
	3	Bilateral	1	0.4%
Missing Values	System		132	57.9%

APPENDIX VII: CODING KEYS

DJD_Elbow

		Value	Count	Percent
Standard Attributes	Position	203		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	96	42.1%
	1	Left	0	0.0%
	2	Right	6	2.6%
	3	Bilateral	0	0.0%
Missing Values	System		126	55.3%

DJD_Wrist

		Value	Count	Percent
Standard Attributes	Position	204		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	92	40.4%
	1	Left	3	1.3%
	2	Right	0	0.0%
	3	Bilateral	1	0.4%
Missing Values	System		132	57.9%

DJD_Hip

		Value	Count	Percent
Standard Attributes	Position	205		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	95	41.7%
	1	Left	8	3.5%
	2	Right	0	0.0%
	3	Bilateral	1	0.4%
Missing Values	System		124	54.4%

APPENDIX VII: CODING KEYS

DJD_Knee

		Value	Count	Percent
Standard Attributes	Position	206		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	99	43.4%
	1	Left	2	0.9%
	2	Right	0	0.0%
	3	Bilateral	1	0.4%
Missing Values	System		126	55.3%

DJD_Ankle

		Value	Count	Percent
Standard Attributes	Position	207		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	96	42.1%
	1	Left	2	0.9%
	2	Right	0	0.0%
	3	Bilateral	0	0.0%
Missing Values	System		130	57.0%

DJD_Invert_IND

		Value	Count	Percent
Standard Attributes	Position	208		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	35	15.4%
	1	Present	61	26.8%
Missing Values	System		132	57.9%

APPENDIX VII: CODING KEYS

Schmorls_ThAbsPr

		Value	Count	Percent
Standard Attributes	Position	209		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	87	38.2%
	1	Present	6	2.6%
Missing Values	System		135	59.2%

Schmorls_LuAbsPr

		Value	Count	Percent
Standard Attributes	Position	210		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	89	39.0%
	1	Present	5	2.2%
Missing Values	System		134	58.8%

Schmorls_IND_AbsPr

		Value	Count	Percent
Standard Attributes	Position	211		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	87	38.2%
	1	Present	9	3.9%
Missing Values	System		132	57.9%

APPENDIX VII: CODING KEYS

CoffinShapeCollapsed

		Value	Count	Percent
Standard Attributes	Position	212		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Anthropoid/ Hexagon	58	25.4%
	2	Rectangular/ Subrectangular	47	20.6%
	3	Oval	2	0.9%
	4	Other	3	1.3%
	5	Undetermined	28	12.3%
Missing Values	System		90	39.5%

Shoulder_Left_Disloc

		Value	Count	Percent
Standard Attributes	Position	213		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	157	68.9%
	1	Slight	1	0.4%
	2	Severe	0	0.0%
Missing Values	System		70	30.7%

Shoulder_Right_Disloc

		Value	Count	Percent
Standard Attributes	Position	214		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	157	68.9%
	1	Slight	0	0.0%
	2	Severe	0	0.0%
Missing Values	System		71	31.1%

APPENDIX VII: CODING KEYS

Elbow_Left_Disloc

		Value	Count	Percent
Standard Attributes	Position	215		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	154	67.5%
	1	Slight	0	0.0%
	2	Severe	0	0.0%
Missing Values	System		74	32.5%

Elbow_Right_Disloc

		Value	Count	Percent
Standard Attributes	Position	216		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	151	66.2%
	1	Slight	1	0.4%
	2	Severe	2	0.9%
Missing Values	System		74	32.5%

Wrist_Left_Disloc

		Value	Count	Percent
Standard Attributes	Position	217		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	141	61.8%
	1	Slight	0	0.0%
	2	Severe	0	0.0%
Missing Values	System		87	38.2%

APPENDIX VII: CODING KEYS

Wrist_Right_Disloc

		Value	Count	Percent
Standard Attributes	Position	218		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	139	61.0%
	1	Slight	0	0.0%
	2	Severe	1	0.4%
Missing Values	System		88	38.6%

Hip_Left_Disloc

		Value	Count	Percent
Standard Attributes	Position	219		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	150	65.8%
	1	Slight	0	0.0%
	2	Severe	0	0.0%
Missing Values	System		78	34.2%

Hip_Right_Disloc

		Value	Count	Percent
Standard Attributes	Position	220		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	158	69.3%
	1	Slight	0	0.0%
	2	Severe	0	0.0%
Missing Values	System		70	30.7%

APPENDIX VII: CODING KEYS

Knee_Left_Disloc

		Value	Count	Percent
Standard Attributes	Position	221		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	155	68.0%
	1	Slight	0	0.0%
	2	Severe	0	0.0%
Missing Values	System		73	32.0%

Knee_Right_Disloc

		Value	Count	Percent
Standard Attributes	Position	222		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	157	68.9%
	1	Slight	0	0.0%
	2	Severe	0	0.0%
Missing Values	System		71	31.1%

Ankle_Left_Disloc

		Value	Count	Percent
Standard Attributes	Position	223		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	146	64.0%
	1	Slight	0	0.0%
	2	Severe	0	0.0%
Missing Values	System		82	36.0%

Ankle_Right_Disloc

		Value	Count	Percent
Standard Attributes	Position	224		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	145	63.6%
	1	Slight	0	0.0%
	2	Severe	0	0.0%
Missing Values	System		83	36.4%

Disloc_IND

		Value	Count	Percent
Standard Attributes	Position	225		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	83	36.4%
	1	Slight	2	0.9%
	2	Severe	2	0.9%
Missing Values	System		141	61.8%

Disloc_Ind_AbsPr

		Value	Count	Percent
Standard Attributes	Position	226		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	83	36.4%
	1	Present	4	1.8%
Missing Values	System		141	61.8%

APPENDIX VII: CODING KEYS

Disloc_Ind_Bone

		Value	Count	Percent
Standard Attributes	Position	227		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	83	36.4%
	1	L shoulder	1	0.4%
	2	R shoulder	0	0.0%
	3	L elbow	0	0.0%
	4	R elbow	2	0.9%
	5	L wrist	0	0.0%
	6	R wrist	1	0.4%
	7	L hip	0	0.0%
	8	R hip	0	0.0%
	9	L knee	0	0.0%
	10	R knee	0	0.0%
	11	L ankle	0	0.0%
	12	R ankle	0	0.0%
Missing Values	System		141	61.8%

Trauma_MaxillaL

		Value	Count	Percent
Standard Attributes	Position	228		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	48	21.1%
	1	Ante-Linear	0	0.0%
	2	Ante-Depress	0	0.0%
	3	Ante-Puncture	0	0.0%
	4	Ante-Multi	0	0.0%
	5	Peri-Linear	0	0.0%
	6	Peri-Depress	0	0.0%
	7	Peri-Puncture	0	0.0%
	8	Peri-Multi	0	0.0%
Missing Values	System		180	78.9%

APPENDIX VII: CODING KEYS

Trauma_FrontalL

		Value	Count	Percent
Standard Attributes	Position	229		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	50	21.9%
	1	Ante-Linear	0	0.0%
	2	Ante-Depress	0	0.0%
	3	Ante-Puncture	0	0.0%
	4	Ante-Multi	1	0.4%
	5	Peri-Linear	1	0.4%
	6	Peri-Depress	0	0.0%
	7	Peri-Puncture	0	0.0%
	8	Peri-Multi	0	0.0%
Missing Values	System		176	77.2%

TraumaMandibleL

		Value	Count	Percent
Standard Attributes	Position	230		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	101	44.3%
	1	Ante-Linear	0	0.0%
	2	Ante-Depress	0	0.0%
	3	Ante-Puncture	1	0.4%
	4	Ante-Multi	0	0.0%
	5	Peri-Linear	0	0.0%
	6	Peri-Depress	0	0.0%
	7	Peri-Puncture	0	0.0%
	8	Peri-Multi	0	0.0%
Missing Values	System		126	55.3%

APPENDIX VII: CODING KEYS

Trauma_ParietalL

		Value	Count	Percent
Standard Attributes	Position	231		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	22	9.6%
	1	Ante-Linear	0	0.0%
	2	Ante-Depress	0	0.0%
	3	Ante-Puncture	1	0.4%
	4	Ante-Multi	0	0.0%
	5	Peri-Linear	0	0.0%
	6	Peri-Depress	0	0.0%
	7	Peri-Puncture	1	0.4%
	8	Peri-Multi	0	0.0%
Missing Values	System		204	89.5%

Trauma_TemporalL

		Value	Count	Percent
Standard Attributes	Position	232		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	60	26.3%
	1	Ante-Linear	0	0.0%
	2	Ante-Depress	0	0.0%
	3	Ante-Puncture	0	0.0%
	4	Ante-Multi	0	0.0%
	5	Peri-Linear	0	0.0%
	6	Peri-Depress	0	0.0%
	7	Peri-Puncture	0	0.0%
	8	Peri-Multi	0	0.0%
Missing Values	System		168	73.7%

APPENDIX VII: CODING KEYS

Trauma_ZygL

		Value	Count	Percent
Standard Attributes	Position	233		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	41	18.0%
	1	Ante-Linear	0	0.0%
	2	Ante-Depress	0	0.0%
	3	Ante-Puncture	0	0.0%
	4	Ante-Multi	0	0.0%
	5	Peri-Linear	0	0.0%
	6	Peri-Depress	0	0.0%
	7	Peri-Puncture	0	0.0%
	8	Peri-Multi	0	0.0%
Missing Values	System		187	82.0%

TraumaNasals

		Value	Count	Percent
Standard Attributes	Position	234		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	38	16.7%
	1	Ante-Linear	0	0.0%
	2	Ante-Depress	0	0.0%
	3	Ante-Puncture	0	0.0%
	4	Ante-Multi	0	0.0%
	5	Peri-Linear	0	0.0%
	6	Peri-Depress	0	0.0%
	7	Peri-Puncture	0	0.0%
	8	Peri-Multi	0	0.0%
Missing Values	System		190	83.3%

APPENDIX VII: CODING KEYS

TraumaOCcipit

		Value	Count	Percent
Standard Attributes	Position	235		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	31	13.6%
	1	Ante-Linear	0	0.0%
	2	Ante-Depress	0	0.0%
	3	Ante-Puncture	1	0.4%
	4	Ante-Multi	0	0.0%
	5	Peri-Linear	0	0.0%
	6	Peri-Depress	0	0.0%
	7	Peri-Puncture	0	0.0%
	8	Peri-Multi	0	0.0%
Missing Values	System		196	86.0%

Trauma_FrontalR

		Value	Count	Percent
Standard Attributes	Position	236		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	50	21.9%
	1	Ante-Linear	0	0.0%
	2	Ante-Depress	1	0.4%
	3	Ante-Puncture	1	0.4%
	4	Ante-Multi	0	0.0%
	5	Peri-Linear	0	0.0%
	6	Peri-Depress	1	0.4%
	7	Peri-Puncture	0	0.0%
	8	Peri-Multi	0	0.0%
Missing Values	System		175	76.8%

APPENDIX VII: CODING KEYS

Trauma_MandibleR

		Value	Count	Percent
Standard Attributes	Position	237		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	85	37.3%
	1	Ante-Linear	1	0.4%
	2	Ante-Depress	0	0.0%
	3	Ante-Puncture	0	0.0%
	4	Ante-Multi	0	0.0%
	5	Peri-Linear	0	0.0%
	6	Peri-Depress	0	0.0%
	7	Peri-Puncture	0	0.0%
	8	Peri-Multi	0	0.0%
Missing Values	System		142	62.3%

Trauma_MaxillaR

		Value	Count	Percent
Standard Attributes	Position	238		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	46	20.2%
	1	Ante-Linear	0	0.0%
	2	Ante-Depress	0	0.0%
	3	Ante-Puncture	0	0.0%
	4	Ante-Multi	0	0.0%
	5	Peri-Linear	1	0.4%
	6	Peri-Depress	0	0.0%
	7	Peri-Puncture	0	0.0%
	8	Peri-Multi	0	0.0%
Missing Values	System		181	79.4%

APPENDIX VII: CODING KEYS

Trauma_ParietalR

		Value	Count	Percent
Standard Attributes	Position	239		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	24	10.5%
	1	Ante-Linear	0	0.0%
	2	Ante-Depress	0	0.0%
	3	Ante-Puncture	0	0.0%
	4	Ante-Multi	0	0.0%
	5	Peri-Linear	0	0.0%
	6	Peri-Depress	0	0.0%
	7	Peri-Puncture	0	0.0%
	8	Peri-Multi	0	0.0%
Missing Values	System		204	89.5%

Trauma_RightTemporal

		Value	Count	Percent
Standard Attributes	Position	240		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	51	22.4%
	1	Ante-Linear	0	0.0%
	2	Ante-Depress	0	0.0%
	3	Ante-Puncture	0	0.0%
	4	Ante-Multi	0	0.0%
	5	Peri-Linear	0	0.0%
	6	Peri-Depress	0	0.0%
	7	Peri-Puncture	0	0.0%
	8	Peri-Multi	0	0.0%
Missing Values	System		177	77.6%

APPENDIX VII: CODING KEYS

Trauma_ZygR

		Value	Count	Percent
Standard Attributes	Position	241		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	32	14.0%
	1	Ante-Linear	0	0.0%
	2	Ante-Depress	0	0.0%
	3	Ante-Puncture	0	0.0%
	4	Ante-Multi	0	0.0%
	5	Peri-Linear	0	0.0%
	6	Peri-Depress	0	0.0%
	7	Peri-Puncture	0	0.0%
	8	Peri-Multi	0	0.0%
Missing Values	System		196	86.0%

CranTrauma

		Value	Count	Percent
Standard Attributes	Position	242		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	Absent	65	28.5%
Missing Values	System		163	71.5%

Trauma_Cran_IND_Peri

		Value	Count	Percent
Standard Attributes	Position	243		
	Label	<none>		
	Type	Numeric		
	Format	F2		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	62	27.2%
	1	Present	4	1.8%
Missing Values	System		162	71.1%

APPENDIX VII: CODING KEYS

Trauma_Cran_IND

		Value	Count	Percent
Standard Attributes	Position	244		
	Label	<none>		
	Type	Numeric		
	Format	F2		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	59	25.9%
	1	Ante-Mortem	4	1.8%
	2	Peri-Mortem	4	1.8%
Missing Values	System		161	70.6%

Trauma_Cran_IND_Ante

		Value	Count	Percent
Standard Attributes	Position	245		
	Label	<none>		
	Type	Numeric		
	Format	F2		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	63	27.6%
	1	Present	5	2.2%
Missing Values	System		160	70.2%

Trauma_MaxL_AbsPr

		Value	Count	Percent
Standard Attributes	Position	246		
	Label	<none>		
	Type	Numeric		
	Format	F8.2		
	Measurement	Nominal		
	Role	Input		
Valid Values	.00		48	21.1%
Missing Values	System		180	78.9%

Trauma_MaxR_AbsPr

		Value	Count	Percent
Standard Attributes	Position	247		
	Label	<none>		
	Type	Numeric		
	Format	F8.2		
	Measurement	Nominal		
	Role	Input		
Valid Values	.00		57	25.0%
Missing Values	System		171	75.0%

APPENDIX VII: CODING KEYS

Trauma_CranComb

		Value	Count	Percent
Standard Attributes	Position	248		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	59	25.9%
	1	Present	8	3.5%
Missing Values	System		161	70.6%

Trauma_FrontalL_Abs_pr

		Value	Count	Percent
Standard Attributes	Position	249		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	50	21.9%
	1	Present	2	0.9%
Missing Values	System		176	77.2%

Trauma_FrontalR_AbsPr

		Value	Count	Percent
Standard Attributes	Position	250		
	Label	<none>		
	Type	Numeric		
	Format	F1		
	Measurement	Nominal		
	Role	Input		
Valid Values	0		50	21.9%
	1		3	1.3%
Missing Values	System		175	76.8%

Trauma_ClavL

		Value	Count	Percent
Standard Attributes	Position	251		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	152	66.7%
	1	Ante-mortem	1	0.4%
	2	Peri-mortem	0	0.0%
Missing Values	System		75	32.9%

APPENDIX VII: CODING KEYS

Trauma_ClavR

		Value	Count	Percent
Standard Attributes	Position	252		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	154	67.5%
	1	Ante-mortem	2	0.9%
	2	Peri-mortem	0	0.0%
Missing Values	System		72	31.6%

Trauma_FemurL

		Value	Count	Percent
Standard Attributes	Position	253		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	153	67.1%
	1	Ante-mortem	1	0.4%
	2	Peri-mortem	0	0.0%
Missing Values	System		74	32.5%

Trauma_FemurR

		Value	Count	Percent
Standard Attributes	Position	254		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	157	68.9%
	1	Ante-mortem	2	0.9%
	2	Peri-mortem	1	0.4%
Missing Values	System		68	29.8%

APPENDIX VII: CODING KEYS

Trauma_FibL

		Value	Count	Percent
Standard Attributes	Position	255		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	133	58.3%
	1	Ante-mortem	0	0.0%
	2	Peri-mortem	0	0.0%
Missing Values	System		95	41.7%

Trauma_FibR

		Value	Count	Percent
Standard Attributes	Position	256		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	131	57.5%
	1	Ante-mortem	0	0.0%
	2	Peri-mortem	0	0.0%
Missing Values	System		97	42.5%

Trauma_HumL

		Value	Count	Percent
Standard Attributes	Position	257		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	150	65.8%
	1	Ante-mortem	1	0.4%
	2	Peri-mortem	0	0.0%
Missing Values	System		77	33.8%

APPENDIX VII: CODING KEYS

Trauma_HumR

		Value	Count	Percent
Standard Attributes	Position	258		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	150	65.8%
	1	Ante-mortem	1	0.4%
	2	Peri-mortem	0	0.0%
Missing Values	System		77	33.8%

Trauma_RadL

		Value	Count	Percent
Standard Attributes	Position	259		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	134	58.8%
	1	Ante-mortem	2	0.9%
	2	Peri-mortem	0	0.0%
Missing Values	System		92	40.4%

Trauma_RadR

		Value	Count	Percent
Standard Attributes	Position	260		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	138	60.5%
	1	Ante-mortem	0	0.0%
	2	Peri-mortem	0	0.0%
Missing Values	System		90	39.5%

APPENDIX VII: CODING KEYS

Trauma_TibL

		Value	Count	Percent
Standard Attributes	Position	261		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	142	62.3%
	1	Ante-mortem	2	0.9%
	2	Peri-mortem	0	0.0%
Missing Values	System		84	36.8%

Trauma_TibR

		Value	Count	Percent
Standard Attributes	Position	262		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	143	62.7%
	1	Ante-mortem	1	0.4%
	2	Peri-mortem	0	0.0%
Missing Values	System		84	36.8%

Trauma_UlnL

		Value	Count	Percent
Standard Attributes	Position	263		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	135	59.2%
	1	Ante-mortem	4	1.8%
	2	Peri-mortem	0	0.0%
Missing Values	System		89	39.0%

APPENDIX VII: CODING KEYS

Trauma_UlnR

		Value	Count	Percent
Standard Attributes	Position	264		
	Label	<none>		
	Type	Numeric		
	Format	F11		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	141	61.8%
	1	Ante-mortem	1	0.4%
	2	Peri-mortem	0	0.0%
Missing Values	System		86	37.7%

FemurR_Abs_pr

		Value	Count	Percent
Standard Attributes	Position	265		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	0	Absent	158	69.3%
	1	Present	2	0.9%
Missing Values	System		68	29.8%

PNB_HumL_Sev

		Value	Count	Percent
Standard Attributes	Position	266		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	148	64.9%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	3	1.3%
	4	Moderate involvement	0	0.0%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	0	0.0%
Missing Values	System		77	33.8%

APPENDIX VII: CODING KEYS

PNB_HumR_Sev

		Value	Count	Percent
Standard Attributes	Position	267		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	148	64.9%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	1	0.4%
	4	Moderate involvement	1	0.4%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	0	0.0%
Missing Values	System		78	34.2%

PNB_RadL_Sev

		Value	Count	Percent
Standard Attributes	Position	268		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	139	61.0%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	1	0.4%
	4	Moderate involvement	0	0.0%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	1	0.4%
Missing Values	System		87	38.2%

APPENDIX VII: CODING KEYS

PNB_RadR_Sev

		Value	Count	Percent
Standard Attributes	Position	269		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	137	60.1%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	1	0.4%
	4	Moderate involvement	0	0.0%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	0	0.0%
Missing Values	System		90	39.5%

PNB_UlnL_Sev

		Value	Count	Percent
Standard Attributes	Position	270		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	138	60.5%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	2	0.9%
	4	Moderate involvement	0	0.0%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	1	0.4%
Missing Values	System		87	38.2%

APPENDIX VII: CODING KEYS

PNB_UlnR_Sev

		Value	Count	Percent
Standard Attributes	Position	271		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	133	58.3%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	1	0.4%
	4	Moderate involvement	0	0.0%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	0	0.0%
Missing Values	System		94	41.2%

PNB_FemL_Sev

		Value	Count	Percent
Standard Attributes	Position	272		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	159	69.7%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	2	0.9%
	4	Moderate involvement	0	0.0%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	0	0.0%
Missing Values	System		67	29.4%

APPENDIX VII: CODING KEYS

PNB_FemR_Sev

		Value	Count	Percent
Standard Attributes	Position	273		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	162	71.1%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	1	0.4%
	4	Moderate involvement	0	0.0%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	0	0.0%
Missing Values	System		65	28.5%

PNB_TibL_Sev

		Value	Count	Percent
Standard Attributes	Position	274		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	142	62.3%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	1	0.4%
	4	Moderate involvement	2	0.9%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	1	0.4%
Missing Values	System		82	36.0%

APPENDIX VII: CODING KEYS

PNB_TibR_Sev

		Value	Count	Percent
Standard Attributes	Position	275		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	144	63.2%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	5	2.2%
	4	Moderate involvement	2	0.9%
	5	Extensive reaction	0	0.0%
	6	PNB associated with fracture	1	0.4%
Missing Values	System		76	33.3%

PNB_FibL_Sev

		Value	Count	Percent
Standard Attributes	Position	276		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	125	54.8%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	1	0.4%
	4	Moderate involvement	3	1.3%
	5	Extensive reaction	1	0.4%
	6	PNB associated with fracture	1	0.4%
Missing Values	System		97	42.5%

APPENDIX VII: CODING KEYS

PNB_FibR_Sev

		Value	Count	Percent
Standard Attributes	Position	277		
	Label	<none>		
	Type	Numeric		
	Format	F8		
	Measurement	Nominal		
	Role	Input		
Valid Values	1	No PNB	125	54.8%
	2	Longitudinal striations	0	0.0%
	3	Slight patches	1	0.4%
	4	Moderate involvement	2	0.9%
	5	Extensive reaction	1	0.4%
	6	PNB associated with fracture	0	0.0%
Missing Values	System		99	43.4%

StatureSTD

		Value
Standard Attributes	Position	278
	Label	SkeletonsStature:: FinalStatureHeightSTD
	Type	Numeric
	Format	F11.2
	Measurement	Scale
	Role	Input
N	Valid	91
	Missing	137
Central Tendency and Dispersion	Mean	159.0459
	Standard Deviation	7.98611
	Percentile 25	153.1500
	Percentile 50	159.6300
	Percentile 75	165.3400

APPENDIX VIII: RAW DATA

SkeletonID	Phase	Sex_All	Sex_Collapsed	WeightedSexA_Score	WeightedSexA	SexACollapsed
7962	1	1	0	1.052632	1	1
7963	1	2	0	1	1	1
7964	1	5	1	5	5	2
7965	1	3	2	0	3	3
7966	1	3	2	0	3	3
7967	1	4	1	4.571429	5	2
7968	1	3	2	0	3	3
7969	1	3	2	0	3	3
7970	1	5	1	5	5	2
7971	1	3	2	0	3	3
7972	1	5	1	4.62963	5	2
7973	1	5	1	4.818182	5	2
7974	1	3	2	0	3	3
7975	1	1	0	1	1	1
7976	1	3	2	0	3	3
7977	1	3	2	0	3	3
7978	1	1	0	1.095238	1	1
7979	1	3	2	0	3	3
7980	1	3	2	0	3	3
7981	1	3	2	0	3	3
7982	1	3	2	0	3	3
7983	1	2	0	1.363636	1	1
7984	1	3	2	0	3	3
7985	1	3	2	0	3	3
7986	1	5	1	4.740741	5	2
7987	1	3	2	0	3	3
7988	1	3	2	0	3	3
7989	1	2	0	1	1	1
7990	1	5	1	5	5	2
7994	1	4	1	5	5	2
7996	1	5	1	5	5	2
7997	1	5	1	4.586207	5	2
7998	1	3	2	0	3	3
7999	1	3	2	0	3	3
8003	1	1	0	1.4	1	1
8017	1	5	1	5	5	2
8025	1	5	1	4.555556	5	2
8026	1	1	0	1.2	1	1
8031	1	3	2	0	3	3
8032	1	3	2	0	3	3
8034	1	3	2	0	3	3
8035	1	5	1	4.407407	5	2

APPENDIX VIII: RAW DATA

SkeletonID	Phase	Sex_All	Sex_Collapsed	WeightedSexA_Score	WeightedSexA	SexACollapsed
8036	1	3	2	0	3	3
8037	1	3	2	0	3	3
8038	1	2	0	1	1	1
8039	1	5	1	4.851852	5	2
8041	1	1	0	1.363636	1	1
8042	1	3	2	0	3	3
8043	1	4	1	3.882353	4	2
8044	1	3	2	0	3	3
8045	1	1	0	1.148148	1	1
8047	1	3	2	0	3	3
8048	1	5	1	5	5	2
8049	1	5	1	4.888889	5	2
8050	1	3	2	1.5	1	1
8051	1	5	1	4.806452	5	2
8052	1	3	2	0	3	3
8054	1	3	2	0	3	3
8055	1	3	2	0	3	3
8056	1	3	2	0	3	3
8057	1	1	0	1.129032	1	1
8060	1	5	1	5	5	2
8061	1	5	1	4.935484	5	2
8062	1	5	1	4.806452	5	2
8063	1	3	2	0	3	3
8064	1	3	2	0	3	3
8067	1	3	2	0	3	3
8068	1	3	2	0	3	3
8070	1	3	2	0	3	3
8074	1	3	2	0	3	3
8075	1	5	1	4.916667	5	2
8076	1	4	1	3.615385	4	2
8077	1	3	2	0	3	3
8078	1	3	2	0	3	3
8079	1	3	2	0	3	3
8080	1	3	2	0	3	3
8081	1	3	2	0	3	3
8082	1	3	2	0	3	3
8083	1	5	1	4.703704	5	2
8084	1	2	0	1	1	1
8085	1	3	2	0	3	3
8086	1	5	1	4.740741	5	2
8087	1	3	2	0	3	3
8088	1	1	0	1.137931	1	1

APPENDIX VIII: RAW DATA

SkeletonID	Phase	Sex_All	Sex_Collapsed	WeightedSexA_Score	WeightedSexA	SexACollapsed
8090	1	3	2	0	3	3
8091	1	3	2	0	3	3
8092	1	5	1	5	5	2
8093	1	3	2	0	3	3
8094	1	4	1	4.8	5	2
8095	1	3	2	0	3	3
8096	1	3	2	0	3	3
8097	1	3	2	0	3	3
8098	1	3	2	0	3	3
8099	1	3	2	0	3	3
8100	1	1	0	1.074074	1	1
8102	1	3	2	0	3	3
8103	1	3	2	0	3	3
8104	1	5	1	5	5	2
8106	1	2	0	1	1	1
8107	1	1	0	1.2	1	1
8110	1	1	0	1.142857	1	1
8111	1	3	2	0	3	3
8112	1	3	2	0	3	3
8113	1	1	0	1	1	1
8114	1	3	2	0	3	3
8115	1	3	2	0	3	3
8117	1	3	2	0	3	3
8118	1	1	0	1.347826	1	1
8119	1	2	0	1.592593	1	1
8120	1	3	2	0	3	3
8121	1	3	2	0	3	3
8124	1	3	2	0	3	3
8125	1	1	0	1.263158	1	1
8126	1	3	2	0	3	3
8127	1	4	1	4.12	5	2
8129	1	2	0	1.25	1	1
8130	1	3	2	0	3	3
8131	1	5	1	4.923077	5	2
8132	1	3	2	0	3	3
8133	1	4	1	4.0345	4	2
8134	1	3	2	0	3	3
8135	1	3	2	4	4	2
8136	1	1	0	1.230769	1	1
8137	1	3	2	0	3	3
8137	1	5	1	4.923077	5	2
8138	1	3	2	0	3	3

APPENDIX VIII: RAW DATA

SkeletonID	Phase	Sex_All	Sex_Collapsed	WeightedSexA_Score	WeightedSexA	SexACollapsed
8139	1	1	0	1.258065	1	1
8140	1	4	1	4.333333	5	2
8141	1	3	2	0	3	3
8142	1	1	0	1	1	1
8143	1	3	2	0	3	3
8144	1	3	2	0	3	3
8148	1	3	2	3	3	3
8149	1	3	2	2	2	1
8154	1	3	2	0	3	3
8155	1	2	0	1.684211	1	1
8156	1	3	2	0	3	3
8157	1	3	2	0	3	3
8158	1	5	1	4.84	5	2
8159	1	1	0	1.296296	1	1
8160	1	5	1	4.913043	5	2
8161	1	3	2	0	3	3
8163	1	5	1	4.925926	5	2
8164	1	3	2	0	3	3
8165	1	1	0	1	1	1
8166	1	3	2	0	3	3
23713	1	1	0	1.111111	1	1
23714	1	3	2	0	3	3
23715	1	1	0	1.066667	1	1
23735	1	3	2	0	3	3
23736	1	1	0	1.322581	1	1
23738	1	5	1	4.782609	5	2
23739	1	5	1	5	5	2
23740	1	1	0	1	1	1
23743	1	1	0	1	1	1
23752	1	5	1	4.733333	5	2
23755	1	5	1	4.384615	5	2
23758	1	5	1	4.904762	5	2
23759	1	3	2	0	3	3
26192	1	1	0	1.086957	1	1
27220	1	5	1	4.806452	5	2
28305	1	4	1	4.5	5	2
31360	1	1	0	1.153846	1	1
31930	1	5	1	5	5	2
31949	1	1	0	1.181818	1	1
7956	2	5	1	4.555556	5	2
8002	2	1	0	1.064516	1	1
8065	2	1	0	1.206897	1	1

APPENDIX VIII: RAW DATA

SkeletonID	Phase	Sex_All	Sex_Collapsed	WeightedSexA_Score	WeightedSexA	SexACollapsed
8069	2	5	1	5	5	2
8122	2	5	1	4.73913	5	2
20435	2	3	2	0	3	3
20436	2	5	1	4.612903	5	2
20439	2	3	2	0	3	3
20444	2	5	1	4.8	5	2
20450	2	5	1	4.73913	5	2
20458	2	1	0	1.105263	1	1
20469	2	1	0	1.222222	1	1
20472	2	3	2	0	3	3
20474	2	5	1	4.76	5	2
20504	2	5	1	5	5	2
20507	2	5	1	5	5	2
20509	2	5	1	4.789474	5	2
21001	2	3	2	0	3	3
21002	2	5	1	4.612903	5	2
21004	2	1	0	1	1	1
21005	2	5	1	4.826087	5	2
21008	2	5	1	5	5	2
21013	2	1	0	1.12	1	1
21024	2	1	0	1	1	1
21025	2	3	2	0	3	3
21026	2	5	1	4.826087	5	2
21033	2	5	1	4.483871	5	2
21034	2	4	1	3.818182	4	2
21035	2	5	1	4.764706	5	2
21044	2	5	1	4.548387	5	2
21045	2	3	2	0	3	3
21053	2	4	1	5	5	2
21056	2	3	2	0	3	3
21057	2	1	0	1.064516	1	1
21069	2	4	1	4.142857	5	2
21070	2	3	2	0	3	3
21074	2	2	0	1	1	1
21080	2	3	2	0	3	3
21082	2	5	1	4.814815	5	2
21083	2	1	0	1.526316	1	1
21086	2	3	2	0	3	3
21090	2	2	0	1.777778	1	1
21093	2	3	2	0	3	3
21096	2	3	2	0	3	3
21102	2	3	2	0	3	3

APPENDIX VIII: RAW DATA

SkeletonID	Phase	Sex_All	Sex_Collapsed	WeightedSexA_Score	WeightedSexA	SexACollapsed
21274	2	5	1	4.62963	5	2
21279	2	2	0	1.222222	1	1
26213	2	5	1	4.666667	5	2
26214	2	2	0	2	2	1
26252	2	2	0	1	1	1
26253	2	5	1	5	5	2
26254	2	4	1	5	5	2
26268	2	3	2	0	3	3
27207	2	4	1	4.6	5	2
28264	2	3	2	0	3	3
28281	2	3	2	0	3	3
28289	2	3	2	0	3	3
28294	2	5	1	4.903226	5	2
28297	2	4	1	4.555556	5	2
28326	2	2	0	1.363636	1	1
31363	2	1	0	1.066667	1	1
31422	2	4	1	5	5	2
31901	2	5	1	4.666667	5	2

APPENDIX VIII: RAW DATA

SkeletonID	WeightedSexB_Score	WeightedSexB	SexBCollapsed	AgeGroup	AgeGroupCollA
7962	1.806452	2	1	5	4
7963	2.225806	2	1	4	3
7964	4.096774	4	2	5	4
7965	0	3	3	2	2
7966	0	3	3	2	2
7967	3.709677	4	2	4	3
7968	0	3	3	3	2
7969	0	3	3	3	2
7970	4.741935	5	2	5	4
7971	0	3	3	2	2
7972	4.419355	5	2	7	5
7973	4.290323	5	2	7	5
7974	0	3	3	3	2
7975	1.387097	1	1	5	4
7976	3	3	3	6	7
7977	0	3	3	2	2
7978	1.709677	1	1	7	5
7979	0	3	3	1	1
7980	0	3	3	3	2
7981	0	3	3	2	2
7982	0	3	3	1	1
7983	2.419355	2	1	7	5
7984	0	3	3	3	2
7985	0	3	3	2	2
7986	4.516129	5	2	5	4
7987	0	3	3	1	1
7988	0	3	3	2	2
7989	1.967742	2	1	4	3
7990	4.741935	5	2	7	5
7994	3.645161	4	2	5	4
7996	4.677419	5	2	5	4
7997	4.483871	5	2	7	5
7998	3	3	3	6	7
7999	3	3	3	6	7
8003	2.225806	2	1	7	5
8017	3.645161	4	2	7	5
8025	4.354839	5	2	8	6
8026	1.258065	1	1	5	4
8031	0	3	3	3	2
8032	3	3	3	6	7
8034	0	3	3	1	1
8035	4.225806	5	2	7	5

APPENDIX VIII: RAW DATA

SkeletonID	WeightedSexB_Score	WeightedSexB	SexBCollapsed	AgeGroup	AgeGroupCollA
8036	0	3	3	2	2
8037	0	3	3	2	2
8038	1.709677	1	1	4	3
8039	4.612903	5	2	5	4
8041	1.83871	2	1	7	5
8042	0	3	3	1	1
8043	3.483871	4	2	5	4
8044	0	3	3	2	2
8045	1.387097	1	1	5	4
8047	0	3	3	2	2
8048	4.741935	5	2	5	4
8049	4.097	4	2	7	5
8050	0.387097	3	3	3	2
8051	4.806452	5	2	7	5
8052	0	3	3	2	2
8054	3	3	3	1	1
8055	0	3	3	2	2
8056	0	3	3	1	1
8057	1.129032	1	1	5	4
8060	4.935484	5	2	7	5
8061	4.935484	5	2	5	4
8062	4.806452	5	2	7	5
8063	0	3	3	2	2
8064	0	3	3	2	2
8067	0	3	3	2	2
8068	0	3	3	3	2
8070	0	3	3	3	2
8074	0	3	3	1	1
8075	4.483871	5	2	5	4
8076	3.516129	4	2	4	3
8077	3	3	3	4	3
8078	0	3	3	1	1
8079	0	3	3	1	1
8080	0	3	3	3	2
8081	0	3	3	3	2
8082	0	3	3	2	2
8083	4.483871	5	2	8	6
8084	1.580645	1	1	4	3
8085	3	3	3	6	7
8086	4.516129	5	2	4	3
8087	0	3	3	3	2
8088	1.258065	1	1	5	4

APPENDIX VIII: RAW DATA

SkeletonID	WeightedSexB_Score	WeightedSexB	SexBCollapsed	AgeGroup	AgeGroupCollA
8090	0	3	3	1	1
8091	0	3	3	1	1
8092	4.483871	5	2	5	4
8093	0	3	3	2	2
8094	3.580645	4	2	7	5
8095	0	3	3	2	2
8096	0	3	3	3	2
8097	3	3	3	4	3
8098	0	3	3	1	1
8099	2.903226	3	3	3	2
8100	1.322581	1	1	5	4
8102	0	3	3	1	1
8103	0	3	3	1	1
8104	4.483871	5	2	5	4
8106	1.580645	1	1	4	3
8107	1.258065	1	1	8	6
8110	2.16129	2	1	5	4
8111	3	3	3	4	3
8112	0	3	3	2	2
8113	2.677419	3	3	8	6
8114	0	3	3	3	2
8115	0	3	3	2	2
8117	0	3	3	2	2
8118	1.774194	1	1	5	4
8119	1.774194	1	1	7	5
8120	0	3	3	3	2
8121	0	3	3	3	2
8124	0	3	3	2	2
8125	1.935484	2	1	7	5
8126	0	3	3	2	2
8127	3.903226	4	2	5	4
8129	2.096774	2	1	7	5
8130	0	3	3	2	2
8131	4.612903	5	2	5	4
8132	0	3	3	1	1
8133	3.968	4	2	4	3
8134	0	3	3	1	1
8135	0	3	3	3	2
8136	1.516129	1	1	8	6
8137	0	3	3	1	1
8137	4.612903	5	2	7	5
8138	0	3	3	2	2

APPENDIX VIII: RAW DATA

SkeletonID	WeightedSexB_Score	WeightedSexB	SexBCollapsed	AgeGroup	AgeGroupCollA
8139	1.258065	1	1	5	4
8140	3.516129	4	2	4	3
8141	0	3	3	1	1
8142	1	1	1	5	4
8143	0	3	3	2	2
8144	0	3	3	1	1
8148	3	3	3	5	4
8149	2.870968	3	3	4	3
8154	0	3	3	2	2
8155	2.193548	2	1	5	4
8156	0	3	3	2	2
8157	0	3	3	2	2
8158	4.483871	5	2	7	5
8159	1.516129	1	1	7	5
8160	4.419355	5	2	5	4
8161	0	3	3	2	2
8163	4.677419	5	2	7	5
8164	0	3	3	2	2
8165	1.645161	1	1	7	5
8166	0	3	3	2	2
23713	1.354839	1	1	5	4
23714	0	3	3	2	2
23715	1.129032	1	1	8	6
23735	0	3	3	2	2
23736	1.322581	1	1	8	5
23738	4.322581	5	2	8	6
23739	4.225806	5	2	7	5
23740	1	1	1	8	6
23743	1	1	1	4	3
23752	4.677419	5	2	4	3
23755	4.16129	5	2	4	3
23758	4.290323	5	2	5	4
23759	3	3	3	6	7
26192	1.580645	1	1	8	6
27220	4.806452	5	2	5	4
28305	3.1935	3	3	6	7
31360	1.451613	1	1	5	4
31930	4.677419	5	2	5	4
31949	1.709677	1	1	8	6
7956	3.903226	4	2	5	4
8002	1.064516	1	1	8	6
8065	1.322581	1	1	7	5

APPENDIX VIII: RAW DATA

SkeletonID	WeightedSexB_Score	WeightedSexB	SexBCollapsed	AgeGroup	AgeGroupCollA
8069	4.806452	5	2	7	5
8122	4.29	5	2	5	4
20435	0	3	3	2	2
20436	4.612903	5	2	5	4
20439	0	3	3	1	1
20444	3.580645	4	2	8	6
20450	4.290323	5	2	5	4
20458	1.83871	2	1	5	4
20469	1.451613	1	1	5	4
20472	0	3	3	2	2
20474	4.419355	5	2	8	6
20504	4.225806	5	2	7	5
20507	4.354839	5	2	7	5
20509	4.096774	4	2	7	5
21001	0	3	3	3	2
21002	4.612903	5	2	8	6
21004	1.967742	2	1	4	3
21005	4.354839	5	2	8	6
21008	4.290323	5	2	7	5
21013	1.483871	1	1	8	6
21024	1.903226	2	1	5	4
21025	0	3	3	2	2
21026	4.354839	5	2	7	5
21033	4.483871	5	2	7	5
21034	3.580645	4	2	4	3
21035	3.967742	4	2	5	4
21044	4.548387	5	2	8	6
21045	0	3	3	3	2
21053	3.129032	3	3	7	5
21056	0	3	3	2	2
21057	1.064516	1	1	5	4
21069	3.774194	4	2	7	5
21070	0	3	3	2	2
21074	2.483871	2	1	4	3
21080	0	3	3	1	1
21082	4.580645	5	2	5	4
21083	2.096774	2	1	5	4
21086	0	3	3	2	2
21090	2.290323	2	1	4	3
21093	3	3	3	6	7
21096	0	3	3	2	2
21102	0	3	3	2	2

APPENDIX VIII: RAW DATA

SkeletonID	WeightedSexB_Score	WeightedSexB	SexBCollapsed	AgeGroup	AgeGroupCollA
21274	4.419355	5	2	8	6
21279	2.483871	2	1	4	3
26213	4.612903	5	2	5	4
26214	2.548387	3	3	4	3
26252	2.612903	3	3	7	5
26253	3.903226	4	2	5	4
26254	3.516129	4	2	8	6
26268	0	3	3	2	2
27207	3.516129	4	2	5	4
28264	0	3	3	2	2
28281	0	3	3	2	2
28289	0	3	3	3	2
28294	4.903226	5	2	7	5
28297	3.903226	4	2	5	4
28326	1.83871	2	1	4	3
31363	1.129032	1	1	5	4
31422	3.645161	4	2	8	6
31901	4.290323	5	2	5	4

APPENDIX VIII: RAW DATA

SkeletonID	AgeGroupCollB	AgeGroupCollC	AgeRange	AgePoint	Coffin	CoffinType	CoffinShape
7962	4	2	25-35	30	1	2	4
7963	3	1	15-18	16.5	0		
7964	4	2	17-25	21	0		
7965	2	1	2-4	3	1	4	5
7966	2	1	2-4	3	0		
7967	3	1	16-18	17	1	2	4
7968	2	1	7-9	8	1	2	7
7969	2	1	9-11	10	0		
7970	4	2	18-25	21.5	1	2	2
7971	2	1	2-3	2.5	0		
7972	4	2	35-40	37.5	1	1	3
7973	4	2	35-45	40	1	2	2
7974	2	1	4-8	6	1	2	4
7975	4	2	20-25	22.5	1	2	4
7976	4	2	18-79	48.5	1	2	7
7977	2	1	3-5	4	0		
7978	4	2	35-45	40	1	2	7
7979	1	1	.665-1.335	1	0		
7980	2	1	4-8	6	0		
7981	2	1	2-4	3	1	2	3
7982	1	1	.5-1	0.75	1	2	1
7983	4	2	35-45	40	0		
7984	2	1	4-8	6	0		
7985	2	1	1-2	1.5	0		
7986	4	2	18-25	21.5	0		
7987	1	1	0.5-1	0.75	0		
7988	2	1	1-2	1.5	0		
7989	3	1	12-15	13.5	0		
7990	4	2	35-55	45	1	2	3
7994	4	2	18-25	21.5	1	2	3
7996	4	2	25-35	30	1	2	1
7997	4	2	33-45	39	1	1	1
7998	4	2	18-79	48.5	0		
7999	4	2	18-79	48.5	0		
8003	4	2	45-50	47.5	1	2	2
8017	4	2	33-45	39	1	2	3
8025	4	2	50-74	62	1	2	3
8026	4	2	18-20	19	1	1	3
8031	2	1	5-10	7.5	1	1	7
8032	4	2	18-79	48.5	1	2	3
8034	1	1	.25-.75	0.5	0		
8035	4	2	33-49	41	1	2	4

APPENDIX VIII: RAW DATA

SkeletonID	AgeGroupCollB	AgeGroupCollC	AgeRange	AgePoint	Coffin	CoffinType	CoffinShape
8036	2	1	3.665-6.335	5	1	1	3
8037	2	1	3-4	3.5	1	1	3
8038	3	1	12-15	13.5	0		
8039	4	2	25-30	27.5	1	2	3
8041	4	2	33-45	39	1	1	1
8042	1	1	.5-1	0.75	1	1	3
8043	4	2	25-35	30	1	2	3
8044	2	1	1.335-2.665	2	0		
8045	4	2	25-35	30	1	2	6
8047	2	1	2-4	3	0		
8048	4	2	19-23	21	1	2	7
8049	4	2	35-45	40	1	1	7
8050	2	1	11-12	11.5	0		
8051	4	2	35-55	45	0		
8052	2	1	3-5	4	1	1	4
8054	1	1	0.5-1	0.75	1	1	3
8055	2	1	.665-1.335	1	1	1	7
8056	1	1	0.25-0.75	0.5	1	1	7
8057	4	2	18-21	19.5	0		
8060	4	2	33-45	39	1	2	3
8061	4	2	21-35	28	1	2	3
8062	4	2	40-50	45	1	2	1
8063	2	1	3.665-6.335	5	0		
8064	2	1	3-5	4	0		
8067	2	1	3-5	4	1	2	1
8068	2	1	4-8	6	1	2	1
8070	2	1	4-8	6	1	1	5
8074	1	1	.75-1	0.875	0		
8075	4	2	18-23	20.5	0		
8076	3	1	12-18	15	0		
8077	3	1	12-17	14.5	1	2	1
8078	1	1	0.5-1	0.75	1	1	7
8079	1	1	.75-1.3	1.025	0		
8080	2	1	5-9	7	1	2	1
8081	2	1	4.5-9	6.75	1	1	7
8082	2	1	1.5-2.5	2	0		
8083	4	2	45-60	52.5	1	1	1
8084	3	1	12-15	13.5	0		
8085	4	2	18-79	48.5	1	2	7
8086	3	1	12-15	13.5	1	2	3
8087	2	1	5-9	7	1	2	1
8088	4	2	25-35	30	1	2	4

APPENDIX VIII: RAW DATA

SkeletonID	AgeGroupCollB	AgeGroupCollC	AgeRange	AgePoint	Coffin	CoffinType	CoffinShape
8090	1	1	.25-.75	0.5	1	1	3
8091	1	1	.5-1	0.75	0		
8092	4	2	18-20	19	1	2	1
8093	2	1	1-2	1.5	1	1	7
8094	4	2	33-45	39	1	2	4
8095	2	1	2-4	3	1	2	7
8096	2	1	4-8	6	1	1	3
8097	3	1	14-18	16	1	2	7
8098	1	1	.25-.75	0.5	1	1	3
8099	2	1	0-7	3.5	0		
8100	4	2	21-23	22	1	1	7
8102	1	1	0-.2	0.1	1	1	7
8103	1	1	.5-1	0.75	0		
8104	4	2	25-35	30	1	2	1
8106	3	1	12-15	12	1	2	1
8107	4	2	45-65	55	0		
8110	4	2	18-25	21.5	0		
8111	3	1	11-15	12	0		
8112	2	1	3-5	4	1	2	2
8113	4	2	50-59	54.5	1	2	7
8114	2	1	4-8	6	0		
8115	2	1	1-2	1.5	1	1	3
8117	2	1	1.335-2.665	2	0		
8118	4	2	25-35	30	1	2	2
8119	4	2	33-45	39	0		
8120	2	1	5-9	7	1	2	3
8121	2	1	10-12	11	1	2	3
8124	2	1	2-4	3	1	1	3
8125	4	2	45-55	50	1	2	2
8126	2	1	2-4	3	0		
8127	4	2	25-35	30	0		
8129	4	2	33-45	39	1	2	2
8130	2	1	2-4	3	1	2	1
8131	4	2	20-30	25	1	2	1
8132	1	1	.25-.75	0.5	0		
8133	3	1	15-18	16.5	1	2	2
8134	1	1	.5-1.5	1	0		
8135	2	1	7-10	8.5	1	2	1
8136	4	2	60-79	69.5	1	2	1
8137	1	1	.25-.75	0.5	0		
8137	4	2	35-45	40	1	2	1
8138	2	1	3.5-4.5	4	1	2	1

APPENDIX VIII: RAW DATA

SkeletonID	AgeGroupCollB	AgeGroupCollC	AgeRange	AgePoint	Coffin	CoffinType	CoffinShape
8139	4	2	20-25	22.5	1	2	1
8140	3	1	15-18	16.5	1	2	1
8141	1	1	0-.1675	0.08375	0		
8142	4	2	18-35	26.5	1	2	4
8143	2	1	3-5	4	1	5	7
8144	1	1	.5-1	0.75	0		
8148	4	2	25-35	30	1	1	3
8149	3	1	12-18	15	0		
8154	2	1	1-2	1.5	0		
8155	4	2	18-25	21.5	1	1	7
8156	2	1	2-4	3	0		
8157	2	1	3-5	4	0		
8158	4	2	33-45	39	1	2	3
8159	4	2	35-45	40	1	2	3
8160	4	2	20-27	23.5	1	2	2
8161	2	1	2-4	3	1	1	3
8163	4	2	35-50	42.5	1	1	6
8164	2	1	3-5	4	0		
8165	4	2	33-45	39	1	2	1
8166	2	1	1.335-2.665	2	0		
23713	4	2	25-35	30	1	2	1
23714	2	1	3-5	4	1	3	7
23715	4	2	45-70	57.5	1	2	1
23735	2	1	1.5-2.5	2	1	3	3
23736	4	2	45-50	47.5	1	2	2
23738	4	2	45-66	55.5	1	2	1
23739	4	2	45-50	47.5	1	2	1
23740	4	2	45-60	52.5	1	2	1
23743	3	1	15-18	16.5	1	2	4
23752	3	1	13-16	14.5	1	2	1
23755	3	1	13-16	14.5	0		
23758	4	2	25-30	27.5	1	2	7
23759	4	2	18-79	48.5	1	2	7
26192	4	2	45-60	52.5	1	1	1
27220	4	2	20-30	25	1	2	4
28305	4	2	18-79	48.5	1	2	7
31360	4	2	25-35	30	1	2	3
31930	4	2	17-25	21	1	2	1
31949	4	2	45-59	52	1	2	1
7956	4	2	20-25	22.5	0		
8002	4	2	50-74	62	0		
8065	4	2	45-50	47.5	1	2	1

APPENDIX VIII: RAW DATA

SkeletonID	AgeGroupCollB	AgeGroupCollC	AgeRange	AgePoint	Coffin	CoffinType	CoffinShape
8069	4	2	33-45	39	1	2	4
8122	4	2	17-24	20.5	1	2	7
20435	2	1	1-2	1.5	1	1	6
20436	4	2	18-23	20.5	1	2	3
20439	1	1	.665-1.335	1	0		
20444	4	2	45-60	52.5	1	2	1
20450	4	2	25-35	30	1	2	1
20458	4	2	25-35	30	0		
20469	4	2	30-35	32.5	1	2	3
20472	2	1	2-4	3	0		
20474	4	2	45-60	52.5	0		
20504	4	2	35-45	40	0		
20507	4	2	40-45	42.5	0		
20509	4	2	33-45	39	1	2	3
21001	2	1	7-9	8	0		
21002	4	2	45-65	55	1	2	2
21004	3	1	15-18	16.5	1	2	1
21005	4	2	50-60	55	0		
21008	4	2	35-45	40	0		
21013	4	2	45-60	52.5	0		
21024	4	2	19-24	21.5	1	2	7
21025	2	1	1-2	1.5	1	2	1
21026	4	2	35-45	40	0		
21033	4	2	40-45	42.5	0		
21034	3	1	14-18	16	1	2	4
21035	4	2	17-25	21	1	2	1
21044	4	2	45-60	52.5	0		
21045	2	1	4-8	6	1	1	1
21053	4	2	35-45	40	1	2	7
21056	2	1	1-2	1.5	0		
21057	4	2	17-30	23.5	0		
21069	4	2	40-45	42.5	1	2	1
21070	2	1	2-4	3	0		
21074	3	1	10-15	12.5	1	2	4
21080	1	1	.5-1	0.75	0		
21082	4	2	25-35	30	0		
21083	4	2	20-25	22.5	0		
21086	2	1	2-4	3	0		
21090	3	1	12-15	13.5	1	2	1
21093	4	2	18-79	48.5	1	2	7
21096	2	1	0.5-1.5	1	0		
21102	2	1	1.5-2.5	2	1	2	1

APPENDIX VIII: RAW DATA

SkeletonID	AgeGroupCollB	AgeGroupCollC	AgeRange	AgePoint	Coffin	CoffinType	CoffinShape
21274	4	2	45-60	52.5	0		
21279	3	1	14-17	15.5	1	5	7
26213	4	2	30-35	32.5	1	1	1
26214	3	1	12-17	14.5	1	1	1
26252	4	2	45-55	50	0		
26253	4	2	25-35	30	0		
26254	4	2	45-65	55	0		
26268	2	1	2-3	2.5	0		
27207	4	2	18-25	21.5	1	1	1
28264	2	1	3-5	4	0		
28281	2	1	3.665-6.335	5	1	1	1
28289	2	1	10-11	10.5	0		
28294	4	2	35-50	42.5	1	2	1
28297	4	2	18-23	20.5	0		
28326	3	1	15-17	16	0		
31363	4	2	16-23	19.5	0		
31422	4	2	49-65	57	0		
31901	4	2	17-25	21	0		

APPENDIX VIII: RAW DATA

SkeletonID	BurialOrientation	BuriaPosition	HeadOrientation	HandPlacement	FeetPlacement
7962	112	1		1	1
7963	119	1	5	1	1
7964	115	1	1	1	1
7965	110	1	1		
7966	108	1	3		
7967	94	1	5	1	
7968	94	1	3	3	
7969	180	1			1
7970	350	1		1	2
7971	92	1		1	2
7972	121	1	3	1	2
7973	109	1	5	1	
7974	101	1	3	1	1
7975	94	1	3	1	1
7976					
7977	99	1	3	5	
7978	97	1	3	1	2
7979	10	1	1	1	
7980	90	1	3	1	1
7981	99	1	1	5	1
7982	106	1	1	5	
7983	72	1	3	1	
7984	104	1	3	1	1
7985	108	1	3	1	1
7986	104	1	5	1	1
7987	86	5	3		
7988	117	1	4	4	
7989	20	1	3	2	1
7990	102	1	1	1	1
7994	100	1		1	3
7996	110	1	1	1	1
7997	110	1	5		
7998	110	1			
7999	90				
8003	90	1	1	1	1
8017	90	1	1		
8025	130	1	1	1	1
8026	275	1	3	1	
8031	0	1			
8032	0				
8034	135	4	4	1	3
8035	90	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	BurialOrientation	BuriaPosition	HeadOrientation	HandPlacement	FeetPlacement
8036	78	1	5		3
8037	170	1			
8038	180	1	1	1	1
8039	100	1	1	1	
8041	120	1	1	2	
8042	90	1	1		
8043	100	1		1	1
8044	350	1			1
8045	90	1	5	1	1
8047	348	1	3	3	1
8048	0	1		1	1
8049	105	1	1	1	
8050	180	1	3		3
8051	86	1	4	1	1
8052	97	1	1	3	1
8054	0				
8055	114	1	3	1	
8056	124	1		1	1
8057	90	1	1	1	1
8060	5	1			1
8061	282	1	1	1	1
8062	78	1	3	1	2
8063	100	1			1
8064	90	1	1		
8067	110	1	3		
8068	30	1	1	1	1
8070	272	1	4	3	3
8074	0	1		1	1
8075	90	1	1	4	1
8076	88	1	1	4	1
8077	108	1	1		1
8078	180	1			
8079	93	1	1	1	1
8080	208	1			3
8081	93	1	1	1	1
8082	180	1	1	3	2
8083	100	1	1	3	1
8084	94	1	3	4	1
8085	150	1			
8086	97	1	5	1	
8087	144	1		1	1
8088	48	1	1	2	1

APPENDIX VIII: RAW DATA

SkeletonID	BurialOrientation	BuriaPosition	HeadOrientation	HandPlacement	FeetPlacement
8090	93	1	3		
8091	90	1		5	
8092	87	1	1	1	3
8093	94	1			
8094	10	1	3	4	
8095	60	1		1	1
8096	84	1	1	1	1
8097	94	1			1
8098	78	1	1		
8099	90				
8100	100	1	1	1	1
8102	0	1	1		
8103	98	1	3		1
8104	80	2	4	1	
8106	79	1	5		3
8107	180	1			
8110	82	1			
8111	78	1	5	3	
8112	94	1	5		1
8113	22	1		1	1
8114	78	1	5	5	
8115	98	1	1	1	1
8117	173	1	3	5	1
8118	96	1	4	1	1
8119	87	1	1	1	1
8120	115	1	5	2	
8121	114	1	1	1	
8124	91	1	3	1	1
8125	94	1	4	1	1
8126	90	1	3		6
8127	90	1	5	1	1
8129	96	1	1	1	1
8130	66	1	5		
8131	78	1	1	1	1
8132	45	1	4		
8133	117	1	1	1	2
8134	32	1			
8135	90	1	3	2	2
8136	90	1	4	1	
8137		6	4		
8137	104	1	4	1	1
8138	96	6	4	4	

APPENDIX VIII: RAW DATA

SkeletonID	BurialOrientation	BuriaPosition	HeadOrientation	HandPlacement	FeetPlacement
8139	99	1		1	1
8140	165	1	3	1	1
8141	63	1			
8142	99	1	1	1	3
8143	79	1	3		
8144	318	1	3	1	
8148	120	1	3	2	1
8149	98	1	5	1	1
8154	85	1	4	1	1
8155	353	1			
8156	96	1	3		
8157	127	1			
8158	95	1			6
8159	124	1	5	1	1
8160	96	1	1	1	1
8161	80	1	1		
8163	104	1	3	1	6
8164	90	1	3		
8165	98	1	1	1	1
8166	127	1	3		
23713	80	1	1	1	1
23714	85	6	4	1	1
23715	120	1	5	1	1
23735	120	1	3	1	
23736	105	1	3	1	1
23738	130	1	5	1	1
23739	150	1	1	1	1
23740	100	1	5	1	1
23743	94	1	3		
23752	105	1	3		
23755	100	1	1	1	
23758	30	1		1	1
23759		1			1
26192	125	1	3	3	1
27220	115	1	1	1	1
28305	108	1			1
31360	105	1	3	1	1
31930	99	1	1	2	1
31949	94	1	5	2	1
7956	22	1	3	1	1
8002	340	1	1		1
8065	90	1	1	1	

APPENDIX VIII: RAW DATA

SkeletonID	BurialOrientation	BuriaPosition	HeadOrientation	HandPlacement	FeetPlacement
8069	90	1	1	1	1
8122	93	1	5		
20435	90	1	3	1	1
20436	90	1	5	1	1
20439	135	4	4		
20444	230	1	3		1
20450	105	1	4	1	1
20458	90	1	5	1	1
20469	120	1	5	1	1
20472	265	1	3	1	1
20474	270	1	1	5	1
20504	90	1	1	4	1
20507	90	1		1	1
20509	90	1	1	1	1
21001	90	1	3	5	1
21002	90	1	3	1	1
21004	110	1		1	1
21005	90	1	3	1	1
21008	90	1		3	1
21013	100	1	1	3	1
21024	135	1		1	
21025	90	1	1	5	2
21026	70	1	1	5	1
21033	40	1	3	5	2
21034	90	1	1	1	
21035	90	1		2	1
21044	0	1	1	1	1
21045	90	1	1	1	1
21053		1	3		
21056	90	1	1	5	1
21057		1	5	5	1
21069	90	1	4	1	1
21070		1	1	1	1
21074	67	1	3	5	
21080	90	1	1	2	1
21082	90	1	1	1	
21083	150	1	1	5	1
21086	135	1		3	1
21090	90	1	1	1	2
21093	90	1		1	1
21096	90	1	5		
21102	90	1	3		1

APPENDIX VIII: RAW DATA

SkeletonID	BurialOrientation	BuriaPosition	HeadOrientation	HandPlacement	FeetPlacement
21274	45	1	1	5	1
21279	90	1		1	1
26213	120	1	1	1	
26214	120	1	3	1	3
26252	110	1	1	1	
26253	100	1	1		1
26254	110	1	4		
26268	100	1			
27207	85		5		
28264	100	1		3	1
28281	105	1	1	1	1
28289	66	1	1		1
28294	105	1	5	1	
28297	90	1	1	5	
28326	45	1	3	5	2
31363	94	1	5	1	
31422	83	1	1	1	1
31901	108	1	3	1	1

APPENDIX VIII: RAW DATA

SkeletonID	ItemYN	VesselYN	Scarab	Amulet	Jewelry	Cowrie	Bead_Single	Bead_Multi	Vessel
7962	0	0	0	0	0	0	0	0	0
7963	0	0	0	0	0	0	0	0	0
7964	1	0	0	0	0	0	1	0	0
7965	1	0	0	0	1	0	0	0	0
7966	1	0	0	1	0	0	1	0	0
7967	1	0	0	0	0	0	1	0	0
7968	1	0	0	1	0	0	0	0	0
7969	0	0	0	0	0	0	0	0	0
7970	0	0	0	0	0	0	0	0	0
7971	0	0	0	0	0	0	0	0	0
7972	0	0	0	0	0	0	0	0	0
7973	0	0	0	0	0	0	0	0	0
7974	1	0	0	1	0	0	0	1	0
7975	0	0	0	0	0	0	0	0	0
7976	0	0	0	0	0	0	0	0	0
7977	0	0	0	0	0	0	0	0	0
7978	0	0	0	0	0	0	0	0	0
7979	1	0	0	0	0	1	0	1	0
7980	1	0	0	1	0	0	0	0	0
7981	1	0	0	0	1	0	0	1	0
7982	1	0	0	1	1	1	0	0	0
7983	0	0	0	0	0	0	0	0	0
7984	0	0	0	0	0	0	0	0	0
7985	0	0	0	0	0	0	0	0	0
7986	0	0	0	0	0	0	0	0	0
7987	0	0	0	0	0	0	0	0	0
7988	1	0	0	0	0	1	0	1	0
7989	0	0	0	0	0	0	0	0	0
7990	0	0	0	0	0	0	0	0	0
7994	0	0	0	0	0	0	0	0	0
7996	0	0	0	0	0	0	0	0	0
7997	0	1	0	0	0	0	0	0	1
7998	0	0	0	0	0	0	0	0	0
7999	0	0	0	0	0	0	0	0	0
8003	0	0	0	0	0	0	0	0	0
8017	0	0	0	0	0	0	0	0	0
8025	0	0	0	0	0	0	0	0	0
8026	1	0	0	0	0	0	1	0	0
8031	1	0	0	0	1	0	0	1	0
8032	0	0	0	0	0	0	0	0	0
8034	0	0	0	0	0	0	0	0	0
8035	0	0	0	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	ItemYN	VesselYN	Scarab	Amulet	Jewelry	Cowrie	Bead_Single	Bead_Multi	Vessel
8036	1	1	0	1	1	0	0	1	1
8037	1	0	0	1	1	1	0	1	0
8038	1	0	0	0	0	0	1	0	0
8039	0	0	0	0	0	0	0	0	0
8041	0	0	0	0	0	0	0	0	0
8042	0	0	0	0	0	0	0	0	0
8043	1	0	0	0	0	0	0	1	0
8044	1	0	1	0	0	0	0	0	0
8045	1	1	0	0	0	0	1	0	1
8047	1	0	0	1	0	0	0	1	0
8048	0	0	0	0	0	0	0	0	0
8049	0	0	0	0	0	0	0	0	0
8050	0	0	0	0	0	0	0	0	0
8051	0	1	0	0	0	0	0	0	1
8052	1	0	0	0	0	0	0	1	0
8054	0	0	0	0	0	0	0	0	0
8055	1	0	0	0	0	1	0	0	0
8056	1	0	0	0	0	1	0	0	0
8057	1	0	0	1	0	0	0	1	0
8060	0	0	0	0	0	0	0	0	0
8061	0	0	0	0	0	0	0	0	0
8062	0	0	0	0	0	0	0	0	0
8063	0	0	0	0	0	0	0	0	0
8064	0	0	0	0	0	0	0	0	0
8067	1	0	0	1	0	0	0	0	0
8068	1	0	0	0	0	1	1	0	0
8070	1	0	0	0	1	0	0	0	0
8074	1	0	0	0	0	1	0	1	0
8075	0	0	0	0	0	0	0	0	0
8076	0	1	0	0	0	0	0	0	1
8077	1	0	0	0	0	0	0	1	0
8078	1	0	0	1	0	1	0	0	0
8079	1	0	0	0	0	0	1	0	0
8080	0	0	0	0	0	0	0	0	0
8081	0	0	0	0	0	0	0	0	0
8082	1	0	0	0	0	0	1	0	0
8083	0	0	0	0	0	0	0	0	0
8084	1	0	0	0	0	1	0	0	0
8085	0	0	0	0	0	0	0	0	0
8086	1	0	0	0	0	1	0	0	0
8087	1	0	0	0	1	0	1	0	0
8088	0	0	0	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	ItemYN	VesselYN	Scarab	Amulet	Jewelry	Cowrie	Bead_Single	Bead_Multi	Vessel
8090	0	0	0	0	0	0	0	0	0
8091	1	0	0	0	1	1	0	1	0
8092	1	0	0	0	1	0	0	0	0
8093	0	0	0	0	0	0	0	0	0
8094	0	0	0	0	0	0	0	0	0
8095	1	0	0	1	0	0	0	0	0
8096	0	0	0	0	0	0	0	0	0
8097	1	0	0	0	0	0	0	1	0
8098	0	0	0	0	0	0	0	0	0
8099	0	0	0	0	0	0	0	0	0
8100	1	0	0	1	0	0	0	1	0
8102	0	0	0	0	0	0	0	0	0
8103	0	0	0	0	0	0	0	0	0
8104	0	0	0	0	0	0	0	0	0
8106	0	0	0	0	0	0	0	0	0
8107	0	0	0	0	0	0	0	0	0
8110	0	0	0	0	0	0	0	0	0
8111	0	0	0	0	0	0	0	0	0
8112	1	0	0	0	0	1	1	0	0
8113	0	0	0	0	0	0	0	0	0
8114	1	0	0	1	0	1	0	1	0
8115	1	0	0	1	1	1	0	1	0
8117	0	0	0	0	0	0	0	0	0
8118	0	0	0	0	0	0	0	0	0
8119	0	0	0	0	0	0	0	0	0
8120	1	0	0	0	0	0	0	0	0
8121	1	0	0	1	0	0	0	0	0
8124	0	0	0	0	0	0	0	0	0
8125	1	0	0	0	0	0	1	0	0
8126	1	0	0	0	0	0	1	0	0
8127	0	0	0	0	0	0	0	0	0
8129	0	0	0	0	0	0	0	0	0
8130	0	1	0	0	0	0	0	0	1
8131	1	0	0	0	1	0	0	1	0
8132	0	0	0	0	0	0	0	0	0
8133	0	0	0	0	0	0	0	0	0
8134	0	0	0	0	0	0	0	0	0
8135	0	0	0	0	0	0	0	0	0
8136	1	0	0	0	0	1	0	0	0
8137	0	0	0	0	0	0	0	0	0
8137	1	0	0	0	0	0	0	0	0
8138	0	0	0	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	ItemYN	VesselYN	Scarab	Amulet	Jewelry	Cowrie	Bead_Single	Bead_Multi	Vessel
8139	0	0	0	0	0	0	0	0	0
8140	1	0	0	0	0	0	0	0	0
8141	1	0	0	1	0	0	0	0	0
8142	1	0	0	0	0	0	0	1	0
8143	0	0	0	0	0	0	0	0	0
8144	1	0	0	0	0	1	0	1	0
8148	0	0	0	0	0	0	0	0	0
8149	0	0	0	0	0	0	0	0	0
8154	1	0	0	0	0	0	0	1	0
8155	0	0	0	0	0	0	0	0	0
8156	1	0	0	0	0	0	1	0	0
8157	1	0	0	0	0	1	0	1	0
8158	0	0	0	0	0	0	0	0	0
8159	0	0	0	0	0	0	0	0	0
8160	0	0	0	0	0	0	0	0	0
8161	1	0	0	0	0	1	0	1	0
8163	1	0	0	0	0	0	1	0	0
8164	0	0	0	0	0	0	0	0	0
8165	0	0	0	0	0	0	0	0	0
8166	1	0	0	1	0	1	1	0	0
23713	0	0	0	0	0	0	0	0	0
23714	1	0	0	1	0	0	0	0	0
23715	0	1	0	0	0	0	0	0	1
23735	1	0	0	0	1	1	0	1	0
23736	0	0	0	0	0	0	0	0	0
23738	0	0	0	0	0	0	0	0	0
23739	0	0	0	0	0	0	0	0	0
23740	1	0	0	0	0	0	0	0	0
23743	1	0	0	1	1	1	0	1	0
23752	0	0	0	0	0	0	0	0	0
23755	1	0	0	0	1	0	0	0	0
23758	0	0	0	0	0	0	0	0	0
23759	0	0	0	0	0	0	0	0	0
26192	0	0	0	0	0	0	0	0	0
27220	0	1	0	0	0	0	0	0	1
28305	0	1	0	0	0	0	0	0	1
31360	0	0	0	0	0	0	0	0	0
31930	0	1	0	0	0	0	0	0	1
31949	0	1	0	0	0	0	0	0	1
7956	1	1	0	0	0	0	1	0	1
8002	0	0	0	0	0	0	0	0	0
8065	0	0	0	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	ItemYN	VesselYN	Scarab	Amulet	Jewelry	Cowrie	Bead_Single	Bead_Multi	Vessel
8069	0	1	0	0	0	0	0	0	1
8122	0	1	0	0	0	0	0	0	1
20435	1	0	1	1	1	1	0	1	0
20436	0	0	0	0	0	0	0	0	0
20439	1	0	0	1	0	0	0	1	0
20444	0	0	0	0	0	0	0	0	0
20450	0	0	0	0	0	0	0	0	0
20458	0	0	0	0	0	0	0	0	0
20469	1	0	0	0	0	0	1	0	0
20472	0	0	0	0	0	0	0	0	0
20474	0	1	0	0	0	0	0	0	1
20504	1	0	0	0	0	0	0	1	0
20507	0	0	0	0	0	0	0	0	0
20509	0	0	0	0	0	0	0	0	0
21001	0	1	0	0	0	0	0	0	1
21002	0	0	0	0	0	0	0	0	0
21004	0	0	0	0	0	0	0	0	0
21005	0	0	0	0	0	0	0	0	0
21008	0	0	0	0	0	0	0	0	0
21013	0	0	0	0	0	0	0	0	0
21024	0	0	0	0	0	0	0	0	0
21025	1	0	0	1	1	1	0	0	0
21026	0	0	0	0	0	0	0	0	0
21033	1	0	0	0	0	0	0	1	0
21034	0	0	0	0	0	0	0	0	0
21035	1	0	0	0	0	1	0	1	0
21044	0	1	0	0	0	0	0	0	1
21045	0	0	0	0	0	0	0	0	0
21053	0	0	0	0	0	0	0	0	0
21056	1	1	0	0	0	0	1	0	1
21057	0	0	0	0	0	0	0	0	0
21069	1	0	0	0	0	0	1	0	0
21070	1	0	0	1	1	1	0	0	0
21074	1	0	0	0	0	0	0	1	0
21080	1	0	0	0	1	0	0	0	0
21082	1	1	0	0	0	0	0	1	1
21083	0	1	0	0	0	0	0	0	1
21086	1	0	0	1	1	1	0	1	0
21090	0	0	0	0	0	0	0	0	0
21093	0	0	0	0	0	0	0	0	0
21096	1	0	0	1	0	0	0	1	0
21102	1	0	0	0	1	1	0	1	0

APPENDIX VIII: RAW DATA

SkeletonID	ItemYN	VesselYN	Scarab	Amulet	Jewelry	Cowrie	Bead_Single	Bead_Multi	Vessel
21274	1	0	0	0	0	0	0	1	0
21279	0	0	0	0	0	0	0	0	0
26213	0	0	0	0	0	0	0	0	0
26214	0	0	0	0	0	0	0	0	0
26252	0	1	0	0	0	0	0	0	1
26253	1	1	0	0	0	1	1	0	1
26254	0	1	0	0	0	0	0	0	1
26268	0	1	0	0	0	0	0	0	1
27207	0	0	0	0	0	0	0	0	0
28264	1	0	1	0	1	1	0	0	0
28281	0	0	0	0	0	0	0	0	0
28289	1	1	0	0	0	0	1	0	1
28294	0	0	0	0	0	0	0	0	0
28297	1	1	1	0	0	1	1	0	1
28326	1	0	0	0	0	0	0	0	0
31363	0	1	0	0	0	0	0	0	1
31422	0	0	0	0	0	0	0	0	0
31901	1	0	0	0	0	1	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Item_Other	Stature	Index_DT	Index_AT	Index_MT	Index_Total	LEH6	LEH7	LEH8
7962	0	152.88	0.067	0	0	0.066667	0	0	0
7963	0	148.83	0	0	0	0			
7964	0	160.776	0	0	0	0	0	0	0
7965	0				0	0			
7966	0				0	0			
7967	0		0.083	0	0	0.083333	0		
7968	0		0	0	0	0		0	0
7969	0					0			
7970	0	166.65	0	0	0	0	2	0	2
7971	0					0			
7972	0	166.71	0	0	0.031	0.03125	0	0	0
7973	0		0	0	0.062	0.0625	0	0	
7974	0		0	0	0	0	0		0
7975	0		0	0	0	0	0	0	0
7976	0					0			
7977	0				0	0		0	0
7978	0	142.83	0.1	0.2	0.625	0.925			
7979	0					0			
7980	0		0	0	0	0			
7981	0				0	0			
7982	0				0	0			
7983	0	144.72	0	0.067	0.258	0.324731	0	0	0
7984	0		0	0	0	0			
7985	0				0	0			
7986	0	164.6	0.033	0	0.031	0.064583	2	0	0
7987	0				0	0			
7988	0				0	0			
7989	0	143.42	0.036	0	0	0.035714	1	2	0
7990	0	161.41	0.111	0	0	0.111111			
7994	0		0	0	0	0	0		0
7996	0	164.63	0	0.034	0	0.034483	0	0	
7997	0		0	0	0	0	0	0	0
7998	0					0			
7999	0					0			
8003	0		0	0	0	0		0	0
8017	0		0	0	0.094	0.09375			
8025	0		0	0	0.688	0.6875			
8026	0	159.63	0	0	0	0	1	0	0
8031	0					0			
8032	0		0	0	0	0			
8034	0					0			
8035	0	170.384	0.038	0	0.031	0.069712	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Item_Other	Stature	Index_DT	Index_AT	Index_MT	Index_Total	LEH6	LEH7	LEH8
8036	0				0	0			
8037	0				0	0		0	
8038	0	142.62	0.036	0	0	0.035714	0	0	2
8039	0	167.411	0.033	0	0	0.033333	0	0	0
8041	0		0.091	0	0	0.090909	0		
8042	0				0	0			
8043	0	151.574				0			
8044	0				0	0			
8045	0	154.5	0	0	0	0			0
8047	0				0	0			
8048	0	164.6	0.107	0	0.034	0.141626	0	0	0
8049	0	170.17				0			
8050	0	136.95	0	0	0	0	0	2	2
8051	0	163.194	0.211	0.053	0.231	0.493927		0	0
8052	0				0	0			
8054	0					0			
8055	0					0			
8056	0					0			
8057	0	155.31	0.125	0	0	0.125	2	2	2
8060	0	167.64	0.033	0	0.062	0.095833	2	0	0
8061	0	162.05	0	0	0	0	0	0	0
8062	0	157.58	0	0	0.267	0.266667			2
8063	0				0	0			
8064	0				0	0		0	0
8067	0				0	0			
8068	0		0	0	0	0	2		2
8070	0		0	0	0	0	0	0	2
8074	0					0			
8075	0	167.67	0	0	0	0	0	2	2
8076	0	151.844	0	0	0	0	0	2	2
8077	0		0	0	0	0			
8078	0				0	0			
8079	0				0	0			
8080	0		0	0	0	0			
8081	0		0	0	0	0			
8082	0				0	0			
8083	0	170.144	0.103	0	0.094	0.197198	0	0	0
8084	0		0.036	0	0	0.035714	2	2	2
8085	0					0			
8086	0		0	0	0	0			
8087	0		0	0	0	0			
8088	0	158.28	0	0	0	0			

APPENDIX VIII: RAW DATA

SkeletonID	Item_Other	Stature	Index_DT	Index_AT	Index_MT	Index_Total	LEH6	LEH7	LEH8
8090	0					0			
8091	0					0			
8092	0	175.58	0.156	0	0	0.15625	0	0	0
8093	0					0			
8094	0	159.98	0	0.045	0	0.045455	0	0	
8095	0					0			
8096	0				0	0	2		0
8097	0	158.73				0			
8098	0					0			
8099	0					0			
8100	0	153.69	0.032	0.032	0	0.064516	0	0	0
8102	0					0			
8103	0					0			
8104	0		0	0	0	0			
8106	0		0	0	0	0	2	2	2
8107	0		0	0	0.08	0.08			
8110	0		0	0	0	0	0	0	0
8111	0		0	0	0	0	0	0	0
8112	0				0	0			1
8113	0	152.22				0			
8114	0		0	0	0	0			
8115	0				0	0			
8117	0				0	0			
8118	0	149.64	0	0	0	0	0	0	0
8119	0	154.5	0.045	0	0.188	0.232955	0	0	0
8120	1		0.143	0	0	0.142857			
8121	0		0	0	0	0	0		
8124	0				0	0			
8125	0	145.47	0	0	0.25	0.25			
8126	1				0	0	0	0	2
8127	0	162.31	0.125	0	0.2	0.325			
8129	0	157.74	0	0	0.069	0.068966	0	0	0
8130	0				0	0			
8131	0	168.18	0	0	0.031	0.03125	0	0	2
8132	0					0			
8133	0	165.11	0	0	0	0	0	0	0
8134	0					0			
8135	0		0	0	0	0	0	0	0
8136	0	155.37	0	0	0.1	0.1	0	0	0
8137	0					0			
8137	1	163.328	0	0	0	0			0
8138	0				0	0			

APPENDIX VIII: RAW DATA

SkeletonID	Item_Other	Stature	Index_DT	Index_AT	Index_MT	Index_Total	LEH6	LEH7	LEH8
8139	0	153.15	0	0	0	0	0	0	0
8140	1	157.97	0	0	0	0	0	0	0
8141	0					0			
8142	0	152.07	0.071	0	0.062	0.133929	1	1	2
8143	0				0	0	2	2	2
8144	0				0	0			
8148	0		0	0	0	0			
8149	0		0.115	0	0	0.115385	0	0	0
8154	0				0	0			
8155	0		0	0	0	0			0
8156	0				0	0			
8157	0				0	0		0	
8158	0	165.34	0.667	0	0	0.666667			
8159	0	165.78	0.091	0	0.031	0.122159	0	0	0
8160	0	168.94	0.067	0	0.031	0.097917	0	0	0
8161	0					0			
8163	0	168.7	0	0	0	0	0	0	0
8164	0				0	0			0
8165	0	146.13	0	0	0	0			
8166	0				0	0			
23713	0	152.34	0	0	0	0	0	0	0
23714	0				0	0			
23715	0	159.06	0	0	0.312	0.3125			
23735	0		0	0	0	0			
23736	0	158.58	0.136	0.091	0.25	0.477273		0	
23738	0	166.65	0.05	0.05	0.286	0.385714			
23739	0	161	0.083	0	0.219	0.302083			
23740	1	151.53	0	0	0.219	0.21875	0		
23743	1		0.033	0	0	0.033333	0	0	0
23752	0	162.05	0	0	0	0	0		
23755	0		0	0	0	0	0	0	0
23758	0	161.8				0			
23759	0					0			
26192	0	150.855	0.062	0	0.448	0.510776	0	0	0
27220	0		0	0	0	0	0	0	0
28305	0					0			
31360	0	163.14	0	0	0	0	0	0	2
31930	0	174.812	0	0	0	0			
31949	0	150.21	0	0	0.296	0.296296		0	0
7956	0	162.08	0.033	0	0.062	0.095833	0	0	0
8002	0		0.087	0	0.281	0.368207	0		
8065	0		0.048	0.095	0.031	0.174107	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Item_Other	Stature	Index_DT	Index_AT	Index_MT	Index_Total	LEH6	LEH7	LEH8
8069	0	162.532	0	0.1	0.444	0.544444			
8122	0		0	0	0.031	0.03125			2
20435	0				0	0			
20436	0	160.01	0	0	0	0	0	0	0
20439	0				0	0			
20444	0		0	0	0.156	0.15625	0	0	0
20450	0	165.37	0.111	0.037	0.031	0.179398	0	0	0
20458	0	146.94	0	0	0.062	0.0625	0	0	0
20469	0		0	0	0	0	0		2
20472	0					0			
20474	0	173.49	0	0	0	0			0
20504	0		0.111	0	0.273	0.383838			
20507	0	161.81				0			
20509	0	171.72	0.032	0.032	0.031	0.095766	0	0	0
21001	0		0.5	0	0	0.5	2		
21002	0	166.42	0	0.045	0.156	0.201705		0	0
21004	0	153.96				0			
21005	0	165.66	1	0	0.304	1.304348			
21008	0	159.16				0			
21013	0	159.63	0.5	0	0.625	1.125			0
21024	0					0			
21025	0				0	0			
21026	0	165.79	0	0	0	0			
21033	0	154.16	0.238	0.095	0.188	0.520833		0	0
21034	0		0	0	0.031	0.03125			0
21035	0	160.52				0			
21044	0	157.53	0	0	0.375	0.375			
21045	0		0	0	0	0			
21053	0		0.2	0.067	0	0.266667	2	0	0
21056	0				0	0			
21057	0	152.88	0	0	0	0	0		
21069	0	145.22	0	0.04	0.138	0.177931	0	0	0
21070	0				0	0			
21074	1		0	0	0	0	0	0	2
21080	0					0			
21082	0		0.071	0	0.176	0.247899	0		
21083	0	159.09	0.043	0	0	0.043478	0	0	0
21086	0				0	0			
21090	0	153.15	0	0	0	0	2	0	
21093	0					0			
21096	0				0	0			
21102	0				0	0			

APPENDIX VIII: RAW DATA

SkeletonID	Item_Other	Stature	Index_DT	Index_AT	Index_MT	Index_Total	LEH6	LEH7	LEH8
21274	0	163	0	0	0.286	0.285714	0		
21279	0	152.34				0			
26213	0	155.01	0.034	0	0	0.034483			
26214	0		0	0	0	0	0	0	0
26252	0		0	0	0.444	0.444444			
26253	0	164.604	0	0	0	0	0		
26254	0	165.91	0	0	0	0	0	0	0
26268	0					0			
27207	0		0.094	0	0	0.09375	0	0	0
28264	0				0	0		0	0
28281	0				0	0		0	0
28289	0		0	0	0	0		0	
28294	0	155.072	0	0	0	0			
28297	0		0.133	0.033	0.062	0.229167	0	0	0
28326	1		0	0	0	0	0		
31363	0		0	0	0.25	0.25			
31422	0	159.156	0	0	0.344	0.34375	0		
31901	0		0.143	0	0.125	0.267857	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	LEH9	LEH10	LEH11	LEH22	LEH23	LEH24	LEH25	LEH26	LEH27	LEH_Ind_Sever
7962	0	0	0	0	0	0	0	0	0	0
7963	0	0	0	0	0	0	0	0	0	0
7964	0	0	0	0	0	0	0	0	0	0
7965										
7966										
7967			0	0	0	0	0	0	0	0
7968	0	0			0	0	0	0		0
7969										
7970	2	0	2	2	0	0	0	0	2	2
7971										
7972	0	0	0	0	0	0	0	0	0	0
7973		0	0	0	0	0	0	0	0	0
7974	0		0			0	0			
7975	0	0	0	0	0	0	0	0	0	0
7976										
7977	0	0			0	0	0	0		0
7978				0	0	0	0	0	0	
7979										
7980										
7981										
7982										
7983	0			0						
7984				0					0	
7985										
7986	0	0	2	2	0	0	0	0		2
7987										
7988										
7989	1	0	2	0	0	0	0	0	0	2
7990		0	0	0	0	0	0	0	0	0
7994	0	0	0	0	0	0	0	0	0	0
7996		0	0	0	0	0	0	0	0	0
7997	0	0	0	0	0	0	0	0	0	0
7998										
7999										
8003	0	0			0	0	0	0	0	0
8017								0	0	
8025					0	0	0	0		
8026	0	0	1	0	0	0	0	0	0	1
8031										
8032										
8034										
8035	0	0	0	0	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	LEH9	LEH10	LEH11	LEH22	LEH23	LEH24	LEH25	LEH26	LEH27	LEH_Ind_Sever
8036			0		0		0			
8037	0									
8038	2	0	0	0	0	2	2	0	0	2
8039	0	0	0	0	0	0	0	0	0	0
8041			0		0	0				
8042										
8043										
8044						0	0			
8045	0	0	0	0	0	0	0	0	0	0
8047										
8048	0	0	0	0	0	0	0	0	0	0
8049										
8050	2	2	0	0	0	0	0	0	0	2
8051	0	0	0	0	0				0	0
8052										
8054										
8055										
8056										
8057	2	2	2	2	0	2	0	0	2	2
8060	0	0	0	2	0	0	0	0	2	2
8061	0		0	0	0	0	0	0	0	0
8062	2	0	0	0	0	0	0	0	0	2
8063							0	0	0	
8064	0	0			0	0	0	0		0
8067	0	0								
8068										2
8070	2	0					2	0	0	2
8074										
8075	2	2	0	0	2	2	2	2	0	2
8076	2	2	0	0	0	0	0	0	0	2
8077										
8078										
8079										
8080				0	0	0	0	0	0	
8081					0	0	0	0		
8082										
8083	0	0	0	0	0	0	0	0	0	0
8084	2	2	2	2	2	2	2	2	2	2
8085										
8086	0		2	2	0	0				2
8087									0	
8088				0	0	0	0	0	0	

APPENDIX VIII: RAW DATA

SkeletonID	LEH9	LEH10	LEH11	LEH22	LEH23	LEH24	LEH25	LEH26	LEH27	LEH_Ind_Sever
8090										
8091										
8092	0	0	0	0	0	0	0	0	0	0
8093										
8094				0	0	0	0	0	0	0
8095										
8096			0		0	0	0	0		2
8097										
8098										
8099										
8100	0	0	0	0	0	0	0	0	0	0
8102										
8103										
8104				0	0	0	0	0	0	
8106	2	2	2	2	2	2	2	2	2	2
8107			0	0	0	0	0	0	0	
8110	0	0	0	0	0	0	0	0	0	0
8111	0	0	0	0	0	0	0	0	0	0
8112	1		0	0			0		0	1
8113										
8114										
8115										
8117										
8118	0	0	0	0	0	0	0	0	0	0
8119	0	0	0	0	0	0	0	0	0	0
8120	2				0			0		2
8121			0	0	0	0	0	0	0	0
8124										
8125				0	0	0	0	0	0	
8126	2	0	0	0	2	0	0	2	0	2
8127										
8129	0	0	0	0	0	0	0	0	0	0
8130	0									
8131	1	0	0	0	0	0	0	0	0	1
8132										
8133	0	0	0	0	0	0	0	0	0	0
8134										
8135		0	0	0		0	0	0	0	0
8136	0	0	0	0					0	0
8137										
8137	0	0	0	0	0	0	0	0	0	0
8138										

APPENDIX VIII: RAW DATA

SkeletonID	LEH9	LEH10	LEH11	LEH22	LEH23	LEH24	LEH25	LEH26	LEH27	LEH_Ind_Sever
8139	0	0	0	0	0	0	0	0	0	0
8140	0	0	0	0	0	0	0	0	0	0
8141										
8142	2	1	1	0	0	0	0	0	0	2
8143	2	2	2	2	2	2	2	2	2	2
8144										
8148				0	0	0	0			
8149	0	0	0	1	0	0	0	0	0	0
8154	0									
8155	0	0	0							
8156										
8157	0					0	0			
8158										
8159	0	0	0						0	
8160	0	0	0	0	0	0	0	0	0	0
8161										
8163	0	0	0	0	0	0	0	0	0	0
8164	0				0	0	0	0		
8165										
8166										
23713	0	0	0	0	0	0	0	0	0	0
23714										
23715	0	0	0		0	0	0	0	0	0
23735										
23736		0	0		0	0	0	0	0	0
23738									0	
23739				0	0			0	0	
23740				0	0	0	0	0	0	
23743	0	0	0	2	0	0	0	0	2	2
23752		0	0	1	0	0		1	1	1
23755	0	0	0	0	0	0	0	0	0	0
23758										
23759										
26192			0							
27220	0	0	0	2	1	1	1	1	2	2
28305										
31360	2	0	0	0	0	0	0	0	0	2
31930				0			0	0	0	
31949	0			0						
7956	0	0	0	0	0	0	0	0	0	0
8002				0	0	1	2	2	2	2
8065	0	0	0	0	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	LEH9	LEH10	LEH11	LEH22	LEH23	LEH24	LEH25	LEH26	LEH27	LEH_Ind_Sever
8069				0	0			0	0	
8122	2		0	1	0	0	0	0	1	1
20435										
20436	0	0	0	0	0	0	0	0	0	0
20439										
20444	0	0	0	0	0	0	0	0	0	0
20450			0	0	0	0	0	0	0	0
20458	0	0	0	0	0	0	0	0	0	0
20469	2	0	0	0	0	0	0	0	0	2
20472										
20474								0		
20504					0	0	0	0	0	
20507										
20509	0	0	0	0	0	0	0	0	0	0
21001			2	2	2	2	2	2	2	2
21002	0	0		0	0	0	0	0	0	0
21004										
21005										
21008										
21013	0									
21024										
21025										
21026				0	0	0	0	0	0	
21033	0	0		0	0	0	0	0	0	0
21034	0	0	0	0	0	0	0	0	0	0
21035										
21044					0	0	0	0		
21045										
21053	0		0			0	0	0		2
21056										
21057				0	0	0	0			
21069	0	0	0	0	0	0	0	0	0	0
21070										
21074	2	0	0	0	2	2	2	2	0	2
21080										
21082				0		0		0	0	
21083	0	0	0	0	1	1	1	1	0	1
21086										
21090	0	0	2	2	0	0	0	0		2
21093										
21096										
21102										

APPENDIX VIII: RAW DATA

SkeletonID	LEH9	LEH10	LEH11	LEH22	LEH23	LEH24	LEH25	LEH26	LEH27	LEH_Ind_Sever
21274				0	0					
21279										
26213	2	0	2	0	0	0	0	0	0	2
26214	0	0	0	0	0	0	0	0	0	0
26252										
26253				2	0	0	0	0	0	2
26254	0	0		0	0	0	0			
26268										
27207	0	0	0	0	0	0	0	0	0	0
28264	0	0								
28281	0	0			0	0	0	0		0
28289			0	0					0	
28294	0	0	0	0	0	0				
28297	0	0	0	0	0	0	0	0	0	0
28326	0	0	0	1	0	0	0	0	1	1
31363										
31422										
31901	0	0	0	0	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	LEHInd_AbsPr	LEH6_AbsPr	LEH7_AbsPr	LEH8_AbsPr	LEH9_AbsPr	LEH10_AbsPr
7962	0	0	0	0	0	0
7963	0				0	0
7964	0	0	0	0	0	0
7965						
7966						
7967	0	0				
7968	0		0	0	0	0
7969						
7970	1	1	0	1	1	0
7971						
7972	0	0	0	0	0	0
7973	0	0	0			0
7974		0		0	0	
7975	0	0	0	0	0	0
7976						
7977	0		0	0	0	0
7978						
7979						
7980						
7981						
7982						
7983		0	0	0	0	
7984						
7985						
7986	1	1	0	0	0	0
7987						
7988						
7989	1	1	1	0	1	0
7990	0					0
7994	0	0		0	0	0
7996	0	0	0			0
7997	0	0	0	0	0	0
7998						
7999						
8003	0		0	0	0	0
8017						
8025						
8026	1	1	0	0	0	0
8031						
8032						
8034						
8035	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	LEHInd_AbsPr	LEH6_AbsPr	LEH7_AbsPr	LEH8_AbsPr	LEH9_AbsPr	LEH10_AbsPr
8036						
8037			0		0	
8038	1	0	0	1	1	0
8039	0	0	0	0	0	0
8041		0				
8042						
8043						
8044						
8045	0			0	0	0
8047						
8048	0	0	0	0	0	0
8049						
8050	1	0	1	1	1	1
8051	0		0	0	0	0
8052						
8054						
8055						
8056						
8057	1	1	1	1	1	1
8060	1	1	0	0	0	0
8061	0	0	0	0	0	
8062	1			1	1	0
8063						
8064	0		0	0	0	0
8067					0	0
8068	1	1		1		
8070	1	0	0	1	1	0
8074						
8075	1	0	1	1	1	1
8076	1	0	1	1	1	1
8077						
8078						
8079						
8080						
8081						
8082						
8083	0	0	0	0	0	0
8084	1	1	1	1	1	1
8085						
8086	1				0	
8087						
8088						

APPENDIX VIII: RAW DATA

SkeletonID	LEHInd_AbsPr	LEH6_AbsPr	LEH7_AbsPr	LEH8_AbsPr	LEH9_AbsPr	LEH10_AbsPr
8090						
8091						
8092	0	0	0	0	0	0
8093						
8094	0	0	0			
8095						
8096	1	1		0		
8097						
8098						
8099						
8100	0	0	0	0	0	0
8102						
8103						
8104						
8106	1	1	1	1	1	1
8107						
8110	0	0	0	0	0	0
8111	0	0	0	0	0	0
8112	1			1	1	
8113						
8114						
8115						
8117						
8118	0	0	0	0	0	0
8119	0	0	0	0	0	0
8120	1				1	
8121	0	0				
8124						
8125						
8126	1	0	0	1	1	0
8127						
8129	0	0	0	0	0	0
8130					0	
8131	1	0	0	1	1	0
8132						
8133	0	0	0	0	0	0
8134						
8135	0	0	0	0		0
8136	0	0	0	0	0	0
8137						
8137	0			0	0	0
8138						

APPENDIX VIII: RAW DATA

SkeletonID	LEHInd_AbsPr	LEH6_AbsPr	LEH7_AbsPr	LEH8_AbsPr	LEH9_AbsPr	LEH10_AbsPr
8139	0	0	0	0	0	0
8140	0	0	0	0	0	0
8141						
8142	1	1	1	1	1	1
8143	1	1	1	1	1	1
8144						
8148						
8149	0	0	0	0	0	0
8154					0	
8155				0	0	0
8156						
8157			0		0	
8158						
8159		0	0	0	0	0
8160	0	0	0	0	0	0
8161						
8163	0	0	0	0	0	0
8164				0	0	
8165						
8166						
23713	0	0	0	0	0	0
23714						
23715	0				0	0
23735						
23736	0		0			0
23738						
23739						
23740		0				
23743	1	0	0	0	0	0
23752	1	0				0
23755	0	0	0	0	0	0
23758						
23759						
26192		0	0	0		
27220	1	0	0	0	0	0
28305						
31360	1	0	0	1	1	0
31930						
31949			0	0	0	
7956	0	0	0	0	0	0
8002	1	0				
8065	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	LEHInd_AbsPr	LEH6_AbsPr	LEH7_AbsPr	LEH8_AbsPr	LEH9_AbsPr	LEH10_AbsPr
8069						
8122	1			1	1	
20435						
20436	0	0	0	0	0	0
20439						
20444	0	0	0	0	0	0
20450	0	0	0	0		
20458	0	0	0	0	0	0
20469	1	0		1	1	0
20472						
20474				0		
20504						
20507						
20509	0	0	0	0	0	0
21001	1	1				
21002	0		0	0	0	0
21004						
21005						
21008						
21013				0	0	
21024						
21025						
21026						
21033	0		0	0	0	0
21034	0			0	0	0
21035						
21044						
21045						
21053	1	1	0	0	0	
21056						
21057		0				
21069	0	0	0	0	0	0
21070						
21074	1	0	0	1	1	0
21080						
21082		0				
21083	1	0	0	0	0	0
21086						
21090	1	1	0		0	0
21093						
21096						
21102						

APPENDIX VIII: RAW DATA

SkeletonID	LEHInd_AbsPr	LEH6_AbsPr	LEH7_AbsPr	LEH8_AbsPr	LEH9_AbsPr	LEH10_AbsPr
21274		0				
21279						
26213	1				1	0
26214	0	0	0	0	0	0
26252						
26253	1	0				
26254		0	0	0	0	0
26268						
27207	0	0	0	0	0	0
28264			0	0	0	0
28281	0		0	0	0	0
28289			0			
28294					0	0
28297	0	0	0	0	0	0
28326	1	0			0	0
31363						
31422		0				
31901	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	LEH11_AbsPr	LEH22_AbsPr	LEH23_AbsPr	LEH24_AbsPr	LEH25_AbsPr	LEH26_AbsPr
7962	0	0	0	0	0	0
7963	0	0	0	0	0	0
7964	0	0	0	0	0	0
7965						
7966						
7967	0	0	0	0	0	0
7968			0	0	0	0
7969						
7970	1	1	0	0	0	0
7971						
7972	0	0	0	0	0	0
7973	0	0	0	0	0	0
7974	0			0	0	
7975	0	0	0	0	0	0
7976						
7977			0	0	0	0
7978		0	0	0	0	0
7979						
7980						
7981						
7982						
7983		0				
7984		0				
7985						
7986	1	1	0	0	0	0
7987						
7988						
7989	1	0	0	0	0	0
7990	0	0	0	0	0	0
7994	0	0	0	0	0	0
7996	0	0	0	0	0	0
7997	0	0	0	0	0	0
7998						
7999						
8003			0	0	0	0
8017						0
8025			0	0	0	0
8026	1	0	0	0	0	0
8031						
8032						
8034						
8035	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	LEH11_AbsPr	LEH22_AbsPr	LEH23_AbsPr	LEH24_AbsPr	LEH25_AbsPr	LEH26_AbsPr
8036	0		0		0	
8037						
8038	0	0	0	1	1	0
8039	0	0	0	0	0	0
8041	0		0	0		
8042						
8043						
8044				0	0	
8045	0	0	0	0	0	0
8047						
8048	0	0	0	0	0	0
8049						
8050	0	0	0	0	0	0
8051	0	0	0			
8052						
8054						
8055						
8056						
8057	1	1	0	1	0	0
8060	0	1	0	0	0	0
8061	0	0	0	0	0	0
8062	0	0	0	0	0	0
8063					0	0
8064			0	0	0	0
8067						
8068						
8070					1	0
8074						
8075	0	0	1	1	1	1
8076	0	0	0	0	0	0
8077						
8078						
8079						
8080		0	0	0	0	0
8081			0	0	0	0
8082						
8083	0	0	0	0	0	0
8084	1	1	1	1	1	1
8085						
8086	1	1	0	0		
8087						
8088		0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	LEH11_AbsPr	LEH22_AbsPr	LEH23_AbsPr	LEH24_AbsPr	LEH25_AbsPr	LEH26_AbsPr
8090						
8091						
8092	0	0	0	0	0	0
8093						
8094		0	0	0	0	0
8095						
8096	0		0	0	0	0
8097						
8098						
8099						
8100	0	0	0	0	0	0
8102						
8103						
8104		0	0	0	0	0
8106	1	1	1	1	1	1
8107	0	0	0	0	0	0
8110	0	0	0	0	0	0
8111	0	0	0	0	0	0
8112	0	0			0	
8113						
8114						
8115						
8117						
8118	0	0	0	0	0	0
8119	0	0	0	0	0	0
8120			0			0
8121	0	0	0	0	0	0
8124						
8125		0	0	0	0	0
8126	0	0	1	0	0	1
8127						
8129	0	0	0	0	0	0
8130						
8131	0	0	0	0	0	0
8132						
8133	0	0	0	0	0	0
8134						
8135	0	0		0	0	0
8136	0	0				
8137						
8137	0	0	0	0	0	0
8138						

APPENDIX VIII: RAW DATA

SkeletonID	LEH11_AbsPr	LEH22_AbsPr	LEH23_AbsPr	LEH24_AbsPr	LEH25_AbsPr	LEH26_AbsPr
8139	0	0	0	0	0	0
8140	0	0	0	0	0	0
8141						
8142	1	0	0	0	0	0
8143	1	1	1	1	1	1
8144						
8148		0	0	0	0	
8149	0	1	0	0	0	0
8154						
8155	0					
8156						
8157				0	0	
8158						
8159	0					
8160	0	0	0	0	0	0
8161						
8163	0	0	0	0	0	0
8164			0	0	0	0
8165						
8166						
23713	0	0	0	0	0	0
23714						
23715	0		0	0	0	0
23735						
23736	0		0	0	0	0
23738						
23739		0	0			0
23740		0	0	0	0	0
23743	0	1	0	0	0	0
23752	0	1	0	0		1
23755	0	0	0	0	0	0
23758						
23759						
26192	0					
27220	0	1	1	1	1	1
28305						
31360	0	0	0	0	0	0
31930		0			0	0
31949		0				
7956	0	0	0	0	0	0
8002		0	0	1	1	1
8065	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	LEH11_AbsPr	LEH22_AbsPr	LEH23_AbsPr	LEH24_AbsPr	LEH25_AbsPr	LEH26_AbsPr
8069		0	0			0
8122	0	1	0	0	0	0
20435						
20436	0	0	0	0	0	0
20439						
20444	0	0	0	0	0	0
20450	0	0	0	0	0	0
20458	0	0	0	0	0	0
20469	0	0	0	0	0	0
20472						
20474						0
20504			0	0	0	0
20507						
20509	0	0	0	0	0	0
21001	1	1	1	1	1	1
21002		0	0	0	0	0
21004						
21005						
21008						
21013						
21024						
21025						
21026		0	0	0	0	0
21033		0	0	0	0	0
21034	0	0	0	0	0	0
21035						
21044			0	0	0	0
21045						
21053	0			0	0	0
21056						
21057		0	0	0	0	
21069	0	0	0	0	0	0
21070						
21074	0	0	1	1	1	1
21080						
21082		0		0		0
21083	0	0	1	1	1	1
21086						
21090	1	1	0	0	0	0
21093						
21096						
21102						

APPENDIX VIII: RAW DATA

SkeletonID	LEH11_AbsPr	LEH22_AbsPr	LEH23_AbsPr	LEH24_AbsPr	LEH25_AbsPr	LEH26_AbsPr
21274		0	0			
21279						
26213	1	0	0	0	0	0
26214	0	0	0	0	0	0
26252						
26253		1	0	0	0	0
26254		0	0	0	0	
26268						
27207	0	0	0	0	0	0
28264						
28281			0	0	0	0
28289	0	0				
28294	0	0	0	0		
28297	0	0	0	0	0	0
28326	0	1	0	0	0	0
31363						
31422						
31901	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	LEH27_AbsPr	LEHbyIndividual	LEHIndAbsPr	Caries_1	Caries_2	Caries_3	Caries_4
7962	0		0	1	1	0	0
7963	0		0		0	0	0
7964	0		0		0	0	0
7965			0				
7966			0				
7967	0		0		1	0	0
7968			0			0	
7969			0				
7970	1	1	1	0	0	0	0
7971			0				
7972	0		0	0	0	0	0
7973	0		0	0	0	0	0
7974			0		0	0	
7975	0		0	0	0	0	0
7976							
7977			0				
7978	0		0				
7979			0				
7980			0			0	
7981			0				
7982			0				
7983			0		0		
7984	0		0				
7985			0				
7986		1	1	0	0	0	0
7987			0				
7988			0				
7989	0	1	1		0	0	0
7990	0		0	0			
7994	0		0	0	0	0	0
7996	0		0	0		0	0
7997	0		0	0	0	0	0
7998							
7999							
8003	0		0	0	0		0
8017	0		0				
8025			0				
8026	0	1	1	0	0	0	0
8031			0				
8032							
8034			0				
8035	0		0	0	0		0

SkeletonID	LEH27_AbsPr	LEHbyIndividual	LEHIndAbsPr	Caries_1	Caries_2	Caries_3	Caries_4
8036			0				
8037			0				
8038	0	1	1		0	0	0
8039	0		0		0	0	0
8041			0		0	0	
8042			0				
8043			0				
8044			0				
8045	0		0	0	0		0
8047			0				
8048	0		0			1	1
8049			0				
8050	0	1	1		0	0	0
8051	0		0				
8052			0				
8054			0				
8055			0				
8056			0				
8057	1	1	1	1	1	0	0
8060	1	1	1	0	1	0	0
8061	0		0		0	0	0
8062	0	1	1			0	0
8063	0		0				
8064			0				
8067			0				
8068		1	1			0	
8070	0	1	1			0	
8074			0				
8075	0	1	1	0	0	0	0
8076	0	1	1		0	0	0
8077			0		0	0	
8078			0				
8079			0				
8080	0		0				
8081			0			0	
8082			0				
8083	0		0	0	0		0
8084	1	1	1		0	0	0
8085							
8086		1	1		0		
8087	0		0				
8088	0		0				

APPENDIX VIII: RAW DATA

SkeletonID	LEH27_AbsPr	LEHbyIndividual	LEHIndAbsPr	Caries_1	Caries_2	Caries_3	Caries_4
8090			0				
8091			0				
8092	0		0	1	0	1	0
8093			0				
8094	0		0		0	0	0
8095			0				
8096		1	1				
8097			0				
8098			0				
8099			0				
8100	0		0	0	0	1	0
8102			0				
8103			0				
8104	0		0				
8106	1	1	1		0	0	0
8107	0		0	0	0	0	
8110	0		0	0	0	0	0
8111	0		0		0	0	0
8112	0	1	1				
8113			0				
8114			0				
8115			0				
8117			0				
8118	0		0	0	0	0	0
8119	0		0				
8120		1	1			0	
8121	0		0		0	0	
8124			0				
8125	0		0	0			
8126	0	1	1				
8127			0	0	0	0	
8129	0		0	0	0		0
8130			0				
8131	0	1	1	0	0		0
8132			0				
8133	0		0		0	0	0
8134			0				
8135	0		0				
8136	0		0	0		0	0
8137			0				
8137	0		0			0	0
8138		1	1				

APPENDIX VIII: RAW DATA

SkeletonID	LEH27_AbsPr	LEHbyIndividual	LEHIndAbsPr	Caries_1	Caries_2	Caries_3	Caries_4
8139	0		0	0	0	0	0
8140	0		0		0	0	0
8141			0				
8142	0	1	1			0	0
8143	1	1	1				
8144			0				
8148			0				
8149	0	1	1		0	0	0
8154			0				
8155			0	0	0	0	
8156			0				
8157			0				
8158			0	0			
8159	0		0	0	0	0	0
8160	0		0	0	0	0	0
8161			0				
8163	0		0	0	0	0	0
8164			0				
8165			0				
8166			0				
23713	0		0	0	0	0	0
23714			0				
23715	0		0	0	0		
23735			0			0	
23736	0		0	0			
23738	0		0				
23739	0		0	0	0	0	
23740	0		0				
23743	1	1	1		0	0	0
23752	1	1	1		0	0	0
23755	0		0		0	0	0
23758			0				
23759							
26192			0	0	0	0	0
27220	1	1	1	0	0	0	0
28305							
31360	0	1	1	0	0	0	0
31930	0		0	0	0	0	0
31949			0				
7956	0		0	0	0	0	0
8002	1	1	1	1		0	0
8065	0		0	0	0	0	

APPENDIX VIII: RAW DATA

SkeletonID	LEH27_AbsPr	LEHbyIndividual	LEHIndAbsPr	Caries_1	Caries_2	Caries_3	Caries_4
8069	0		0		0		
8122	1	1	1		0	0	0
20435			0				
20436	0		0	0	0	0	0
20439			0				
20444	0		0				0
20450	0		0	0	1		0
20458	0		0		0	0	0
20469	0	1	1	0	0	0	
20472			0				
20474			0				
20504	0		0				0
20507			0				
20509	0		0	0	0	0	0
21001	1	1	1			0	
21002	0		0	0	0		0
21004							
21005			0				
21008			0				
21013			0				
21024			0				
21025			0				
21026	0		0				
21033	0		0				
21034	0		0		0	0	
21035			0				
21044			0				
21045			0				
21053		1	1			0	
21056			0				
21057			0		0	0	
21069	0		0	0	0	0	0
21070			0				
21074	0	1	1		0	0	
21080			0				
21082	0		0	0	0		0
21083	0	1	1	0	0	0	
21086			0				
21090		1	1		0	0	0
21093							
21096			0				
21102			0				

APPENDIX VIII: RAW DATA

SkeletonID	LEH27_AbsPr	LEHbyIndividual	LEHIndAbsPr	Caries_1	Caries_2	Caries_3	Caries_4
21274			0				
21279			0				
26213	0	1	1	0	1	0	0
26214	0		0		0	0	0
26252			0		0	0	
26253	0	1	1		0	0	0
26254			0				
26268			0				
27207	0		0	0	0	0	0
28264			0				
28281			0				
28289	0		0			0	
28294			0	0	0	0	0
28297	0		0	0	0	0	0
28326	1	1	1	0	0	0	0
31363			0				
31422			0	0			
31901	0		0	0		1	1

SkeletonID	Caries_5	Caries_6	Caries_7	Caries_8	Caries_9	Caries_10	Caries_11	Caries_12
7962	0	0	0	0	0	0	0	0
7963	0				0	0	0	
7964	0	0	0	0	0	0	0	0
7965								
7966								
7967	0	0					0	0
7968			0	0	0	0		
7969								
7970	0	0	0	0	0	0	0	0
7971								
7972	0	0	0	0	0	0	0	0
7973	0	0	0			0	0	0
7974		0		0	0		0	
7975	0	0	0	0	0	0	0	0
7976								
7977								
7978								
7979								
7980								
7981								
7982								
7983		0	0	0	0			
7984								
7985								
7986	0	0	0	0	0	0	0	0
7987								
7988								
7989	0	0	0	0	0	0	0	0
7990						0	0	0
7994	0	0		0	0	0	0	0
7996	0	0	0			0	0	0
7997	0	0	0	0	0	0	0	0
7998								
7999								
8003	0		0	0	0	0		
8017								
8025								
8026	0	0	0	0	0	0	0	0
8031								
8032								
8034								
8035	0	0	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Caries_5	Caries_6	Caries_7	Caries_8	Caries_9	Caries_10	Caries_11	Caries_12
8036								
8037								
8038	0	0	0	0	0	0	0	0
8039	0	0	0	0	0	0	0	0
8041		1					0	
8042								
8043								
8044								
8045		0			0	0	0	0
8047								
8048	0	0	0	0	0	0	0	0
8049								
8050	0	0	0	0	0	0	0	0
8051			0	0	0	0	1	0
8052								
8054								
8055								
8056								
8057	0	0	0	0	0	0	0	0
8060	0	0	0	0	0	0	0	0
8061	0	0	0	0	0		0	0
8062	0			0	0	0	0	0
8063								
8064								
8067								
8068								
8070								
8074								
8075	0	0	0	0	0	0	0	0
8076	0	0	0	0	0	0	0	0
8077								
8078								
8079								
8080								
8081								
8082								
8083	0	0	0	0	0	0	0	0
8084	0	0	0	0	0	0	0	0
8085								
8086					0		0	
8087								
8088								

APPENDIX VIII: RAW DATA

SkeletonID	Caries_5	Caries_6	Caries_7	Caries_8	Caries_9	Caries_10	Caries_11	Caries_12
8090								
8091								
8092	0	0	0	0	1	0	0	1
8093								
8094	0	0	0					
8095								
8096								
8097								
8098								
8099								
8100	0	0	0	0	0	0	0	0
8102								
8103								
8104								
8106		0		0	0	0	0	0
8107							0	0
8110	0	0	0	0	0	0	0	0
8111	0	0	0	0	0	0	0	0
8112								
8113								
8114								
8115								
8117								
8118	0	0	0	0	0	0	0	0
8119		0	0	0	0	0	0	
8120					0			
8121	0	0					0	
8124								
8125								
8126								
8127								
8129		0	0	0	0	0		0
8130								
8131	0	0	0	0	0	0	0	0
8132								
8133	0	0	0	0	0	0	0	0
8134								
8135			0	0		0		
8136	0	0	0	0	0	0	0	0
8137								
8137	0			0	0	0	0	0
8138								

APPENDIX VIII: RAW DATA

SkeletonID	Caries_5	Caries_6	Caries_7	Caries_8	Caries_9	Caries_10	Caries_11	Caries_12
8139	0	0	0	0	0	0	0	0
8140	0	0	0	0	0	0	0	0
8141								
8142	0	0	0	0	0	0	0	0
8143								
8144								
8148								
8149	0	0	0	0	0	0	0	0
8154								
8155					0	0	0	0
8156								
8157								
8158								
8159	0	0	0	0	0	0	0	0
8160	0	0	0	0	0	0	0	0
8161								
8163	0	0	0	0	0	0	0	0
8164								
8165								
8166								
23713	0	0	0	0	0	0	0	0
23714								
23715					0	0	0	
23735								
23736	0		0			0	0	
23738		0	0	0	0	0	0	
23739								
23740		0						
23743	0	0	0	0	0	0	0	0
23752	0	0				0	0	0
23755	0	0	0	0	0	0	0	0
23758								
23759								
26192	0	0	0	0			0	
27220	0	0	0	0	0	0	0	0
28305								
31360	0	0	0	0	0	0	0	0
31930								
31949			0	0	0			0
7956	0	0	0	0	0	0	0	0
8002		0	0	0	0	0	0	
8065	0	0	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Caries_5	Caries_6	Caries_7	Caries_8	Caries_9	Caries_10	Caries_11	Caries_12
8069								
8122	0			0	0		0	0
20435								
20436	0	0	0	0	0	0	0	0
20439								
20444	0	0	0	0	0	0	0	0
20450	0	0	0	0			0	0
20458	0	0	0	0	0	0	0	0
20469		0		0	0	0	0	0
20472								
20474								
20504								
20507								
20509	0	0	0	0	0	0	0	0
21001								
21002	0		0	0	0	0		0
21004								
21005								
21008								
21013	1			1	0			
21024								
21025								
21026								
21033			0	0	0	0		
21034				0	0	0	0	
21035								
21044								
21045								
21053	0	0	0	0	0		0	0
21056								
21057		0						
21069	0	0	0	0	0	0	0	0
21070								
21074	0	0	0	0	0	0	0	0
21080								
21082	0	0						0
21083		0	0	0			0	
21086								
21090	0	0	0		0	0		0
21093								
21096								
21102								

APPENDIX VIII: RAW DATA

SkeletonID	Caries_5	Caries_6	Caries_7	Caries_8	Caries_9	Caries_10	Caries_11	Caries_12
21274		0						
21279								
26213	0				0	0	0	0
26214	0	0	0	0	0	0	0	0
26252								
26253	0	0						0
26254		0	0	0	0	0		
26268								
27207	0	0	0	0	0	0	0	0
28264								
28281								
28289								
28294		0	0	0	0	0	0	0
28297	0	0	0	0	0	0	0	0
28326	0	0			0	0	0	0
31363	0							
31422		0						
31901		0	0	0	0	0	0	

APPENDIX VIII: RAW DATA

SkeletonID	Caries_13	Caries_14	Caries_15	Caries_16	Caries_17	Caries_18	Caries_19	Caries_20
7962	0			0	0	0	0	0
7963		0	0			0	0	0
7964	0	0	0		0	0	0	0
7965								
7966								
7967	0	0	0			0	0	0
7968		0					0	
7969								
7970	0	0	0	0	0	0	0	0
7971								
7972	0		0	0	0	0	0	0
7973	0	0	0	0		0	0	0
7974		0	0			0	0	
7975	0	0	0	0	0	0	0	0
7976								
7977								
7978		1						0
7979								
7980		0					0	
7981								
7982								
7983				0	0	0	0	0
7984							0	
7985								
7986	0	0	0	0	0		0	0
7987								
7988								
7989	0	0	1			0	0	0
7990	0			0	0	0	1	0
7994	0	0	0	0	0	0	0	0
7996	0	0	0	0	0	0	0	0
7997			0	0	0	0	0	0
7998								
7999								
8003		0		0	0		0	0
8017					0	0		
8025					0			0
8026	0	0	0	0	0	0	0	0
8031								
8032		0						
8034								
8035	0	0			0	0		0

APPENDIX VIII: RAW DATA

SkeletonID	Caries_13	Caries_14	Caries_15	Caries_16	Caries_17	Caries_18	Caries_19	Caries_20
8036								
8037								
8038	0	0	0			1	0	0
8039	0	0	0		0	1	0	0
8041	0	0				0		0
8042								
8043								
8044								
8045	0	0	0	0	0	0		0
8047								
8048	0		0		0	0	0	0
8049								
8050	0	0	0			0	0	0
8051	0				0	1	1	1
8052								
8054								
8055								
8056								
8057	0	0	0	0	0	1	0	0
8060	0		0	0	0	0	0	0
8061	0	0	0	0	0	0	0	0
8062	0							0
8063								
8064								
8067								
8068		0					0	
8070		0						
8074								
8075	0	0	0	0	0	0	0	0
8076	0	0	0			0	0	0
8077		0	0					
8078								
8079								
8080							0	
8081		0					0	
8082								
8083	0	1	1	0	0	0		0
8084	0	0	0			0	0	0
8085								
8086		0	0		0	0	0	0
8087							0	
8088					0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Caries_13	Caries_14	Caries_15	Caries_16	Caries_17	Caries_18	Caries_19	Caries_20
8090								
8091								
8092	0	0	0	0	0	0	0	1
8093								
8094					0	0	0	0
8095								
8096								
8097								
8098								
8099								
8100	0	0	0		0	0	0	0
8102								
8103								
8104					0	0	0	0
8106	0	0	0			0	0	0
8107	0	0	0	0		0		0
8110	0	0	0	0	0	0	0	0
8111	0	0	0			0	0	0
8112								
8113								
8114		0					0	
8115								
8117								
8118	0	0	0	0	0	0	0	0
8119		0		0	0	0	0	0
8120		0					0	
8121		0	0			0	0	
8124								
8125				0	0	0	0	0
8126								
8127		1	0	0			0	
8129	0	0	0	0	0	0		0
8130								
8131	0	0	0	0	0	0	0	0
8132								
8133	0	0	0			0	0	0
8134								
8135		0						
8136	0			0		0	0	0
8137								
8137	0	0	0		0	0	0	0
8138								

APPENDIX VIII: RAW DATA

SkeletonID	Caries_13	Caries_14	Caries_15	Caries_16	Caries_17	Caries_18	Caries_19	Caries_20
8139	0	0	0	0	0	0	0	0
8140	0	0	0			0	0	0
8141								
8142	0	0			0	0	1	0
8143								
8144								
8148					0	0	0	0
8149	0	0	0			1	1	
8154								
8155	0	0	0		0	0	0	
8156								
8157								
8158								
8159			0	0	1		0	0
8160	0	0	0	0	1	0	0	0
8161								
8163	0	0	0	0	0	0	0	0
8164								
8165								
8166								
23713	0	0	0	0	0	0	0	0
23714								
23715			0			0		0
23735		0					0	
23736	1			1	1	0	0	0
23738			0		0	0		0
23739		1				0		
23740					0	0	0	0
23743	0	0	0	0		0	0	0
23752	0	0	0			0	0	0
23755	0	0	0			0	0	0
23758								
23759								
26192	0	0	1	0		0		
27220	0	0	0	0	0	0	0	0
28305								
31360	0	0	0	0	0	0	0	0
31930					0	0	0	0
31949	0		0			0		
7956	0	0	0	0	0	1	0	0
8002	0				0	0		1
8065	0	0	0	0				

APPENDIX VIII: RAW DATA

SkeletonID	Caries_13	Caries_14	Caries_15	Caries_16	Caries_17	Caries_18	Caries_19	Caries_20
8069			0			0		0
8122	0	0	0	0	0	0	0	0
20435								
20436	0	0	0	0	0	0	0	0
20439								
20444	0			0		0	0	0
20450	0		0	0	0	0	1	0
20458	0	0	0	0		0	0	0
20469	0	0	0	0	0	0	0	0
20472								
20474								
20504			1					
20507								
20509	0	0	0	0	0	0		0
21001		0					1	
21002		0	0	0				0
21004								
21005			1					
21008								
21013								
21024								
21025								
21026			0	0		0	0	0
21033	1	1		1		0		1
21034		0	0			0	0	0
21035								
21044								
21045							0	
21053	0	0				1		
21056								
21057	0	0	0		0	0	0	0
21069		0				0	0	
21070								
21074		0	0			0	0	
21080								
21082						1		0
21083		0	0	0	0	0	0	
21086								
21090	0	0	0			0	0	0
21093								
21096								
21102								

APPENDIX VIII: RAW DATA

SkeletonID	Caries_13	Caries_14	Caries_15	Caries_16	Caries_17	Caries_18	Caries_19	Caries_20
21274						0		0
21279								
26213	0	0	0	0	0	0	0	0
26214	0	0	0			0	0	0
26252		0	0					
26253	0	0	0			0	0	0
26254					0	0		
26268								
27207	0	0	0	1	1	0	0	0
28264								
28281								
28289		0					0	
28294	0	0	0	0		0	0	0
28297	0	0	1	0	0	1	0	0
28326	0	0	0	0	0	0	0	0
31363	0	0	0	0				
31422	0				0		0	
31901				1			0	0

APPENDIX VIII: RAW DATA

SkeletonID	Caries_21	Caries_22	Caries_23	Caries_24	Caries_25	Caries_26	Caries_27	Caries_28
7962	0	0	0	0	0	0	0	0
7963	0	0	0	0	0	0	0	0
7964	0	0	0	0	0	0	0	0
7965								
7966								
7967	0	0	0	0	0	0	0	0
7968			0	0	0	0		
7969								
7970	0	0	0	0	0	0	0	0
7971								
7972	0	0	0	0	0	0	0	0
7973	0	0	0	0	0	0	0	0
7974				0	0			
7975	0	0	0	0	0	0	0	0
7976								
7977								
7978	0	0	0	0	0	0	0	0
7979								
7980								
7981								
7982								
7983	0	0						
7984								
7985								
7986	0	0	0	0	0		0	0
7987								
7988								
7989	0	0	0	0	0	0	0	0
7990	0	0				0	0	0
7994	0	0	0	0	0	0	0	0
7996	0	0	0	0	0	0	0	0
7997	0	0	0	0	0	0	0	
7998								
7999								
8003	0		0	0	0	0	0	0
8017							0	0
8025	0		0	0	0	0		0
8026	0	0	0	0	0	0	0	0
8031								
8032								
8034								
8035	0	0	0	0		0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Caries_21	Caries_22	Caries_23	Caries_24	Caries_25	Caries_26	Caries_27	Caries_28
8036								
8037								
8038	0	0	0	0	0	0	0	0
8039	0	0	0	0	0	0	0	0
8041			0	0				
8042								
8043								
8044								
8045	0	0	0	0	0	0	0	0
8047								
8048	0	0	0	0	0	0	0	0
8049								
8050	0	0	0	0	0	0	0	0
8051	0	0	0				0	0
8052								
8054								
8055								
8056								
8057	0	0	0	0	0	0	0	0
8060	0	0	0	0	0	0	0	0
8061	0	0	0	0	0	0	0	0
8062	0	0	0	0	0	0	0	0
8063								
8064								
8067								
8068								
8070					0			
8074								
8075	0	0	0	0	0	0	0	0
8076	0	0	0	0	0			
8077								
8078								
8079								
8080			0	0	0	0		
8081			0	0	0	0		
8082								
8083	0	0	0	0	0	0	0	0
8084	0	0	0	0	0	0	0	0
8085								
8086	0	0	0	0				
8087								
8088	0	0	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Caries_21	Caries_22	Caries_23	Caries_24	Caries_25	Caries_26	Caries_27	Caries_28
8090								
8091								
8092	0	0	0	0	0	0	0	0
8093								
8094	0	0	0	0	0	0	0	0
8095								
8096								
8097								
8098								
8099								
8100	0	0	0	0	0	0	0	0
8102								
8103								
8104	0	0	0	0	0	0	0	0
8106	0	0	0	0	0	0	0	0
8107	0	0	0	0	0	0	0	0
8110	0	0	0	0	0	0	0	0
8111	0	0	0	0	0	0	0	0
8112								
8113								
8114								
8115								
8117								
8118	0	0	0	0	0	0	0	0
8119	0	0	0	0	0	0	0	0
8120			0			0		
8121	0	0	0	0	0	0	0	0
8124								
8125	0	0	0	0	0	0	0	0
8126								
8127								
8129	0	0	0	0	0			
8130								
8131	0	0	0	0	0	0	0	0
8132								
8133	0	0	0	0	0	0	0	0
8134								
8135				0	0	0		
8136	0	0	0			0	0	0
8137								
8137	0	0	0	0	0	0	0	0
8138								

APPENDIX VIII: RAW DATA

SkeletonID	Caries_21	Caries_22	Caries_23	Caries_24	Caries_25	Caries_26	Caries_27	Caries_28
8139	0	0	0	0	0	0	0	0
8140	0	0	0	0	0	0	0	0
8141								
8142	0	0	0	0	0	0	0	0
8143								
8144								
8148	0	0	0	0	0	0	0	0
8149	0	0	0	0	0	0		0
8154								
8155								
8156								
8157								
8158				1	1			
8159							0	1
8160	0	0	0	0	0	0	0	0
8161								
8163	0	0	0	0	0	0	0	
8164								
8165								
8166								
23713	0	0	0	0	0	0	0	0
23714								
23715	0		0	0	0	0	0	0
23735								
23736	0		0	0	0	0	0	0
23738	1	0	0	0			0	0
23739	0	0	0			0	0	0
23740	0	0	0	0	0	0	0	0
23743	0	0	0	0	0	0	0	0
23752	0	0	0	0	0		0	0
23755	0	0	0	0	0	0	0	0
23758								
23759								
26192								
27220	0	0	0	0	0	0	0	0
28305								
31360	0	0	0	0	0	0	0	0
31930	0	0			0	0	0	0
31949		0						
7956	0	0	0	0	0	0	0	0
8002	0	0	0	0	0	0	0	0
8065					0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Caries_21	Caries_22	Caries_23	Caries_24	Caries_25	Caries_26	Caries_27	Caries_28
8069	0	0	0			0	0	
8122	0	0	0	0			0	0
20435								
20436	0	0	0	0	0	0	0	0
20439								
20444	0	0	0	0	0	0	0	0
20450	0	0	0	0	0	0	0	0
20458	0	0	0	0	0	0	0	0
20469	0	0	0	0	0	0		0
20472								
20474						0		
20504			0	0	0	0	0	0
20507								
20509	0	0	0	0	0	0	0	0
21001								
21002	0	0	0	0	0	0	0	0
21004								
21005								
21008								
21013	0							
21024								
21025								
21026	0	0	0	0	0	0	0	0
21033	1	0	0	0	0	0	0	0
21034	0	0	0	0	0	0	0	0
21035								
21044			0	0	0	0		
21045								
21053				1	1	0		0
21056								
21057	0	0	0	0	0	0		
21069	0	0	0	0	0	0	0	
21070								
21074	0	0	0	0	0	0		
21080								
21082	0	0		0		0	0	0
21083		0	0	0	0	0	0	
21086								
21090	0				0	0		0
21093								
21096								
21102								

APPENDIX VIII: RAW DATA

SkeletonID	Caries_21	Caries_22	Caries_23	Caries_24	Caries_25	Caries_26	Caries_27	Caries_28
21274	0	0	0					
21279								
26213	0	0	0	0	0	0	0	0
26214	0	0	0	0	0	0	0	0
26252								
26253	0	0	0	0	0	0	0	0
26254		0	0	0	0			
26268								
27207	0	0	0	0	0	0	0	0
28264								
28281								
28289								
28294	0	0	0	0	0	0	0	0
28297	0	0	0			0	0	0
28326	0	0	0	0	0	0	0	0
31363								0
31422								
31901	0	0	0	0	0	0	0	

APPENDIX VIII: RAW DATA

SkeletonID	Caries_29	Caries_30	Caries_31	Caries_32	Caries_Sum	ToothObs_1	ToothObs_2
7962	0	0	0	0	2	1	1
7963	0	0	0				1
7964	0	0	0	0			1
7965							
7966							
7967	0	0	1		2		1
7968		0					
7969							
7970	0	0	0	0		1	1
7971							
7972	0	0	0	0		1	1
7973						1	1
7974		0	0				1
7975	0	0	0	0		1	1
7976							
7977							
7978					1		
7979							
7980		0					
7981							
7982							
7983		0	0	0			1
7984		0					
7985							
7986	0	1	0	0	1	1	1
7987							
7988							
7989	0	0	0		1		1
7990		1	0	0	2	1	
7994	0	0	0	0		1	1
7996	0	0	0	0		1	
7997		0	0	0		1	1
7998							
7999							
8003	0	0				1	1
8017	0	0	0	0			
8025	0						
8026	0	0	0	0		1	1
8031							
8032							
8034							
8035	0		0	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	Caries_29	Caries_30	Caries_31	Caries_32	Caries_Sum	ToothObs_1	ToothObs_2
8036							
8037							
8038	0	0	0		1		1
8039	0	0	0	0	1		1
8041		0			1		1
8042							
8043							
8044							
8045	0	0	0	0		1	1
8047							
8048	0	1	0	0	3		
8049							
8050	0	0	0				1
8051	0		0	0	4		
8052							
8054							
8055							
8056							
8057	0	0	1	0	4	1	1
8060	0	0	0		1	1	1
8061	0	0	0	0			1
8062	0	0	0	0			
8063							
8064							
8067							
8068		0					
8070		0					
8074							
8075	0	0	0	0		1	1
8076		0	0				1
8077		0	0				1
8078							
8079							
8080		0					
8081		0					
8082							
8083	0	1	0		3	1	1
8084	0	0	1		1		1
8085							
8086		0	0	0			1
8087		0					
8088	0	0	0	0			

APPENDIX VIII: RAW DATA

SkeletonID	Caries_29	Caries_30	Caries_31	Caries_32	Caries_Sum	ToothObs_1	ToothObs_2
8090							
8091							
8092	0	0	0	0	5	1	1
8093							
8094	0	0	0	0			1
8095							
8096							
8097							
8098							
8099							
8100	0	0	0	0	1	1	1
8102							
8103							
8104	0	0	0	0			
8106	0	0	0				1
8107	0	0	0	0		1	1
8110	0	0	0	0		1	1
8111	0	0	0				1
8112							
8113							
8114							
8115							
8117							
8118	0	0	0	0		1	1
8119	0	1			1		
8120		1			1		
8121		0	0				1
8124							
8125	0	0	0	0		1	
8126							
8127		0			1	1	1
8129	0	0		0		1	1
8130							
8131	0	0	0	0		1	1
8132							
8133	0	0	0				1
8134							
8135		0					
8136	0	0	0	0		1	
8137							
8137	0	0	0	0			
8138							

APPENDIX VIII: RAW DATA

SkeletonID	Caries_29	Caries_30	Caries_31	Caries_32	Caries_Sum	ToothObs_1	ToothObs_2
8139	0	0	0	0		1	1
8140	0	0	0				1
8141							
8142	0	1	0	0	2		
8143							
8144							
8148	0	0	0	0			
8149	0	1	0		3		1
8154							
8155	0	0	0	0		1	1
8156							
8157							
8158					2	1	
8159	0		0	0	2	1	1
8160	0			1	2	1	1
8161							
8163	0	0	0	0		1	1
8164							
8165				0			
8166							
23713	0	0	0			1	1
23714							
23715	0	0	0	0		1	1
23735		0					
23736	0	0	0	0	3	1	
23738	0	0	0	0	1		
23739			0		1	1	1
23740	0	0					
23743	1	0	0	0	1		1
23752	0	0	0				1
23755	0	0	0				1
23758							
23759							
26192		0	0		1	1	1
27220	0	0	0	0		1	1
28305							
31360	0	0	0	0		1	1
31930	0	0	0	0		1	1
31949			0	0			
7956	0	0			1	1	1
8002	0			0	2	1	
8065	1			0	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	Caries_29	Caries_30	Caries_31	Caries_32	Caries_Sum	ToothObs_1	ToothObs_2
8069				0			1
8122	0	0	0	0			1
20435							
20436	0	0	0	0		1	1
20439							
20444	0	0	0				
20450	0		1	0	3	1	1
20458		0	0	0			1
20469		0	0	0		1	1
20472							
20474							
20504	0				1		
20507							
20509	0	1	0	0	1	1	1
21001		1			2		
21002	0					1	1
21004							
21005					1		
21008							
21013					2		
21024							
21025							
21026	0	0	0	0			
21033	0	0	0	0	5		
21034	0	0	0				1
21035							
21044							
21045		0					
21053					3		
21056							
21057	0	0	0	0			1
21069		0	0	0		1	1
21070							
21074	0	0	0				1
21080							
21082					1	1	1
21083	0	0	0	1	1	1	1
21086							
21090	0	0	0				1
21093							
21096							
21102							

APPENDIX VIII: RAW DATA

SkeletonID	Caries_29	Caries_30	Caries_31	Caries_32	Caries_Sum	ToothObs_1	ToothObs_2
21274	0	0	0				
21279							
26213	0	0	0	0	1	1	1
26214	0	0	0				1
26252		0					1
26253	0	0	0				1
26254				0			
26268							
27207	0	0	0	1	3	1	1
28264							
28281							
28289							
28294	0	0	0			1	1
28297	0	1	1	0	4	1	1
28326	0	0	0	0		1	1
31363	0		0				
31422		0				1	
31901	0			0	3	1	

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_3	ToothObs_4	ToothObs_5	ToothObs_6	ToothObs_7	ToothObs_8
7962	1	1	1	1	1	1
7963	1	1	1			
7964	1	1	1	1	1	1
7965						
7966						
7967	1	1	1	1		
7968	1				1	1
7969						
7970	1	1	1	1	1	1
7971						
7972	1	1	1	1	1	1
7973	1	1	1	1	1	
7974	1			1		1
7975	1	1	1	1	1	1
7976						
7977						
7978						
7979						
7980	1					
7981						
7982						
7983				1	1	1
7984						
7985						
7986	1	1	1	1	1	1
7987						
7988						
7989	1	1	1	1	1	1
7990						
7994	1	1	1	1		1
7996	1	1	1	1	1	
7997	1	1	1	1	1	1
7998						
7999						
8003		1	1		1	1
8017						
8025						
8026	1	1	1	1	1	1
8031						
8032						
8034						
8035		1	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_3	ToothObs_4	ToothObs_5	ToothObs_6	ToothObs_7	ToothObs_8
8036						
8037						
8038	1	1	1	1	1	1
8039	1	1	1	1	1	1
8041	1			1		
8042						
8043						
8044						
8045		1		1		
8047						
8048	1	1	1	1	1	1
8049						
8050	1	1	1	1	1	1
8051					1	1
8052						
8054						
8055						
8056						
8057	1	1	1	1	1	1
8060	1	1	1	1	1	1
8061	1	1	1	1	1	1
8062	1	1	1			1
8063						
8064						
8067						
8068	1					
8070	1					
8074						
8075	1	1	1	1	1	1
8076	1	1	1	1	1	1
8077	1					
8078						
8079						
8080						
8081	1					
8082						
8083		1	1	1	1	1
8084	1	1	1	1	1	1
8085						
8086						
8087						
8088						

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_3	ToothObs_4	ToothObs_5	ToothObs_6	ToothObs_7	ToothObs_8
8090						
8091						
8092	1	1	1	1	1	1
8093						
8094	1	1	1	1	1	
8095						
8096						
8097						
8098						
8099						
8100	1	1	1	1	1	1
8102						
8103						
8104						
8106	1	1		1		1
8107	1					
8110	1	1	1	1	1	1
8111	1	1	1	1	1	1
8112						
8113						
8114						
8115						
8117						
8118	1	1	1	1	1	1
8119				1	1	1
8120	1					
8121	1		1	1		
8124						
8125						
8126						
8127	1					
8129		1		1	1	1
8130						
8131		1	1	1	1	1
8132						
8133	1	1	1	1	1	1
8134						
8135					1	1
8136	1	1	1	1	1	1
8137						
8137	1	1	1			1
8138						

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_3	ToothObs_4	ToothObs_5	ToothObs_6	ToothObs_7	ToothObs_8
8139	1	1	1	1	1	1
8140	1	1	1	1	1	1
8141						
8142	1	1	1	1	1	1
8143						
8144						
8148						
8149	1	1	1	1	1	1
8154						
8155	1					
8156						
8157						
8158						
8159	1	1	1	1	1	1
8160	1	1	1	1	1	1
8161						
8163	1	1	1	1	1	1
8164						
8165						
8166						
23713	1	1	1	1	1	1
23714						
23715						
23735	1					
23736			1		1	
23738				1	1	1
23739	1					
23740				1		
23743	1	1	1	1	1	1
23752	1	1	1	1		
23755	1	1	1	1	1	1
23758						
23759						
26192	1	1	1	1	1	1
27220	1	1	1	1	1	1
28305						
31360	1	1	1	1	1	1
31930	1	1				
31949					1	1
7956	1	1	1	1	1	1
8002	1	1		1	1	1
8065	1		1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_3	ToothObs_4	ToothObs_5	ToothObs_6	ToothObs_7	ToothObs_8
8069						
8122	1	1	1			1
20435						
20436	1	1	1	1	1	1
20439						
20444		1	1	1	1	1
20450		1	1	1	1	1
20458	1	1	1	1	1	1
20469	1			1		1
20472						
20474						
20504		1				
20507						
20509	1	1	1	1	1	1
21001	1					
21002		1	1		1	1
21004						
21005						
21008						
21013			1			1
21024						
21025						
21026						
21033					1	1
21034	1					1
21035						
21044						
21045						
21053	1		1	1	1	1
21056						
21057	1			1		
21069	1	1	1	1	1	1
21070						
21074	1		1	1	1	1
21080						
21082		1	1	1		
21083	1			1	1	1
21086						
21090	1	1	1	1	1	
21093						
21096						
21102						

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_3	ToothObs_4	ToothObs_5	ToothObs_6	ToothObs_7	ToothObs_8
21274				1		
21279						
26213	1	1	1			
26214	1	1	1	1	1	1
26252	1					
26253	1	1	1	1		
26254				1	1	1
26268						
27207	1	1	1	1	1	1
28264						
28281						
28289	1					
28294	1	1		1	1	1
28297	1	1	1	1	1	1
28326	1	1	1	1		
31363			1			
31422				1		
31901	1	1		1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_9	ToothObs_10	ToothObs_11	ToothObs_12	ToothObs_13	ToothObs_14
7962	1	1	1	1	1	
7963	1	1	1			1
7964	1	1	1	1	1	1
7965						
7966						
7967			1	1	1	1
7968	1	1				1
7969						
7970	1	1	1	1	1	1
7971						
7972	1	1	1	1	1	
7973		1	1	1	1	1
7974	1		1			1
7975	1	1	1	1	1	1
7976						
7977						
7978						1
7979						
7980						1
7981						
7982						
7983	1					
7984						
7985						
7986	1	1	1	1	1	1
7987						
7988						
7989	1	1	1	1	1	1
7990		1	1	1	1	
7994	1	1	1	1	1	1
7996		1	1	1	1	1
7997	1	1	1	1		
7998						
7999						
8003	1	1				1
8017						
8025						
8026	1	1	1	1	1	1
8031						
8032						1
8034						
8035	1	1	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_9	ToothObs_10	ToothObs_11	ToothObs_12	ToothObs_13	ToothObs_14
8036						
8037						
8038	1	1	1	1	1	1
8039	1	1	1	1	1	1
8041			1		1	1
8042						
8043						
8044						
8045	1	1	1	1	1	1
8047						
8048	1	1	1	1	1	
8049						
8050	1	1	1	1	1	1
8051	1	1	1	1	1	
8052						
8054						
8055						
8056						
8057	1	1	1	1	1	1
8060	1	1	1	1	1	
8061	1		1	1	1	1
8062	1	1	1	1	1	
8063						
8064						
8067						
8068						1
8070						1
8074						
8075	1	1	1	1	1	1
8076	1	1	1	1	1	1
8077						1
8078						
8079						
8080						
8081						1
8082						
8083	1	1	1	1	1	1
8084	1	1	1	1	1	1
8085						
8086	1		1			1
8087						
8088						

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_9	ToothObs_10	ToothObs_11	ToothObs_12	ToothObs_13	ToothObs_14
8090						
8091						
8092	1	1	1	1	1	1
8093						
8094						
8095						
8096						
8097						
8098						
8099						
8100	1	1	1	1	1	1
8102						
8103						
8104						
8106	1	1	1	1	1	1
8107			1	1	1	1
8110	1	1	1	1	1	1
8111	1	1	1	1	1	1
8112						
8113						
8114						1
8115						
8117						
8118	1	1	1	1	1	1
8119	1	1	1			1
8120	1					1
8121			1			1
8124						
8125						
8126						
8127						1
8129	1	1		1	1	1
8130						
8131	1	1	1	1	1	1
8132						
8133	1	1	1	1	1	1
8134						
8135		1				1
8136	1	1	1	1	1	
8137						
8137	1	1	1	1	1	1
8138						

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_9	ToothObs_10	ToothObs_11	ToothObs_12	ToothObs_13	ToothObs_14
8139	1	1	1	1	1	1
8140	1	1	1	1	1	1
8141						
8142	1	1	1	1	1	1
8143						
8144						
8148						
8149	1	1	1	1	1	1
8154						
8155	1	1	1	1	1	1
8156						
8157						
8158						
8159	1	1	1	1		
8160	1	1	1	1	1	1
8161						
8163	1	1	1	1	1	1
8164						
8165						
8166						
23713	1	1	1	1	1	1
23714						
23715	1	1	1			
23735						1
23736		1	1		1	
23738	1	1	1			
23739						1
23740						
23743	1	1	1	1	1	1
23752		1	1	1	1	1
23755	1	1	1	1	1	1
23758						
23759						
26192			1		1	1
27220	1	1	1	1	1	1
28305						
31360	1	1	1	1	1	1
31930						
31949	1			1	1	
7956	1	1	1	1	1	1
8002	1	1	1		1	
8065	1	1	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_9	ToothObs_10	ToothObs_11	ToothObs_12	ToothObs_13	ToothObs_14
8069						
8122	1		1	1	1	1
20435						
20436	1	1	1	1	1	1
20439						
20444	1	1	1	1	1	
20450			1	1	1	
20458	1	1	1	1	1	1
20469	1	1	1	1	1	1
20472						
20474						
20504						
20507						
20509	1	1	1	1	1	1
21001						1
21002	1	1		1		1
21004						
21005						
21008						
21013	1					
21024						
21025						
21026						
21033	1	1			1	1
21034	1	1	1			1
21035						
21044						
21045						
21053	1		1	1	1	1
21056						
21057					1	1
21069	1	1	1	1		1
21070						
21074	1	1	1	1		1
21080						
21082				1		
21083			1			1
21086						
21090	1	1		1	1	1
21093						
21096						
21102						

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_9	ToothObs_10	ToothObs_11	ToothObs_12	ToothObs_13	ToothObs_14
21274						
21279						
26213	1	1	1	1	1	1
26214	1	1	1	1	1	1
26252						1
26253				1	1	1
26254	1	1				
26268						
27207	1	1	1	1	1	1
28264						
28281						
28289						1
28294	1	1	1	1	1	1
28297	1	1	1	1	1	1
28326	1	1	1	1	1	1
31363					1	1
31422					1	
31901	1	1	1			

SkeletonID	ToothObs_15	ToothObs_16	ToothObs_17	ToothObs_18	ToothObs_19	ToothObs_20
7962		1	1	1	1	1
7963	1			1	1	1
7964	1		1	1	1	1
7965						
7966						
7967	1			1	1	1
7968					1	
7969						
7970	1	1	1	1	1	1
7971						
7972	1	1	1	1	1	1
7973	1	1		1	1	1
7974	1			1	1	
7975	1	1	1	1	1	1
7976						
7977						
7978						1
7979						
7980					1	
7981						
7982						
7983		1	1	1	1	1
7984					1	
7985						
7986	1	1	1		1	1
7987						
7988						
7989	1			1	1	1
7990		1	1	1	1	1
7994	1	1	1	1	1	1
7996	1	1	1	1	1	1
7997	1	1	1	1	1	1
7998						
7999						
8003		1	1		1	1
8017			1	1		
8025			1			1
8026	1	1	1	1	1	1
8031						
8032						
8034						
8035			1	1		1

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_15	ToothObs_16	ToothObs_17	ToothObs_18	ToothObs_19	ToothObs_20
8036						
8037						
8038	1			1	1	1
8039	1		1	1	1	1
8041				1		1
8042						
8043						
8044						
8045	1	1	1	1		1
8047						
8048	1		1	1	1	1
8049						
8050	1			1	1	1
8051			1	1	1	1
8052						
8054						
8055						
8056						
8057	1	1	1	1	1	1
8060	1	1	1	1	1	1
8061	1	1	1	1	1	1
8062						1
8063						
8064						
8067						
8068					1	
8070						
8074						
8075	1	1	1	1	1	1
8076	1			1	1	1
8077	1					
8078						
8079						
8080					1	
8081					1	
8082						
8083	1	1	1	1		1
8084	1			1	1	1
8085						
8086	1		1	1	1	1
8087					1	
8088			1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_15	ToothObs_16	ToothObs_17	ToothObs_18	ToothObs_19	ToothObs_20
8090						
8091						
8092	1	1	1	1	1	1
8093						
8094			1	1	1	1
8095						
8096						
8097						
8098						
8099						
8100	1		1	1	1	1
8102						
8103						
8104			1	1	1	1
8106	1			1	1	1
8107	1	1		1		1
8110	1	1	1	1	1	1
8111	1			1	1	1
8112						
8113						
8114					1	
8115						
8117						
8118	1	1	1	1	1	1
8119		1	1	1	1	1
8120					1	
8121	1			1	1	
8124						
8125		1	1	1	1	1
8126						
8127	1	1			1	
8129	1	1	1	1		1
8130						
8131	1	1	1	1	1	1
8132						
8133	1			1	1	1
8134						
8135						
8136		1		1	1	1
8137						
8137	1		1	1	1	1
8138						

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_15	ToothObs_16	ToothObs_17	ToothObs_18	ToothObs_19	ToothObs_20
8139	1	1	1	1	1	1
8140	1			1	1	1
8141						
8142			1	1	1	1
8143						
8144						
8148			1	1	1	1
8149	1			1	1	
8154						
8155	1		1	1	1	
8156						
8157						
8158						
8159	1	1	1		1	1
8160	1	1	1	1	1	1
8161						
8163	1	1	1	1	1	1
8164						
8165						
8166						
23713	1	1	1	1	1	1
23714						
23715	1			1		1
23735					1	
23736		1	1	1	1	1
23738	1		1	1		1
23739				1		
23740			1	1	1	1
23743	1	1		1	1	1
23752	1			1	1	1
23755	1			1	1	1
23758						
23759						
26192	1	1		1		
27220	1	1	1	1	1	1
28305						
31360	1	1	1	1	1	1
31930			1	1	1	1
31949	1			1		
7956	1	1	1	1	1	1
8002			1	1		1
8065	1	1				

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_15	ToothObs_16	ToothObs_17	ToothObs_18	ToothObs_19	ToothObs_20
8069	1			1		1
8122	1	1	1	1	1	1
20435						
20436	1	1	1	1	1	1
20439						
20444		1		1	1	1
20450	1	1	1	1	1	1
20458	1	1		1	1	1
20469	1	1	1	1	1	1
20472						
20474						
20504	1					
20507						
20509	1	1	1	1		1
21001					1	
21002	1	1				1
21004						
21005	1					
21008						
21013						
21024						
21025						
21026	1	1		1	1	1
21033		1		1		1
21034	1			1	1	1
21035						
21044						
21045					1	
21053				1		
21056						
21057	1		1	1	1	1
21069				1	1	
21070						
21074	1			1	1	
21080						
21082				1		1
21083	1	1	1	1	1	
21086						
21090	1			1	1	1
21093						
21096						
21102						

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_15	ToothObs_16	ToothObs_17	ToothObs_18	ToothObs_19	ToothObs_20
21274				1		1
21279						
26213	1	1	1	1	1	1
26214	1			1	1	1
26252	1					
26253	1			1	1	1
26254			1	1		
26268						
27207	1	1	1	1	1	1
28264						
28281						
28289					1	
28294	1	1		1	1	1
28297	1	1	1	1	1	1
28326	1	1	1	1	1	1
31363	1	1				
31422			1		1	
31901		1			1	1

SkeletonID	ToothObs_21	ToothObs_22	ToothObs_23	ToothObs_24	ToothObs_25	ToothObs_26
7962	1	1	1	1	1	1
7963	1	1	1	1	1	1
7964	1	1	1	1	1	1
7965						
7966						
7967	1	1	1	1	1	1
7968			1	1	1	1
7969						
7970	1	1	1	1	1	1
7971						
7972	1	1	1	1	1	1
7973	1	1	1	1	1	1
7974				1	1	
7975	1	1	1	1	1	1
7976						
7977						
7978	1	1	1	1	1	1
7979						
7980						
7981						
7982						
7983	1	1				
7984						
7985						
7986	1	1	1	1	1	
7987						
7988						
7989	1	1	1	1	1	1
7990	1	1				1
7994	1	1	1	1	1	1
7996	1	1	1	1	1	1
7997	1	1	1	1	1	1
7998						
7999						
8003	1		1	1	1	1
8017						
8025	1		1	1	1	1
8026	1	1	1	1	1	1
8031						
8032						
8034						
8035	1	1	1	1		1

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_21	ToothObs_22	ToothObs_23	ToothObs_24	ToothObs_25	ToothObs_26
8036						
8037						
8038	1	1	1	1	1	1
8039	1	1	1	1	1	1
8041			1	1		
8042						
8043						
8044						
8045	1	1	1	1	1	1
8047						
8048	1	1	1	1	1	1
8049						
8050	1	1	1	1	1	1
8051	1	1	1			
8052						
8054						
8055						
8056						
8057	1	1	1	1	1	1
8060	1	1	1	1	1	1
8061	1	1	1	1	1	1
8062	1	1	1	1	1	1
8063						
8064						
8067						
8068						
8070					1	
8074						
8075	1	1	1	1	1	1
8076	1	1	1	1	1	
8077						
8078						
8079						
8080			1	1	1	1
8081			1	1	1	1
8082						
8083	1	1	1	1	1	1
8084	1	1	1	1	1	1
8085						
8086	1	1	1	1		
8087						
8088	1	1	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_21	ToothObs_22	ToothObs_23	ToothObs_24	ToothObs_25	ToothObs_26
8090						
8091						
8092	1	1	1	1	1	1
8093						
8094	1	1	1	1	1	1
8095						
8096						
8097						
8098						
8099						
8100	1	1	1	1	1	1
8102						
8103						
8104	1	1	1	1	1	1
8106	1	1	1	1	1	1
8107	1	1	1	1	1	1
8110	1	1	1	1	1	1
8111	1	1	1	1	1	1
8112						
8113						
8114						
8115						
8117						
8118	1	1	1	1	1	1
8119	1	1	1	1	1	1
8120			1			1
8121	1	1	1	1	1	1
8124						
8125	1	1	1	1	1	1
8126						
8127						
8129	1	1	1	1	1	
8130						
8131	1	1	1	1	1	1
8132						
8133	1	1	1	1	1	1
8134						
8135				1	1	1
8136	1	1	1			1
8137						
8137	1	1	1	1	1	1
8138						

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_21	ToothObs_22	ToothObs_23	ToothObs_24	ToothObs_25	ToothObs_26
8139	1	1	1	1	1	1
8140	1	1	1	1	1	1
8141						
8142	1	1	1	1	1	1
8143						
8144						
8148	1	1	1	1	1	1
8149	1	1	1	1	1	1
8154						
8155						
8156						
8157						
8158				1	1	
8159						
8160	1	1	1	1	1	1
8161						
8163	1	1	1	1	1	1
8164						
8165						
8166						
23713	1	1	1	1	1	1
23714						
23715	1		1	1	1	1
23735						
23736	1		1	1	1	1
23738	1	1	1	1		
23739	1	1	1			1
23740	1	1	1	1	1	1
23743	1	1	1	1	1	1
23752	1	1	1	1	1	
23755	1	1	1	1	1	1
23758						
23759						
26192						
27220	1	1	1	1	1	1
28305						
31360	1	1	1	1	1	1
31930	1	1			1	1
31949		1				
7956	1	1	1	1	1	1
8002	1	1	1	1	1	1
8065					1	1

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_21	ToothObs_22	ToothObs_23	ToothObs_24	ToothObs_25	ToothObs_26
8069	1	1	1			1
8122	1	1	1	1		
20435						
20436	1	1	1	1	1	1
20439						
20444	1	1	1	1	1	1
20450	1	1	1	1	1	1
20458	1	1	1	1	1	1
20469	1	1	1	1	1	1
20472						
20474						1
20504			1	1	1	1
20507						
20509	1	1	1	1	1	1
21001						
21002	1	1	1	1	1	1
21004						
21005						
21008						
21013	1					
21024						
21025						
21026	1	1	1	1	1	1
21033	1	1	1	1	1	1
21034	1	1	1	1	1	1
21035						
21044			1	1	1	1
21045						
21053				1	1	1
21056						
21057	1	1	1	1	1	1
21069	1	1	1	1	1	1
21070						
21074	1	1	1	1	1	1
21080						
21082	1	1		1		1
21083		1	1	1	1	1
21086						
21090	1				1	1
21093						
21096						
21102						

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_21	ToothObs_22	ToothObs_23	ToothObs_24	ToothObs_25	ToothObs_26
21274	1	1	1			
21279						
26213	1	1	1	1	1	1
26214	1	1	1	1	1	1
26252						
26253	1	1	1	1	1	1
26254		1	1	1	1	
26268						
27207	1	1	1	1	1	1
28264						
28281						
28289						
28294	1	1	1	1	1	1
28297	1	1	1			1
28326	1	1	1	1	1	1
31363						
31422						
31901	1	1	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_27	ToothObs_28	ToothObs_29	ToothObs_30	ToothObs_31	ToothObs_32
7962	1	1	1	1	1	1
7963	1	1	1	1	1	
7964	1	1	1	1	1	1
7965						
7966						
7967	1	1	1	1	1	
7968				1		
7969						
7970	1	1	1	1	1	1
7971						
7972	1	1	1	1	1	1
7973	1	1				
7974				1	1	
7975	1	1	1	1	1	1
7976						
7977						
7978	1	1				
7979						
7980				1		
7981						
7982						
7983				1	1	1
7984				1		
7985						
7986	1	1	1	1	1	1
7987						
7988						
7989	1	1	1	1	1	
7990	1	1		1	1	1
7994	1	1	1	1	1	1
7996	1	1	1	1	1	1
7997	1			1	1	1
7998						
7999						
8003	1	1	1	1		
8017	1	1	1	1	1	1
8025		1	1			
8026	1	1	1	1	1	1
8031						
8032						
8034						
8035	1	1	1		1	1

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_27	ToothObs_28	ToothObs_29	ToothObs_30	ToothObs_31	ToothObs_32
8036						
8037						
8038	1	1	1	1	1	
8039	1	1	1	1	1	1
8041				1		
8042						
8043						
8044						
8045	1	1	1	1	1	1
8047						
8048	1	1	1	1	1	1
8049						
8050	1	1	1	1	1	
8051	1	1	1		1	1
8052						
8054						
8055						
8056						
8057	1	1	1	1	1	1
8060	1	1	1	1	1	
8061	1	1	1	1	1	1
8062	1	1	1	1	1	1
8063						
8064						
8067						
8068				1		
8070				1		
8074						
8075	1	1	1	1	1	1
8076				1	1	
8077				1	1	
8078						
8079						
8080				1		
8081				1		
8082						
8083	1	1	1	1	1	
8084	1	1	1	1	1	
8085						
8086				1	1	1
8087				1		
8088	1	1	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_27	ToothObs_28	ToothObs_29	ToothObs_30	ToothObs_31	ToothObs_32
8090						
8091						
8092	1	1	1	1	1	1
8093						
8094	1	1	1	1	1	1
8095						
8096						
8097						
8098						
8099						
8100	1	1	1	1	1	1
8102						
8103						
8104	1	1	1	1	1	1
8106	1	1	1	1	1	
8107	1	1	1	1	1	1
8110	1	1	1	1	1	1
8111	1	1	1	1	1	
8112						
8113						
8114						
8115						
8117						
8118	1	1	1	1	1	1
8119	1	1	1	1		
8120				1		
8121	1	1		1	1	
8124						
8125	1	1	1	1	1	1
8126						
8127				1		
8129			1	1		1
8130						
8131	1	1	1	1	1	1
8132						
8133	1	1	1	1	1	
8134						
8135				1		
8136	1	1	1	1	1	1
8137						
8137	1	1	1	1	1	1
8138						

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_27	ToothObs_28	ToothObs_29	ToothObs_30	ToothObs_31	ToothObs_32
8139	1	1	1	1	1	1
8140	1	1	1	1	1	
8141						
8142	1	1	1	1	1	1
8143						
8144						
8148	1	1	1	1	1	1
8149		1	1	1	1	
8154						
8155			1	1	1	1
8156						
8157						
8158						
8159	1	1	1		1	1
8160	1	1	1			1
8161						
8163	1		1	1	1	1
8164						
8165						1
8166						
23713	1	1	1	1	1	
23714						
23715	1	1	1	1	1	1
23735				1		
23736	1	1	1	1	1	1
23738	1	1	1	1	1	1
23739	1	1			1	
23740	1	1	1	1		
23743	1	1	1	1	1	1
23752	1	1	1	1	1	
23755	1	1	1	1	1	
23758						
23759						
26192				1	1	
27220	1	1	1	1	1	1
28305						
31360	1	1	1	1	1	1
31930	1	1	1	1	1	1
31949					1	1
7956	1	1	1	1		
8002	1	1	1			1
8065	1	1	1			1

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_27	ToothObs_28	ToothObs_29	ToothObs_30	ToothObs_31	ToothObs_32
8069	1					1
8122	1	1	1	1	1	1
20435						
20436	1	1	1	1	1	1
20439						
20444	1	1	1	1	1	
20450	1	1	1		1	1
20458	1	1		1	1	1
20469		1		1	1	1
20472						
20474						
20504	1	1	1			
20507						
20509	1	1	1	1	1	1
21001				1		
21002	1	1	1			
21004						
21005						
21008						
21013						
21024						
21025						
21026	1	1	1	1	1	1
21033	1	1	1	1	1	1
21034	1	1	1	1	1	
21035						
21044						
21045				1		
21053		1				
21056						
21057			1	1	1	1
21069	1			1	1	1
21070						
21074			1	1	1	
21080						
21082	1	1				
21083	1		1	1	1	1
21086						
21090		1	1	1	1	
21093						
21096						
21102						

APPENDIX VIII: RAW DATA

SkeletonID	ToothObs_27	ToothObs_28	ToothObs_29	ToothObs_30	ToothObs_31	ToothObs_32
21274			1	1	1	
21279						
26213	1	1	1	1	1	1
26214	1	1	1	1	1	
26252				1		
26253	1	1	1	1	1	
26254						1
26268						
27207	1	1	1	1	1	1
28264						
28281						
28289						
28294	1	1	1	1	1	
28297	1	1	1	1	1	1
28326	1	1	1	1	1	1
31363		1	1		1	
31422				1		
31901	1		1			1

APPENDIX VIII: RAW DATA

SkeletonID	SumToothObs	CO_Score	CO_ScoreColl	CO_ScoreCollapsed2	CO_Activity_Full
7962	30	0		0	0
7963	23	0		0	0
7964	30	0		0	0
7965					
7966		1	0	1	1
7967	24	0		0	0
7968	12				
7969					
7970	32	0		0	0
7971		1	0	1	1
7972	31	0		0	0
7973	25	0		0	0
7974	14	0		0	0
7975	32	0		0	0
7976					
7977		0		0	0
7978	10	0		0	0
7979					
7980	4	0		0	0
7981		1	0	1	1
7982					
7983	15	0		0	0
7984	2				
7985					
7986	30	0		0	0
7987		0		0	0
7988		0		0	0
7989	28	2	0	1	1
7990	18	0		0	0
7994	31				
7996	29	0		0	0
7997	28	0		0	0
7998					
7999					
8003	22	0		0	0
8017	8	0		0	0
8025	9	0		0	0
8026	32				
8031					
8032	1				
8034					
8035	26	0		0	0

APPENDIX VIII: RAW DATA

SkeletonID	SumToothObs	CO_Score	CO_ScoreColl	CO_ScoreCollapsed2	CO_Activity_Full
8036		0		0	0
8037					
8038	28	2	0	1	1
8039	30	1	0	1	3
8041	11				
8042					
8043					
8044					
8045	27	0		0	0
8047					
8048	28	1	0	1	1
8049					
8050	28				
8051	19	0		0	0
8052					
8054					
8055		1	0	1	3
8056					
8057	32	0		0	0
8060	30	0		0	0
8061	30	0		0	0
8062	22	0		0	0
8063					
8064		0		0	0
8067					
8068	4	1	0	1	1
8070	4	0		0	0
8074					
8075	32	0		0	0
8076	24				
8077	6				
8078					
8079					
8080	6				
8081	8	0		0	0
8082					
8083	29				
8084	28	0		0	0
8085					
8086	16	0		0	0
8087	2	0		0	0
8088	16				

APPENDIX VIII: RAW DATA

SkeletonID	SumToothObs	CO_Score	CO_ScoreColl	CO_ScoreCollapsed2	CO_Activity_Full
8090					
8091					
8092	32				
8093					
8094	22	0		0	0
8095					
8096					
8097					
8098					
8099					
8100	31	0		0	0
8102					
8103					
8104	16				
8106	26	0		0	0
8107	23	0		0	0
8110	32	0		0	0
8111	28	0		0	0
8112		0		0	0
8113					
8114	2	0		0	0
8115		0		0	0
8117		0		0	0
8118	32	0		0	0
8119	22	0		0	0
8120	7	1	0	1	1
8121	19	0		0	0
8124		0		0	0
8125	18	0		0	0
8126					
8127	8	0		0	0
8129	24	0		0	0
8130		1	0	1	1
8131	31	0		0	0
8132		0		0	0
8133	28	0		0	0
8134					
8135	8	0		0	0
8136	26	0		0	0
8137		0		0	0
8137	27				
8138		0		0	0

APPENDIX VIII: RAW DATA

SkeletonID	SumToothObs	CO_Score	CO_ScoreColl	CO_ScoreCollapsed2	CO_Activity_Full
8139	32	0		0	0
8140	28	2	0	1	1
8141					
8142	28	1	0	1	3
8143					
8144					
8148	16				
8149	26	0		0	0
8154					
8155	17	0		0	0
8156		1	0	1	1
8157		1	0	1	1
8158	3				
8159	22	1	0	1	2
8160	30	1	0	1	2
8161		1	0	1	1
8163	31	0		0	0
8164		1	0	1	1
8165	1				
8166					
23713	31	0		0	0
23714		1	0	1	1
23715	19	1	0	1	2
23735	4	2	0	1	1
23736	22	0		0	0
23738	20	0		0	0
23739	12	1	0	1	2
23740	15	0		0	0
23743	30	2	0	1	1
23752	24	2	0	1	3
23755	28	1	0	1	1
23758					
23759					
26192	16				
27220	32	0		0	0
28305					
31360	32	0		0	0
31930	18				
31949	10				
7956	30	0		0	0
8002	23	0		0	0
8065	21	0		0	0

APPENDIX VIII: RAW DATA

SkeletonID	SumToothObs	CO_Score	CO_ScoreColl	CO_ScoreCollapsed2	CO_Activity_Full
8069	10	0		0	0
8122	26	0		0	0
20435		1	0	1	1
20436	32	0		0	0
20439		0		0	0
20444	25	0		0	0
20450	27	1	0	1	2
20458	29	2	0	1	3
20469	27	1	0	1	1
20472		1	0	1	1
20474	1	0		0	0
20504	9	1	0	1	3
20507					
20509	31				
21001	4	0		0	0
21002	22	0		0	0
21004					
21005	1	1	0	1	2
21008					
21013	4	0		0	0
21024					
21025		1	0	1	1
21026	17	0		0	0
21033	21	0		0	0
21034	22	1	0	1	1
21035					
21044	4				
21045	2	1	0	1	1
21053	15	0		0	0
21056					
21057	20	0		0	0
21069	25	0		0	0
21070					
21074	23	0		0	0
21080		0		0	0
21082	14	0		0	0
21083	23				
21086					
21090	22	1	0	1	3
21093					
21096					
21102		0		0	0

APPENDIX VIII: RAW DATA

SkeletonID	SumToothObs	CO_Score	CO_ScoreColl	CO_ScoreCollapsed2	CO_Activity_Full
21274	9	0		0	0
21279					
26213	29	0		0	0
26214	28	2	0	1	1
26252	5				
26253	23				
26254	12				
26268					
27207	32	0		0	0
28264					
28281		0		0	0
28289	3				
28294	29	0		0	0
28297	30				
28326	30				
31363	8	0		0	0
31422	6	2	0	1	2
31901	21				

APPENDIX VIII: RAW DATA

SkeletonID	CO_Activity	PH_Score	PHScore_Coll	PH_Activity	PNB_General	PNB_AbsPr_Combined
7962		1	0		0	0
7963		1	0			
7964		1	0		0	0
7965		1	0		0	0
7966	1	1	0		0	0
7967		1	0		1	1
7968		0			0	0
7969		0			0	0
7970		2	1	1	0	0
7971	1	1	0		0	0
7972		1	0		0	0
7973		1	0		0	0
7974		1	0		0	0
7975		1	0		0	0
7976		0			0	0
7977		1	0		0	0
7978		1	0		0	0
7979		0				
7980		1	0		0	0
7981	3	1	0		0	0
7982		0			0	0
7983		1	0		0	0
7984		0			0	0
7985		1	0		0	0
7986		2	1	3	0	0
7987		1	0		0	0
7988		1	0		0	0
7989	1	1	0		0	0
7990		1	0			
7994		1	0		0	1
7996		1	0		0	0
7997		1	0		0	0
7998		0			0	0
7999		0			0	0
8003		1	0		0	0
8017		1	0		0	0
8025		1	0		0	0
8026		0			0	0
8031		0			0	0
8032		0			0	0
8034		1	0		0	0
8035		1	0		1	1

APPENDIX VIII: RAW DATA

SkeletonID	CO_Activity	PH_Score	PHScore_Coll	PH_Activity	PNB_General	PNB_AbsPr_Combined
8036		1	0		0	0
8037		1	0		0	0
8038	1	2	1	1	0	0
8039	2	1	0		0	0
8041		0			0	0
8042		0			0	0
8043		0			0	0
8044		0			0	0
8045		1	0		0	0
8047		0			0	0
8048	1	1	0			
8049		0			0	0
8050		1	0		1	1
8051		1	0		1	1
8052		0			0	0
8054		0			0	0
8055	3	1	0		0	0
8056		0			0	0
8057		1	0		1	1
8060		1	0		0	0
8061		1	0		0	0
8062		1	0		0	1
8063		0			0	0
8064		1	0		0	0
8067		0			0	0
8068	1	1	0		0	0
8070		1	0		0	0
8074		0			0	0
8075		1	0		0	0
8076		1	0		0	0
8077		1	0		0	0
8078		1	0		0	0
8079		0			0	0
8080		1	0		0	0
8081		1	0		0	0
8082		0			0	0
8083		1	0		0	0
8084		1	0		0	0
8085		0			0	0
8086		1	0		0	0
8087		1	0		0	0
8088		0			0	0

APPENDIX VIII: RAW DATA

SkeletonID	CO_Activity	PH_Score	PHScore_Coll	PH_Activity	PNB_General	PNB_AbsPr_Combined
8090		1	0		0	0
8091		0			0	0
8092		1	0		0	0
8093		0			0	0
8094		1	0		0	0
8095		0			0	0
8096		0			0	0
8097		0			0	0
8098		0			0	0
8099		1	0		0	0
8100		1	0		0	0
8102		0			0	0
8103		0			0	0
8104		0			0	0
8106		1	0		0	0
8107		1	0		0	0
8110		1	0		0	0
8111		1	0		0	0
8112		1	0		0	0
8113		0			1	1
8114		1	0		0	0
8115		1	0		0	0
8117		1	0		0	0
8118		2	1	1		
8119		1	0		0	0
8120	1	1	0		0	0
8121		1	0			
8124		1	0		0	0
8125		1	0		0	1
8126		1	0			
8127		1	0		0	0
8129		1	0		1	1
8130	1	1	0			
8131		1	0		0	0
8132		1	0		0	0
8133		1	0		0	0
8134		0			0	0
8135		1	0		0	0
8136		1	0		0	0
8137		1	0		0	0
8137		1	0		0	0
8138		1	0		0	0

APPENDIX VIII: RAW DATA

SkeletonID	CO_Activity	PH_Score	PHScore_Coll	PH_Activity	PNB_General	PNB_AbsPr_Combined
8139		1	0		0	0
8140	1	1	0		0	1
8141		0			0	0
8142	2	2	1		0	0
8143		0			0	0
8144		0			0	0
8148		1	0		0	0
8149		1	0		0	0
8154		2	1	1	1	1
8155		1	0		0	0
8156	1	1	0		0	0
8157	1	1	0		0	0
8158		0			0	0
8159	1	1	0		1	1
8160	1	1	0		0	0
8161	1	1	0		0	0
8163		1	0		0	0
8164	1	1	0		0	0
8165		0			0	0
8166		0			0	0
23713		1	0		1	1
23714	1	1	0		1	1
23715	2	2	1	1	1	1
23735	1	1	0		0	0
23736		1	0		1	1
23738		1	0		0	0
23739	1	1	0		1	1
23740		1	0		1	1
23743	1	1	0			
23752	1	1	0		1	1
23755	1	1	0		0	0
23758		0			0	0
23759		0			1	1
26192		0			1	1
27220		2	1	2	0	1
28305		0			0	0
31360		2	1	2	0	0
31930		0			0	0
31949		1	0		0	0
7956		1	0		0	0
8002		1	0		0	0
8065		1	0			0

APPENDIX VIII: RAW DATA

SkeletonID	CO_Activity	PH_Score	PHScore_Coll	PH_Activity	PNB_General	PNB_AbsPr_Combined
8069		1	0		0	0
8122		1	0			
20435	1	0			0	0
20436		1	0		0	0
20439		1	0		0	0
20444		1	0		0	0
20450	2	1	0		0	0
20458	1	1	0		0	0
20469	1	2	1	1	0	0
20472	1	1	0		1	1
20474		1	0		1	1
20504	1	1	0		0	0
20507		0			0	0
20509		1	0		1	1
21001		1	0		0	0
21002		1	0		0	0
21004		0			0	0
21005	2	0			0	0
21008		0			0	0
21013		1	0		0	0
21024		0			0	0
21025	1	2	1		0	0
21026		1	0		0	0
21033		1	0		1	1
21034	1	1	0		0	0
21035		0			0	0
21044		1	0		0	1
21045	1	1	0		0	0
21053		1	0		0	0
21056		1	0		0	0
21057		1	0		0	0
21069		1	0		0	0
21070		1	0			
21074		1	0		0	0
21080		1	0			
21082		1	0		0	0
21083		1	0		1	1
21086		1	0			
21090	1	1	0		0	0
21093		0			0	0
21096		1	0		0	0
21102		1	0		0	0

APPENDIX VIII: RAW DATA

SkeletonID	CO_Activity	PH_Score	PHScore_Coll	PH_Activity	PNB_General	PNB_AbsPr_Combined
21274		1	0		0	0
21279		0				
26213		1	0		0	0
26214	1	1	0		0	0
26252		0			0	0
26253		0			0	0
26254		1	0		0	0
26268		0			0	0
27207		1	0		0	0
28264		1	0		0	0
28281		1	0		0	1
28289		0				
28294		1	0		0	1
28297		1	0		0	0
28326		1	0		0	0
31363		1	0		0	0
31422	1	2	1	3	0	0
31901		1	0		0	0

APPENDIX VIII: RAW DATA

SkeletonID	PNB_HumL	PNB_HumR	PNB_RadL	PNB_RadR	PNB_UlnL	PNB_UlnR	PNB_FemL
7962	1	1	1	1	1	9	1
7963							
7964	1	1	9	1	9	9	1
7965	1	9	1	9	1	9	1
7966	1	9	9	9	9	9	9
7967	1	3	1	1	9	1	1
7968	1	1	1	1	1	1	1
7969	9	9	9	9	9	9	1
7970	1	1	1	1	1	1	1
7971	9	1	9	1	9	1	1
7972	1	1	1	1	1	1	1
7973	1	1	1	1	1	1	1
7974	1	1	1	1	1	1	1
7975	1	1	1	1	1	1	1
7976	9	9	9	9	9	9	1
7977	1	9	1	9	1	9	1
7978	1	1	1	1	1	1	1
7979							
7980	9	9	9	9	9	9	9
7981	1	1	1	9	1	9	1
7982	1	1	1	9	1	9	9
7983	1	1	1	1	1	1	1
7984	1	9	1	1	9	9	1
7985	9	9	9	9	9	9	9
7986	1	1	1	1	1	1	1
7987	9	9	9	9	9	9	9
7988	1	1	9	9	9	1	1
7989	1	1	1	1	1	1	1
7990							
7994	9	9	9	1	1	1	1
7996	1	1	1	1	1	1	1
7997	1	1	1	1	1	1	1
7998	9	9	9	9	9	9	9
7999	9	9	9	9	1	9	9
8003	1	1	1	1	1	1	1
8017	9	1	9	9	9	9	9
8025	1	1	1	1	1	1	1
8026	1	1	1	1	1	1	1
8031	1	9	9	9	1	9	1
8032	9	9	9	9	9	9	9
8034	1	1	1	1	1	1	9
8035	1	1	1	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	PNB_HumL	PNB_HumR	PNB_RadL	PNB_RadR	PNB_UlnL	PNB_UlnR	PNB_FemL
8036	1	1	1	1	1	1	1
8037	1	1	9	9	9	9	1
8038	9	1	1	1	1	1	1
8039	1	1	1	1	1	1	1
8041	9	9	9	1	9	1	9
8042	9	1	9	9	9	9	9
8043	9	1	1	1	1	1	1
8044	9	9	9	9	9	9	1
8045	1	1	1	1	1	1	1
8047	1	9	9	9	9	9	1
8048							
8049	1	9	1	1	1	9	1
8050	9	9	9	9	9	9	1
8051	1	1	1	1	1	1	1
8052	1	1	1	9	1	9	1
8054	9	1	9	1	9	1	9
8055	1	1	1	1	1	1	9
8056	9	9	9	9	9	9	1
8057	1	1	1	1	1	1	1
8060	1	1	9	1	9	1	9
8061	1	1	1	1	1	1	1
8062	1	1	1	1	1	1	1
8063	1	9	9	9	9	9	9
8064	9	1	9	9	9	9	9
8067	9	9	9	9	1	9	9
8068	1	1	1	1	1	1	1
8070	1	1	1	1	1	1	1
8074	9	9	9	9	9	9	1
8075	1	1	1	1	1	1	1
8076	9	9	9	1	9	9	1
8077	1	9	9	9	9	9	9
8078	9	9	9	1	9	1	9
8079	1	1	1	9	1	9	1
8080	1	9	1	1	1	1	1
8081	9	1	9	9	9	9	1
8082	9	9	9	1	9	1	9
8083	1	1	1	1	1	1	1
8084	1	1	1	1	1	1	1
8085	9	9	9	9	9	9	9
8086	1	1	1	1	1	1	1
8087	1	1	1	1	1	1	1
8088	1	1	1	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	PNB_HumL	PNB_HumR	PNB_RadL	PNB_RadR	PNB_UlnL	PNB_UlnR	PNB_FemL
8090	1	1	1	9	1	1	9
8091	9	9	9	9	9	9	1
8092	1	1	1	1	1	1	1
8093	9	9	9	9	9	9	9
8094	1	1	1	1	1	1	1
8095	9	9	9	9	9	9	1
8096	1	1	1	1	1	1	1
8097	9	9	9	9	9	9	1
8098	1	9	1	1	1	1	9
8099	9	9	9	9	9	9	9
8100	1	1	1	1	1	1	1
8102	9	1	9	9	9	9	9
8103	9	1	9	9	9	9	9
8104	1	1	1	9	1	1	1
8106	1	1	1	1	1	1	1
8107	9	9	9	9	9	9	9
8110	1	1	9	1	9	1	9
8111	9	9	1	9	1	9	9
8112	9	1	9	9	9	9	9
8113	9	9	9	9	9	9	1
8114	1	1	9	9	9	9	1
8115	1	1	1	1	1	9	1
8117	1	1	1	1	1	1	1
8118							
8119	1	1	1	1	1	1	1
8120	1	1	1	1	1	1	1
8121							
8124	1	1	1	9	1	9	1
8125	1	1	1	1	1	1	1
8126							
8127	1	1	1	1	1	1	1
8129	1	1	1	1	1	1	1
8130							
8131	1	1	1	9	1	9	1
8132	1	1	1	9	9	9	9
8133	1	1	1	1	1	1	1
8134	1	1	9	9	1	9	1
8135	1	1	1	1	1	1	1
8136	1	1	1	1	1	1	1
8137	9	9	9	1	9	9	9
8137	1	1	1	1	1	1	1
8138	1	1	1	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	PNB_HumL	PNB_HumR	PNB_RadL	PNB_RadR	PNB_UlnL	PNB_UlnR	PNB_FemL
8139	1	1	1	1	1	1	1
8140	3	1	1	1	1	1	1
8141	9	9	9	9	9	9	1
8142	1	1	1	1	1	1	1
8143	1	9	9	9	9	9	9
8144	1	9	1	9	9	9	1
8148	1	1	1	1	1	1	1
8149	9	9	9	9	9	9	1
8154	1	9	1	9	1	9	1
8155	1	1	1	1	1	1	1
8156	9	1	9	1	9	1	9
8157	9	1	9	1	9	1	9
8158	9	9	1	1	1	1	1
8159	1	1	1	1	1	1	1
8160	1	1	1	1	1	1	1
8161	1	1	9	9	9	9	1
8163	1	1	1	1	1	1	1
8164	9	9	9	9	9	9	9
8165	1	1	1	1	1	1	1
8166	1	9	1	9	9	9	9
23713	1	1	1	1	1	1	3
23714	1	1	1	1	1	1	1
23715	1	4	1	1	1	1	1
23735	1	1	1	1	1	1	1
23736	1	1	1	1	3	1	1
23738	1	1	1	1	1	1	1
23739	1	1	1	1	1	1	1
23740	1	1	3	3	3	3	1
23743							
23752	1	1	1	1	1	1	1
23755	1	1	1	1	1	1	1
23758	9	9	1	9	1	9	1
23759	9	9	9	9	9	9	3
26192	1	1	1	1	1	1	1
27220	1	1	1	1	1	1	1
28305	1	9	1	9	1	9	1
31360	1	1	1	1	1	1	1
31930	1	1	1	1	1	1	1
31949	1	1	1	9	1	9	1
7956	1	1	1	1	1	9	1
8002	1	1	9	1	1	1	1
8065	9	1	9	1	9	1	9

APPENDIX VIII: RAW DATA

SkeletonID	PNB_HumL	PNB_HumR	PNB_RadL	PNB_RadR	PNB_UlnL	PNB_UlnR	PNB_FemL
8069	1	1	1	1	1	1	1
8122							
20435	1	1	1	9	1	1	1
20436	1	1	1	1	1	1	1
20439	1	9	9	9	9	9	9
20444	9	9	9	9	9	9	9
20450	1	1	1	1	1	1	1
20458	1	1	1	9	1	9	1
20469	1	1	1	1	1	1	1
20472	1	1	1	1	1	1	1
20474	3	1	1	1	1	1	1
20504	1	1	1	1	1	1	1
20507	9	1	1	1	1	1	1
20509	1	1	1	1	1	1	1
21001	1	1	1	1	1	1	1
21002	1	1	1	1	1	1	1
21004	1	1	1	1	1	1	1
21005	1	1	1	1	1	1	1
21008	1	1	1	1	1	1	1
21013	1	1	1	1	1	1	1
21024	9	9	1	1	1	1	1
21025	1	1	1	1	1	1	1
21026	1	1	1	1	1	1	1
21033	1	1	6	1	6	1	1
21034	1	1	1	1	1	1	1
21035	9	9	1	1	1	1	1
21044	3	1	1	1	1	1	1
21045	1	1	1	1	1	1	1
21053	9	9	9	9	9	9	1
21056	1	1	1	1	1	1	1
21057	1	1	1	1	1	1	1
21069	1	1	1	1	1	1	1
21070							
21074	1	1	1	1	9	9	9
21080							
21082	1	1	1	1	1	1	9
21083	1	1	1	1	1	1	1
21086							
21090	1	1	1	1	1	1	1
21093	9	1	9	9	9	1	9
21096	1	1	1	1	1	1	9
21102	1	1	9	9	9	9	1

APPENDIX VIII: RAW DATA

SkeletonID	PNB_HumL	PNB_HumR	PNB_RadL	PNB_RadR	PNB_UlnL	PNB_UlnR	PNB_FemL
21274	1	1	1	1	1	1	1
21279							
26213	1	1	1	1	1	1	1
26214	1	1	1	1	1	1	1
26252	9	9	9	9	9	9	9
26253	9	9	9	9	9	9	9
26254	9	9	9	9	9	9	9
26268	9	9	9	9	9	9	1
27207	9	9	9	9	9	9	9
28264	9	9	9	1	9	1	1
28281	1	1	1	1	1	1	1
28289	9	9	9	9	9	9	9
28294	1	1	1	1	1	1	1
28297	1	1	9	1	9	1	9
28326	1	1	1	1	1	1	1
31363	1	1	1	1	1	1	1
31422	9	9	9	9	9	9	9
31901	9	9	9	9	9	9	1

APPENDIX VIII: RAW DATA

SkeletonID	PNB_FemR	PNB_TibL	PNB_TibR	PNB_FibL	PNB_FibR	PNB_HumLCol	PNB_HumRCol
7962	1	1	1	1	1	0	0
7963							
7964	1	9	1	9	9	0	0
7965	9	1	9	9	9	0	
7966	1	1	9	1	9	0	
7967	1	9	9	9	9	0	1
7968	9	9	9	9	9	0	0
7969	1	1	1	1	1		
7970	1	1	1	1	1	0	0
7971	1	1	1	1	1		0
7972	1	1	1	1	1	0	0
7973	1	1	1	9	9	0	0
7974	1	1	1	1	1	0	0
7975	1	1	1	9	9	0	0
7976	9	1	9	9	9		
7977	1	1	1	1	1	0	
7978	1	1	1	1	1	0	0
7979							
7980	9	9	9	9	9		
7981	1	1	1	1	1	0	0
7982	1	1	1	9	9	0	0
7983	1	9	9	9	9	0	0
7984	1	1	1	1	1	0	
7985	1	9	1	1	9		
7986	1	1	1	1	1	0	0
7987	9	9	9	9	9		
7988	1	9	1	9	9	0	0
7989	1	1	1	1	1	0	0
7990							
7994	1	1	3	1	1		
7996	1	1	1	1	1	0	0
7997	1	9	9	1	1	0	0
7998	9	9	1	9	9		
7999	9	9	9	9	9		
8003	1	1	1	1	1	0	0
8017	9	9	9	9	9		0
8025	1	1	1	1	1	0	0
8026	1	1	1	1	1	0	0
8031	1	1	1	1	9	0	
8032	9	9	9	9	9		
8034	9	1	1	1	1	0	0
8035	1	1	1	1	1	0	0

APPENDIX VIII: RAW DATA

SkeletonID	PNB_FemR	PNB_TibL	PNB_TibR	PNB_FibL	PNB_FibR	PNB_HumLCol	PNB_HumRCol
8036	1	1	1	1	1	0	0
8037	1	9	1	9	9	0	0
8038	1	1	1	1	1		0
8039	1	1	1	1	1	0	0
8041	9	9	9	9	9		
8042	9	9	9	9	9		0
8043	1	1	1	1	1		0
8044	9	9	9	9	9		
8045	1	1	1	1	1	0	0
8047	1	1	1	1	1	0	
8048							
8049	1	1	1	1	1	0	
8050	1	1	1	1	1		
8051	1	1	1	4	1	0	0
8052	1	1	1	1	1	0	0
8054	9	9	9	9	9		0
8055	1	9	9	9	9	0	0
8056	1	9	9	9	9		
8057	1	1	1	1	1	0	0
8060	1	1	1	1	1	0	0
8061	1	1	1	1	1	0	0
8062	1	4	1	1	1	0	0
8063	9	1	1	9	1	0	
8064	9	9	9	9	9		0
8067	9	9	9	9	9		
8068	1	1	1	1	1	0	0
8070	1	1	1	1	1	0	0
8074	9	1	9	9	9		
8075	1	1	1	1	1	0	0
8076	1	1	1	1	1		
8077	1	1	1	1	1	0	
8078	9	9	9	9	9		
8079	9	1	1	9	9	0	0
8080	1	1	1	1	1	0	
8081	1	1	1	1	1		0
8082	9	1	1	1	1		
8083	1	9	9	9	9	0	0
8084	1	1	1	1	9	0	0
8085	9	1	1	1	1		
8086	9	1	1	9	1	0	0
8087	1	1	1	1	1	0	0
8088	1	1	1	1	1	0	0

APPENDIX VIII: RAW DATA

SkeletonID	PNB_FemR	PNB_TibL	PNB_TibR	PNB_FibL	PNB_FibR	PNB_HumLCol	PNB_HumRCol
8090	9	9	9	9	9	0	0
8091	1	1	9	1	1		
8092	1	1	1	1	1	0	0
8093	9	9	1	1	1		
8094	1	1	1	1	1	0	0
8095	1	1	1	1	1		
8096	1	9	1	9	1	0	0
8097	1	1	1	1	1		
8098	1	1	1	1	1	0	
8099	9	9	9	9	9		
8100	1	1	1	1	1	0	0
8102	1	1	1	1	9		0
8103	9	1	1	9	9		0
8104	1	9	9	9	9	0	0
8106	1	1	1	9	9	0	0
8107	9	9	9	9	9		
8110	9	9	9	9	1	0	0
8111	9	9	9	9	9		
8112	1	9	1	9	9		0
8113	1	1	1	4	4		
8114	1	9	9	9	9	0	0
8115	1	1	1	9	1	0	0
8117	1	1	1	1	1	0	0
8118							
8119	1	1	1	1	1	0	0
8120	1	9	9	9	9	0	0
8121							
8124	1	1	1	1	9	0	0
8125	1	1	6	1	1	0	0
8126							
8127	1	1	1	1	1	0	0
8129	1	1	1	4	1	0	0
8130							
8131	1	1	1	1	1	0	0
8132	9	9	9	9	9	0	0
8133	1	1	1	1	1	0	0
8134	9	9	9	9	9	0	0
8135	1	1	1	1	1	0	0
8136	1	1	1	1	1	0	0
8137	9	9	9	9	9		
8137	1	1	1	1	1	0	0
8138	1	9	9	9	9	0	0

APPENDIX VIII: RAW DATA

SkeletonID	PNB_FemR	PNB_TibL	PNB_TibR	PNB_FibL	PNB_FibR	PNB_HumLCol	PNB_HumRCol
8139	1	1	1	1	1	0	0
8140	1	1	1	1	1	1	0
8141	9	9	9	9	9		
8142	1	1	1	1	1	0	0
8143	9	9	9	9	9	0	
8144	1	1	1	1	1	0	
8148	1	1	1	9	9	0	0
8149	1	9	9	9	9		
8154	1	1	1	1	9	0	
8155	1	9	9	9	9	0	0
8156	1	9	1	9	1		0
8157	1	9	9	9	9		0
8158	1	1	1	1	1		
8159	1	1	4	1	4	0	0
8160	1	1	1	1	1	0	0
8161	1	1	1	9	9	0	0
8163	1	1	1	1	1	0	0
8164	9	9	9	9	9		
8165	1	1	1	1	1	0	0
8166	9	9	9	9	9	0	
23713	1	1	3	1	3	0	0
23714	3	1	1	1	1	0	0
23715	1	4	1	1	1	0	1
23735	1	1	1	1	1	0	0
23736	1	1	1	1	1	0	0
23738	1	1	1	1	1	0	0
23739	1	1	1	1	1	0	0
23740	1	1	3	3	1	0	0
23743							
23752	1	1	1	1	1	0	0
23755	1	1	9	1	9	0	0
23758	1	1	1	1	1		
23759	9	1	1	1	1		
26192	1	3	4	5	5	0	0
27220	1	6	1	1	1	0	0
28305	1	9	9	9	9	0	
31360	1	1	1	1	1	0	0
31930	1	1	1	1	1	0	0
31949	1	1	1	1	1	0	0
7956	1	1	1	1	1	0	0
8002	1	9	1	9	1	0	0
8065	1	9	9	9	9		0

APPENDIX VIII: RAW DATA

SkeletonID	PNB_FemR	PNB_TibL	PNB_TibR	PNB_FibL	PNB_FibR	PNB_HumLCol	PNB_HumRCol
8069	1	9	1	9	1	0	0
8122							
20435	1	1	1	9	9	0	0
20436	1	1	1	1	1	0	0
20439	9	9	9	9	9	0	
20444	9	1	1	1	1		
20450	1	1	1	1	1	0	0
20458	9	1	9	1	9	0	0
20469	1	1	1	1	1	0	0
20472	1	1	1	1	1	0	0
20474	1	1	1	1	1	1	0
20504	1	1	1	1	1	0	0
20507	1	9	1	9	1		0
20509	1	1	1	6	1	0	0
21001	1	1	1	9	9	0	0
21002	1	1	1	1	1	0	0
21004	1	1	1	1	1	0	0
21005	1	1	1	1	1	0	0
21008	1	1	1	1	1	0	0
21013	1	1	1	1	1	0	0
21024	1	9	9	9	9		
21025	1	1	1	9	9	0	0
21026	1	1	1	1	1	0	0
21033	1	1	1	1	9	0	0
21034	9	1	9	1	9	0	0
21035	1	1	1	1	1		
21044	1	1	1	1	1	1	0
21045	1	1	1	1	1	0	0
21053	1	9	1	1	1		
21056	1	1	1	1	1	0	0
21057	1	1	1	1	1	0	0
21069	1	1	1	1	1	0	0
21070							
21074	1	9	9	9	9	0	0
21080							
21082	9	9	9	9	9	0	0
21083	1	1	1	1	1	0	0
21086							
21090	1	1	1	1	1	0	0
21093	1	9	1	9	9		0
21096	9	9	9	9	9	0	0
21102	1	1	1	1	1	0	0

APPENDIX VIII: RAW DATA

SkeletonID	PNB_FemR	PNB_TibL	PNB_TibR	PNB_FibL	PNB_FibR	PNB_HumLCol	PNB_HumRCol
21274	1	1	1	1	1	0	0
21279							
26213	1	1	1	1	1	0	0
26214	1	1	1	1	1	0	0
26252	9	9	9	9	9		
26253	9	9	9	9	9		
26254	9	9	9	9	9		
26268	9	9	9	9	9		
27207	9	9	9	9	9		
28264	1	1	1	1	1		
28281	1	1	3	1	1	0	0
28289	9	9	9	9	9		
28294	1	1	3	1	1	0	0
28297	1	9	9	9	9	0	0
28326	1	1	1	9	9	0	0
31363	1	9	9	9	9	0	0
31422	9	9	9	9	9		
31901	1	1	1	9	9		

APPENDIX VIII: RAW DATA

SkeletonID	PNB_RadLCol	PNB_RadRCol	PNB_UlnLCol	PNB_UlnRCol	PNB_FemLCol	PNB_FemRCol
7962	0	0	0		0	0
7963						
7964		0			0	0
7965	0		0		0	
7966						0
7967	0	0		0	0	0
7968	0	0	0	0	0	
7969					0	0
7970	0	0	0	0	0	0
7971		0		0	0	0
7972	0	0	0	0	0	0
7973	0	0	0	0	0	0
7974	0	0	0	0	0	0
7975	0	0	0	0	0	0
7976					0	
7977	0		0		0	0
7978	0	0	0	0	0	0
7979						
7980						
7981	0		0		0	0
7982	0		0			0
7983	0	0	0	0	0	0
7984	0	0			0	0
7985						0
7986	0	0	0	0	0	0
7987						
7988				0	0	0
7989	0	0	0	0	0	0
7990						
7994		0	0	0	0	0
7996	0	0	0	0	0	0
7997	0	0	0	0	0	0
7998						
7999			0			
8003	0	0	0	0	0	0
8017						
8025	0	0	0	0	0	0
8026	0	0	0	0	0	0
8031			0		0	0
8032						
8034	0	0	0	0		
8035	0	0	0	0	0	0

SkeletonID	PNB_RadLCol	PNB_RadRCol	PNB_UlnLCol	PNB_UlnRCol	PNB_FemLCol	PNB_FemRCol
8036	0	0	0	0	0	0
8037					0	0
8038	0	0	0	0	0	0
8039	0	0	0	0	0	0
8041		0		0		
8042						
8043	0	0	0	0	0	0
8044					0	
8045	0	0	0	0	0	0
8047					0	0
8048						
8049	0	0	0		0	0
8050					0	0
8051	0	0	0	0	0	0
8052	0		0		0	0
8054		0		0		
8055	0	0	0	0		0
8056					0	0
8057	0	0	0	0	0	0
8060		0		0		0
8061	0	0	0	0	0	0
8062	0	0	0	0	0	0
8063						
8064						
8067			0			
8068	0	0	0	0	0	0
8070	0	0	0	0	0	0
8074					0	
8075	0	0	0	0	0	0
8076		0			0	0
8077						0
8078		0		0		
8079	0		0		0	
8080	0	0	0	0	0	0
8081					0	0
8082		0		0		
8083	0	0	0	0	0	0
8084	0	0	0	0	0	0
8085						
8086	0	0	0	0	0	
8087	0	0	0	0	0	0
8088	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	PNB_RadLCol	PNB_RadRCol	PNB_UlnLCol	PNB_UlnRCol	PNB_FemLCol	PNB_FemRCol
8090	0		0	0		
8091					0	0
8092	0	0	0	0	0	0
8093						
8094	0	0	0	0	0	0
8095					0	0
8096	0	0	0	0	0	0
8097					0	0
8098	0	0	0	0		0
8099						
8100	0	0	0	0	0	0
8102						0
8103						
8104	0		0	0	0	0
8106	0	0	0	0	0	0
8107						
8110		0		0		
8111	0		0			
8112						0
8113					0	0
8114					0	0
8115	0	0	0		0	0
8117	0	0	0	0	0	0
8118						
8119	0	0	0	0	0	0
8120	0	0	0	0	0	0
8121						
8124	0		0		0	0
8125	0	0	0	0	0	0
8126						
8127	0	0	0	0	0	0
8129	0	0	0	0	0	0
8130						
8131	0		0		0	0
8132	0					
8133	0	0	0	0	0	0
8134			0		0	
8135	0	0	0	0	0	0
8136	0	0	0	0	0	0
8137		0				
8137	0	0	0	0	0	0
8138	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	PNB_RadLCol	PNB_RadRCol	PNB_UlnLCol	PNB_UlnRCol	PNB_FemLCol	PNB_FemRCol
8139	0	0	0	0	0	0
8140	0	0	0	0	0	0
8141					0	
8142	0	0	0	0	0	0
8143						
8144	0				0	0
8148	0	0	0	0	0	0
8149					0	0
8154	0		0		0	0
8155	0	0	0	0	0	0
8156		0		0		0
8157		0		0		0
8158	0	0	0	0	0	0
8159	0	0	0	0	0	0
8160	0	0	0	0	0	0
8161					0	0
8163	0	0	0	0	0	0
8164						
8165	0	0	0	0	0	0
8166	0					
23713	0	0	0	0	1	0
23714	0	0	0	0	0	1
23715	0	0	0	0	0	0
23735	0	0	0	0	0	0
23736	0	0	1	0	0	0
23738	0	0	0	0	0	0
23739	0	0	0	0	0	0
23740	1	1	1	1	0	0
23743						
23752	0	0	0	0	0	0
23755	0	0	0	0	0	0
23758	0		0		0	0
23759					1	
26192	0	0	0	0	0	0
27220	0	0	0	0	0	0
28305	0		0		0	0
31360	0	0	0	0	0	0
31930	0	0	0	0	0	0
31949	0		0		0	0
7956	0	0	0		0	0
8002		0	0	0	0	0
8065		0		0		0

APPENDIX VIII: RAW DATA

SkeletonID	PNB_RadLCol	PNB_RadRCol	PNB_UlnLCol	PNB_UlnRCol	PNB_FemLCol	PNB_FemRCol
8069	0	0	0	0	0	0
8122						
20435	0		0	0	0	0
20436	0	0	0	0	0	0
20439						
20444						
20450	0	0	0	0	0	0
20458	0		0		0	
20469	0	0	0	0	0	0
20472	0	0	0	0	0	0
20474	0	0	0	0	0	0
20504	0	0	0	0	0	0
20507	0	0	0	0	0	0
20509	0	0	0	0	0	0
21001	0	0	0	0	0	0
21002	0	0	0	0	0	0
21004	0	0	0	0	0	0
21005	0	0	0	0	0	0
21008	0	0	0	0	0	0
21013	0	0	0	0	0	0
21024	0	0	0	0	0	0
21025	0	0	0	0	0	0
21026	0	0	0	0	0	0
21033	1	0	1	0	0	0
21034	0	0	0	0	0	
21035	0	0	0	0	0	0
21044	0	0	0	0	0	0
21045	0	0	0	0	0	0
21053					0	0
21056	0	0	0	0	0	0
21057	0	0	0	0	0	0
21069	0	0	0	0	0	0
21070						
21074	0	0				0
21080						
21082	0	0	0	0		
21083	0	0	0	0	0	0
21086						
21090	0	0	0	0	0	0
21093				0		0
21096	0	0	0	0		
21102					0	0

APPENDIX VIII: RAW DATA

SkeletonID	PNB_RadLCol	PNB_RadRCol	PNB_UlnLCol	PNB_UlnRCol	PNB_FemLCol	PNB_FemRCol
21274	0	0	0	0	0	0
21279						
26213	0	0	0	0	0	0
26214	0	0	0	0	0	0
26252						
26253						
26254						
26268					0	
27207						
28264		0		0	0	0
28281	0	0	0	0	0	0
28289						
28294	0	0	0	0	0	0
28297		0		0		0
28326	0	0	0	0	0	0
31363	0	0	0	0	0	0
31422						
31901					0	0

APPENDIX VIII: RAW DATA

SkeletonID	PNB_TibLCol	PNB_TibRCol	PNB_FibLCol	PNB_FibRCol	PNBbySkeleton_Count
7962	0	0	0	0	0
7963					
7964		0			0
7965	0				0
7966	0		0		0
7967					2
7968					0
7969	0	0	0	0	0
7970	0	0	0	0	0
7971	0	0	0	0	0
7972	0	0	0	0	0
7973	0	0			0
7974	0	0	0	0	0
7975	0	0			0
7976	0				0
7977	0	0	0	0	0
7978	0	0	0	0	0
7979					
7980					0
7981	0	0	0	0	0
7982	0	0			0
7983					0
7984	0	0	0	0	0
7985		0	0		0
7986	0	0	0	0	0
7987					0
7988		0			0
7989	0	0	0	0	0
7990					
7994	0	1	0	0	1
7996	0	0	0	0	0
7997			0	0	0
7998		0			0
7999					0
8003	0	0	0	0	0
8017					0
8025	0	0	0	0	0
8026	0	0	0	0	0
8031	0	0	0		0
8032					0
8034	0	0	0	0	0
8035	0	0	0	0	1

APPENDIX VIII: RAW DATA

SkeletonID	PNB_TibLCol	PNB_TibRCol	PNB_FibLCol	PNB_FibRCol	PNBbySkeleton_Count
8036	0	0	0	0	0
8037		0			0
8038	0	0	0	0	0
8039	0	0	0	0	0
8041					0
8042					0
8043	0	0	0	0	0
8044					0
8045	0	0	0	0	0
8047	0	0	0	0	0
8048					
8049	0	0	0	0	0
8050	0	0	0	0	1
8051	0	0	1	0	2
8052	0	0	0	0	0
8054					0
8055					0
8056					0
8057	0	0	0	0	1
8060	0	0	0	0	0
8061	0	0	0	0	0
8062	1	0	0	0	1
8063	0	0		0	0
8064					0
8067					0
8068	0	0	0	0	0
8070	0	0	0	0	0
8074	0				0
8075	0	0	0	0	0
8076	0	0	0	0	0
8077	0	0	0	0	0
8078					0
8079	0	0			0
8080	0	0	0	0	0
8081	0	0	0	0	0
8082	0	0	0	0	0
8083					0
8084	0	0	0		0
8085	0	0	0	0	0
8086	0	0		0	0
8087	0	0	0	0	0
8088	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	PNB_TibLCol	PNB_TibRCol	PNB_FibLCol	PNB_FibRCol	PNBbySkeleton_Count
8090					0
8091	0		0	0	0
8092	0	0	0	0	0
8093		0	0	0	0
8094	0	0	0	0	0
8095	0	0	0	0	0
8096		0		0	0
8097	0	0	0	0	0
8098	0	0	0	0	0
8099					0
8100	0	0	0	0	0
8102	0	0	0		0
8103	0	0			0
8104					0
8106	0	0			0
8107					0
8110				0	0
8111					0
8112		0			0
8113	0	0	1	1	3
8114					0
8115	0	0		0	0
8117	0	0	0	0	0
8118					
8119	0	0	0	0	0
8120					0
8121					
8124	0	0	0		0
8125	0	1	0	0	1
8126					
8127	0	0	0	0	0
8129	0	0	1	0	3
8130					
8131	0	0	0	0	0
8132					0
8133	0	0	0	0	0
8134					0
8135	0	0	0	0	0
8136	0	0	0	0	0
8137					0
8137	0	0	0	0	0
8138					0

APPENDIX VIII: RAW DATA

SkeletonID	PNB_TibLCol	PNB_TibRCol	PNB_FibLCol	PNB_FibRCol	PNBbySkeleton_Count
8139	0	0	0	0	0
8140	0	0	0	0	1
8141					0
8142	0	0	0	0	0
8143					0
8144	0	0	0	0	0
8148	0	0			0
8149					0
8154	0	0	0		1
8155					0
8156		0		0	0
8157					0
8158	0	0	0	0	0
8159	0	1	0	1	3
8160	0	0	0	0	0
8161	0	0			0
8163	0	0	0	0	0
8164					0
8165	0	0	0	0	0
8166					0
23713	0	1	0	1	4
23714	0	0	0	0	2
23715	1	0	0	0	3
23735	0	0	0	0	0
23736	0	0	0	0	2
23738	0	0	0	0	0
23739	0	0	0	0	1
23740	0	1	1	0	7
23743					
23752	0	0	0	0	1
23755	0		0		0
23758	0	0	0	0	0
23759	0	0	0	0	2
26192	1	1	1	1	6
27220	1	0	0	0	1
28305					0
31360	0	0	0	0	0
31930	0	0	0	0	0
31949	0	0	0	0	0
7956	0	0	0	0	0
8002		0		0	0
8065					0

APPENDIX VIII: RAW DATA

SkeletonID	PNB_TibLCol	PNB_TibRCol	PNB_FibLCol	PNB_FibRCol	PNBbySkeleton_Count
8069		0		0	0
8122					
20435	0	0			0
20436	0	0	0	0	0
20439					0
20444	0	0	0	0	0
20450	0	0	0	0	0
20458	0		0		0
20469	0	0	0	0	0
20472	0	0	0	0	2
20474	0	0	0	0	2
20504	0	0	0	0	0
20507		0		0	0
20509	0	0	1	0	2
21001	0	0			0
21002	0	0	0	0	0
21004	0	0	0	0	0
21005	0	0	0	0	0
21008	0	0	0	0	0
21013	0	0	0	0	0
21024					0
21025	0	0			0
21026	0	0	0	0	0
21033	0	0	0		3
21034	0		0		0
21035	0	0	0	0	0
21044	0	0	0	0	1
21045	0	0	0	0	0
21053		0	0	0	0
21056	0	0	0	0	0
21057	0	0	0	0	0
21069	0	0	0	0	0
21070					
21074					0
21080					
21082					0
21083	0	0	0	0	1
21086					
21090	0	0	0	0	0
21093		0			0
21096					0
21102	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	PNB_TibLCol	PNB_TibRCol	PNB_FibLCol	PNB_FibRCol	PNBbySkeleton_Count
21274	0	0	0	0	0
21279					
26213	0	0	0	0	0
26214	0	0	0	0	0
26252					0
26253					0
26254					0
26268					0
27207					0
28264	0	0	0	0	0
28281	0	1	0	0	1
28289					
28294	0	1	0	0	1
28297					0
28326	0	0			0
31363					0
31422					0
31901	0	0			0

APPENDIX VIII: RAW DATA

SkeletonID	PNBbySkeleton_AbsPr	PNB_AbsPr_LongBone	DJD_ShoulderL	DJD_ShoulderR
7962	0	0	0	0
7963				
7964	0	0	0	0
7965	0	0		
7966	0	0		
7967	1		0	0
7968	0	0		
7969	0	0		
7970	0	0	0	0
7971	0	0		
7972	0	0	0	0
7973	0	0	0	0
7974	0	0		
7975	0	0	0	0
7976	0	0		
7977	0	0		
7978	0	0	0	0
7979				
7980	0	0		
7981	0	0		
7982	0	0		
7983	0	0	0	0
7984	0	0		
7985	0	0		
7986	0	0	0	0
7987	0	0		
7988	0	0		
7989	0	0		
7990			0	1
7994	1			0
7996	0	0	0	0
7997	0	0	0	0
7998	0	0		
7999	0	0		
8003	0	0	0	0
8017	0	0	0	0
8025	0	0	0	0
8026	0	0	0	0
8031	0	0		
8032	0	0		
8034	0	0		
8035	1		0	0

APPENDIX VIII: RAW DATA

SkeletonID	PNBbySkeleton_AbsPr	PNB_AbsPr_LongBone	DJD_ShoulderL	DJD_ShoulderR
8036	0	0		
8037	0	0		
8038	0	0	0	0
8039	0	0	0	0
8041	0	0	0	0
8042	0	0		
8043	0	0		0
8044	0	0		
8045	0	0	0	0
8047	0	0		
8048				0
8049	0	0	0	
8050	1			
8051	1	1	0	0
8052	0	0		
8054	0	0		
8055	0	0		
8056	0	0		
8057	1		0	0
8060	0	0	0	0
8061	0	0	0	0
8062	1	1	0	0
8063	0	0		
8064	0	0		
8067	0	0		
8068	0	0		
8070	0	0		
8074	0	0		
8075	0	0	0	0
8076	0	0		
8077	0	0		
8078	0	0		
8079	0	0		
8080	0	0		
8081	0	0		
8082	0	0		
8083	0	0	0	0
8084	0	0	0	0
8085	0	0		
8086	0	0		
8087	0	0		
8088	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	PNBbySkeleton_AbsPr	PNB_AbsPr_LongBone	DJD_ShoulderL	DJD_ShoulderR
8090	0	0		
8091	0	0		
8092	0	0	0	0
8093	0	0		
8094	0	0	0	0
8095	0	0		
8096	0	0		
8097	0	0		
8098	0	0		
8099	0	0		
8100	0	0	0	0
8102	0	0		
8103	0	0		
8104	0	0	0	0
8106	0	0		
8107	0	0	0	0
8110	0	0	0	0
8111	0	0		
8112	0	0		
8113	1			
8114	0	0		
8115	0	0		
8117	0	0		
8118			1	0
8119	0	0	0	0
8120	0	0		
8121				
8124	0	0		
8125	1	1	0	0
8126				
8127	0	0	0	0
8129	1	1	0	0
8130				
8131	0	0	0	0
8132	0	0		
8133	0	0		
8134	0	0		
8135	0	0		
8136	0	0	0	0
8137	0	0		
8137	0	0	0	0
8138	0	0		

APPENDIX VIII: RAW DATA

SkeletonID	PNBbySkeleton_AbsPr	PNB_AbsPr_LongBone	DJD_ShoulderL	DJD_ShoulderR
8139	0	0	0	0
8140	1	1	0	0
8141	0	0		
8142	0	0	0	0
8143	0	0		
8144	0	0		
8148	0	0	0	0
8149	0	0		
8154	1			
8155	0	0	0	0
8156	0	0		
8157	0	0		
8158	0	0		
8159	1	1	0	0
8160	0	0	0	0
8161	0	0		
8163	0	0	0	0
8164	0	0		
8165	0	0	0	0
8166	0	0		
23713	1	1	0	0
23714	1	1		
23715	1	1	0	2
23735	0	0		
23736	1	1	0	0
23738	0	0	0	0
23739	1		0	0
23740	1	1	0	0
23743			0	0
23752	1		0	0
23755	0	0		
23758	0	0		
23759	1			
26192	1	1	0	0
27220	1	1	0	0
28305	0	0	0	
31360	0	0	0	
31930	0	0	0	0
31949	0	0		
7956	0	0	0	0
8002	0	0	0	0
8065	0	0		0

APPENDIX VIII: RAW DATA

SkeletonID	PNBbySkeleton_AbsPr	PNB_AbsPr_LongBone	DJD_ShoulderL	DJD_ShoulderR
8069	0	0	0	0
8122			0	0
20435	0	0		
20436	0	0	0	0
20439	0	0		
20444	0	0		
20450	0	0	1	0
20458	0	0	0	0
20469	0	0	0	0
20472	1			
20474	1	1	0	0
20504	0	0	0	0
20507	0	0		
20509	1	1	0	0
21001	0	0		
21002	0	0	0	0
21004	0	0		0
21005	0	0	1	2
21008	0	0	0	0
21013	0	0	0	0
21024	0	0		
21025	0	0		
21026	0	0	0	1
21033	1		0	1
21034	0	0	0	0
21035	0	0		0
21044	1	1	0	0
21045	0	0	0	0
21053	0	0		
21056	0	0		
21057	0	0	0	0
21069	0	0	0	0
21070				
21074	0	0	0	0
21080				
21082	0	0	0	1
21083	1		0	0
21086				
21090	0	0	0	0
21093	0	0		2
21096	0	0		
21102	0	0		

APPENDIX VIII: RAW DATA

SkeletonID	PNBbySkeleton_AbsPr	PNB_AbsPr_LongBone	DJD_ShoulderL	DJD_ShoulderR
21274	0	0	0	0
21279				
26213	0	0	0	0
26214	0	0		
26252	0	0		
26253	0	0		
26254	0	0		
26268	0	0		
27207	0	0		0
28264	0	0		
28281	1	1		
28289				
28294	1	1	0	0
28297	0	0	0	0
28326	0	0		
31363	0	0		
31422	0	0		
31901	0	0		

APPENDIX VIII: RAW DATA

SkeletonID	DJD_ElbowL	DJD_ElbowR	DJD_WristL	DJD_WristR	DJD_HipL	DJD_HipR	DJD_KneeL
7962	0	0	0	0	0	0	0
7963							
7964	0	0		0	0	0	0
7965							
7966							
7967	0	0	0	0	0	0	0
7968							
7969					0	0	0
7970	0	0	0	0	0	0	0
7971							
7972	0	0	0	0	0	0	0
7973					0	0	
7974							
7975	0	0	0	0	0	0	0
7976							0
7977							
7978	0	0	0	0	0	0	0
7979							
7980							
7981							
7982							
7983	0	0	0	0	0	0	0
7984							
7985							
7986	0	0	0	0	0	0	0
7987							
7988							
7989							
7990	0	0	0	0	0	0	0
7994	0	0	0	0	0	0	
7996	0	0	0	0	1	0	0
7997	0	0	0	0	1	0	0
7998							
7999							
8003	0	0	0	0	0	0	0
8017		0					
8025	0	1	0	0	0	0	0
8026	0	0		0	0	0	0
8031							
8032							
8034							
8035	0	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_ElbowL	DJD_ElbowR	DJD_WristL	DJD_WristR	DJD_HipL	DJD_HipR	DJD_KneeL
8036							
8037							
8038	0	0	0	0	0	0	0
8039	0	0	0	0	0	0	0
8041	0	0	0			0	
8042							
8043	0	0	0	0	0	0	0
8044							
8045	0	0	0	0	0	0	0
8047							
8048	0	0	0	0	0	0	0
8049	0	0	0	0	1	1	0
8050							
8051	0	0	0	0	0	0	0
8052							
8054							
8055							
8056							
8057	0	0	0	0	1	0	0
8060	0	0		0		0	
8061	0	0	0	0	0	0	0
8062	0	0	0	0	0	0	0
8063							
8064							
8067							
8068							
8070							
8074							
8075	0	0	0	0	0	0	0
8076							
8077							0
8078							
8079							
8080							
8081							
8082							
8083	0	0	0	0	2	0	0
8084	0	0	0	0	0	0	0
8085							0
8086							
8087							
8088	0	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_ElbowL	DJD_ElbowR	DJD_WristL	DJD_WristR	DJD_HipL	DJD_HipR	DJD_KneeL
8090							
8091							
8092	0	0	0	0	0	0	0
8093							
8094	0	0	0	0	0	0	0
8095							
8096							
8097							0
8098							
8099							
8100	0	0	0	0	0	0	0
8102							
8103		0					0
8104	0	1	0	0	0	0	0
8106							
8107					0	0	
8110	0	0		0		0	
8111							
8112							
8113			0	0	0	0	0
8114							
8115							
8117							
8118	0	0	0	0	0	0	0
8119	0	0	0	0	0	0	0
8120							
8121							
8124							
8125	0	0		0	0	0	0
8126							
8127	0	0	0	0	0	0	0
8129	0	0	0	0	0	0	0
8130							
8131	0	0	0	0	0	0	0
8132							
8133							
8134							
8135							
8136	0	0	0	0	0	0	0
8137							
8137	0	0	0	0	0	0	0
8138							

APPENDIX VIII: RAW DATA

SkeletonID	DJD_ElbowL	DJD_ElbowR	DJD_WristL	DJD_WristR	DJD_HipL	DJD_HipR	DJD_KneeL
8139	0	0	0	0	0	0	0
8140	0	0	0	0	0	0	0
8141							
8142	0	0	0	0	0	0	0
8143							
8144							
8148	0	0	0	0	0	0	0
8149							
8154							
8155	0	0	0	0	0	0	0
8156							
8157							
8158	0	0	0	0	0	0	0
8159	0	0		0	0	0	0
8160	0	0	0	0	0	0	0
8161							
8163	0	0	0	0	0	0	0
8164							
8165	0	0	0	0	0	0	0
8166							
23713	0	0	0	0	0	0	0
23714							
23715	0	0	0	0	0	0	0
23735							
23736	0	0	1	0	0	0	0
23738	0	0	0	0	0	0	0
23739	0	2	0	0	0	0	0
23740	0	0	0	0	0	0	0
23743	0	0	0	0	0	0	0
23752	0	0	0	0	0	0	0
23755							
23758			0	0	0	0	0
23759							0
26192	0	0	0	0	0	0	0
27220	0	0	0	0	0	0	0
28305	0						
31360	0	0	0	0	0	0	0
31930	0	0	0	0	0	0	0
31949	0	0	0	0	0	0	0
7956				0	0	0	0
8002	0	0	0	0		0	2
8065		0		0		0	

APPENDIX VIII: RAW DATA

SkeletonID	DJD_ElbowL	DJD_ElbowR	DJD_WristL	DJD_WristR	DJD_HipL	DJD_HipR	DJD_KneeL
8069	0	0	2	2	0	0	0
8122	0	0	0	0	0	0	0
20435							
20436	0	0	0	0	0	0	0
20439							
20444							
20450	0	0	0	0	0	0	0
20458	0		0		0		0
20469	0	0	0	0	0	0	0
20472							
20474	0	0	0	0	0	0	0
20504	0	0	0	0	0	0	0
20507	0	0	0	0	0	0	0
20509	0	0	0	0	0	0	0
21001							
21002	0	0	0	0	1	0	2
21004	0	0	0	0	0	0	0
21005	0	0	1	0	2	0	0
21008	0	0	0	0	0	0	0
21013	0	0	0	0	2	0	0
21024		0	0		0	0	0
21025							
21026	0	0	0	0	0	0	0
21033	0	0	0	0	0	0	0
21034	0	0	0	0	0	0	0
21035	0	1	1	0	0	0	1
21044	0	0	0	0	1	0	0
21045	0	0	0	0	0	0	0
21053							
21056							
21057	0	0	0	0	0	0	0
21069	0	1	0	0	0	0	0
21070							
21074	0	0	0	0	0	0	
21080							
21082	0	1	0	0		0	
21083	0	0	0	0	0	0	0
21086							
21090	0	0	0	0	0	0	0
21093		0		0		0	
21096							
21102							

APPENDIX VIII: RAW DATA

SkeletonID	DJD_ElbowL	DJD_ElbowR	DJD_WristL	DJD_WristR	DJD_HipL	DJD_HipR	DJD_KneeL
21274	0	0	0	0	0	0	0
21279			0	0	0	0	0
26213	0	0	0	0	0	0	0
26214							
26252							
26253							
26254							
26268							
27207							
28264							
28281							
28289							
28294	0	0	0	0	0	0	0
28297	0	0		0	0	0	0
28326							
31363	0	0	0	0			
31422							
31901	0	0	0		0	0	

APPENDIX VIII: RAW DATA

SkeletonID	DJD_KneeR	DJD_AnkleL	DJD_AnkleR	DJD_ShoulderL_Col	DJD_ShoulderR_Col
7962	0	0	0	0	0
7963					
7964	0	0	0	0	0
7965					
7966					
7967	0			0	0
7968					
7969	0	0	0		
7970	0	0	0	0	0
7971					
7972	0	0	0	0	0
7973				0	0
7974					
7975	0	0	0	0	0
7976					
7977					
7978	0	0	0	0	0
7979					
7980					
7981					
7982					
7983	0	0	0	0	0
7984					
7985					
7986	0	0	0	0	0
7987					
7988					
7989					
7990	0	0	0	0	1
7994		0	0		0
7996	0	0	0	0	0
7997	0			0	0
7998	0				
7999					
8003	0	0	0	0	0
8017				0	0
8025	0	0	0	0	0
8026	0	0	0	0	0
8031					
8032					
8034					
8035	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_KneeR	DJD_AnkleL	DJD_AnkleR	DJD_ShoulderL_Col	DJD_ShoulderR_Col
8036					
8037					
8038	0	0	0	0	0
8039	0	0	0	0	0
8041				0	0
8042					
8043	0	0	0		0
8044					
8045	0	0	0	0	0
8047					
8048	0	0	0		0
8049	0	0	0	0	
8050					
8051	0	0	0	0	0
8052					
8054					
8055					
8056					
8057	0	0	0	0	0
8060	0	0	0	0	0
8061	0	0	0	0	0
8062	0	0	0	0	0
8063					
8064					
8067					
8068					
8070					
8074					
8075	0	0	0	0	0
8076					
8077	0	0	0		
8078					
8079					
8080					
8081					
8082					
8083	0	0	0	0	0
8084	0	0	0	0	0
8085	0				
8086					
8087					
8088	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_KneeR	DJD_AnkleL	DJD_AnkleR	DJD_ShoulderL_Col	DJD_ShoulderR_Col
8090					
8091					
8092	0	0	0	0	0
8093					
8094	0	0	0	0	0
8095					
8096					
8097	0	0	0		
8098					
8099					
8100	0	0	0	0	0
8102					
8103	0	0	0		
8104				0	0
8106					
8107				0	0
8110	0		0	0	0
8111					
8112					
8113	0	0	0		
8114					
8115					
8117					
8118	0	0	0	1	0
8119	0	0	0	0	0
8120					
8121					
8124					
8125	0	0	0	0	0
8126					
8127	0	0	0	0	0
8129	0	0	0	0	0
8130					
8131	0	0	0	0	0
8132					
8133					
8134					
8135					
8136	0	0	0	0	0
8137					
8137	0	0	0	0	0
8138					

APPENDIX VIII: RAW DATA

SkeletonID	DJD_KneeR	DJD_AnkleL	DJD_AnkleR	DJD_ShoulderL_Col	DJD_ShoulderR_Col
8139	0	0	0	0	0
8140	0	0	0	0	0
8141					
8142	0	0	0	0	0
8143					
8144					
8148	0	0	0	0	0
8149					
8154					
8155	0			0	0
8156					
8157					
8158	0	0	0		
8159	0	0	0	0	0
8160	0	0	0	0	0
8161					
8163	0	0	0	0	0
8164					
8165	0	0	0	0	0
8166					
23713	0	0	0	0	0
23714					
23715	0	0	0	0	1
23735					
23736	0	0	0	0	0
23738	0	0	0	0	0
23739	0	1	0	0	0
23740	0	0	0	0	0
23743	0			0	0
23752	0	0	0	0	0
23755					
23758	0	0	0		
23759	0	0	0		
26192	0	0	0	0	0
27220	0	0	0	0	0
28305				0	
31360	0	0	0	0	
31930	0	0	0	0	0
31949	0	0	0		
7956	0	0	0	0	0
8002	2			0	0
8065					0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_KneeR	DJD_AnkleL	DJD_AnkleR	DJD_ShoulderL_Col	DJD_ShoulderR_Col
8069	0	0	0	0	0
8122	0			0	0
20435					
20436	0	0	0	0	0
20439					
20444		0	0		
20450	0	0	0	1	0
20458		0		0	0
20469	0	0	0	0	0
20472					
20474	0	0	0	0	0
20504	0	0	0	0	0
20507	0	0	0		
20509	0	1	0	0	0
21001					
21002	0	0	0	0	0
21004	0	0	0		0
21005	0	0	0	1	1
21008	0	0	0	0	0
21013	0	0	0	0	0
21024					
21025					
21026	0	0	0	0	1
21033	0	0	0	0	1
21034		0		0	0
21035	0	0	0		0
21044	0	0	0	0	0
21045	0	0	0	0	0
21053					
21056					
21057	0	0	0	0	0
21069	0	0	0	0	0
21070					
21074	0			0	0
21080					
21082				0	1
21083	0	0	0	0	0
21086					
21090	0	0	0	0	0
21093	0		0		1
21096					
21102					

APPENDIX VIII: RAW DATA

SkeletonID	DJD_KneeR	DJD_AnkleL	DJD_AnkleR	DJD_ShoulderL_Col	DJD_ShoulderR_Col
21274	0	0	0	0	0
21279	0	0	0		
26213	0	0	0	0	0
26214					
26252					
26253					
26254					
26268					
27207					0
28264					
28281					
28289					
28294	0	0	0	0	0
28297	0			0	0
28326					
31363					
31422					
31901		0	0		

APPENDIX VIII: RAW DATA

SkeletonID	DJD_ElbowL_Col	DJD_ElbowR_Col	DJD_WristL_Col	DJD_WristR_Col	DJD_HipL_Col
7962	0	0	0	0	0
7963					
7964	0	0		0	0
7965					
7966					
7967	0	0	0	0	0
7968					
7969					0
7970	0	0	0	0	0
7971					
7972	0	0	0	0	0
7973					0
7974					
7975	0	0	0	0	0
7976					
7977					
7978	0	0	0	0	0
7979					
7980					
7981					
7982					
7983	0	0	0	0	0
7984					
7985					
7986	0	0	0	0	0
7987					
7988					
7989					
7990	0	0	0	0	0
7994	0	0	0	0	0
7996	0	0	0	0	1
7997	0	0	0	0	1
7998					
7999					
8003	0	0	0	0	0
8017		0			
8025	0	1	0	0	0
8026	0	0		0	0
8031					
8032					
8034					
8035	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_ElbowL_Col	DJD_ElbowR_Col	DJD_WristL_Col	DJD_WristR_Col	DJD_HipL_Col
8036					
8037					
8038	0	0	0	0	0
8039	0	0	0	0	0
8041	0	0	0		
8042					
8043	0	0	0	0	0
8044					
8045	0	0	0	0	0
8047					
8048	0	0	0	0	0
8049	0	0	0	0	1
8050					
8051	0	0	0	0	0
8052					
8054					
8055					
8056					
8057	0	0	0	0	1
8060	0	0		0	
8061	0	0	0	0	0
8062	0	0	0	0	0
8063					
8064					
8067					
8068					
8070					
8074					
8075	0	0	0	0	0
8076					
8077					
8078					
8079					
8080					
8081					
8082					
8083	0	0	0	0	1
8084	0	0	0	0	0
8085					
8086					
8087					
8088	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_ElbowL_Col	DJD_ElbowR_Col	DJD_WristL_Col	DJD_WristR_Col	DJD_HipL_Col
8090					
8091					
8092	0	0	0	0	0
8093					
8094	0	0	0	0	0
8095					
8096					
8097					
8098					
8099					
8100	0	0	0	0	0
8102					
8103		0			
8104	0	1	0	0	0
8106					
8107					0
8110	0	0		0	
8111					
8112					
8113			0	0	0
8114					
8115					
8117					
8118	0	0	0	0	0
8119	0	0	0	0	0
8120					
8121					
8124					
8125	0	0		0	0
8126					
8127	0	0	0	0	0
8129	0	0	0	0	0
8130					
8131	0	0	0	0	0
8132					
8133					
8134					
8135					
8136	0	0	0	0	0
8137					
8137	0	0	0	0	0
8138					

APPENDIX VIII: RAW DATA

SkeletonID	DJD_ElbowL_Col	DJD_ElbowR_Col	DJD_WristL_Col	DJD_WristR_Col	DJD_HipL_Col
8139	0	0	0	0	0
8140	0	0	0	0	0
8141					
8142	0	0	0	0	0
8143					
8144					
8148	0	0	0	0	0
8149					
8154					
8155	0	0	0	0	0
8156					
8157					
8158	0	0	0	0	0
8159	0	0		0	0
8160	0	0	0	0	0
8161					
8163	0	0	0	0	0
8164					
8165	0	0	0	0	0
8166					
23713	0	0	0	0	0
23714					
23715	0	0	0	0	0
23735					
23736	0	0	1	0	0
23738	0	0	0	0	0
23739	0	1	0	0	0
23740	0	0	0	0	0
23743	0	0	0	0	0
23752	0	0	0	0	0
23755					
23758			0	0	0
23759					
26192	0	0	0	0	0
27220	0	0	0	0	0
28305	0				
31360	0	0	0	0	0
31930	0	0	0	0	0
31949	0	0	0	0	0
7956				0	0
8002	0	0	0	0	
8065		0		0	

APPENDIX VIII: RAW DATA

SkeletonID	DJD_ElbowL_Col	DJD_ElbowR_Col	DJD_WristL_Col	DJD_WristR_Col	DJD_HipL_Col
8069	0	0	1	1	0
8122	0	0	0	0	0
20435					
20436	0	0	0	0	0
20439					
20444					
20450	0	0	0	0	0
20458	0		0		0
20469	0	0	0	0	0
20472					
20474	0	0	0	0	0
20504	0	0	0	0	0
20507	0	0	0	0	0
20509	0	0	0	0	0
21001					
21002	0	0	0	0	1
21004	0	0	0	0	0
21005	0	0	1	0	1
21008	0	0	0	0	0
21013	0	0	0	0	1
21024		0	0		0
21025					
21026	0	0	0	0	0
21033	0	0	0	0	0
21034	0	0	0	0	0
21035	0	1	1	0	0
21044	0	0	0	0	1
21045	0	0	0	0	0
21053					
21056					
21057	0	0	0	0	0
21069	0	1	0	0	0
21070					
21074	0	0	0	0	0
21080					
21082	0	1	0	0	
21083	0	0	0	0	0
21086					
21090	0	0	0	0	0
21093		0		0	
21096					
21102					

APPENDIX VIII: RAW DATA

SkeletonID	DJD_ElbowL_Col	DJD_ElbowR_Col	DJD_WristL_Col	DJD_WristR_Col	DJD_HipL_Col
21274	0	0	0	0	0
21279			0	0	0
26213	0	0	0	0	0
26214					
26252					
26253					
26254					
26268					
27207					
28264					
28281					
28289					
28294	0	0	0	0	0
28297	0	0		0	0
28326					
31363	0	0	0	0	
31422					
31901	0	0	0		0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_HipR_Col	DJD_KneeL_Col	DJD_KneeR_Col	DJD_AnkleL_Col	DJD_AnkleR_Col
7962	0	0	0	0	0
7963					
7964	0	0	0	0	0
7965					
7966					
7967	0	0	0		
7968					
7969	0	0	0	0	0
7970	0	0	0	0	0
7971					
7972	0	0	0	0	0
7973	0				
7974					
7975	0	0	0	0	0
7976		0			
7977					
7978	0	0	0	0	0
7979					
7980					
7981					
7982					
7983	0	0	0	0	0
7984					
7985					
7986	0	0	0	0	0
7987					
7988					
7989					
7990	0	0	0	0	0
7994	0			0	0
7996	0	0	0	0	0
7997	0	0	0		
7998			0		
7999					
8003	0	0	0	0	0
8017					
8025	0	0	0	0	0
8026	0	0	0	0	0
8031					
8032					
8034					
8035	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_HipR_Col	DJD_KneeL_Col	DJD_KneeR_Col	DJD_AnkleL_Col	DJD_AnkleR_Col
8036					
8037					
8038	0	0	0	0	0
8039	0	0	0	0	0
8041	0				
8042					
8043	0	0	0	0	0
8044					
8045	0	0	0	0	0
8047					
8048	0	0	0	0	0
8049	1	0	0	0	0
8050					
8051	0	0	0	0	0
8052					
8054					
8055					
8056					
8057	0	0	0	0	0
8060	0		0	0	0
8061	0	0	0	0	0
8062	0	0	0	0	0
8063					
8064					
8067					
8068					
8070					
8074					
8075	0	0	0	0	0
8076					
8077		0	0	0	0
8078					
8079					
8080					
8081					
8082					
8083	0	0	0	0	0
8084	0	0	0	0	0
8085		0	0		
8086					
8087					
8088	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_HipR_Col	DJD_KneeL_Col	DJD_KneeR_Col	DJD_AnkleL_Col	DJD_AnkleR_Col
8090					
8091					
8092	0	0	0	0	0
8093					
8094	0	0	0	0	0
8095					
8096					
8097		0	0	0	0
8098					
8099					
8100	0	0	0	0	0
8102					
8103		0	0	0	0
8104	0	0			
8106					
8107	0				
8110	0		0		0
8111					
8112					
8113	0	0	0	0	0
8114					
8115					
8117					
8118	0	0	0	0	0
8119	0	0	0	0	0
8120					
8121					
8124					
8125	0	0	0	0	0
8126					
8127	0	0	0	0	0
8129	0	0	0	0	0
8130					
8131	0	0	0	0	0
8132					
8133					
8134					
8135					
8136	0	0	0	0	0
8137					
8137	0	0	0	0	0
8138					

APPENDIX VIII: RAW DATA

SkeletonID	DJD_HipR_Col	DJD_KneeL_Col	DJD_KneeR_Col	DJD_AnkleL_Col	DJD_AnkleR_Col
8139	0	0	0	0	0
8140	0	0	0	0	0
8141					
8142	0	0	0	0	0
8143					
8144					
8148	0	0	0	0	0
8149					
8154					
8155	0	0	0		
8156					
8157					
8158	0	0	0	0	0
8159	0	0	0	0	0
8160	0	0	0	0	0
8161					
8163	0	0	0	0	0
8164					
8165	0	0	0	0	0
8166					
23713	0	0	0	0	0
23714					
23715	0	0	0	0	0
23735					
23736	0	0	0	0	0
23738	0	0	0	0	0
23739	0	0	0	1	0
23740	0	0	0	0	0
23743	0	0	0		
23752	0	0	0	0	0
23755					
23758	0	0	0	0	0
23759		0	0	0	0
26192	0	0	0	0	0
27220	0	0	0	0	0
28305					
31360	0	0	0	0	0
31930	0	0	0	0	0
31949	0	0	0	0	0
7956	0	0	0	0	0
8002	0	1	1		
8065	0				

SkeletonID	DJD_HipR_Col	DJD_KneeL_Col	DJD_KneeR_Col	DJD_AnkleL_Col	DJD_AnkleR_Col
8069	0	0	0	0	0
8122	0	0	0		
20435					
20436	0	0	0	0	0
20439					
20444				0	0
20450	0	0	0	0	0
20458		0		0	
20469	0	0	0	0	0
20472					
20474	0	0	0	0	0
20504	0	0	0	0	0
20507	0	0	0	0	0
20509	0	0	0	1	0
21001					
21002	0	1	0	0	0
21004	0	0	0	0	0
21005	0	0	0	0	0
21008	0	0	0	0	0
21013	0	0	0	0	0
21024	0	0			
21025					
21026	0	0	0	0	0
21033	0	0	0	0	0
21034	0	0		0	
21035	0	1	0	0	0
21044	0	0	0	0	0
21045	0	0	0	0	0
21053					
21056					
21057	0	0	0	0	0
21069	0	0	0	0	0
21070					
21074	0		0		
21080					
21082	0				
21083	0	0	0	0	0
21086					
21090	0	0	0	0	0
21093	0		0		0
21096					
21102					

APPENDIX VIII: RAW DATA

SkeletonID	DJD_HipR_Col	DJD_KneeL_Col	DJD_KneeR_Col	DJD_AnkleL_Col	DJD_AnkleR_Col
21274	0	0	0	0	0
21279	0	0	0	0	0
26213	0	0	0	0	0
26214					
26252					
26253					
26254					
26268					
27207					
28264					
28281					
28289					
28294	0	0	0	0	0
28297	0	0	0		
28326					
31363					
31422					
31901	0			0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Cervical	DJD_Thoracic	DJD_Lumbar	DJD_Cervical_AbsPr	DJD_Thoracic_AbsPr
7962	1	1	1	1	1
7963					
7964	0	0	0	0	0
7965					
7966					
7967	0			0	
7968					
7969					
7970	0	0	0	0	0
7971					
7972	0	1	0	0	1
7973	1			1	
7974					
7975	0			0	
7976					
7977					
7978	0	0	1	0	0
7979					
7980					
7981					
7982					
7983	1			1	
7984					
7985					
7986	0	0	0	0	0
7987					
7988					
7989					
7990	1	1	0	1	1
7994					
7996	1	1	1	1	1
7997	1	1	2	1	1
7998					
7999					
8003	1	1	1	1	1
8017	0	0		0	0
8025	0	2	1	0	1
8026	0	0	0	0	0
8031					
8032					
8034					
8035	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Cervical	DJD_Thoracic	DJD_Lumbar	DJD_Cervical_AbsPr	DJD_Thoracic_AbsPr
8036					
8037					
8038	0	0	0	0	0
8039	0	0	0	0	0
8041	0	0	1	0	0
8042					
8043		0	0		0
8044					
8045	0	1	0	0	1
8047					
8048	0	0	1	0	0
8049	0	0	1	0	0
8050					
8051	0	0	1	0	0
8052					
8054					
8055					
8056					
8057	0	0	0	0	0
8060	0	2		0	1
8061	0	1	1	0	1
8062	0	2	2	0	1
8063					
8064					
8067					
8068					
8070					
8074					
8075	0	0	0	0	0
8076					
8077					
8078					
8079					
8080					
8081					
8082					
8083	0	0	2	0	0
8084	0	0	0	0	0
8085					
8086					
8087					
8088	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Cervical	DJD_Thoracic	DJD_Lumbar	DJD_Cervical_AbsPr	DJD_Thoracic_AbsPr
8090					
8091					
8092	0	0	0	0	0
8093					
8094	1		1	1	
8095					
8096					
8097					
8098					
8099					
8100	0	0	0	0	0
8102					
8103					
8104	0	0	0	0	0
8106					
8107	1	1	1	1	1
8110	0	0	0	0	0
8111					
8112					
8113					
8114					
8115					
8117					
8118	0	0	0	0	0
8119	0	0	0	0	0
8120					
8121					
8124					
8125	0		0	0	
8126					
8127	0	0	1	0	0
8129	0	0	0	0	0
8130					
8131	0	0	0	0	0
8132					
8133					
8134					
8135					
8136	0	0	2	0	0
8137					
8137					
8138					

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Cervical	DJD_Thoracic	DJD_Lumbar	DJD_Cervical_AbsPr	DJD_Thoracic_AbsPr
8139	1	0	0	1	0
8140	0	0	0	0	0
8141					
8142	0	0	0	0	0
8143					
8144					
8148	0			0	
8149					
8154					
8155	0	0	0	0	0
8156					
8157					
8158	0	1	2	0	1
8159	0	0	1	0	0
8160	1	1	0	1	1
8161					
8163	1	1	1	1	1
8164					
8165	1	1	0	1	1
8166					
23713	0	1	0	0	1
23714					
23715	2	2	2	1	1
23735					
23736	2	0	1	1	0
23738	2	2	2	1	1
23739	0	2	2	0	1
23740	0	1	2	0	1
23743	0	0	0	0	0
23752	0	0	0	0	0
23755					
23758					
23759					
26192	1	1	1	1	1
27220	0	0	0	0	0
28305					
31360	0	0	1	0	0
31930					
31949					
7956	0	0	1	0	0
8002	2	1	2	1	1
8065	2	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Cervical	DJD_Thoracic	DJD_Lumbar	DJD_Cervical_AbsPr	DJD_Thoracic_AbsPr
8069	2	2	0	1	1
8122	0	1	0	0	1
20435					
20436	0	0	0	0	0
20439					
20444	0			0	
20450	2	1	1	1	1
20458	0	1	0	0	1
20469	0	2	0	0	1
20472					
20474	1	1	0	1	1
20504	1	1	1	1	1
20507	0	0	0	0	0
20509	1	1	0	1	1
21001					
21002	0	2	2	0	1
21004	0	0	0	0	0
21005	2	2	1	1	1
21008	0	1	0	0	1
21013	2	2	2	1	1
21024			0		
21025					
21026	0	2	2	0	1
21033	2	2	1	1	1
21034	0	0	0	0	0
21035		0	0		0
21044	1	1	1	1	1
21045					
21053					
21056					
21057	0	0	0	0	0
21069	2	0	1	1	0
21070					
21074		0	0		0
21080					
21082	0	0	0	0	0
21083	0	0	1	0	0
21086					
21090	0	0	0	0	0
21093					
21096					
21102					

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Cervical	DJD_Thoracic	DJD_Lumbar	DJD_Cervical_AbsPr	DJD_Thoracic_AbsPr
21274		0	2		0
21279		0	0		0
26213			1		
26214					
26252	0			0	
26253	0	0	1	0	0
26254					
26268					
27207	0			0	
28264					
28281					
28289					
28294	0	0	0	0	0
28297	0	1	0	0	1
28326					
31363	0	0	0	0	0
31422					
31901	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Lumbar_AbsPr	DJD_IND	DJD_Shoulder	DJD_Elbow	DJD_Wrist	DJD_Hip
7962	1	0	0	0	0	0
7963						
7964	0		0	0		0
7965						
7966						
7967			0	0	0	0
7968						
7969						0
7970	0	0	0	0	0	0
7971						
7972	0	0	0	0	0	0
7973			0			0
7974						
7975		0	0	0	0	0
7976						
7977						
7978	1	0	0	0	0	0
7979						
7980						
7981						
7982						
7983		0	0	0	0	0
7984						
7985						
7986	0	0	0	0	0	0
7987						
7988						
7989						
7990	0	1	2	0	0	0
7994				0	0	0
7996	1	1	0	0	0	1
7997	1	1	0	0	0	1
7998						
7999						
8003	1	0	0	0	0	0
8017			0			
8025	1	1	0	2	0	0
8026	0		0	0		0
8031						
8032						
8034						
8035	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Lumbar_AbsPr	DJD_IND	DJD_Shoulder	DJD_Elbow	DJD_Wrist	DJD_Hip
8036						
8037						
8038	0	0	0	0	0	0
8039	0	0	0	0	0	0
8041	1		0	0		
8042						
8043	0			0	0	0
8044						
8045	0	0	0	0	0	0
8047						
8048	1			0	0	0
8049	1	1		0	0	3
8050						
8051	1	0	0	0	0	0
8052						
8054						
8055						
8056						
8057	0	1	0	0	0	1
8060			0	0		
8061	1	0	0	0	0	0
8062	1	0	0	0	0	0
8063						
8064						
8067						
8068						
8070						
8074						
8075	0	0	0	0	0	0
8076						
8077						
8078						
8079						
8080						
8081						
8082						
8083	1	1	0	0	0	1
8084	0	0	0	0	0	0
8085						
8086						
8087						
8088	0	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Lumbar_AbsPr	DJD_IND	DJD_Shoulder	DJD_Elbow	DJD_Wrist	DJD_Hip
8090						
8091						
8092	0	0	0	0	0	0
8093						
8094	1	0	0	0	0	0
8095						
8096						
8097						
8098						
8099						
8100	0	0	0	0	0	0
8102						
8103						
8104	0	1	0	2	0	0
8106						
8107	1		0			0
8110	0		0	0		
8111						
8112						
8113					0	0
8114						
8115						
8117						
8118	0	1	1	0	0	0
8119	0	0	0	0	0	0
8120						
8121						
8124						
8125	0		0	0		0
8126						
8127	1	0	0	0	0	0
8129	0	0	0	0	0	0
8130						
8131	0	0	0	0	0	0
8132						
8133						
8134						
8135						
8136	1	0	0	0	0	0
8137						
8137		0	0	0	0	0
8138						

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Lumbar_AbsPr	DJD_IND	DJD_Shoulder	DJD_Elbow	DJD_Wrist	DJD_Hip
8139	0	0	0	0	0	0
8140	0	0	0	0	0	0
8141						
8142	0	0	0	0	0	0
8143						
8144						
8148		0	0	0	0	0
8149						
8154						
8155	0		0	0	0	0
8156						
8157						
8158	1			0	0	0
8159	1		0	0		0
8160	0	0	0	0	0	0
8161						
8163	1	0	0	0	0	0
8164						
8165	0	0	0	0	0	0
8166						
23713	0	0	0	0	0	0
23714						
23715	1	1	2	0	0	0
23735						
23736	1	1	0	0	1	0
23738	1	0	0	0	0	0
23739	1	1	0	2	0	0
23740	1	0	0	0	0	0
23743	0		0	0	0	0
23752	0	0	0	0	0	0
23755						
23758					0	0
23759						
26192	1	0	0	0	0	0
27220	0	0	0	0	0	0
28305						
31360	1			0	0	0
31930		0	0	0	0	0
31949				0	0	0
7956	1		0			0
8002	1	1	0	0	0	
8065	1					

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Lumbar_AbsPr	DJD_IND	DJD_Shoulder	DJD_Elbow	DJD_Wrist	DJD_Hip
8069	0	1	0	0	3	0
8122	0		0	0	0	0
20435						
20436	0	0	0	0	0	0
20439						
20444						
20450	1	1	1	0	0	0
20458	0		0			
20469	0	0	0	0	0	0
20472						
20474	0	0	0	0	0	0
20504	1	0	0	0	0	0
20507	0			0	0	0
20509	0	1	0	0	0	0
21001						
21002	1	1	0	0	0	1
21004	0			0	0	0
21005	1	1	3	0	1	1
21008	0	0	0	0	0	0
21013	1	1	0	0	0	1
21024	0					0
21025						
21026	1	1	2	0	0	0
21033	1	1	2	0	0	0
21034	0		0	0	0	0
21035	0	1		2	1	0
21044	1	1	0	0	0	1
21045		0	0	0	0	0
21053						
21056						
21057	0	0	0	0	0	0
21069	1	1	0	2	0	0
21070						
21074	0		0	0	0	0
21080						
21082	0	1	2	2	0	
21083	1	0	0	0	0	0
21086						
21090	0	0	0	0	0	0
21093		1	2			
21096						
21102						

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Lumbar_AbsPr	DJD_IND	DJD_Shoulder	DJD_Elbow	DJD_Wrist	DJD_Hip
21274	1	0	0	0	0	0
21279	0				0	0
26213	1	0	0	0	0	0
26214						
26252						
26253	1					
26254						
26268						
27207						
28264						
28281						
28289						
28294	0	0	0	0	0	0
28297	0		0	0		0
28326						
31363	0			0	0	
31422						
31901	0			0		0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Knee	DJD_Ankle	DJD_Invert_IND	Schmorls_ThAbsPr	Schmorls_LuAbsPr
7962	0	0	1		
7963					
7964	0	0	0	0	0
7965					
7966					
7967	0				
7968					
7969	0	0			
7970	0	0	0	0	0
7971					
7972	0	0	1	0	0
7973			1		
7974					
7975	0	0			
7976					
7977					
7978	0	0	1	0	0
7979					
7980					
7981					
7982					
7983	0	0	1		
7984					
7985					
7986	0	0	0	0	0
7987					
7988					
7989					
7990	0	0	1	0	1
7994		0			
7996	0	0	1	1	1
7997	0		1	0	0
7998					
7999					
8003	0	0	1	0	0
8017				0	0
8025	0	0	1	0	0
8026	0	0	0	0	0
8031					
8032					
8034					
8035	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Knee	DJD_Ankle	DJD_Invert_IND	Schmorls_ThAbsPr	Schmorls_LuAbsPr
8036					
8037					
8038	0	0	0	0	0
8039	0	0	0	0	0
8041			1	0	0
8042					
8043	0	0		0	0
8044					
8045	0	0	1	0	0
8047					
8048	0	0	1	0	0
8049	0	0	1	0	0
8050					
8051	0	0	1	0	0
8052					
8054					
8055					
8056					
8057	0	0	0	0	0
8060		0	1	1	
8061	0	0	1	1	0
8062	0	0	1	0	0
8063					
8064					
8067					
8068					
8070					
8074					
8075	0	0	0	0	0
8076					
8077	0	0			
8078					
8079					
8080					
8081					
8082					
8083	0	0	1	0	0
8084	0	0	0	0	0
8085	0				
8086					
8087					
8088	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Knee	DJD_Ankle	DJD_Invert_IND	Schmorls_ThAbsPr	Schmorls_LuAbsPr
8090					
8091					
8092	0	0	0	0	0
8093					
8094	0	0	1	0	0
8095					
8096					
8097	0	0			
8098					
8099					
8100	0	0	0	0	0
8102					
8103	0	0			
8104			0	0	0
8106					
8107			1	0	0
8110			0	0	0
8111					
8112					
8113	0	0			
8114					
8115					
8117					
8118	0	0	0	0	
8119	0	0	0	0	0
8120					
8121					
8124					
8125	0	0			0
8126					
8127	0	0	1	0	0
8129	0	0	0	0	0
8130					
8131	0	0	0	0	0
8132					
8133					
8134					
8135					
8136	0	0	1	0	0
8137					
8137	0	0			
8138					

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Knee	DJD_Ankle	DJD_Invert_IND	Schmorls_ThAbsPr	Schmorls_LuAbsPr
8139	0	0	1	0	0
8140	0	0	0	0	0
8141					
8142	0	0	0	0	0
8143					
8144					
8148	0	0			
8149					
8154					
8155	0		0	0	0
8156					
8157					
8158	0	0	1	0	0
8159	0	0	1	0	0
8160	0	0	1	0	0
8161					
8163	0	0	1	1	0
8164					
8165	0	0	1	0	0
8166					
23713	0	0	1	0	0
23714					
23715	0	0	1	0	0
23735					
23736	0	0	1	0	0
23738	0	0	1	0	0
23739	0	1	1	0	0
23740	0	0	1	0	0
23743	0		0		
23752	0	0	0		
23755					
23758	0	0			
23759	0	0			
26192	0	0	1	0	0
27220	0	0	0	0	0
28305					
31360	0	0	1	0	0
31930	0	0			
31949	0	0			
7956	0	0	1		
8002	3		1	0	0
8065			1	0	0

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Knee	DJD_Ankle	DJD_Invert_IND	Schmorls_ThAbsPr	Schmorls_LuAbsPr
8069	0	0	1	0	0
8122	0		1	0	0
20435					
20436	0	0	0	0	0
20439					
20444		0			
20450	0	0	1	0	1
20458			1	0	0
20469	0	0	1	0	0
20472					
20474	0	0	1	0	0
20504	0	0	1	1	0
20507	0	0	0	1	1
20509	0	1	1	0	0
21001					
21002	1	0	1	0	0
21004	0	0	0	0	0
21005	0	0	1	0	0
21008	0	0	1	0	0
21013	0	0	1	0	0
21024					0
21025					
21026	0	0	1	0	0
21033	0	0	1	0	0
21034			0	0	0
21035	1	0		0	0
21044	0	0	1	0	0
21045	0	0			
21053					
21056					
21057	0	0	0	0	0
21069	0	0	1	0	0
21070					
21074				0	0
21080					
21082			0	0	1
21083	0	0	1	0	0
21086					
21090	0	0	0	0	0
21093					
21096					
21102					

APPENDIX VIII: RAW DATA

SkeletonID	DJD_Knee	DJD_Ankle	DJD_Invert_IND	Schmorls_ThAbsPr	Schmorls_LuAbsPr
21274	0	0	1	0	0
21279	0	0		0	0
26213	0	0	1		0
26214					
26252					
26253			1		
26254					
26268					
27207					
28264					
28281					
28289					
28294	0	0	0	0	0
28297	0		1	0	0
28326					
31363			0	0	0
31422					
31901		0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Schmorls_IND_AbsPr	CoffinShapeCollapsed	Shoulder_Left_Disloc
7962		2	0
7963			0
7964	0		0
7965		3	
7966			0
7967		2	0
7968		5	0
7969			
7970	0	1	0
7971			
7972	0	2	0
7973		1	0
7974		2	0
7975		2	0
7976		5	
7977			
7978	0	5	0
7979			
7980			
7981		2	0
7982		1	
7983			0
7984			0
7985			
7986	0		0
7987			
7988			0
7989			0
7990	1	2	0
7994		2	
7996	1	1	0
7997	0	1	0
7998			
7999			
8003	0	1	0
8017	0	2	0
8025	0	2	0
8026	0	2	0
8031		5	0
8032		2	
8034			0
8035	0	2	0

APPENDIX VIII: RAW DATA

SkeletonID	Schmorls_IND_AbsPr	CoffinShapeCollapsed	Shoulder_Left_Disloc
8036		2	0
8037		2	0
8038	0		0
8039	0	2	0
8041	0	1	0
8042		2	
8043	0	2	
8044			0
8045	0	4	0
8047			0
8048	0	5	
8049	0	5	0
8050			0
8051	0		0
8052		2	0
8054		2	
8055		5	
8056		5	
8057	0		0
8060	1	2	0
8061	1	2	0
8062	0	1	0
8063			
8064			
8067		1	
8068		1	0
8070		3	0
8074			
8075	0		0
8076			0
8077		1	
8078		5	0
8079			
8080		1	0
8081		5	
8082			0
8083	0	1	0
8084	0		0
8085		5	
8086		2	0
8087		1	0
8088	0	2	0

APPENDIX VIII: RAW DATA

SkeletonID	Schmorls_IND_AbsPr	CoffinShapeCollapsed	Shoulder_Left_Disloc
8090		2	0
8091			
8092	0	1	0
8093		5	
8094	0	2	0
8095		5	
8096		2	0
8097		5	
8098		2	0
8099			
8100	0	5	0
8102		5	
8103			
8104	0	1	0
8106		1	0
8107	0		0
8110	0		0
8111			0
8112		1	0
8113		5	
8114			0
8115		2	0
8117			0
8118	0	1	0
8119	0		0
8120		2	0
8121		2	0
8124		2	0
8125	0	1	0
8126			0
8127	0		0
8129	0	1	0
8130		1	
8131	0	1	0
8132			0
8133		1	0
8134			
8135		1	0
8136	0	1	0
8137			0
8137		1	0
8138		1	0

APPENDIX VIII: RAW DATA

SkeletonID	Schmorls_IND_AbsPr	CoffinShapeCollapsed	Shoulder_Left_Disloc
8139	0	1	0
8140	0	1	0
8141			
8142	0	2	0
8143		5	0
8144			0
8148		2	0
8149			
8154			0
8155	0	5	0
8156			
8157			0
8158	0	2	
8159	0	2	0
8160	0	1	0
8161		2	
8163	1	4	0
8164			
8165	0	1	0
8166			
23713	0	1	0
23714		5	0
23715	0	1	0
23735		2	0
23736	0	1	0
23738	0	1	1
23739	0	1	0
23740	0	1	0
23743		2	0
23752		1	0
23755			0
23758		5	
23759		5	
26192	0	1	0
27220	0	2	0
28305		5	0
31360	0	2	0
31930		1	0
31949		1	
7956			0
8002	0		0
8065	0	1	

SkeletonID	Schmorls_IND_AbsPr	CoffinShapeCollapsed	Shoulder_Left_Disloc
8069	0	2	0
8122	0	5	0
20435		4	
20436	0	2	0
20439			
20444		1	
20450	1	1	0
20458	0		0
20469	0	2	0
20472			0
20474	0		0
20504	1		0
20507	1		
20509	0	2	0
21001			0
21002	0	1	0
21004	0	1	
21005	0		0
21008	0		0
21013	0		0
21024	0	5	
21025		1	
21026	0		0
21033	0		0
21034	0	2	0
21035	0	1	
21044	0		0
21045		1	0
21053		5	
21056			0
21057	0		0
21069	0	1	0
21070			0
21074	0	2	0
21080			0
21082	1		0
21083	0		0
21086			0
21090	0	1	0
21093		5	
21096			0
21102		1	0

APPENDIX VIII: RAW DATA

SkeletonID	Schmorls_IND_AbsPr	CoffinShapeCollapsed	Shoulder_Left_Disloc
21274	0		0
21279	0	5	
26213	0	1	0
26214		1	0
26252			
26253			
26254			
26268			
27207		1	
28264			
28281		1	0
28289			
28294	0	1	0
28297	0		0
28326			0
31363	0		
31422			
31901	0		

APPENDIX VIII: RAW DATA

SkeletonID	Shoulder_Right_Disloc	Elbow_Left_Disloc	Elbow_Right_Disloc	Wrist_Left_Disloc
7962	0	0	0	0
7963	0	0		0
7964	0		0	
7965				
7966	0			
7967	0	0	0	0
7968		0	0	0
7969				
7970	0	0	0	0
7971	0		0	
7972	0	0	0	0
7973	0			
7974	0	0	0	0
7975	0	0	0	0
7976				
7977				
7978	0	0	0	0
7979				
7980				
7981	0	0	0	0
7982				
7983	0	0	0	
7984	0	0		0
7985				
7986	0	0	0	0
7987				
7988	0	0		
7989	0	0	0	0
7990	0	0	0	0
7994	0	0	0	0
7996	0	0	0	0
7997	0	0	0	0
7998				
7999				
8003	0	0	0	0
8017	0		0	
8025	0	0	1	0
8026	0	0	0	
8031				
8032				
8034	0	0		0
8035	0	0	0	0

SkeletonID	Shoulder_Right_Disloc	Elbow_Left_Disloc	Elbow_Right_Disloc	Wrist_Left_Disloc
8036	0	0	0	0
8037		0	0	0
8038	0	0	0	0
8039	0	0	0	0
8041	0	0	0	0
8042	0			
8043	0	0	0	0
8044				
8045	0	0	0	0
8047	0	0		
8048	0	0	0	0
8049		0	0	0
8050				0
8051	0	0	0	0
8052	0			0
8054				
8055				
8056				
8057	0	0	0	0
8060	0	0	0	
8061	0	0	0	0
8062	0	0	0	0
8063				
8064				
8067				
8068	0	0	0	0
8070	0	0	0	0
8074				
8075	0	0	0	0
8076	0	0	0	0
8077				
8078			0	0
8079	0	0		0
8080	0	0	0	
8081	0		0	
8082	0		0	
8083	0	0	0	0
8084	0	0	0	0
8085				
8086	0	0	0	
8087	0	0	0	
8088	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Shoulder_Right_Disloc	Elbow_Left_Disloc	Elbow_Right_Disloc	Wrist_Left_Disloc
8090	0	0	0	0
8091				
8092	0	0	0	0
8093				
8094	0	0	0	0
8095				
8096	0	0	0	0
8097				
8098	0	0	0	
8099				
8100	0	0	0	0
8102	0		0	
8103			0	
8104	0	0	0	0
8106	0	0	0	0
8107	0			
8110	0	0	0	
8111		0		0
8112		0		
8113				0
8114	0	0	0	
8115	0		0	
8117	0	0	0	0
8118	0	0	0	0
8119	0	0	0	0
8120	0	0	0	0
8121	0	0	0	0
8124	0	0		0
8125	0	0	0	
8126	0		0	
8127	0	0	0	0
8129	0	0	0	0
8130				
8131	0	0	0	0
8132	0	0	0	
8133	0	0	0	0
8134	0			
8135	0	0	0	0
8136	0	0	0	0
8137	0			0
8137	0	0	0	0
8138	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Shoulder_Right_Disloc	Elbow_Left_Disloc	Elbow_Right_Disloc	Wrist_Left_Disloc
8139	0	0	0	0
8140	0	0	0	0
8141				
8142	0	0	0	0
8143		0		
8144		0		
8148	0	0	0	0
8149				
8154		0		0
8155	0	0	0	0
8156	0		0	
8157	0		0	
8158		0	0	0
8159	0	0	0	
8160	0	0	0	0
8161		0	0	
8163	0	0	0	0
8164				
8165	0	0	0	0
8166				
23713	0	0	0	0
23714	0	0	0	0
23715	0	0	0	0
23735	0	0	0	0
23736	0	0	0	0
23738	0	0	0	0
23739	0	0	0	0
23740	0	0	0	0
23743	0	0	0	0
23752	0	0	0	0
23755	0	0	0	0
23758				0
23759				
26192	0	0	0	0
27220	0	0	0	0
28305		0		
31360		0	0	0
31930	0	0	0	0
31949		0	0	0
7956	0			0
8002	0	0	0	0
8065	0		0	

APPENDIX VIII: RAW DATA

SkeletonID	Shoulder_Right_Disloc	Elbow_Left_Disloc	Elbow_Right_Disloc	Wrist_Left_Disloc
8069	0	0	0	0
8122	0	0	0	0
20435		0	0	0
20436	0	0	0	0
20439				
20444				
20450	0	0	0	0
20458	0	0		0
20469	0	0	0	0
20472	0			0
20474	0	0	0	0
20504	0	0	0	0
20507		0	0	0
20509	0	0	0	0
21001	0	0	0	0
21002	0	0	0	0
21004	0	0	0	0
21005	0	0	0	0
21008	0	0	0	0
21013	0	0	0	0
21024			0	0
21025				
21026	0	0	0	0
21033	0	0	0	0
21034	0	0	0	0
21035		0	0	0
21044	0	0	0	0
21045	0	0	0	0
21053				
21056	0	0	0	0
21057	0	0	0	0
21069	0	0	2	0
21070	0	0		
21074	0	0	0	0
21080	0	0	0	
21082	0	0	2	0
21083	0	0	0	0
21086	0	0	0	0
21090	0	0	0	0
21093	0		0	
21096	0	0	0	0
21102	0	0	0	

APPENDIX VIII: RAW DATA

SkeletonID	Shoulder_Right_Disloc	Elbow_Left_Disloc	Elbow_Right_Disloc	Wrist_Left_Disloc
21274	0	0	0	0
21279				0
26213	0	0	0	0
26214	0	0	0	0
26252				
26253				
26254				
26268				
27207				
28264				
28281	0	0	0	0
28289				
28294	0	0	0	0
28297	0	0	0	
28326	0	0	0	0
31363		0	0	0
31422				
31901		0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Wrist_Right_Disloc	Hip_Left_Disloc	Hip_Right_Disloc	Knee_Left_Disloc
7962	0	0	0	0
7963	0	0	0	0
7964	0	0	0	0
7965				
7966				
7967	0	0	0	0
7968	0	0		0
7969		0	0	0
7970	0	0	0	0
7971		0		
7972	0	0	0	0
7973		0	0	
7974	0	0	0	0
7975	0	0	0	0
7976				0
7977				
7978	0	0	0	0
7979				
7980				
7981		0	0	0
7982			0	
7983		0	0	
7984	0	0		
7985			0	
7986	0	0	0	0
7987				
7988				
7989	0	0	0	0
7990	0	0	0	0
7994	0	0	0	
7996	0	0	0	0
7997	0	0	0	0
7998				
7999				
8003	0	0	0	0
8017				
8025	0	0	0	0
8026	0	0	0	0
8031				0
8032				
8034				0
8035	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Wrist_Right_Disloc	Hip_Left_Disloc	Hip_Right_Disloc	Knee_Left_Disloc
8036	0	0	0	0
8037	0	0	0	0
8038	0	0	0	0
8039	0	0	0	0
8041			0	
8042				
8043	0	0	0	0
8044		0		
8045	0	0	0	0
8047		0	0	0
8048	0	0	0	0
8049	0	0	0	0
8050		0	0	0
8051	0	0	0	0
8052		0	0	0
8054				
8055				
8056		0		
8057	0	0	0	0
8060	0		0	
8061	0	0	0	0
8062	0	0	0	0
8063				
8064				
8067				
8068	0	0	0	0
8070	0		0	0
8074				
8075	0	0	0	0
8076	0	0	0	0
8077				0
8078				
8079				
8080	0	0	0	0
8081		0	0	0
8082	0			0
8083	0	0	0	0
8084	0	0	0	0
8085				0
8086	0	0	0	0
8087		0	0	0
8088	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Wrist_Right_Disloc	Hip_Left_Disloc	Hip_Right_Disloc	Knee_Left_Disloc
8090				
8091		0	0	
8092	0	0	0	0
8093				
8094	0	0	0	0
8095		0		0
8096	0	0	0	0
8097				0
8098	0		0	
8099				
8100	0	0	0	0
8102				
8103				0
8104	0	0	0	0
8106	0	0	0	0
8107		0	0	
8110	0		0	
8111	0	0	0	0
8112				
8113	0	0	0	0
8114		0	0	0
8115			0	0
8117	0	0	0	0
8118	0	0	0	0
8119	0	0	0	0
8120	0	0	0	
8121	0	0	0	0
8124		0	0	0
8125	0	0	0	0
8126			0	0
8127	0	0	0	0
8129	0	0	0	0
8130			0	
8131	0	0	0	0
8132				
8133	0	0	0	0
8134				
8135	0	0	0	0
8136	0	0	0	0
8137				
8137	0	0	0	0
8138	0	0	0	

APPENDIX VIII: RAW DATA

SkeletonID	Wrist_Right_Disloc	Hip_Left_Disloc	Hip_Right_Disloc	Knee_Left_Disloc
8139	0	0	0	0
8140	0	0	0	0
8141				
8142	0	0	0	0
8143				
8144		0		0
8148	0	0	0	0
8149				
8154		0		0
8155	0	0	0	0
8156	0		0	
8157			0	
8158	0	0	0	0
8159	0	0	0	0
8160	0	0	0	0
8161				0
8163	0	0	0	0
8164				
8165	0	0	0	0
8166				
23713	0	0	0	0
23714	0	0	0	0
23715	0	0	0	0
23735	0	0	0	0
23736	0	0	0	0
23738	0	0	0	0
23739	0	0	0	0
23740	0	0	0	0
23743	0	0	0	0
23752	0	0	0	0
23755	0	0	0	0
23758	0	0	0	0
23759				0
26192	0	0	0	0
27220	0	0	0	0
28305				
31360	0	0	0	0
31930	0	0	0	0
31949	0	0	0	0
7956	0	0	0	0
8002	0		0	0
8065	0		0	

APPENDIX VIII: RAW DATA

SkeletonID	Wrist_Right_Disloc	Hip_Left_Disloc	Hip_Right_Disloc	Knee_Left_Disloc
8069	0	0	0	0
8122	0	0	0	0
20435	0			0
20436	0	0	0	0
20439				
20444				
20450	0	0	0	0
20458		0		0
20469	0	0	0	0
20472	0	0	0	0
20474	0	0	0	0
20504	0	0	0	0
20507	0	0	0	0
20509	0	0	0	0
21001	0	0	0	0
21002	0	0	0	0
21004	0	0	0	0
21005	0	0	0	0
21008	0	0	0	0
21013	0	0	0	0
21024		0	0	0
21025				
21026	0	0	0	0
21033	0	0	0	0
21034	0	0	0	0
21035	0	0	0	0
21044	0	0	0	0
21045	0	0	0	0
21053				
21056	0	0	0	0
21057	0	0	0	0
21069	2	0	0	0
21070			0	0
21074	0	0	0	
21080		0	0	0
21082	0		0	
21083	0	0	0	0
21086		0	0	0
21090	0	0	0	0
21093	0		0	
21096	0			
21102		0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Wrist_Right_Disloc	Hip_Left_Disloc	Hip_Right_Disloc	Knee_Left_Disloc
21274	0	0	0	0
21279	0	0	0	0
26213	0	0	0	0
26214	0	0	0	0
26252				
26253				
26254				
26268				
27207				
28264				
28281	0			0
28289				
28294	0	0	0	0
28297	0	0	0	0
28326	0			0
31363	0			
31422				
31901		0	0	

APPENDIX VIII: RAW DATA

SkeletonID	Knee_Right_Disloc	Ankle_Left_Disloc	Ankle_Right_Disloc	Disloc_IND	Disloc_Ind_AbsPr
7962	0	0	0	0	0
7963	0	0	0		
7964	0	0	0		
7965					
7966					
7967	0				
7968		0			
7969	0	0	0		
7970	0	0	0	0	0
7971		0			
7972	0	0	0	0	0
7973					
7974	0	0	0	0	0
7975	0	0	0	0	0
7976					
7977					
7978	0	0	0	0	0
7979					
7980					
7981	0	0	0		
7982	0				
7983					
7984					
7985	0				
7986	0	0	0	0	0
7987					
7988					
7989	0	0	0	0	0
7990	0	0	0	0	0
7994		0	0		
7996	0	0	0	0	0
7997	0				
7998	0				
7999					
8003	0	0	0	0	0
8017					
8025	0	0	0	1	1
8026	0	0	0		
8031	0	0	0		
8032					
8034	0	0	0		
8035	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Knee_Right_Disloc	Ankle_Left_Disloc	Ankle_Right_Disloc	Disloc_IND	Disloc_Ind_AbsPr
8036	0	0	0	0	0
8037	0	0	0		
8038	0	0	0	0	0
8039	0	0	0	0	0
8041					
8042					
8043	0	0	0		
8044					
8045	0	0	0	0	0
8047	0	0	0		
8048	0	0	0		
8049	0	0	0		
8050	0	0	0		
8051	0	0	0	0	0
8052	0	0	0		
8054					
8055					
8056					
8057	0	0	0	0	0
8060	0	0	0		
8061	0	0	0	0	0
8062	0	0	0	0	0
8063		0	0		
8064					
8067					
8068	0	0	0	0	0
8070	0	0	0		
8074					
8075	0	0	0	0	0
8076	0	0	0	0	0
8077	0	0	0		
8078					
8079		0	0		
8080	0	0	0		
8081	0	0	0		
8082	0	0	0		
8083	0	0	0	0	0
8084	0	0	0	0	0
8085	0				
8086			0		
8087	0	0	0		
8088	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Knee_Right_Disloc	Ankle_Left_Disloc	Ankle_Right_Disloc	Disloc_IND	Disloc_Ind_AbsPr
8090					
8091					
8092	0	0	0	0	0
8093			0		
8094	0	0	0	0	0
8095	0	0	0		
8096	0	0	0	0	0
8097	0	0	0		
8098	0				
8099					
8100	0	0	0	0	0
8102	0		0		
8103	0	0	0		
8104					
8106	0	0	0	0	0
8107					
8110	0		0		
8111	0	0	0		
8112					
8113	0	0	0		
8114	0				
8115	0		0		
8117	0	0	0	0	0
8118	0	0	0	0	0
8119	0	0	0	0	0
8120					
8121	0				
8124	0	0	0		
8125	0	0	0		
8126	0	0	0		
8127	0	0	0	0	0
8129	0	0	0	0	0
8130					
8131	0	0	0	0	0
8132					
8133	0	0	0	0	0
8134					
8135	0	0	0	0	0
8136	0	0	0	0	0
8137					
8137	0	0	0	0	0
8138	0				

APPENDIX VIII: RAW DATA

SkeletonID	Knee_Right_Disloc	Ankle_Left_Disloc	Ankle_Right_Disloc	Disloc_IND	Disloc_Ind_AbsPr
8139	0	0	0	0	0
8140	0	0	0	0	0
8141					
8142	0	0	0	0	0
8143					
8144	0	0			
8148	0	0	0	0	0
8149					
8154		0	0		
8155	0				
8156	0		0		
8157					
8158	0	0	0		
8159	0	0	0		
8160	0	0	0	0	0
8161	0	0			
8163	0	0	0	0	0
8164					
8165	0	0	0	0	0
8166					
23713	0	0	0	0	0
23714	0	0	0	0	0
23715	0	0	0	0	0
23735	0	0	0	0	0
23736	0	0	0	0	0
23738	0	0	0	1	1
23739	0	0	0	0	0
23740	0	0	0	0	0
23743	0				
23752	0	0	0	0	0
23755	0	0			
23758	0	0	0		
23759	0	0	0		
26192	0	0	0	0	0
27220	0	0	0	0	0
28305					
31360	0	0	0		
31930	0	0	0	0	0
31949	0	0	0		
7956	0	0	0		
8002	0				
8065					

APPENDIX VIII: RAW DATA

SkeletonID	Knee_Right_Disloc	Ankle_Left_Disloc	Ankle_Right_Disloc	Disloc_IND	Disloc_Ind_AbsPr
8069	0	0	0	0	0
8122	0				
20435		0	0		
20436	0	0	0	0	0
20439					
20444		0	0		
20450	0	0	0	0	0
20458		0			
20469	0	0	0	0	0
20472	0	0	0		
20474	0	0	0	0	0
20504	0	0	0	0	0
20507	0	0	0		
20509	0	0	0	0	0
21001	0	0	0	0	0
21002	0	0	0	0	0
21004	0	0	0		
21005	0	0	0	0	0
21008	0	0	0	0	0
21013	0	0	0	0	0
21024					
21025					
21026	0	0	0	0	0
21033	0	0	0	0	0
21034		0			
21035	0	0	0		
21044	0	0	0	0	0
21045	0	0	0	0	0
21053					
21056	0	0	0	0	0
21057	0	0	0	0	0
21069	0	0	0	2	1
21070	0	0			
21074	0				
21080	0	0	0		
21082				2	1
21083	0	0	0	0	0
21086	0	0	0		
21090	0	0	0	0	0
21093	0		0		
21096					
21102	0	0	0		

APPENDIX VIII: RAW DATA

SkeletonID	Knee_Right_Disloc	Ankle_Left_Disloc	Ankle_Right_Disloc	Disloc_IND	Disloc_Ind_AbsPr
21274	0	0	0	0	0
21279	0	0	0		
26213	0	0	0	0	0
26214	0	0	0	0	0
26252					
26253					
26254					
26268					
27207					
28264					
28281	0	0	0		
28289					
28294	0	0	0	0	0
28297	0				
28326	0				
31363					
31422					
31901		0	0		

APPENDIX VIII: RAW DATA

SkeletonID	Disloc_Ind_Bone	Trauma_MaxillaL	Trauma_FrontalL	TraumaMandibleL
7962	0			0
7963				
7964				
7965				
7966				
7967			0	0
7968				
7969				
7970	0			0
7971				
7972	0		0	
7973			0	
7974	0		0	0
7975	0	0		0
7976				
7977				
7978	0			0
7979				
7980		0	0	0
7981		0		0
7982				
7983			0	0
7984				0
7985				
7986	0	0	0	0
7987			0	
7988				0
7989	0	0	0	0
7990	0	0		0
7994				
7996	0	0		0
7997			4	
7998				
7999				
8003	0		0	0
8017		0		0
8025	4	0	5	
8026				
8031				
8032				
8034				
8035	0			0

APPENDIX VIII: RAW DATA

SkeletonID	Disloc_Ind_Bone	Trauma_MaxillaL	Trauma_FrontalL	TraumaMandibleL
8036	0			0
8037				
8038	0			0
8039	0			0
8041				
8042		0		0
8043				
8044				
8045	0			0
8047				0
8048			0	0
8049				
8050				0
8051	0	0		0
8052				
8054				0
8055			0	
8056				
8057	0	0	0	0
8060				0
8061	0		0	0
8062	0		0	0
8063				
8064			0	
8067				
8068	0			0
8070			0	0
8074				
8075	0	0		0
8076	0			
8077				
8078				
8079				
8080				0
8081				
8082				
8083	0			
8084	0	0	0	0
8085				
8086				0
8087		0	0	0
8088	0			0

APPENDIX VIII: RAW DATA

SkeletonID	Disloc_Ind_Bone	Trauma_MaxillaL	Trauma_FrontalL	TraumaMandibleL
8090				0
8091				
8092	0			0
8093				
8094	0	0	0	0
8095				
8096	0			0
8097				
8098				0
8099				
8100	0	0		0
8102				
8103				
8104				0
8106	0			0
8107		0	0	0
8110		0		0
8111		0		
8112				
8113				
8114				
8115		0		
8117	0			0
8118	0		0	0
8119	0	0	0	0
8120				0
8121		0		0
8124				0
8125				0
8126		0		0
8127	0			0
8129	0	0		
8130				
8131	0		0	0
8132				
8133	0	0		0
8134				
8135	0			
8136	0			
8137				
8137	0			3
8138				

APPENDIX VIII: RAW DATA

SkeletonID	Disloc_Ind_Bone	Trauma_MaxillaL	Trauma_FrontalL	TraumaMandibleL
8139	0	0	0	
8140	0	0	0	0
8141				
8142	0	0	0	0
8143				
8144				0
8148	0			
8149		0		0
8154		0		0
8155				
8156		0	0	0
8157			0	0
8158				
8159			0	
8160	0	0		0
8161				0
8163	0	0	0	0
8164				0
8165	0			
8166				
23713	0	0	0	0
23714	0			
23715	0		0	
23735	0	0		0
23736	0		0	
23738	1	0		0
23739	0		0	0
23740	0			
23743		0	0	0
23752	0		0	
23755			0	0
23758				
23759				
26192	0			0
27220	0		0	0
28305				
31360		0	0	
31930	0			
31949				0
7956				0
8002		0		0
8065				0

APPENDIX VIII: RAW DATA

SkeletonID	Disloc_Ind_Bone	Trauma_MaxillaL	Trauma_FrontalL	TraumaMandibleL
8069	0			0
8122		0		0
20435				
20436	0	0		0
20439			0	
20444				
20450	0		0	0
20458			0	
20469	0			
20472				0
20474	0		0	
20504	0			
20507				
20509	0	0		
21001	0			
21002	0	0		0
21004				
21005	0			0
21008	0			
21013	0		0	
21024				
21025				
21026	0			
21033	0		0	0
21034				
21035				
21044	0			
21045	0			
21053				
21056	0			
21057	0			
21069	6			
21070				
21074				
21080				
21082	4			
21083	0			
21086				
21090	0			
21093				
21096				
21102				

APPENDIX VIII: RAW DATA

SkeletonID	Disloc_Ind_Bone	Trauma_MaxillaL	Trauma_FrontalL	TraumaMandibleL
21274	0	0	0	0
21279				
26213	0			0
26214	0			0
26252				
26253				
26254				
26268				
27207			0	0
28264				
28281		0	0	0
28289				
28294	0	0	0	
28297		0		0
28326				0
31363				
31422				0
31901				0

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_ParietalL	Trauma_TemporalL	Trauma_ZygL	TraumaNasals	TraumaOCcipit
7962			0		
7963					
7964					
7965					
7966		0			
7967		0			
7968					
7969					
7970	0	0			0
7971					
7972					0
7973					
7974		0	0		
7975			0		
7976					
7977					
7978					
7979					
7980					
7981		0	0		
7982					
7983		0		0	
7984					
7985				0	
7986	0		0	0	0
7987					
7988				0	
7989		0		0	
7990			0		0
7994					
7996	0	0	0	0	
7997					
7998					
7999					
8003		0			0
8017		0	0		
8025	0	0			0
8026					
8031					
8032					
8034					
8035					

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_ParietalL	Trauma_TemporalL	Trauma_ZygL	TraumaNasals	TraumaOCcipit
8036				0	
8037					
8038		0		0	0
8039		0	0	0	
8041					
8042					
8043					
8044					
8045					
8047					
8048			0	0	
8049					
8050					
8051		0	0	0	0
8052					
8054					
8055					
8056					
8057	0	0	0		0
8060				0	0
8061		0		0	
8062		0			
8063					
8064					
8067					
8068				0	
8070					
8074					
8075					
8076					
8077					
8078					
8079					
8080					
8081				0	
8082					
8083	0	0			
8084	0	0	0	0	0
8085					
8086		0			
8087				0	
8088					

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_ParietalL	Trauma_TemporalL	Trauma_ZygL	TraumaNasals	TraumaOCcipit
8090					
8091					
8092		0			0
8093					
8094	0	0	0		
8095					
8096					
8097					
8098					0
8099					
8100	3		0		
8102					
8103					
8104					
8106		0			
8107		0	0		0
8110		0			
8111					
8112		0			
8113					
8114		0			
8115	0	0			
8117			0	0	
8118		0	0		0
8119		0			
8120					
8121		0	0	0	
8124					
8125				0	
8126					
8127					
8129			0		3
8130					
8131	0	0	0		0
8132					
8133		0			
8134					
8135					
8136		0			
8137					
8137	7				
8138		0			

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_ParietalL	Trauma_TemporalL	Trauma_ZygL	TraumaNasals	TraumaOCcipit
8139		0			
8140		0	0		0
8141					
8142			0	0	
8143					
8144					
8148					
8149		0		0	
8154			0		
8155					0
8156				0	
8157		0		0	
8158					
8159	0				0
8160		0		0	
8161					0
8163	0	0	0		0
8164					
8165					0
8166					
23713			0		
23714					
23715		0		0	
23735		0	0	0	
23736					
23738		0			
23739		0	0		
23740					
23743	0	0	0	0	0
23752				0	
23755	0	0			0
23758					
23759					
26192					
27220	0	0			0
28305					
31360	0	0	0	0	
31930					
31949					
7956	0	0			
8002		0	0	0	0
8065			0		

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_ParietalL	Trauma_TemporalL	Trauma_ZygL	TraumaNasals	TraumaOCcipit
8069	0	0	0		0
8122		0	0		
20435					
20436		0			
20439	0		0		
20444					
20450		0			
20458			0	0	
20469					0
20472				0	
20474	0				
20504					
20507					
20509			0		
21001					
21002			0	0	0
21004					
21005					
21008					
21013	0				
21024					
21025					
21026					
21033			0		
21034					
21035					
21044					
21045					
21053					
21056					
21057					
21069					
21070					
21074					
21080					
21082					
21083					
21086					
21090					
21093					
21096					
21102					

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_ParietalL	Trauma_TemporalL	Trauma_ZygL	TraumaNasals	TraumaOCcipit
21274					
21279					
26213		0			
26214					
26252					
26253					
26254					
26268					
27207		0		0	
28264					
28281		0			
28289					
28294	0	0			0
28297			0		
28326		0			
31363				0	
31422			0	0	0
31901				0	

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_FrontalR	Trauma_MandibleR	Trauma_MaxillaR	Trauma_ParietalR
7962				
7963				
7964				
7965				
7966				
7967	0	0		
7968				
7969				
7970	0	0		0
7971				
7972	0	0		0
7973	0			
7974	0	0		
7975		0	0	
7976				
7977				
7978				
7979				
7980		0	0	
7981		0	0	
7982				
7983	0	0		
7984		0		
7985				
7986	0	0	0	0
7987				
7988				
7989	0	0	0	
7990		0	0	
7994				
7996	0	0	0	
7997	3			
7998				
7999				
8003	0	0		
8017		0	0	
8025	0		5	0
8026				
8031				
8032				
8034				
8035		0	0	

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_FrontalR	Trauma_MandibleR	Trauma_MaxillaR	Trauma_ParietalR
8036		0	0	
8037		0		
8038		0		
8039		0		
8041				
8042		0		
8043				
8044				
8045		0	0	
8047				
8048	0			
8049				
8050		0		
8051	0	0		0
8052				
8054		0		
8055				
8056				
8057	0	0	0	
8060		0	0	
8061	0	0	0	
8062		0	0	
8063				
8064	0			0
8067				
8068		0		
8070	0	0		
8074				
8075		0	0	
8076				
8077				
8078				
8079				
8080				
8081		0		
8082				
8083				
8084	0	0	0	0
8085				
8086				
8087	0		0	
8088		0		

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_FrontalR	Trauma_MandibleR	Trauma_MaxillaR	Trauma_ParietalR
8090		0		
8091				
8092		0		
8093				
8094	0	0	0	0
8095				
8096		0		
8097				
8098		0		
8099				
8100		0	0	
8102				
8103				
8104				
8106	0	0		
8107	0	0		0
8110		0	0	
8111		0	0	
8112				
8113				
8114				
8115				
8117		0		
8118	6	0	0	
8119		0	0	
8120		0		
8121		0	0	
8124				
8125				
8126		0	0	
8127				
8129				
8130				
8131	0	0		0
8132	0			
8133		0	0	
8134				
8135				
8136				
8137				
8137				
8138				

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_FrontalR	Trauma_MandibleR	Trauma_MaxillaR	Trauma_ParietalR
8139	0	0	0	
8140	0	0		
8141				
8142	0	0	0	
8143				
8144		0		
8148				
8149		0	0	
8154				
8155				
8156	0	0	0	
8157	0	0		0
8158				
8159	0	0		0
8160	0	0		
8161				
8163		0	0	0
8164		0		
8165				
8166				
23713	0	0	0	
23714				
23715	0			
23735	0	0	0	0
23736				
23738		0		
23739	0	0		0
23740				
23743	0	0	0	0
23752			0	0
23755	0			0
23758				
23759				
26192		1		
27220	0	0		0
28305				
31360	0		0	0
31930				
31949				
7956	0	0		
8002		0	0	
8065		0		

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_FrontalR	Trauma_MandibleR	Trauma_MaxillaR	Trauma_ParietalR
8069	0	0		0
8122		0	0	
20435				
20436		0		
20439				
20444				
20450	0	0		
20458	0			
20469				
20472				
20474	0			0
20504				
20507				
20509			0	
21001				
21002		0	0	
21004				
21005				
21008				
21013	0			0
21024				
21025				
21026	2			
21033		0	0	
21034				
21035				
21044				
21045				
21053				
21056				
21057				
21069				
21070				
21074				
21080				
21082				
21083				
21086				
21090				
21093				
21096				
21102				

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_FrontalR	Trauma_MandibleR	Trauma_MaxillaR	Trauma_ParietalR
21274	0		0	
21279				
26213		0		
26214		0		
26252				
26253				
26254				
26268				
27207	0			
28264				
28281	0	0	0	
28289				
28294	0		0	0
28297		0	0	
28326		0		
31363				
31422	0	0		
31901				

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_RightTemporal	Trauma_ZygR	CranTrauma	Trauma_Cran_IND_Peri
7962			1	0
7963				
7964			1	0
7965				
7966	0		1	0
7967	0		1	0
7968				
7969				
7970	0		1	0
7971			1	0
7972	0	0	1	0
7973			1	0
7974	0		1	0
7975		0	1	0
7976				
7977			1	0
7978			1	0
7979				
7980		0	1	0
7981	0	0	1	0
7982				
7983	0		1	0
7984				
7985				
7986			1	0
7987				
7988			1	0
7989	0		1	0
7990			1	0
7994				
7996	0	0		
7997			1	0
7998				
7999				
8003	0	0		
8017	0	0	1	0
8025	0		1	1
8026				
8031				
8032				
8034				
8035		0	1	0

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_RightTemporal	Trauma_ZygR	CranTrauma	Trauma_Cran_IND_Peri
8036				
8037				
8038			1	0
8039			1	0
8041				
8042				
8043				
8044				
8045	0	0		
8047				
8048			1	0
8049				
8050				
8051	0			
8052				
8054				
8055			1	0
8056				
8057			1	0
8060			1	0
8061	0		1	0
8062	0	0	1	0
8063				
8064	0			
8067				
8068				
8070				
8074				
8075				
8076				
8077				
8078				
8079				
8080				
8081		0		
8082				
8083			1	0
8084	0		1	0
8085				
8086				
8087			1	0
8088				

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_RightTemporal	Trauma_ZygR	CranTrauma	Trauma_Cran_IND_Peri
8090				
8091				
8092				
8093				
8094	0		1	0
8095				
8096				
8097				
8098				
8099				
8100	0	0	1	1
8102				
8103				
8104				
8106			1	0
8107	0		1	0
8110				
8111			1	0
8112				
8113				
8114	0			
8115				
8117				
8118	0	0	1	1
8119		0	1	0
8120				
8121	0	0		
8124	0			
8125	0			
8126				
8127	0			
8129				
8130				
8131	0	0	1	0
8132				
8133	0			
8134				
8135				
8136	0			
8137				
8137				1
8138	0	0		

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_RightTemporal	Trauma_ZygR	CranTrauma	Trauma_Cran_IND_Peri
8139				
8140				
8141				
8142	0		1	0
8143				
8144				
8148				
8149		0	1	0
8154				
8155				
8156		0		
8157	0	0		
8158				
8159	0		1	0
8160				
8161				
8163	0	0	1	0
8164				
8165				
8166				
23713			1	0
23714				
23715			1	0
23735	0	0	1	0
23736			1	0
23738				
23739				
23740				
23743	0	0	1	0
23752			1	0
23755	0		1	0
23758				
23759				
26192				
27220	0		1	0
28305				
31360				
31930				
31949				
7956	0	0	1	0
8002	0	0		
8065		0	1	0

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_RightTemporal	Trauma_ZygR	CranTrauma	Trauma_Cran_IND_Peri
8069		0	1	0
8122	0	0		
20435				
20436			1	0
20439				
20444				
20450	0		1	0
20458		0	1	0
20469	0		1	0
20472				
20474				
20504				
20507				
20509		0		
21001				
21002				
21004				
21005				
21008				
21013				
21024				
21025				
21026			1	0
21033	0		1	0
21034		0		
21035				
21044				
21045				
21053				
21056				
21057				
21069				
21070				
21074				
21080			1	0
21082				
21083				
21086				
21090				
21093				
21096				
21102				

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_RightTemporal	Trauma_ZygR	CranTrauma	Trauma_Cran_IND_Peri
21274			1	0
21279				
26213	0			
26214				
26252				
26253				
26254				
26268				
27207	0			
28264				
28281	0	0		
28289				
28294	0			
28297	0			
28326	0			
31363				
31422				
31901				

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_Cran_IND	Trauma_Cran_IND_Ante	Trauma_MaxL_AbsPr	Trauma_MaxR_AbsPr
7962	0	0		
7963				
7964	0	0		
7965				
7966	0	0		
7967	0	0		
7968				
7969				
7970	0	0		
7971		0		
7972	0	0		
7973	0	0		
7974	0	0		
7975	0	0	0	0
7976				
7977	0	0		
7978	0	0		
7979				
7980	0	0	0	0
7981	0	0	0	0
7982				
7983	0	0		
7984				
7985				
7986	0	0	0	0
7987				
7988	0	0		
7989	0	0	0	0
7990	0	0	0	0
7994				
7996			0	0
7997	1	1		
7998				
7999				
8003				
8017	0	0	0	0
8025	2	0	0	0
8026				
8031				
8032				
8034				
8035	0	0		0

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_Cran_IND	Trauma_Cran_IND_Ante	Trauma_MaxL_AbsPr	Trauma_MaxR_AbsPr
8036				0
8037				
8038	0	0		
8039	0	0		
8041				
8042			0	0
8043				
8044				
8045				0
8047				
8048	0	0		
8049				
8050				
8051			0	0
8052				
8054				
8055	0	0		
8056				
8057	0	0	0	0
8060	0	0		0
8061	0	0		0
8062	0	0		0
8063				
8064				
8067				
8068				
8070				
8074				
8075			0	0
8076				
8077				
8078				
8079				
8080				
8081				
8082				
8083	0	0		
8084	0	0	0	0
8085				
8086				
8087	0	0	0	0
8088				

SkeletonID	Trauma_Cran_IND	Trauma_Cran_IND_Ante	Trauma_MaxL_AbsPr	Trauma_MaxR_AbsPr
8090				
8091				
8092				
8093				
8094	0	0	0	0
8095				
8096				
8097				
8098				
8099				
8100	2	0	0	0
8102				
8103				
8104				
8106	0	0		
8107	0	0	0	0
8110			0	0
8111	0	0	0	0
8112				
8113				
8114				
8115			0	0
8117				
8118	2	0		0
8119	0	0	0	0
8120				
8121			0	0
8124				
8125				
8126			0	0
8127				
8129	1	1	0	0
8130				
8131	0	0		
8132				
8133			0	0
8134				
8135				
8136				
8137				
8137	1	1		
8138				

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_Cran_IND	Trauma_Cran_IND_Ante	Trauma_MaxL_AbsPr	Trauma_MaxR_AbsPr
8139			0	0
8140			0	0
8141				
8142	0	0	0	0
8143				
8144				
8148				
8149	0	0	0	0
8154			0	0
8155				
8156			0	0
8157				
8158				
8159	0	0		
8160			0	0
8161				
8163	0	0	0	0
8164				
8165				
8166				
23713	0	0	0	0
23714				
23715	0	0		
23735	0	0	0	0
23736	0	0		
23738			0	0
23739				
23740				
23743	0	0	0	0
23752	0	0		0
23755	0	0		
23758				
23759				
26192	1	1		
27220	0	0		
28305				
31360			0	0
31930				
31949				
7956	0	0		
8002			0	0
8065	0	0		

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_Cran_IND	Trauma_Cran_IND_Ante	Trauma_MaxL_AbsPr	Trauma_MaxR_AbsPr
8069	0	0		
8122			0	0
20435				
20436	0	0	0	0
20439				
20444				
20450	0	0		
20458	0	0		
20469	0	0		
20472				
20474				
20504				
20507				
20509			0	0
21001				
21002			0	0
21004				
21005				
21008				
21013				
21024				
21025				
21026	2	1		
21033	0	0		0
21034				
21035				
21044				
21045				
21053				
21056				
21057				
21069				
21070				
21074				
21080	0	0		
21082				
21083				
21086				
21090				
21093				
21096				
21102				

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_Cran_IND	Trauma_Cran_IND_Ante	Trauma_MaxL_AbsPr	Trauma_MaxR_AbsPr
21274	0	0	0	0
21279				
26213				
26214				
26252				
26253				
26254				
26268				
27207				
28264				
28281			0	0
28289				
28294			0	0
28297			0	0
28326				
31363				
31422				
31901				

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_CranComb	Trauma_FrontalL_Abs_pr	Trauma_FrontalR_AbsPr	Trauma_ClavL
7962	0			
7963				
7964	0			
7965				
7966	0			0
7967	0	0	0	0
7968				
7969				
7970	0		0	0
7971				
7972	0	0	0	
7973	0	0	0	
7974	0	0	0	0
7975	0			0
7976				
7977	0			
7978	0			0
7979				
7980	0	0		
7981	0			0
7982				0
7983	0	0	0	
7984				0
7985				
7986	0	0	0	0
7987		0		
7988	0			0
7989	0	0	0	0
7990	0			0
7994				0
7996			0	0
7997	1	1	1	0
7998				
7999				
8003		0	0	0
8017	0			0
8025	1	1	0	0
8026				0
8031				
8032				
8034				0
8035	0			

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_CranComb	Trauma_FrontalL_Abs_pr	Trauma_FrontalR_AbsPr	Trauma_ClavL
8036				0
8037				0
8038	0			0
8039	0			0
8041				0
8042				
8043				
8044				0
8045				0
8047				0
8048	0	0	0	
8049				
8050				0
8051			0	0
8052				0
8054				
8055	0	0		0
8056				
8057	0	0	0	0
8060	0			0
8061	0	0	0	0
8062	0	0		0
8063				
8064		0	0	
8067				
8068				0
8070		0	0	0
8074				
8075				0
8076				0
8077				0
8078				0
8079				
8080				
8081				
8082				0
8083	0			0
8084	0	0	0	0
8085				
8086				0
8087	0	0	0	0
8088				0

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_CranComb	Trauma_FrontalL_Abs_pr	Trauma_FrontalR_AbsPr	Trauma_ClavL
8090				0
8091				
8092				0
8093				
8094	0	0	0	0
8095				
8096				0
8097				
8098				0
8099				
8100	1			0
8102				
8103				
8104				0
8106	0		0	
8107	0	0	0	0
8110				0
8111	0			
8112				0
8113				
8114				0
8115				0
8117				0
8118	1	0	1	0
8119	0	0		0
8120				0
8121				0
8124				0
8125				0
8126				0
8127				0
8129	1			0
8130				
8131	0	0	0	
8132			0	0
8133				0
8134				
8135				0
8136				0
8137				0
8137	1			0
8138				0

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_CranComb	Trauma_FrontalL_Abs_pr	Trauma_FrontalR_AbsPr	Trauma_ClavL
8139		0	0	0
8140		0	0	0
8141				
8142	0	0	0	0
8143				
8144				0
8148				0
8149	0			
8154				0
8155				0
8156		0	0	
8157		0	0	
8158				0
8159	0	0	0	0
8160			0	0
8161				
8163	0	0		0
8164				
8165				0
8166				
23713	0	0	0	0
23714				0
23715	0	0	0	0
23735	0		0	0
23736	0	0		0
23738				0
23739		0	0	0
23740				0
23743	0	0	0	0
23752	0	0		0
23755	0	0	0	0
23758				
23759				
26192	1			0
27220	0	0	0	0
28305				
31360		0	0	0
31930				
31949				0
7956	0		0	0
8002				0
8065	0			

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_CranComb	Trauma_FrontalL_Abs_pr	Trauma_FrontalR_AbsPr	Trauma_ClavL
8069	0		0	
8122				0
20435				
20436	0			0
20439		0		
20444				0
20450	0	0	0	0
20458	0	0	0	0
20469	0			0
20472				0
20474		0	0	0
20504				0
20507				
20509				0
21001				0
21002				0
21004				0
21005				0
21008				0
21013		0	0	1
21024				
21025				
21026	1		1	0
21033	0	0		0
21034				0
21035				
21044				0
21045				0
21053				0
21056				0
21057				0
21069				0
21070				0
21074				0
21080	0			0
21082				0
21083				0
21086				0
21090				0
21093				
21096				
21102				0

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_CranComb	Trauma_FrontalL_Abs_pr	Trauma_FrontalR_AbsPr	Trauma_ClavL
21274	0	0	0	0
21279				
26213				0
26214				0
26252				0
26253				0
26254				0
26268				
27207		0	0	0
28264				
28281		0	0	0
28289				
28294		0	0	0
28297				0
28326				0
31363				0
31422			0	
31901				0

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_ClavR	Trauma_FemurL	Trauma_FemurR	Trauma_FibL	Trauma_FibR
7962			0		
7963					
7964			0		
7965		0			
7966	0			0	
7967	0	0	0		
7968					
7969		0	0	0	0
7970	0	0	0	0	0
7971					
7972		0	0	0	0
7973					
7974	0	0	0	0	0
7975	0	0	0		
7976					
7977					
7978	0	0	0	0	0
7979	0				
7980					
7981	0			0	0
7982	0	0	0	0	0
7983					
7984	0	0	0	0	0
7985	0		0		
7986	0	0	0	0	0
7987	0				
7988	0	0	0		
7989	0	0	0	0	0
7990	0	0	0	0	0
7994	0		0		
7996	0	0	0	0	0
7997	0	0	0	0	0
7998					
7999					
8003	0	0	0	0	0
8017					
8025	0	0	0	0	0
8026	0	0	0	0	0
8031		0	0	0	
8032					
8034	0			0	0
8035	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_ClavR	Trauma_FemurL	Trauma_FemurR	Trauma_FibL	Trauma_FibR
8036	0	0	0	0	0
8037		0	0		
8038	0	0	0	0	0
8039	0	0	0	0	0
8041					
8042	0				
8043	0	0	0	0	0
8044					
8045	0	0	0	0	0
8047	0	0	0	0	0
8048	0	0	0	0	0
8049		0	0	0	0
8050		0	0	0	0
8051	0	0	0	0	0
8052		0	0	0	0
8054					
8055	0				
8056		0	0		
8057	0	0	0	0	0
8060	0		0	0	0
8061	0	0	0	0	0
8062	0	0	0	0	0
8063					
8064	0				
8067	0				
8068	0	0	0	0	0
8070	0	0	0	0	0
8074	0	0			
8075	0	0	0	0	0
8076		0	0	0	0
8077			0	0	0
8078					
8079					
8080	0	0	0	0	0
8081	0	0	0	0	
8082				0	0
8083	0	0	0	0	0
8084	0	0	0	0	0
8085				0	0
8086	0	0			0
8087	0	0	0	0	0
8088	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_ClavR	Trauma_FemurL	Trauma_FemurR	Trauma_FibL	Trauma_FibR
8090	0				
8091		0	0	0	0
8092	0	0	0	0	0
8093				0	0
8094	0	0	0	0	0
8095		0	0	0	0
8096	0	0	0		0
8097		0	0	0	0
8098	0		0	0	0
8099					
8100		0	0	0	0
8102	0				
8103					
8104	0	0	0		
8106	0	0	0	0	0
8107	0				
8110	0				0
8111					
8112	0		0		
8113		0	0	0	0
8114	0	0	0		
8115	0	0	0		0
8117	0	0	0	0	0
8118	0	0	0	0	0
8119	0	0	0		
8120	0	0	0		
8121	0	0	0	0	0
8124	0	0	0	0	
8125	0	0	1	0	0
8126	0		0		
8127	0	0	0	0	0
8129	0	0	0	0	0
8130			0		0
8131	0	0	0	0	0
8132	0				
8133	0	0	0	0	0
8134	0	0			
8135	0	0	0	0	0
8136	0	0	0	0	0
8137	0				
8137	0	0	0	0	0
8138	0	0	0		

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_ClavR	Trauma_FemurL	Trauma_FemurR	Trauma_FibL	Trauma_FibR
8139	0	0	0	0	0
8140	0	0	0	0	0
8141					
8142	0	0	0	0	0
8143					
8144		0	0	0	0
8148	0	0	0		
8149		0	0		
8154		0	0	0	
8155		0	0		
8156			0		0
8157	0		0		
8158	0	0	0	0	0
8159	0	0	0	0	0
8160	0	0	0	0	0
8161		0			
8163	0	0	0	0	0
8164					
8165	0	0	0	0	0
8166					
23713	0	0	0	0	0
23714	0	0	0	0	0
23715	0	0	0	0	0
23735	0	0	0	0	0
23736	0	0	0	0	0
23738	0	0	0	0	0
23739	0	0	0	0	0
23740	0	0	0	0	0
23743	0	0	0		
23752	0	0	0	0	0
23755	0	0	0	0	
23758		0	0	0	0
23759				0	0
26192	0	1	1	0	0
27220	0	0	2	0	0
28305					
31360	0	0	0	0	0
31930		0	0	0	0
31949	0	0	0	0	0
7956	0	0	0	0	0
8002	0	0	0		
8065	0				

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_ClavR	Trauma_FemurL	Trauma_FemurR	Trauma_FibL	Trauma_FibR
8069	0	0	0		0
8122	1	0	0		
20435		0	0		
20436	0	0	0	0	0
20439					
20444					
20450	0	0	0	0	0
20458	0	0		0	
20469	0	0	0	0	0
20472	0	0	0	0	0
20474	0	0	0	0	0
20504	0	0	0	0	0
20507		0	0		0
20509	0	0	0	0	0
21001	0	0	0		
21002	0	0	0	0	0
21004	0	0	0	0	0
21005	0	0	0	0	0
21008	0	0	0	0	0
21013	0	0	0	0	0
21024					
21025					
21026	0	0	0	0	0
21033	0	0	0	0	
21034	0	0		0	
21035		0	0	0	0
21044	0	0	0	0	0
21045	0	0	0	0	0
21053				0	
21056	0	0	0	0	0
21057	0	0	0	0	0
21069	0	0	0	0	0
21070	0		0		
21074	0		0		
21080		0	0	0	0
21082	0				
21083	1	0	0	0	0
21086	0	0	0	0	0
21090	0	0	0	0	0
21093					
21096					
21102	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_ClavR	Trauma_FemurL	Trauma_FemurR	Trauma_FibL	Trauma_FibR
21274	0	0	0	0	0
21279		0	0	0	0
26213	0	0	0	0	0
26214	0	0	0	0	0
26252	0				
26253	0				
26254	0				
26268		0			
27207	0				
28264	0	0	0	0	0
28281	0	0	0	0	0
28289					
28294	0	0	0	0	0
28297	0		0		
28326	0	0	0		
31363	0	0	0		
31422		0			
31901	0	0	0		

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_HumL	Trauma_HumR	Trauma_RadL	Trauma_RadR	Trauma_TibL
7962	0				
7963					
7964		0			
7965					0
7966					0
7967	0	0	0	0	
7968	0			0	
7969					0
7970	0	0		0	0
7971					
7972	0	0	0	0	0
7973					
7974	0	0	0	0	0
7975	0	0	0	0	
7976					
7977					
7978	0	0	0	0	0
7979					
7980					
7981	0	0	0		0
7982	0	0	0	0	0
7983	0	0	0	0	
7984	0		0	0	0
7985					
7986	0	0	0	0	0
7987					
7988	0	0			
7989	0	0	0	0	0
7990	0	0	0	0	0
7994				0	0
7996	0	0	0	0	0
7997	0	0	0	0	
7998					
7999					
8003	0	0	0	0	0
8017		0			
8025	0	0	0	0	0
8026	0	0	0	0	0
8031	0				0
8032					
8034	0	0	0	0	0
8035	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_HumL	Trauma_HumR	Trauma_RadL	Trauma_RadR	Trauma_TibL
8036	0	0	0	0	0
8037	0	0	0		0
8038		0	0	0	0
8039	0	0	0	0	0
8041		0			
8042					
8043		0	0	0	0
8044					
8045	0	0	0	0	0
8047	0				0
8048		0		0	0
8049	0		0	0	0
8050					0
8051	0	1	0	0	0
8052	0	0			0
8054		0		0	
8055	0	0	0	0	
8056					
8057	0	0	0	0	0
8060	0	0		0	0
8061	0	0	0	0	0
8062	0	0	0	0	0
8063	0				
8064					
8067					
8068	0	0	0	0	0
8070	0	0	0	0	0
8074					0
8075	0	0	0	0	0
8076				0	0
8077					0
8078					
8079			0		
8080	0			0	0
8081					0
8082				0	0
8083	0	0	0	0	0
8084	0	0	0	0	0
8085					0
8086	0	0	0	0	0
8087	0	0	0	0	0
8088	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_HumL	Trauma_HumR	Trauma_RadL	Trauma_RadR	Trauma_TibL
8090	0	0	0		
8091					0
8092	0	0	0	0	0
8093					
8094	0	0	0	0	0
8095					0
8096	0	0	0	0	
8097					0
8098	0	0		0	0
8099					
8100	0	0	0	0	0
8102		0			
8103		0			0
8104	0	0			
8106	0	0	0	0	0
8107					
8110	0	0		0	
8111					
8112		0			
8113					0
8114	0	0			
8115	0	0	0	0	0
8117	0	0	0	0	0
8118	0	0	0	0	0
8119	0	0	0	0	
8120	0	0	0	0	
8121	0	0	0	0	0
8124	0	0	0		0
8125	0	0	0	0	0
8126	0	0	0		0
8127	0	0	0	0	0
8129	0	0	0	0	0
8130		0		0	0
8131	0	0	0	0	0
8132	0	0	0		
8133	0	0	0	0	0
8134	0	0			
8135	0	0	0	0	0
8136	0	0	0	0	0
8137				0	
8137	0	0	0	0	0
8138	0	0	0	0	

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_HumL	Trauma_HumR	Trauma_RadL	Trauma_RadR	Trauma_TibL
8139	0	0	0	0	0
8140	0	0	0	0	0
8141					
8142	0	0	0	0	0
8143	0				
8144	0		0		0
8148	0	0	0	0	0
8149					0
8154	0		0		0
8155	0	0	0	0	
8156		0		0	
8157		0		0	
8158		0	0	0	0
8159	0	0	0	0	0
8160	0	0	0	0	0
8161	0	0			
8163	0	0	0	0	0
8164					
8165	0	0	0	0	0
8166	0		0		
23713	0	0	0	0	0
23714	0	0	0	0	0
23715	0	0	0	0	0
23735	0	0	0	0	0
23736	0	0	1	0	0
23738	0	0	0	0	0
23739	0	0	0	0	0
23740	0	0	0	0	0
23743	0		0		
23752	0	0	0	0	0
23755	0	0	0	0	0
23758					0
23759					0
26192	0	0	0	0	0
27220	0	0	0	0	1
28305	0				
31360	0	0	0	0	0
31930	0	0	0	0	0
31949	0	0	0		0
7956		0	0	0	0
8002	0	0		0	0
8065		0		0	

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_HumL	Trauma_HumR	Trauma_RadL	Trauma_RadR	Trauma_TibL
8069	0	0	0	0	
8122	0	0	0		
20435	0	0	0		0
20436	0	0	0	0	0
20439	0				
20444					
20450	0	0	0	0	0
20458	0		0		
20469	0	0	0	0	0
20472	0	0	0	0	0
20474	0	0	0	0	0
20504	0	0	0	0	0
20507		0	0	0	
20509	0	0	0	0	1
21001	0	0	0	0	
21002	0	0	0	0	0
21004	0	0	0	0	0
21005	0	0	0	0	0
21008	0	0	0	0	0
21013	0	0	0	0	0
21024			0	0	
21025					
21026	0	0	0	0	0
21033	0	0	1	0	0
21034	0	0	0	0	0
21035			0	0	0
21044	0				0
21045	0	0	0	0	0
21053					
21056	0	0	0	0	0
21057	0	0	0	0	0
21069	0	0	0	0	0
21070	0				0
21074	0	0	0	0	
21080	0	0			0
21082	1	0	0		
21083	0	0	0	0	0
21086	0	0	0	0	0
21090	0	0	0	0	0
21093					
21096					
21102	0	0			0

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_HumL	Trauma_HumR	Trauma_RadL	Trauma_RadR	Trauma_TibL
21274	0	0	0	0	0
21279			0	0	0
26213	0	0	0	0	0
26214	0	0	0	0	0
26252					
26253		0			
26254					
26268					
27207					
28264			0	0	0
28281	0	0	0	0	0
28289					
28294	0	0	0	0	0
28297	0	0		0	
28326	0	0	0	0	
31363	0	0	0	0	
31422					
31901	0	0	0	0	0

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_TibR	Trauma_UlnL	Trauma_UlnR	FemurR_Abs_pr	PNB_HumL_Sev
7962	0			0	1
7963					
7964	0			0	1
7965					1
7966					1
7967			0	0	1
7968			0		1
7969	0			0	
7970	0	0	0	0	1
7971					
7972	0	0	0	0	1
7973					1
7974	0	0	0	0	1
7975		0	0	0	1
7976					
7977					1
7978	0	0	0	0	1
7979					
7980					
7981	0	0			1
7982	0	0	0	0	1
7983		0	0		1
7984	0			0	1
7985				0	
7986	0	0	0	0	1
7987					
7988	0		0	0	1
7989	0	0	0	0	1
7990	0	0	0	0	
7994	0	0	0	0	
7996	0	0	0	0	1
7997		0	0	0	1
7998	0				
7999		0			
8003	0	0	0	0	1
8017					
8025	0	1	0	0	1
8026	0	0	0	0	1
8031	0	0		0	1
8032					
8034	0	0	0		1
8035	0	0	0	0	1

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_TibR	Trauma_UlnL	Trauma_UlnR	FemurR_Abs_pr	PNB_HumL_Sev
8036	0	0	0	0	1
8037	0	0		0	1
8038	0	0	0	0	
8039	0	0	0	0	1
8041			0		
8042					
8043	0	0	0	0	
8044					
8045	0	0	0	0	1
8047	0			0	1
8048	0	0	0	0	
8049	0	0		0	1
8050	0			0	
8051	0	0	0	0	1
8052	0			0	1
8054			0		
8055		0	0		1
8056				0	
8057	0	0	0	0	1
8060	0		0	0	1
8061	0	0	0	0	1
8062	0	0	0	0	1
8063					1
8064					
8067		0			
8068	0	0	0	0	1
8070	0	0	0	0	1
8074					
8075	0	0	0	0	1
8076	0			0	
8077	0			0	1
8078					
8079					1
8080	0		0	0	1
8081	0			0	
8082	0		0		
8083	0	0	0	0	1
8084	0	0	0	0	1
8085	0				
8086	0	0	0		1
8087	0	0	0	0	1
8088	0	0	0	0	1

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_TibR	Trauma_UlnL	Trauma_UlnR	FemurR_Abs_pr	PNB_HumL_Sev
8090		0	0		1
8091				0	
8092	0	0	0	0	1
8093	0				
8094	0	0	0	0	1
8095	0			0	
8096	0	0	0	0	1
8097	0			0	
8098	0	0	0	0	1
8099					
8100	0	0	0	0	1
8102					
8103	0				
8104		0	0	0	1
8106	0	0	0	0	1
8107					
8110			0		1
8111		0			
8112				0	
8113	0			0	
8114				0	1
8115	0	0		0	1
8117	0	0	0	0	1
8118	0	0	0	0	
8119		0	0	0	1
8120		0	0	0	1
8121	0	0	0	0	
8124	0	0		0	1
8125	1	0	0	1	1
8126			0	0	
8127	0	0	0	0	1
8129	0	0	0	0	1
8130	0		0	0	
8131	0	0	0	0	1
8132					1
8133	0	0	0	0	1
8134		0			1
8135	0	0	0	0	1
8136	0	0	0	0	1
8137					
8137	0	0	0	0	1
8138		0	0	0	1

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_TibR	Trauma_UlnL	Trauma_UlnR	FemurR_Abs_pr	PNB_HumL_Sev
8139	0	0	0	0	1
8140	0	0	0	0	3
8141					
8142	0	0	0	0	1
8143					1
8144	0			0	1
8148	0	0	0	0	1
8149	0			0	
8154	0	0		0	1
8155		0	0	0	1
8156	0		0	0	
8157			0	0	
8158	0	0	0	0	
8159	0		1	0	1
8160	0	0	0	0	1
8161					1
8163	0	0	0	0	1
8164					
8165	0	0	0	0	1
8166					1
23713	0	0	0	0	1
23714	0	0	0	0	1
23715	0	0	0	0	1
23735	0	0	0	0	1
23736	0	1	0	0	1
23738	0	0	0	0	1
23739	0	0	0	0	1
23740	0	0	0	0	1
23743		0	0	0	
23752	0	0	0	0	1
23755		0	0	0	1
23758	0	0		0	
23759	0				
26192	0	0	0	1	1
27220	0	0	0	0	1
28305					1
31360	0	0	0	0	1
31930	0	0	0	0	1
31949	0	0		0	1
7956	0	0	0	0	1
8002		0	0	0	1
8065			0		

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_TibR	Trauma_UlnL	Trauma_UlnR	FemurR_Abs_pr	PNB_HumL_Sev
8069	0	0	0	0	1
8122		0		0	
20435	0	0	0	0	1
20436	0	0	0	0	1
20439					1
20444					
20450	0	0	0	0	1
20458		0			1
20469	0	0	0	0	1
20472	0	0	0	0	1
20474	0	0	0	0	3
20504	0	0	0	0	1
20507	0	0	0	0	
20509	0	0	0	0	1
21001		0	0	0	1
21002	0	0	0	0	1
21004	0	0	0	0	1
21005	0	0	0	0	1
21008	0	0	0	0	1
21013	0	0	0	0	1
21024		0	0		
21025					1
21026	0	0	0	0	1
21033	0	1	0	0	1
21034		0	0		1
21035	0	0	0	0	
21044	0	0	0	0	3
21045	0	0	0	0	1
21053					
21056	0	0	0	0	1
21057	0	0	0	0	1
21069	0	0	0	0	1
21070				0	
21074				0	1
21080	0			0	
21082		1	0		1
21083	0	0	0	0	1
21086	0	0	0	0	
21090	0	0	0	0	1
21093			0		
21096					1
21102	0			0	1

APPENDIX VIII: RAW DATA

SkeletonID	Trauma_TibR	Trauma_UlnL	Trauma_UlnR	FemurR_Abs_pr	PNB_HumL_Sev
21274	0	0	0	0	1
21279	0	0	0	0	
26213	0	0	0	0	1
26214	0	0	0	0	1
26252					
26253					
26254					
26268					
27207					
28264	0		0	0	
28281	0	0	0	0	1
28289					
28294	0	0	0	0	1
28297			0	0	1
28326		0	0	0	1
31363		0	0	0	1
31422					
31901	0	0	0	0	

APPENDIX VIII: RAW DATA

SkeletonID	PNB_HumR_Sev	PNB_RadL_Sev	PNB_RadR_Sev	PNB_UlnL_Sev	PNB_UlnR_Sev
7962	1	1	1	1	
7963					
7964	1		1		
7965		1		1	
7966					
7967	3	1	1		1
7968	1	1	1	1	1
7969					
7970	1	1	1	1	1
7971	1		1		1
7972	1	1	1	1	1
7973	1	1	1	1	1
7974	1	1	1	1	1
7975	1	1	1	1	1
7976					
7977		1		1	
7978	1	1	1	1	1
7979					
7980					
7981	1	1		1	
7982	1	1		1	
7983	1	1	1	1	1
7984		1	1		
7985					
7986	1	1	1	1	1
7987					
7988	1				1
7989	1	1	1	1	1
7990					
7994			1	1	1
7996	1	1	1	1	1
7997	1	1	1	1	1
7998					
7999				1	
8003	1	1	1	1	1
8017	1				
8025	1	1	1	1	1
8026	1	1	1	1	1
8031				1	
8032					
8034	1	1	1	1	1
8035	1	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	PNB_HumR_Sev	PNB_RadL_Sev	PNB_RadR_Sev	PNB_UlnL_Sev	PNB_UlnR_Sev
8036	1	1	1	1	1
8037	1				
8038	1	1	1	1	1
8039	1	1	1	1	1
8041			1		1
8042	1				
8043	1	1	1	1	1
8044					
8045	1	1	1	1	1
8047					
8048					
8049		1	1	1	
8050					
8051	1	1	1	1	1
8052	1	1		1	
8054	1		1		1
8055	1	1	1	1	1
8056					
8057	1	1	1	1	1
8060	1		1		1
8061	1	1	1	1	1
8062	1	1	1	1	1
8063					
8064	1				
8067				1	
8068	1	1	1	1	1
8070	1	1	1	1	1
8074					
8075	1	1	1	1	1
8076			1		
8077					
8078			1		1
8079	1	1		1	
8080		1	1	1	1
8081	1				
8082			1		1
8083	1	1	1	1	1
8084	1	1	1	1	1
8085					
8086	1	1	1	1	1
8087	1	1	1	1	1
8088	1	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	PNB_HumR_Sev	PNB_RadL_Sev	PNB_RadR_Sev	PNB_UlnL_Sev	PNB_UlnR_Sev
8090	1	1		1	1
8091					
8092	1	1	1	1	1
8093					
8094	1	1	1	1	1
8095					
8096	1	1	1	1	1
8097					
8098		1	1	1	1
8099					
8100	1	1	1	1	1
8102	1				
8103	1				
8104	1	1		1	1
8106	1	1	1	1	1
8107					
8110	1		1		1
8111		1		1	
8112	1				
8113					
8114	1				
8115	1	1	1	1	
8117	1	1	1	1	1
8118					
8119	1	1	1	1	1
8120	1	1	1	1	1
8121					
8124	1	1		1	
8125	1	1	1	1	1
8126					
8127	1	1	1	1	1
8129	1	1	1	1	1
8130					
8131	1	1		1	
8132	1	1			
8133	1	1	1	1	1
8134	1			1	
8135	1	1	1	1	1
8136	1	1	1	1	1
8137			1		
8137	1	1	1	1	1
8138	1	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	PNB_HumR_Sev	PNB_RadL_Sev	PNB_RadR_Sev	PNB_UlnL_Sev	PNB_UlnR_Sev
8139	1	1	1	1	1
8140	1	1	1	1	1
8141					
8142	1	1	1	1	1
8143					
8144		1			
8148	1	1	1	1	1
8149					
8154		1		1	
8155	1	1	1	1	1
8156	1		1		1
8157	1		1		1
8158		1	1	1	1
8159	1	1	1	1	1
8160	1	1	1	1	1
8161	1				
8163	1	1	1	1	1
8164					
8165	1	1	1	1	1
8166		1			
23713	1	1	1	1	1
23714	1	1	1	1	1
23715	4	1	1	1	1
23735	1	1	1	1	1
23736	1	1	1	3	1
23738	1	1	1	1	1
23739	1	1	1	1	1
23740	1	3	3	3	3
23743					
23752	1	1	1	1	1
23755	1	1	1	1	1
23758		1		1	
23759					
26192	1	1	1	1	1
27220	1	1	1	1	1
28305		1		1	
31360	1	1	1	1	1
31930	1	1	1	1	1
31949	1	1		1	
7956	1	1	1	1	
8002	1		1	1	1
8065	1		1		1

APPENDIX VIII: RAW DATA

SkeletonID	PNB_HumR_Sev	PNB_RadL_Sev	PNB_RadR_Sev	PNB_UlnL_Sev	PNB_UlnR_Sev
8069	1	1	1	1	1
8122					
20435	1	1		1	1
20436	1	1	1	1	1
20439					
20444					
20450	1	1	1	1	1
20458	1	1		1	
20469	1	1	1	1	1
20472	1	1	1	1	1
20474	1	1	1	1	1
20504	1	1	1	1	1
20507	1	1	1	1	1
20509	1	1	1	1	1
21001	1	1	1	1	1
21002	1	1	1	1	1
21004	1	1	1	1	1
21005	1	1	1	1	1
21008	1	1	1	1	1
21013	1	1	1	1	1
21024		1	1	1	1
21025	1	1	1	1	1
21026	1	1	1	1	1
21033	1	6	1	6	1
21034	1	1	1	1	1
21035		1	1	1	1
21044	1	1	1	1	1
21045	1	1	1	1	1
21053					
21056	1	1	1	1	1
21057	1	1	1	1	1
21069	1	1	1	1	1
21070					
21074	1	1	1		
21080					
21082	1	1	1	1	1
21083	1	1	1	1	1
21086					
21090	1	1	1	1	1
21093	1				1
21096	1	1	1	1	1
21102	1				

APPENDIX VIII: RAW DATA

SkeletonID	PNB_HumR_Sev	PNB_RadL_Sev	PNB_RadR_Sev	PNB_UlnL_Sev	PNB_UlnR_Sev
21274	1	1	1	1	1
21279					
26213	1	1	1	1	1
26214	1	1	1	1	1
26252					
26253					
26254					
26268					
27207					
28264			1		1
28281	1	1	1	1	1
28289					
28294	1	1	1	1	1
28297	1		1		1
28326	1	1	1	1	1
31363	1	1	1	1	1
31422					
31901					

APPENDIX VIII: RAW DATA

SkeletonID	PNB_FemL_Sev	PNB_FemR_Sev	PNB_TibL_Sev	PNB_TibR_Sev	PNB_FibL_Sev
7962	1	1	1	1	1
7963					
7964	1	1		1	
7965	1		1		
7966		1	1		1
7967	1	1			
7968	1				
7969	1	1	1	1	1
7970	1	1	1	1	1
7971	1	1	1	1	1
7972	1	1	1	1	1
7973	1	1	1	1	
7974	1	1	1	1	1
7975	1	1	1	1	
7976	1		1		
7977	1	1	1	1	1
7978	1	1	1	1	1
7979					
7980					
7981	1	1	1	1	1
7982		1	1	1	
7983	1	1			
7984	1	1	1	1	1
7985		1		1	1
7986	1	1	1	1	1
7987					
7988	1	1		1	
7989	1	1	1	1	1
7990					
7994	1	1	1	3	1
7996	1	1	1	1	1
7997	1	1			1
7998				1	
7999					
8003	1	1	1	1	1
8017					
8025	1	1	1	1	1
8026	1	1	1	1	1
8031	1	1	1	1	1
8032					
8034			1	1	1
8035	1	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	PNB_FemL_Sev	PNB_FemR_Sev	PNB_TibL_Sev	PNB_TibR_Sev	PNB_FibL_Sev
8036	1	1	1	1	1
8037	1	1		1	
8038	1	1	1	1	1
8039	1	1	1	1	1
8041					
8042					
8043	1	1	1	1	1
8044	1				
8045	1	1	1	1	1
8047	1	1	1	1	1
8048					
8049	1	1	1	1	1
8050	1	1	1	1	1
8051	1	1	1	1	4
8052	1	1	1	1	1
8054					
8055		1			
8056	1	1			
8057	1	1	1	1	1
8060		1	1	1	1
8061	1	1	1	1	1
8062	1	1	4	1	1
8063			1	1	
8064					
8067					
8068	1	1	1	1	1
8070	1	1	1	1	1
8074	1		1		
8075	1	1	1	1	1
8076	1	1	1	1	1
8077		1	1	1	1
8078					
8079	1		1	1	
8080	1	1	1	1	1
8081	1	1	1	1	1
8082			1	1	1
8083	1	1			
8084	1	1	1	1	1
8085			1	1	1
8086	1		1	1	
8087	1	1	1	1	1
8088	1	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	PNB_FemL_Sev	PNB_FemR_Sev	PNB_TibL_Sev	PNB_TibR_Sev	PNB_FibL_Sev
8090					
8091	1	1	1		1
8092	1	1	1	1	1
8093				1	1
8094	1	1	1	1	1
8095	1	1	1	1	1
8096	1	1		1	
8097	1	1	1	1	1
8098		1	1	1	1
8099					
8100	1	1	1	1	1
8102		1	1	1	1
8103			1	1	
8104	1	1			
8106	1	1	1	1	
8107					
8110					
8111					
8112		1		1	
8113	1	1	1	1	4
8114	1	1			
8115	1	1	1	1	
8117	1	1	1	1	1
8118					
8119	1	1	1	1	1
8120	1	1			
8121					
8124	1	1	1	1	1
8125	1	1	1	6	1
8126					
8127	1	1	1	1	1
8129	1	1	1	1	4
8130					
8131	1	1	1	1	1
8132					
8133	1	1	1	1	1
8134	1				
8135	1	1	1	1	1
8136	1	1	1	1	1
8137					
8137	1	1	1	1	1
8138	1	1			

APPENDIX VIII: RAW DATA

SkeletonID	PNB_FemL_Sev	PNB_FemR_Sev	PNB_TibL_Sev	PNB_TibR_Sev	PNB_FibL_Sev
8139	1	1	1	1	1
8140	1	1	1	1	1
8141	1				
8142	1	1	1	1	1
8143					
8144	1	1	1	1	1
8148	1	1	1	1	
8149	1	1			
8154	1	1	1	1	1
8155	1	1			
8156		1		1	
8157		1			
8158	1	1	1	1	1
8159	1	1	1	4	1
8160	1	1	1	1	1
8161	1	1	1	1	
8163	1	1	1	1	1
8164					
8165	1	1	1	1	1
8166					
23713	3	1	1	3	1
23714	1	3	1	1	1
23715	1	1	4	1	1
23735	1	1	1	1	1
23736	1	1	1	1	1
23738	1	1	1	1	1
23739	1	1	1	1	1
23740	1	1	1	3	3
23743					
23752	1	1	1	1	1
23755	1	1	1		1
23758	1	1	1	1	1
23759	3		1	1	1
26192	1	1	3	4	5
27220	1	1	6	1	1
28305	1	1			
31360	1	1	1	1	1
31930	1	1	1	1	1
31949	1	1	1	1	1
7956	1	1	1	1	1
8002	1	1		1	
8065		1			

APPENDIX VIII: RAW DATA

SkeletonID	PNB_FemL_Sev	PNB_FemR_Sev	PNB_TibL_Sev	PNB_TibR_Sev	PNB_FibL_Sev
8069	1	1		1	
8122					
20435	1	1	1	1	
20436	1	1	1	1	1
20439					
20444			1	1	1
20450	1	1	1	1	1
20458	1		1		1
20469	1	1	1	1	1
20472	1	1	1	1	1
20474	1	1	1	1	1
20504	1	1	1	1	1
20507	1	1		1	
20509	1	1	1	1	6
21001	1	1	1	1	
21002	1	1	1	1	1
21004	1	1	1	1	1
21005	1	1	1	1	1
21008	1	1	1	1	1
21013	1	1	1	1	1
21024	1	1			
21025	1	1	1	1	
21026	1	1	1	1	1
21033	1	1	1	1	1
21034	1		1		1
21035	1	1	1	1	1
21044	1	1	1	1	1
21045	1	1	1	1	1
21053	1	1		1	1
21056	1	1	1	1	1
21057	1	1	1	1	1
21069	1	1	1	1	1
21070					
21074		1			
21080					
21082					
21083	1	1	1	1	1
21086					
21090	1	1	1	1	1
21093		1		1	
21096					
21102	1	1	1	1	1

APPENDIX VIII: RAW DATA

SkeletonID	PNB_FemL_Sev	PNB_FemR_Sev	PNB_TibL_Sev	PNB_TibR_Sev	PNB_FibL_Sev
21274	1	1	1	1	1
21279					
26213	1	1	1	1	1
26214	1	1	1	1	1
26252					
26253					
26254					
26268	1				
27207					
28264	1	1	1	1	1
28281	1	1	1	3	1
28289					
28294	1	1	1	3	1
28297		1			
28326	1	1	1	1	
31363	1	1			
31422					
31901	1	1	1	1	

APPENDIX VIII: RAW DATA

SkeletonID	PNB_FibR_Sev	StatureSTD
7962	1	152.88
7963		148.83
7964		160.776
7965		
7966		
7967		
7968		
7969	1	
7970	1	166.65
7971	1	
7972	1	166.71
7973		
7974	1	
7975		
7976		
7977	1	
7978	1	142.83
7979		
7980		
7981	1	
7982		
7983		144.72
7984	1	
7985		
7986	1	164.6
7987		
7988		
7989	1	143.42
7990		161.41
7994	1	
7996	1	164.63
7997	1	
7998		
7999		
8003	1	
8017		
8025	1	
8026	1	159.63
8031		
8032		
8034	1	
8035	1	170.384

APPENDIX VIII: RAW DATA

SkeletonID	PNB_FibR_Sev	StatureSTD
8036	1	
8037		
8038	1	142.62
8039	1	167.411
8041		
8042		
8043	1	151.574
8044		
8045	1	154.5
8047	1	
8048		164.6
8049	1	170.17
8050	1	136.95
8051	1	163.194
8052	1	
8054		
8055		
8056		
8057	1	155.31
8060	1	167.64
8061	1	162.05
8062	1	157.58
8063	1	
8064		
8067		
8068	1	
8070	1	
8074		
8075	1	167.67
8076	1	151.844
8077	1	
8078		
8079		
8080	1	
8081	1	
8082	1	
8083		170.144
8084		
8085	1	
8086	1	
8087	1	
8088	1	158.28

SkeletonID	PNB_FibR_Sev	StatureSTD
8090		
8091	1	
8092	1	175.58
8093	1	
8094	1	159.98
8095	1	
8096	1	
8097	1	158.73
8098	1	
8099		
8100	1	153.69
8102		
8103		
8104		
8106		
8107		
8110	1	
8111		
8112		
8113	4	152.22
8114		
8115	1	
8117	1	
8118		149.64
8119	1	154.5
8120		
8121		
8124		
8125	1	145.47
8126		
8127	1	162.31
8129	1	157.74
8130		
8131	1	168.18
8132		
8133	1	165.11
8134		
8135	1	
8136	1	155.37
8137		
8137	1	163.328
8138		

APPENDIX VIII: RAW DATA

SkeletonID	PNB_FibR_Sev	StatureSTD
8139	1	153.15
8140	1	157.97
8141		
8142	1	152.07
8143		
8144	1	
8148		
8149		
8154		
8155		
8156	1	
8157		
8158	1	165.34
8159	4	165.78
8160	1	168.94
8161		
8163	1	168.7
8164		
8165	1	146.13
8166		
23713	3	152.34
23714	1	
23715	1	159.06
23735	1	
23736	1	158.58
23738	1	166.65
23739	1	161
23740	1	151.53
23743		
23752	1	162.05
23755		
23758	1	161.8
23759	1	
26192	5	150.855
27220	1	
28305		
31360	1	163.14
31930	1	174.812
31949	1	150.21
7956	1	162.08
8002	1	
8065		

SkeletonID	PNB_FibR_Sev	StatureSTD
8069	1	162.532
8122		
20435		
20436	1	160.01
20439		
20444	1	
20450	1	165.37
20458		146.94
20469	1	
20472	1	
20474	1	173.49
20504	1	
20507	1	161.81
20509	1	171.72
21001		
21002	1	166.42
21004	1	153.96
21005	1	165.66
21008	1	159.16
21013	1	159.63
21024		
21025		
21026	1	165.79
21033		154.16
21034		
21035	1	160.52
21044	1	157.53
21045	1	
21053	1	
21056	1	
21057	1	152.88
21069	1	145.22
21070		
21074		
21080		
21082		
21083	1	159.09
21086		
21090	1	153.15
21093		
21096		
21102	1	

APPENDIX VIII: RAW DATA

SkeletonID	PNB_FibR_Sev	StatureSTD
21274	1	163
21279		152.34
26213	1	155.01
26214	1	
26252		
26253		164.604
26254		165.91
26268		
27207		
28264	1	
28281	1	
28289		
28294	1	155.072
28297		
28326		
31363		
31422		159.156
31901		

APPENDIX IX: RECORDING FORMS

BURIAL RECORDING FORM

Date:	Recorder/ Excavator:	Square #	Burial #	Skeleton #	Cut #	Fill #	Coffin #

Context Description:	Photographs:	Sex:	Sed out C/G:
			Sed in C/G:
		Age:	Sed at P:

Mask Description:

Grave Description:	Coffin Description:	Burial Description:	Burial Orientation:
Type:	Type:	Burial Position:	N
		Head Orientation:	
		Hand Placement:	
		Feet Placement:	
N/S:	N/S:	N/S:	
E/W:	E/W:	E/W:	
GL:	GL:	GL:	
GW:	GW:	GW:	
Elev at E:	Elev at E:	Depth:	
Elev at W:	Elev at W:	Elev at Skull:	Elev at Hands:
Elev at C:	Elev at C:	Elev at Pelvis:	Elev at Feet:
Munsell of fill: (M), (T), (I), (C):	Munsell of Coffin:	Associated bags and items:	Taphonomy:

Noted Pathologies:

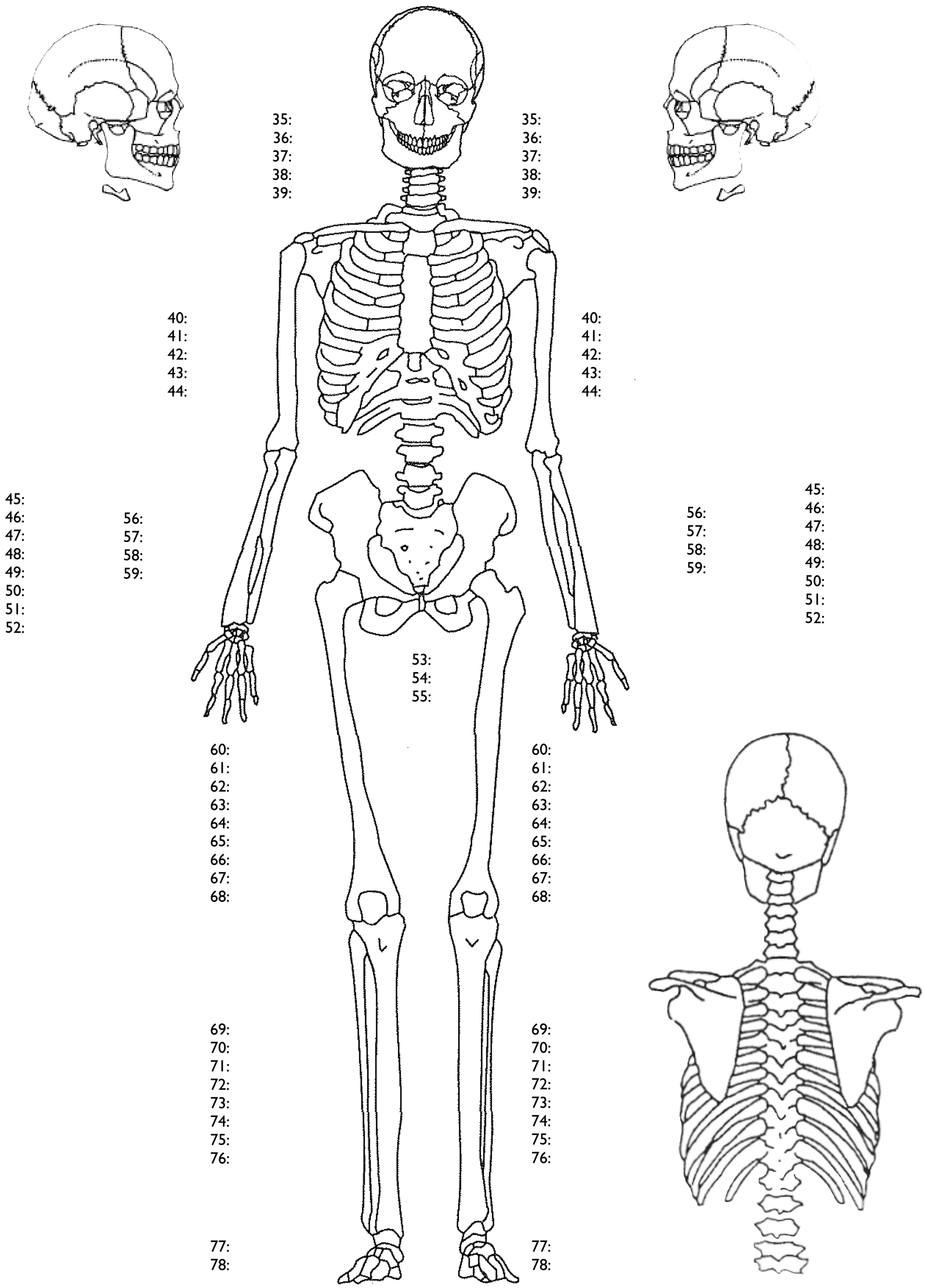
	Notes/Sketch:
Placement in Square	
Drawings:	△Top: △Bottom:

This burial is:

APPENDIX IX: RECORDING FORMS

ADULT VISUAL INVENTORY

Intls: ________
Date: ________
Bur. #: ________
Sk. #: ________



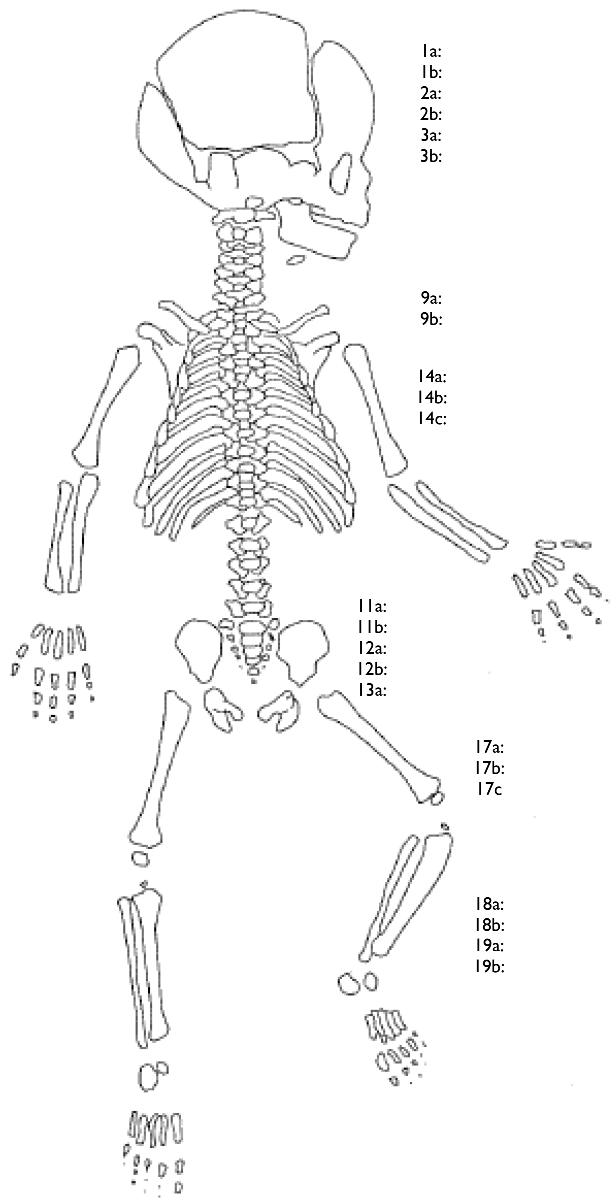
APPENDIX IX: RECORDING FORMS

INFANT VISUAL INVENTORY

Intls: ________
Date: ________
Bur. #: ________
Sk. #: ________

4a:
4b:
5a:
5b:

6a:
6b:
7a:
7b:
7c:
8a:
8b:
8c:



1a:
1b:
2a:
2b:
3a:
3b:

10a:
10b:
10c:

9a:
9b:

9a:
9b:

10a:
10b:
10c:

14a:
14b:
14c:

14a:
14b:
14c:

15a:
15b:
16a:
16b:

15a:
15b:
16a:
16b:

11a:
11b:
12a:
12b
13a:

11a:
11b:
12a:
12b:
13a:

17a:
17b:
17c:

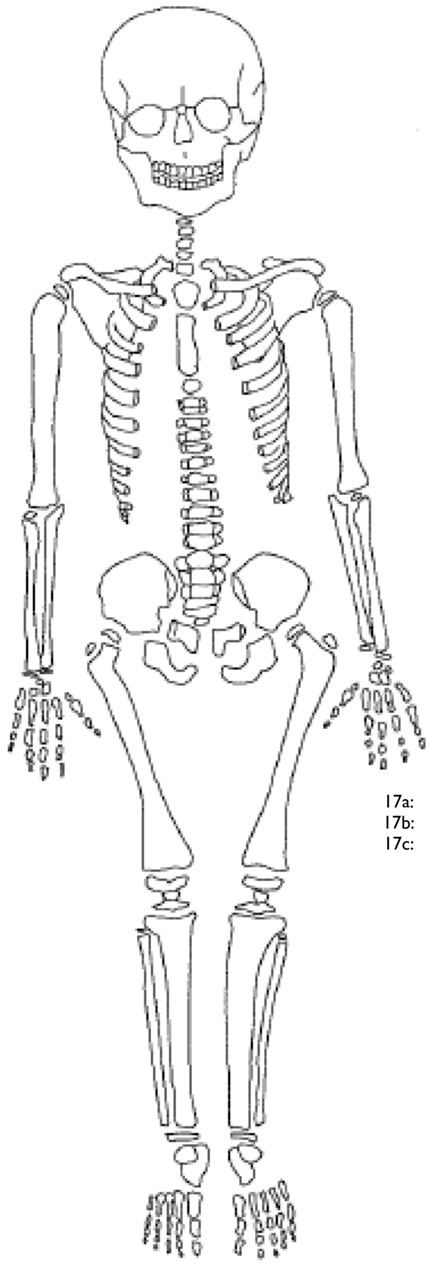
17a:
17b:
17c

18a:
18b:
19a:
19b:

18a:
18b:
19a:
19b:

JUVENILE VISUAL INVENTORY

Intls: ________
Date: ________
Bur. #: ________
Sk. #: ________



APPENDIX IX: RECORDING FORMS

INVENTORY RECORDING FORM FOR COMPLETE SKELETONS

Date: ____________ **Area:** ______________ **Square:** ____________ **Observer:** ____________

Burial#: ______________ **Skeleton#:** ____________

-- - Absent, 1 - Present Complete, 2 - Present Fragmentary, 3 - Poor (<50%), 4 - Antemortem Loss

---

Cranium

	Left	Right
Frontal		
Orb. Roof		
Parietal		
Occipital		
Temporal		
Pars. Petrus		
TMJ		

	Left	Right
Sphenoid		
Ethmoid		
Vomer		
Nasal		
Zygomatic		
Maxilla		
Palatine		

Mandible:

Body		
Condyle		

Hyoid:

L. Horn Body R. Horn

Cranial Fragments: ______

Spine and Ribs

	Centra	Arches
C1		
C2		
C7		
C3-6 (#/C)	/	/
T1-9 (#/C)	/	/
T10		
T11		
T12		
L1		
L2		
L3		
L4		
L5		

	Left	Right
1st Rib		
2nd Rib		
11th Rib		
12th Rib		
Ribs 3-10:		
Rib Fragments		

Sternum: Manubrium Body Xiphoid

Sacrum:	
Coccyx:	
Vert. Frags.	

Post Cranial

	Clavicle	Scapula	Acromion	Coracoid	Glenoid
Left					
Right					

Notes:

APPENDIX IX: RECORDING FORMS

Date: ____________ **Area:** ______________ **Square:** ____________ **Observer:** ____________

Burial#: ______________ **Skeleton#:** ____________

Long Bones

	Proximal Epiphysis	Proximal Third	Middle Third	Distal Third	Distal Epiphysis
Humerus Sin					
Humerus Dx					
Radius Sin					
Radius Dx					
Ulna Sin					
Ulna Dx					
Femur Sin					
Femur Dx					
Tibia Sin					
Tibia Dx					
Fibula Sin					
Fibula Dx					
Talus Sin					
Talus Dx					
Calcaneus Sin					
Calcaneus Dx					

Hands and Feet

Carpals:	Left	Right
SCA		
LUN		
TRQ		
PIS		
TZM		
TZD		
CAP		
HAM		

MC:	Left	Right
I		
II		
III		
IV		
V		

MC Unsided	

Ph. Man:	Left/C#	Right/C#	Unsided/C#
Prox	/	/	/
Int.	/	/	/
Dist.	/	/	/

Tarsals:	Left	Right
Talus		
Calcaneus		
CUB		
NAV		
1CU		
2CU		
3CU		

MT:	Left	Right
I		
II		
III		
IV		
V		

MC Unsided:	

Ph. Ped:	Left/C#	Right/C#	Unsided/C#
Prox	/	/	/
Int.	/	/	/
Dist.	/	/	/

PATHOLOGY RECORDING FORM

Date: __________ **Area:** __________ **Square:** __________ **Observer:** __________

Burial#: __________ **Skeleton#:** __________

Age:
Based on:

Sex:
Based on:

Stature: (Preliminary)

Osteophytic Growth
Score as Ph 0, I, II or III acc. to Brothwell

ATLAS		T6	
AXIS		T7	
C3		T8	
C4		T9	
C5		T10	
C6		T11	
C7		T12	
T1		L1	
T2		L2	
T3		L3	
T4		L4	
T5		L5	

Enamel Hypoplasias
Score as 1, 2, 3 acc to Brothwell

Tooth#	Score:

Pathologies:

PATHOLOGY RECORDING FORM

Date: __________ **Area:** __________ **Square:** __________ **Observer:** __________

Burial#: __________ **Skeleton#:** __________

TAPHONOMY:

Munsell of bones:

Degree of preservation:

Truncation/Damage:

Describe surrounding archaeological features that can have affected preservation, such as the depth of the grave as found, elevation, surrounding architectural features even if not stratigraphically relevant:

Methods of excavation and recording:

BADaBooM

Database Documentation

Jessica Kaiser

APPENDIX X: DATABASE DOCUMENTATION

BADaBooM Database Documentation:

Jessica Kaiser

1. Introduction:

The Bio-Archaeology Data Base Module (BADaBooM) was built mainly as a tool for dealing with the osteological analysis in my dissertation, but I hope it will be of use for others as well. It is modeled mainly after *Standards* (Buikstra and Ubelaker 1994), with some modifications of my own. In some cases, I have used other analytical or data-collection methods, and the references for these are given in the relevant section of the database documentation, as well as on the layout or report in the actual database. I also owe thanks to the team behind the Smithsonian Institution's OsteoWare database, whose tables I modeled some of my layouts after, particularly in the pathology sections of the database, and to Kristina Killgrove, whose Access database I have cannibalized somewhat for tables and value lists, as well as to Elizabeth Minor, who helped me learn how FileMaker worked when "The Missing Manual" reference book was not enough! Finally, a caveat: I am not by any means a database developer, and any mistakes/bugs or design flaws in the database are my own. If anyone discovers something that could be done better, or that does not perform as intended, I would be grateful for the feedback!

1.1 Purpose

I developed BADaBooM because I could not find an existing database that could do exactly what I needed. Mainly, I wanted a database that would deal with not only the osteological data, but the archaeological information as well. In addition, existing databases - such as OsteoWare for example - does not allow for much customization. Since BADaBooM is an unlocked, stand-alone file, any new user can edit the database, and add or delete layouts or reports to individualize the database for their personal needs.

In addition, I wanted to use a database for upcoming projects where I work with several other osteologists that would ensure standardization of data-collection as well as ease of reporting. One feature of BADaBooM that will make collaboration/overview of larger projects easier are the "Reports" Layouts, where several common queries (or reports, as they are called in FileMaker) are pre-programmed, so that they can be run and printed with the click of a button. That way, anyone who is trained in how to do the basic data entry can also access the most important reporting features without needing knowledge of SQL or FileMaker development. Since I am anticipating having several people doing data entry in my own database in upcoming projects, I have designed the database mainly with drop-down lists for the various fields, though each layout has a field for free-text notes as well. This is to minimize data entry mistakes, which can make querying ineffective.

1.2. Why FileMaker?

When I built my previous DB, FileMaker was nowhere near Access when it came to relational databases, and was not really an option. Now, all that has changed, and FileMaker has more or less the same functionality as Access, with a few added benefits, chief among which are:

- It is cross-platform – the same database file can be run from a PC or a Mac
- It supports up to five simultaneous users without the need for server hosting, through a web-connection, or just an offline network connection.
- For larger teams with more than five members, it can be run over a server as-is through WebDirect, without need for re-programming.
- It syncs wirelessly between several computers or between computer and mobile device
- It can be run from a mobile device such as an iphone or ipad for field data collection
- It handles photos better than Access
- It produces easier to read, more professional-looking printable reports than Access
- It has a more streamlined interface

Finally, it has to be said – like anything Mac, it simply looks better…..

2. General Overview:

2.1. Tables:

The database has two main tables, **`Burials`** and **`Skeletons`**, around which many (many!) sub-tables are arranged. However, it should be noted that the majority of these tables are not database tables containing regular records, but tables serving as bases for custom value lists. This is the one drawback I have found in FileMaker – unlike Access, custom value lists can not be configured directly to contain two columns. As many of the fields in the database are numerical, to allow for direct export to SPSS or Excel for statistical analysis, a description for each numerical code (or short alphabetical code) is usually necessary for data-entry – that is, the fields require a dropdown list with the numerical code for each feature, which is what is ultimately stored in the field, as well as a written description or key explaining what each code stands for. To accomplish this in FileMaker, it is necessary to create a base table with two fields; one for the numerical code, and one for the description, upon which the final value list can be based. One more feature of these value lists deserves to be noted. FileMaker two-column value-lists cannot be custom sorted when they are simply made from two fields in a base table. You can choose to sort the value list based on either column, but the sorting will be automatic; that is, if you have a drop-down with the codes SUB for Subadult, YAD for Young adult and OAD for old adult, they will be sorted SUB, OAD, and YAD, unless you preface the codes with a letter or number (a, b, c or 1, 2, 3 for example), which may not be desirable. In addition, the columns of the drop-down lists are not aligned automatically, which can end up looking rather disorganized if your codes are of very variable length. To get around this, I used a custom function and calculations for the value list base tables, along with a monospaced font for the actual drop-down list. First, I added three fields to the two original fields (let's call them "`Code`" and "`Description`") of each value list: `CodePadded`, `DescriptionCustomSorted` and `SortOrder`. I then opened the fields in Table view on a layout, and entered the sort order I wanted in the `SortOrder` field. For the example above, it would look like this:

Table: ListAgeGroups				
Code	**Description**	**CodePadded**	**DescriptionCustomSorted**	**SortOrder**
SUB	Subadult			1
YAD	Young Adult			2
OAD	Old Adult			3

Table 1: Custom sorting of value list

I then opened the Manage Database window and changed the `CodePadded` field to a calculation field, with result set as text and the following formula:

```
CodePadded=
Left(Code&"          "; 10)
```

The space between the quotation marks is 10 spaces, set with the space bar. This calculation will add 10 blank spaces after each code, and then start each second column entry on character spacing 10 (in this case leaving 7 spaces between the columns – adjust this number for longer or shorter codes)

Next, I changed the `DescriptionCustomSorted` field to a calculation field as well, with the calculation:

```
DescriptionCustomSorted=
_PrependWithByteOrderMarks ( Description ; SortOrder )
```

This is a custom function, available and explained here:
http://www.soliantconsulting.com/blog/2012/09/extending-filemaker-pro%E2%80%99s-value-list-sort-capabilities-using-char-function

This calculation will prepend the `Description` with the same number of invisible byte order marks as denoted in the `SortOrder` field.

After entering the calculations, I went to the field needing a drop-down list and added a New Value List, named it appropriately, and chose choose values from field→ specify and chose the ListAgeGroups table from the dropdown. I then chose

`CodePadded` as the first field, and `DescriptionCustomSorted` as the second field. At the bottom of the dialogue, I checked the check-box for "Re-sort values based on:" and chose "Unicode" from the associated drop-down list. This last step is important, as Filemaker will ignore the byte order marks when sorting in English.

Note that if changes are needed to the value lists, the calculation fields (`CodePadded` and `DescriptionCustomSorted`) cannot be changed, but the base fields (`Code` and `Description`) can, which will then carry over in the calculated fields.

Next, I changed the font in the field using the value list to Arial Monospaced MT (available for free here: http://www.ufonts.com/download/arial-monospaced-mt/197885.html) so that the value list would be consistently spaced. Finally, I added conditional formatting to the field with Format→ Conditional menu → Formula is: `not IsEmpty(Self)` → More Formatting → Font (Arial), so that the entries displayed in the field would be consistent with the rest of the database. This conditional formatting tells FileMaker to change the font in the field to Arial Plain (which is what I used for the rest of the database) whenever the field is not empty. It should be noted that this step is unnecessary if the numerical codes are just one-number length codes.

Finally, I entered a formula in the auto-enter calculation option for every field that utilizes the padded value-lists to remove any errant spaces (which, as I discovered, will otherwise affect the sorting of reports and queries). The formula is a custom function from onepartharmony.com, and runs when the field is exited. The function is detailed below, but can also be found here: http://www.onepartharmony.com/custom_functions_one_function.php?function=16

```
/*
Removes all carriage returns, all text formatting (i.e. font
selection, bold, italic, etc.), and leading and trailing spaces
from a field or string.
*/

TextFormatRemove
(
TrimAll
(
Substitute
( Data ;
/* convert all carriage returns to spaces */
[ "¶" ; " " ] ;
/* convert all horizontal tabs (ASCII 9) to spaces */
[ Char( 9 ) , “ “ ] ;
/* convert all new line characters (ASCII 10) to spaces */
[ Char( 10 ) , “ “ ] ;
/* convert all vertical tabs (ASCII 11) to spaces */
```

```
[ Char( 11 ) , " " ] ;
/* convert all form feed characters (ASCII 12) to spaces */
[ Char( 12 ) , " " ] ) ;
/* remove leading, trailing & dup spaces */
0 ; 2 ) )
```

The value list base tables are denoted in the database as **`LayoutName_ListFieldName`**, and they are coloured blue in the relationship graph to distinguish them from true, record containing tables. The advantage to this feature is that the drop-down lists are easy to customize; to change the codes or descriptions, simply change the base table so that it contains the desired values, and the drop-down lists will change accordingly. To minimize confusion as much as possible, the tables are organized by layout in the Manage Database → Tables window, when sorted by "custom order". I have added a "dummy" table as a heading for each layout and sublayout, labeled ---LAYOUT: LAYOUT NAME --- and –SUBLAYOUT: LAYOUT NAME- respectively, with the base and list tables listed below in the order they appear.

The **`Burials`** table is fairly simple: it contains the archaeological data for each burial, such as grave type, shape and fill; date opened, square, phase and other context information. It is separate from the remaining tables because a burial can contain more than one skeleton (in, for example a multiple burial, or when secondary bones are found in a grave). It is related to the **`Skeletons`** table through a one-to-many relationship of the `BurialNumber` field.

The **`Skeletons`** table is the heart of the database. It contains the main primary key of the database, the `SkeletonNumber` field, which MUST be unique, and the basic, summary information about each skeleton such as Burial, Skeleton and Coffin feature numbers, and age, sex and phase. This information is displayed across the top of all Layouts except the Burial Form. The header also contains buttons labeled [Hide/Show Navigation] for toggling the navigation tabs on and off, as well as a button labeled [Show Progress], which opens a Pop-Up window showing the data entry progress for the current burial record. This Pop-Up is based on the entries in the check-boxes labeled "Entry Complete" in each section of the database (Layout, Sub-layout or Tab - in different locations depending on spatial availability). These boxes should be checked whenever a section is completed, to enable the progress report for each burial and the material as a whole. The progress reports are described in greater detail under section 4.2: Report Navigation.

Details about each table, when relevant, will be provided in the descriptions of each layout and the fields displayed there. Full details are available in the database design report attached to this document.

2.2. Database Organization:

At the point of writing this section, the BADaBooM database contains 223 tables. However, since the majority of the tables are two-column value lists, the number of tables used for data entry is significantly smaller. To organize the tables, they are listed in order of layout in the Manage Database → Tables window, and separated by headings denoting the layout or sub-layout to which they belong. Any tables used for value lists are prefaced by "List". Note that the "View by" option in the top right corner of the Manage Database window has to be set to "custom order" for the tables to appear ordered by layout.

In the relationship graph, the tables are organized by a centric model. This approach was chosen over the anchor-buoy model since only one table in the database (The **`PathologyDetailJoints`** table) required a second Table Occurrence or TO. Thus, with very few exceptions, the **`Skeletons`** table is the base table that ties the database together, and the remaining tables are arranged around it in the relationship graph. The value list tables (i.e. tables that do not contain actual data, but which nevertheless have to be present in the graph for the dynamic value lists to function) are colored blue. Tables used for data entry remain the default gray color. To make it easier to find specific tables, the tables have been arranged in a color-coded system, each colored section labeled with the name of the layout on which the tables occur in the database (Fig 1).

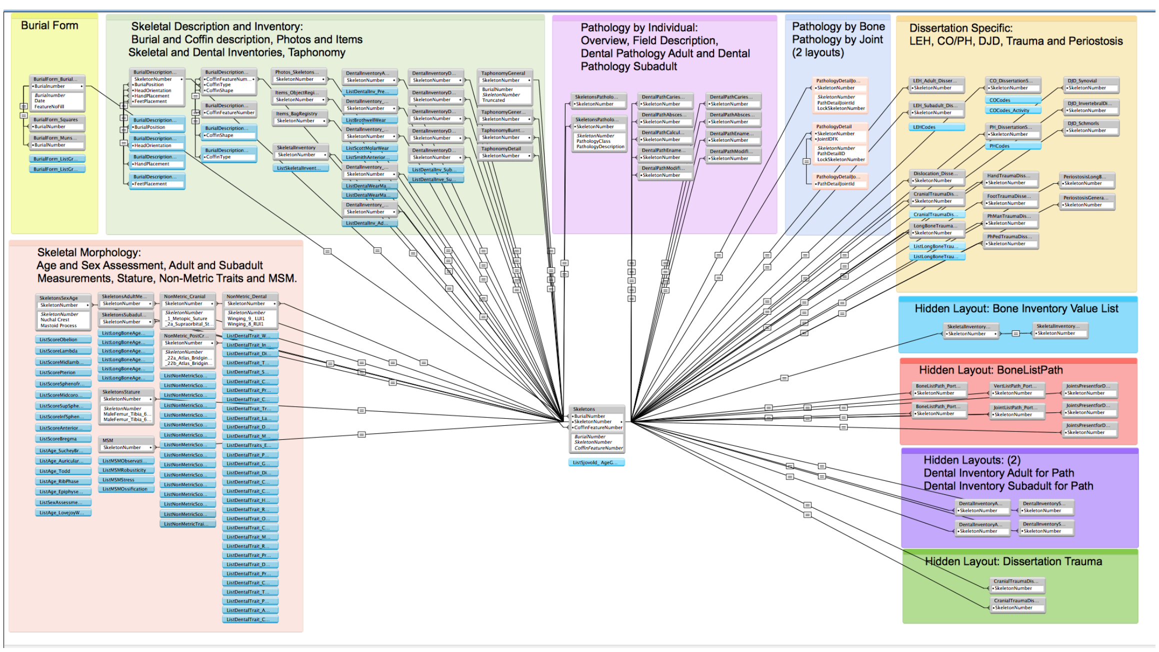


Figure 1: The BADaBooM relation ship graph.

3. LAYOUTS: Database Architecture and Data Entry

BADaBooM has seven main layouts:

Burial Form
Skeletal Description and Inventory
Skeletal Morphology
Pathology by Individual
Pathology by Bone
Pathology by Joint
Dissertation Specific

You can navigate between the different layouts using tabs at the top of the header of each layout. If you prefer to navigate through the database using the "Layout" drop-down list in the left lower corner of the status bar, you can hide the navigation tabs by pressing the button [Hide Navigation] at the top right hand corner of each layout. To the left of this button is another button labeled [Show Progress], which launches a pop-up window detailing the data entry progress for the current burial record.

The Burial Form consists of one page only, as it displays information about the entire burial (that is, the information in the burial form can pertain to more than one individual). The six remaining layouts each have the same fields in the header, showing feature/context numbers, age and sex, archaeological phase and context information. Below the header, each form is divided in several sub-layouts in the form of tabs. Each is described below. In addition, there are several other folders with layouts visible only in layout mode. The first folder contains Pop-up layouts, which are launched from the main layouts for data-entry. The second folder contains Help layouts, which are also launched from the main layouts. Finally, the Hidden layout folder contains layouts that work in the background of the database to provide dynamic drop-down lists linked to skeletal and dental inventories. Each of the layouts/forms and sub-layouts are described below.

3.1. Burial Form:

This form contains the archaeological information for each burial. The header contains a dropdown list, which enables you to choose a burial number already entered, a button that creates a new burial record, and navigation buttons for the remaining forms. The burial form is it's own layout because each burial can contain more than one skeleton, so it has a one-to-many relationship with the main primary key of the database, the `SkeletonNumber`. The Burial Form is based mainly on the "**`BurialForm_BurialsMain`**" table, but also contains a portal for the fill description (**`BurialForm_MunsellofFill`**) and the squares

(`BurialForm_Squares`), since both of these fields can contain more than one record per burial.

Below the header are fields for burial number, area and square, context numbers for the burial cut and fill, and the date the burial was opened. There are also two fields for "`Phase`" and "`Dating`" respectively – this is due to the recording system at Giza (the material for which the database was built) where the site-wide phase could be fairly general, such as "Late Period Funerary Use" while the actual dating could be more precise, such as "second half of 25th Dynasty". For sites with only one set of phases, one of these fields could be deleted. There is also a field for "`Dating based on`", which details whether or not the dating is relative (based on stratigraphic information) or directly based on items in the grave such as pottery. The grave description contains fields for type and shape of grave, as well as dimensions and elevations, and description of the burial fill. The fields "`Earlier than`" and "`Later than`" contains the numbers of burials immediately above or below the current burial in the site matrix. Finally, a container field holds a PDF file of the field documentation of the burial. The PDF can be either dropped directly in the field, in which case it will be stored within the database, or inserted as a reference to a storage location on the computer or on a server through the Insert menu. Choose the former option for a self-contained database but a larger file (if the database will be copied to several computers without server access, this may be the best choice) choose the latter option if the database will be used on one computer only, or stored centrally on a server.

Note that if you are running Mavericks on a Mac, there is a bug that freezes the container window if you are using Adobe web viewer plugin. Get around this problem by moving the "AdobePDFViewer.plugin" and "AdobePDFViewerNPAPI.plugin" in /Library/Internet Plug-Ins/ and instead installing the free Schubert pdf viewer plugin, which can be found here: http://www.schubert-it.com/pluginpdf/

The Schubert plugin also allows for double-clicking the file to open it in the Adobe Acrobat program on your computer, which the Adobe Web plug-in does not.

Sub-layouts: *None*

3.2. Skeletal Description and Inventory

With a few exceptions in portals that will be noted when relevant, all of the records on the description and inventory form are related through the `SkeletonNumber`. The Description and Inventory layout contains 7 sub-layouts, and is based on the **`Skeletons`** table. The header contains fields for burial number (`Burial#`), Skeleton feature number (`Skeleton#`), Coffin feature number (`Coffin#`), whether or not the skeleton is primary or secondary (`P/S`), `Phase`, `Age` and `Sex`.

Sex is coded as M (Male), M? (Probable Male), ? (Undetermined), F? (Probable Female) and F (Female).

There are 3 fields for age assessment. The `AgeGroup` field displays Age groups following Sjøvold 1978, but if a different scale is desired this can be changed in the value list table `ListAgeGroup`. The `AgeRange` field contains the range in years, and actually consists of two fields combined: `AgeMin` and `AgeMax`. The `AgePoint` field is for calculation purposes only – it is a calculation field, which calculates the minimum age in years plus maximum age in years divided by two. Obviously, this will cause problems with individuals coded only as "Adult: 18-79", as this will cause a large group of burials to be coded as 48.5 years of age, so in reports based on age in years those burials should be omitted from calculations.

The header also contains a checkbox to be checked if there was no skeleton in the grave (i.e. an empty coffin), `"No sk!"` and a general notes field.

Sub-layouts:

3.2.1. Burial Description:

The **Burial Description** tab contains description of burial position, hand and feet position and dimensions in the "Burial Description" box, similar information for the coffin if present in the coffin description box, as well as a portal displaying the Munsell colors of the coffin. There is also a container field for drawings, sketches etc, optimized for PDF files. If a drawing exists and should be used in the Catalogue report, check the box for "Use for Report" in the top right corner. This will display the chosen drawing in the Burial Catalogue Report.

The sub-layout is based on the tables **`BurialDescriptionMain`**, **`BurialDescription_CoffinDescription`**, and **`BurialDescription_CoffinDescriptionMunsell`**, in addition to several tables providing data for the drop-down value list, all prefaced with **`BurialDescription_List`**

3.2.2. Photos:

The **Photos** tab contains a portal for multiple photos. For each photo, there are associated fields for photo number, photo type (overview, macro et c.) as well as a small notes field. In addition, there is a button for [Send to Bur Cat], which is linked to the Burial Catalogue Report. Pressing this button sends the photo to the **`Photos_BurialCatalogue_Photos`** table, which contains the photos displayed in the Burial Catalogue.

The photo portal is based on the table **`Photos_SkeletonsPhotos`**. The table also contains a `BurialNumber` and `SkeletonNumber` field, which are not on the layout, to enable sorting by either burial or skeleton number. The `SkeletonNumber` field is the key field. Again, photos can be either dragged-and-dropped (storing the image within the database itself) or inserted as a reference via the Insert→ Picture menu command.

3.2.3. Items:

The **Items** tab contains portals for displaying records from the **`Items_ObjectRegistry`** and **`Items_BagRegistry`** tables. The records are linked through the `SkeletonNumber` field, and the table also contains a `BurialNumber` field, so that objects or other finds can be sorted by burial (in cases where burials contain more than one individual with associated finds). Though the **`Items_BagRegistry`** table is fairly simple, with only fields for `BagNumber` and `BagType` (lithics, ceramics, faunal bone or whatever else the bag contained) the **`Items_ObjectRegistry`** table is very specific to my dissertation material and reflects the many changes our object registry system underwent over the years. It will likely have to be customized for use with other materials.

3.2.4. Skeletal Inventory:

The Skeletal Inventory layout is based on the **`SkeletalInventory`** table. It is set up to make bone inventory as quick as possible. For that reason, the majority of the fields are in the form of radio buttons (where only one button can be checked) or check-box sets, for "check all that apply" situations (see below).

The inventory largely follows the *Standards* (Buikstra and Ubelaker 1994) recommendations, with a few adaptations. Most bones display the options "PC" for "Present Complete" and "PF" for "Present Fragmentary". The orbital roof, the auricular surface and the pubic symphysis also have additional checkboxes for "Observable" (O) and "Unobservable (UO), to facilitate statistical analyses.

Long Bones:

Long bone inventory is displayed on the layout as a checkbox list with the following checkboxes for each long bone:

PE = Proximal Epiphysis
PT = Proximal Third
MT = Middle Third
DT = Distal Third
DE = Distal Epiphysis
C = Complete
CF = Complete Fragmentary

APPENDIX X: DATABASE DOCUMENTATION

Data Entry Main Inventory Form:
If the bone is complete, check "C" and no other checkbox
If the bone is complete but fragmented (i.e. all parts present but not in one piece) check "CF" and no other checkbox.
If the bone is incomplete, check all segments that apply; for example, if a humerus is nearly complete but missing the distal epiphysis, check "PE", "PT", "MT" and "DT", but leave the remaining checkboxes empty.

Data Storage and Statistics:
The checkbox entry stores the values of all long bone checkbox entries in the same field `(LongBoneName_Side),` so that an export of the table will produce a return-separated list of all checked values in a long bone field as below:

SkeletonNumber	Humerus _ Left
8037	PE MT DE

Table 2: Return-separated export fields

If what is needed is just an inventory for a given skeleton, this should be sufficient. However, to enable counts of each bone or bone part for frequency calculations (for example, calculations of pathological lesions for each given bone or bone section as a percentage of the total number of observable bones or MNI calculations), several "hidden" fields are included in the base table "**`SkeletalInventory`**" though not displayed on the inventory layout. For each long bone, these fields are as follows:

```
LongboneName_Side_PE
LongboneName_Side_PT
LongboneName_Side_MT
LongboneName_Side_DT
LongboneName_Side_DE
LongboneName_Side_C
LongboneName_Side_CF
```

These fields are calculation fields, which return a value of "1" (present) for each individual bone segment if "PE", "PT", "MT", "DT", or "DE" are checked, fills all segments as "1" if "C" or "CF" is checked, in addition to returning the value "1" in the `"LongboneName_Side_C"` field if "C" is checked. If the checkbox "CF" is checked, this returns the value "1" in the `"LongboneName_Side_CF"` field.

The calculations were made with the If/ValueCount/FilterValues functions for all bone segments, and with the case function if "C" or "CF" were checked in the following way:

Bone segments (using `Humerus_Left_PE` as an example):

```
If ( ValueCount (FilterValues (Humerus_Left ; "PE")); "1" ; If (
ValueCount (FilterValues (Humerus_Left ; "C")) ; "1" ; If ( ValueCount
(FilterValues (Humerus_Left; "CF")) ; "2" ) ) )
```

Complete and Complete Fragmentary Entries (Using `Humerus_Left` as an example):

```
Case ( Humerus_Left  = "C" ;"1";  Humerus_Left ≠ "C"; "0" )

Case ( Humerus_Right  = "CF" ;"1"; Humerus_Right  ≠ "CF" ; "0")
```

Data Entry Long Bone Preservation Detailed (Pop-Up Window):

As a basic inventory (i.e. present or not present), the entries in the main inventory form should be sufficient. However, if more detailed information about long bone preservation is required, the button [Long Bone Preservation Detailed] in the top right corner of the inventory form can be used to launch a pop-up window with separate fields for each long bone and segment. Each bone-segment field has a drop-down list with the choices “1 → Complete, > 90% preserved”, “2 →Partial, 50-90% preserved” and “3 → Poor, less than 50% preserved”. The information entered is stored in the `SkeletalInventory` table, in separate fields named as below:

```
LongboneName_Side_PE_Preserv
LongboneName_Side_PT_Preserv
LongboneName_Side_MT_Preserv
LongboneName_Side_DT_Preserv
LongboneName_Side_DE_Preserv
```

The detailed preservation inventory should be done *after* the main inventory is completed, as the fields in the pop-up window are set to auto-fill based on the entries in the long-bone check-box sets as below:

When long bone check-boxes are left empty in the main inventory to indicate missing bone segments, the corresponding fields in the pop-up window are replaced with the text “N/A”. This is done by hiding the entry field with the formula:

```
IsEmpty ( SkeletalInventory::LongBoneName_Side_Segment )
```

When the check-box “C” is checked for a long bone on the main inventory form indicating a complete bone, all pop-up field pertaining to that bone are auto-filled with the code “1”. This is done with the auto-enter calculation:

```
If ( ValueCount (FilterValues (LongBoneName_Side ; "C")); "1" )
```

Note that the auto-fill calculations are set to replace the existing value in the pop-up window fields – in other words, when the checkboxes are changed on the main inventory form, this will be reflected in the pop-up fields as well.

Other bones with 'hidden' calculation fields:

Similar to the long bones, the hyoid, sternum, carpals, tarsals with the exception of calcaneus and talus (which are evaluated separately as "Present Complete" or "Present Fragmentary"), metacarpals and metatarsals are inventoried through checkbox sets for different bones or bone parts, which after export to excel produce return-separated lists as below.

SkeletonNumber	Sternum	Carpals_Right	Metacarpals_Left
90010	MAN BOD XIPH	SCA LUN TRQ PIS TZM TZD CAP HAM	I IV III

Table 3: Return separated lists - Sternum, Carpals and Metacarpals

Again, for inventories of individual skeletons this should be sufficient, but for counts of individual bones or bone sections, all of the checkbox entries have corresponding calculation fields in the `SkeletalInventory` table, which return a "1" when the box on the layout is checked.

In addition, there are also hidden calculation fields for the Orbital roofs and Pelvic features, named `OrbitalRoof_Side_Inv`, `PubicSymphysis_Side_Inv`, `Acetabulum_Side_Inv` and `FacAuric_Side_Inv` respectively. These are all calculation fields, that will return a "1" when "O" (for "Observable") is checked in the corresponding field on the inventory, using the following function (Left Orbital Roof used as example):

```
If ( OrbitalRoof_Left = "O" ; "1" )
```

If "UO" is checked in any of the fields with that option, the `_Inv` field for the corresponding bone will be blank.

The 'Update Value Lists' button:

The [Update Value Lists] button is located in the bottom left of the inventory layout, and should be pressed after inventory is completed or updated for a given skeleton. When pressed, this button updates the hidden tables `SkeletalInventoryValues_PortalBase` and

SkeletalInventoryValues_PortalList, which are the basis of the dynamic value lists used in other layouts. If updated, these dynamic value lists ensure that only bones marked as present on the inventory form show in the drop-down lists of other layouts, such as the Taphonomy: Detail and Taphonomy: Burnt Bone layouts for example.

3.2.5. Dental Inventory and Wear: Adult

The Adult Dental Inventory sub-layout is based on the tables **DentalInventoryAdultMain**, **DentalInventory_Adult_BrothwellWear**, **DentalInventory_Adult_ScottSmithWear**, and **DentalInventory_Adult_LovejoyWear**.

In addition, a pop-up window accessible through buttons at either side of the layout enables data entry on supernumerary teeth in the **DentalInventory_Adult_SuperNumerary** table. The tables are all related to the Skeletons table via the SkeletonNumber field.

The layout displays an image of the upper and lower dental arches for reference (adapted from Wikimedia commons), numbered according to the Universal Numbering System (1-32). The image is surrounded by fields for dental inventory, wear, and notes. At either side of the layout is a button labeled [SuperNumerary Teeth], which opens up the related Supernumerary teeth layout, in a pop-up window, triggered by the ShowSuperNumeraryTeeth script. In the center of the layout is another button that opens an additional pop-up window with images and descriptions of each scoring system used on the layout, as well as directional terms and cusp names. The pop-up window is triggered by the script ShowDentalWearHelp, and is a dialog window, meaning it has to be closed before returning to the layout.

The **DentalInventoryAdultMain** table contains fields for the adult dentition using the Universal Numbering System (1-32) and the corresponding layout fields are coded by a dropdown list based on the **ListDentalInv_Adult_PresenceAbsence** table following *Standards*. (Buikstra and Ubelaker 1994, p. 46-48). The table and layout also contain the notes fields, separated by quadrant (Left and Right Maxilla, and Left and Right Mandible).

In addition, the table also contains two sets of hidden fields for the dentition to be used in the dental pathology indices. The first set contains fields for each observable tooth (_1Obs-_32Obs). These fields are all calculation fields, and will auto-fill with a "1" whenever the dental inventory for the corresponding tooth is set to either "Present, not in occlusion" (1) or "Present, development complete, in occlusion" (2). The calculation is accomplished through a Case function:

```
Case(_DentalInventoryField = 1; 1; _DentalInventoryField = 2; 1)
```

where "_DentalInventoryField" refers to the main dental inventory fields _1 through _32.

The `Obs` fields are then summed in the `SumObs` field using the sum function, returning the number of teeth for the current dentition scored as either "1" or "2". For my purposes, I chose not to count teeth scored as "Present, damaged and unmeasurable" (7), as I used this score to denote teeth where most of the crown was missing, but the case function could easily be changed to include this score as well, by adding `_DentalInventoryField = 7; 1` to the end of the calculation.

The second set of hidden fields counts the number of teeth missing pre-mortem (`_1MPreM-_32MPreM`). They are also calculation fields, each returning a "1" when the a tooth is inventoried as "Premortem loss, missing, alveolus resorbed/ing" (4), with the calculation:

```
If ( _DentalInventoryField = 4 ; 1)
```

where "_DentalInventoryField" again refers to the main dental inventory fields _1 through _32.

The MPreM fields are then summed in the `SumMPreM`, returning the number of teeth missing premortem for the dentition.

The **`DentalInventory_Adult_BrothwellWear`** table contains fields for the molars, again using the Universal Numbering System, and the corresponding layout fields are coded by a drop-down list based on the table `ListBrothwellWear`, following Brothwell (1981, p. 72).

The **`DentalInventory_Adult_ScottSmithWear`** table contains one field each for teeth 4-13 and 20-29, and the corresponding layout fields are coded with a drop-down list based on the table **`ListSmithAnteriorWear`** following Smith (1984). In addition, the table also contains four fields each for molars 14-19 and 30-32, one for each quadrant, coded by a drop-down list based on the table **`ListScottMolarWear`** following Scott (1979), as well as a Total field for each molar that calculates the composite score for each tooth (Scott 1979). In the Scott system, each molar occlusal surface is divided in quadrants, the remaining enamel of which is scored on a scale from 1 to 10. The four quadrants are combined to produce a composite score between 4-40. On the dental inventory layout, the `Total` field accomplishes this by using a calculation combining the quadrant scores for each tooth.

The original Scott molar scoring system does not require consistent orientation of each tooth quadrant. However, in 2010, Shykoluk and Lovell published an enhancement to the Scott method, where each quadrant was consistently oriented and associated with a specific cusp. With this method, maxillary molars are scored as Quad 1=Paracone, Quad 2=Metacone, Quad 3=Hypocone and Quad 4=Protocone, while mandibular molars are scored as Quad 1=Protoconid, Quad 2=Hypoconid, Quad 3=Entoconid and Quad 4=Metaconid. The scores are subsequently reported individually and sequentially for each tooth, without summing the quadrants, to facilitate identification of directional and differential molar wear. On the Dental Inventory layout, the quadrant fields are tabbed in the order suggested by Shykoluk and Lovell (2010), with tooltips appearing above each quadrant field to show which cusp to enter. As the methods are not mutually exclusive, reports should be prepared for both composite and sequential scores of molar wear.

The **`DentalInventory_Adult_LovejoyWear`** table contains fields for left and right maxilla and left and right mandible, which are coded by dropdown lists based on the tables `ListDentalWearMaxLovejoy` and `ListDentalWearMandLovejoy` respectively, following Lovejoy (1985).

The **`DentalInventory_Adult_SuperNumerary`** table contains fields in a portal, so that more than one supernumerary tooth can be recorded for each dentition. There are layout fields for the teeth on either side of eventual supernumerary teeth, shown as "Between teeth: __ /__ " on the pop-up layout, as well as a field for a 1-4 score of the position of the supernumerary tooth, following Standards (Buikstra and Ubelaker 1994, p. 49). The score field contains a drop-down list based on the **`ListDentalInv_Adult_SuperNumeraryPosition`** table. The pop-up window is a floating dialogue window, meaning that it can be accessed while editing the underlying layout (i.e. it is possible to switch back and forth between the layouts without closing the window), but it will always stay on top of the main layout.

3.2.6. Dental Inventory and Wear: Subadult

The Dental Inventory and Wear: Subadult layout is based on the tables **`DentalInventoryDeciduousMain`**, **`DentalInventoryDeciduous_Formation`**, **`DentalInventoryDeciduous_Resorption`** **`DentalInventoryDeciduous_ScottJuvWear`** and **`DentalInventoryDeciduous_UbelakerDevelopment`**, all related to the Skeletons table via the `SkeletonNumber` field.

Similar to the adult dental inventory layout, the subadult dental inventory contains an image of the dental arches (adapted from http://ameritasgroup.com/OCM/GetFile?doc=093524), numbered with the Universal Numbering System 51-70.

Upon entering the layout, there are fields for dental inventory surrounding the dental arches image, again with a drop-down list for each field following Standards (Buikstra and Ubelaker 1994, pp. 48-49). Entry in these fields will populate the table

DentalInventoryDeciduousMain , which also contains the notes fields for each quadrant.

Above the "Inventory" label are two buttons, designated "Formation" and "Resorption". These will toggle additional fields around the dental arches for recording crown and root formation and root resorption, respectively. There is also a script that sets the fields to be hidden by default when the layout is first entered.

The drop-down lists in the formation fields follow Moores et al (1963a, 1963b), but with the added numerical designation (1-14) for each formation stage recommended in Standards (Buikstra and Ubelaker 1994, pp. 49-50). In addition, two further numerical designations have been added for "Adult, complete, root obscured by alveolus" (15) and "Subadult, complete, root obscured by alveolus" (16) following Killgrove (2013). Data entry in the formation fields will populate the table **DentalInventoryDeciduous_Formation,** which again has fields for each tooth labeled according to the Universal Numbering System.

Data entry in the resorption fields will populate the table **DentalInventoryDeciduous_Resorption,** with drop-down lists based on Moorees et al (1963a, 1963b), but with the addition of numerical coding 1-3 for Res ¼, ½ and ¾ respectively, as well as an added entry (4) for "Unobservable – root obscured or missing".

On both sides of the inventory, resorption and formation fields are fields for development for each quadrant, following Ubelaker (1978, p. 64). Entries here will populate the table **DentalInventoryDeciduous_UbelakerDevelopment.**

In addition, there are also fields for molar wear, following Scott (1979) but tabbed in the order suggested by Shykulok and Lovell (2010). A "Total" field calculates the composite score for each molar. The underlying table is named **DentalInventoryDeciduous_ScottJuvWear**.

Finally, a button in the center of the layout, labeled "Show Help" will open the pop-up window "Dental Development Help", with visual help files of the Ubelaker and Moorees et al scores. The window has to be closed before data-entry can resume. The radio-button set in the help files is tied to the **DentalInventoryDeciduousMain** table via the `ChooseDentalFormationHelp` field.

***Scripts*:**
The help files opens via the script `ShowDentalDevelopmentHelp`, triggered by the help button.

The toggling of the Formation and Resorption fields is accomplished by two overlying buttons for each group of fields, which are scripted to set two global fields in the **`DentalInventoryDeciduousMain`** table to Show or Hide. The formation and resorption data entry fields are then set to be hidden based on the contents of the global fields. The full scripts are as follows:

Hiding fields by default:

Script trigger: `OnLayoutEnter`
//Triggers script when first entering layout//

Script: `ShowHideDentalEnterLayout`
//Sets global fields gResorption and gFormation to "Hide Resorption" and "Hide Formation"//

"Show" buttons (brown):

Resorption button → Format→ Button Setup

```
Set Field [DentalInventoryDeciduousMain::gResorption; "Show Resorption"]
```
//Sets the global field gResorption to "Show Resorption"//

Resorption button → Inspector → Data → Hide object when:

```
DentalInventoryDeciduousMain::gResorption =
"ShowResorption"
```
//Hides button when gResorption equals "Show Resorption"//

Formation button → Format→ Button Setup

```
Set Field [DentalInventoryDeciduousMain::gFormation; "Show Formation"]
```
//Sets the global field gFormation to "Show Formation"//

Formation button → Inspector → Data → Hide object when:

```
DentalInventoryDeciduousMain::gFormation = "ShowFormation"
```
//Hides button when gFormation equals "Show Formation"//

"Hide" buttons (clear):

Resorption button → Format→ Button Setup

```
Set Field [DentalInventoryDeciduousMain::gResorption; “Hide
Resorption”]
```
//Sets the global field gResorption to “Hide Resorption”//

Formation button → Format → Button Setup

```
Set Field [DentalInventoryDeciduousMain::gFormation; “Hide
Formation”]
```
//Sets the global field gFormation to “Hide Formation”//

Resorption button → Inspector → Data → Hide object when:

```
DentalInventoryDeciduousMain::gResorption =
"HideResorption"
```
//Hides button when gResorption equals “Hide Resorption”//

Formation button → Inspector → Data → Hide object when:

```
DentalInventoryDeciduousMain::gFormation = "HideFormation"
```
//Hides button when gFormation equals “Hide Formation”//

Formation data entry fields:

Inspector → Data → Hide object when:

```
DentalInventoryDeciduousMain::gFormation = "HideFormation"
```
//Hides all formation fields when gFormation is set to “HideFormation”//

Resorption data entry fields:

Inspector → Data → Hide object when:

```
DentalInventoryDeciduousMain::gFormation = "HideResorption"
```
//Hides all formation fields when gResorption is set to “HideResorption”//

3.2.7. Taphonomy:

The Taphonomy sub-layout has three tabs: “Taphonomy: Overview”, “Taphonomy: Detail” and “Taphonomy: Burnt Bone”.

Tab: Taphonomy: Overview

The Overview tab deals with information related to an entire skeleton record, and was largely adapted from the OsteoWare taphonomy module, with a few additions.

In particular, the tab includes a section aimed at archaeological (excavated) burials. This section has fields for general preservation (as Excellent, Good, Fair, Poor or Extremely Poor), % disarticulated as found, truncation, and surface exposure. There are also sections for surface texture, surface damage, adherent materials, cultural and curation modifications and color and staining., as well as a large Notes field. Below the color and staining section, there is an additional field that allows for entry of Munsell codes of either general bone color or unusual discoloration. With the exception of the fields for Munsell codes, which are set in a portal linked to the table **`TaphonomyGeneralMunsellCodes`** (since one bone may have several stains/Munsell codes), the fields on the Overview tab are all derived from the table **`TaphonomyGeneral.`** Both tables are linked to the **`Skeletons`** table via the `SkeletonNumber` field. Except for the edit boxes and the field "Surface Exposure", which is a radio-button (i.e. 'choose one') field, the multiple choice fields are all check-box sets, meaning that they allow for "choose all that apply" data-entry. Thus, when data is exported to excel, any field in which more than one check-box was populated will transfer as multiple, return-separated entries per field as below:

BurialNumber	SkeletonNumber	SurfaceDamage	CurationModifications	AdherentMaterials
1003	90003	Sunbleaching Plant Root Damage Rodent Gnawing	Excavation Damage Laboratory Damage Bleaching/Cleaning	Dried Body Fluids Desiccated Tissue (Natural) Desiccated Tissue (Mummified) Mold

Table 4: Return-separated export - Taphonomy layout

Finally, a button labeled [Taphonomy Help] calls the script <u>ShowTaphonomyHelp</u>, which opens a pop-up window displaying images and score descriptions for the Behrensmeyer (1978) weathering stages, as well as images of rodent and carnivore gnawing, root damage, and cut, chop and percussion marks taken from White (2012).

Tab: Taphonomy: Detail

As the name implies, the Taphonomy: Detail tab enables data entry on a more detailed level. The tab has six portals for entering information bone element by bone element on weathering, discoloration, polish, cut/chop/percussion marks and cultural modification, and one portal with container fields for adding images. The tab is largely based on the prompts of Attachment 24 in *Standards*. (Buikstra and Ubelaker 1994) As the fields reside in portals, any portals with more than one row populated will have corresponding rows in the spreadsheet, so that there could be many rows with information for the same skeleton number.

To minimize data-entry errors, the drop-down lists in the Taphonomy: Detail portals are based on the skeletal inventory, so that they only show bone elements that have been entered as present in the main inventory. This is accomplished by a hidden layout, containing the fields of the table **SkeletalInventoryValues_PortalBase** and a portal for the table **SkeletalInventoryValues_PortalList.** The **SkeletalInventoryValues_PortalBase** table is populated through the script UpdateSkeletalInventoryList, which transfers values from the Skeletal Inventory layout fields that contain data. Another script, PopulateInventoryPortal, then transfers the values to the **SkeletalInventoryValues_PortalList** through the portal `BoneElementPortal`, creating a final table with one separate row for each bone element added to the inventory. Both of these scripts are called as sub-scripts by the script UpdateValueLists, which in turn is called when the button [Update Value Lists] on the Skeletal Inventory layout is pressed. To avoid duplicates in the **SkeletalInventoryValues_PortalList** table, the UpdateValueLists script overwrites previous entries. To keep the value lists current, it is important that the [Update Value Lists] button is pressed whenever changes are made to the main skeletal inventory.

The UpdateValueLists script is written as follows:

```
   • Go to Related Record [ From table:
     “SkeletalInventoryValues_PortalBase”; Using layout:
     “HiddenLayout: BoneInventoryValueList”
     (SkeletalInventoryValues_PortalBase) ]
   • Perform Script [ “UpdateSkeletonInventoryList” ]
   • Perform Script [ “PopulateInventoryPortal” ]
   • Go to Layout [ original layout ]
Exit Script [ ]
```

The two sub-scripts are too long to reproduce fully here, as they use every field in the **SkeletalInventoryValues_PortalBase** table, but the full scripts can be found in the database design report attached to this documentation. The first lines of each script are given below:

Script: UpdateSkeletalInventoryList

```
• Replace Field Contents [
      SkeletalInventoryValues_PortalBase::Frontal_Left; Replace with
      calculation: If ( not IsEmpty ( SkeletalInventory::Frontal_Left )
      ; "Left Frontal" ) ] [ No dialog ]
Replace Field Contents [
SkeletalInventoryValues_PortalBase::Frontal_Right; Replace with
calculation: If ( not IsEmpty (SkeletalInventory::Frontal_Right ) ;
"Right Frontal" ) ] [ No dialog ]
```

Script: PopulateInventoryPortal

```
   • Go to Object [ Object Name: "BoneElementPortal" ]
   • Go to Portal Row [ Select; First ]
   • Insert Calculated Result [
     SkeletalInventoryValues_PortalList::BoneElements; If ( not
     IsEmpty ( SkeletalInventoryValues_PortalBase::Frontal_Left ) ;
```

```
    GetAsText ( SkeletalInventoryValues_PortalBase::Frontal_Left ) )
    ] [ Select ]
  • Go to Object [ Object Name: "BoneElementPortal" ]
  • Go to Portal Row [ Select; Next ]
Insert Calculated Result [
SkeletalInventoryValues_PortalList::BoneElements; If ( not IsEmpty (
SkeletalInventoryValues_PortalBase::Frontal_Right ) ; GetAsText (
SkeletalInventoryValues_PortalBase::Frontal_Right ) ) ] [ Select ]
```

Some of the inventory values have been simplified for the value list: for instance, though the carpal and tarsal bones are inventoried separately in the main inventory, they show only as “Left/Right Tarsals” or “Left/Right Carpals” in the drop-down list. The pelvic bones, which are inventoried as Ilium, Ischium and Pubis in the main inventory, have also been combined to “Innominate”, and the long bones are represented with one entry for each long bone rather than by separate entries for each long bone segment. If more detail is needed, the exact location or bone can be detailed in the description field. Alternatively, the value-lists can be added to manually, as the drop-down fields allow for manual entry.

Tab: Taphonomy: Burnt Bone

The Taphonomy: Burnt Bone tab consists of one portal, with fields based mainly on Attachment 23 of *Standards* (Buikstra and Ubelaker 1994) and based on the table **`TaphonomyBurntBone`**. Each portal row contains a drop-down list (again dynamic, and based on the same table and scripts as in the previous tab), another drop-down list for color choice and an edit box for “% Affected”. In addition, there is a check-box set enabling a ‘choose all that apply’ entry for “Surface Texture” with boxes for L=Longitudinally Split, T=Longitudinal and Transverse Checking, and C=Curved Cracks., and two Yes/No radio-button sets for “Warping” and “Shielded Surfaces”, respectively, as well as a notes field for “Description”. As on the previous tab, both drop-down lists allow for manual entry as well.

3.3. Skeletal Morphology

The Morphology Layout has five sublayouts: Age and Sex Assessment, Adult Measurements, Subadult Measurements, Non-Metric Traits and MSM’s. The header of the layout is based on the **`Skeletons`** table, and has the same fields as the Description and Inventory layout, along with buttons to navigate between the different layouts.

Sub-layouts:

3.3.1. Sex and Age Assessment:

The Sex and Age Assessment layout is based on the **SexAge** table, and has three sections: Sex, Age (Adult) and Age (Subadult). It is linked to the **Skeletons** table with the SkeletonNumber field. The sex assessment section is largely based on *Standards* (Buikstra and Ubelaker 1994), with a few additions. The Cranial Morphology subsection contains fields for the nuchal crest, mastoid process, supraorbital margin and mental eminence, to be scored on a numerical scale of 0-Undetermined/Unobservable, 1-Female, 2-Probable Female, 3-Ambiguous, 4-Probable Male and 5-Male, as recommended in *Standards*. There is also a field for "Cranial Assessment" with the same scale, meant to contain the final cranial assessment. The Pelvic Morphology subsection contains fields for the preauricular sulcus, sciatic notch, ventral arc, subpubic concavity and ischiopubic ramus. In addition, there is also a field for scoring Arc Composé (Novotny 1982). The sciatic notch is scored following the same numerical scale as the cranial features, and the preauricular sulcus is scored on a scale from 0-4, following Milner (1992). The subpubic region and Arc Composé is scored on the scale recommended in *Standards* as 0-Unobservable/Undetermined, 1-Female 2-Ambiguous and 3-Male. The combined Pelvic Assessment field is scored according to the 0-5 numerical scale. For isolated or incomplete remains, there are also three fields for sex assessment from the femur (Pearson 1917-1919; Bass 1987:218-220), humerus (Dittrick 1979; Bass 1987: 150-156) and based on discriminant function. If discriminant function is used, the specific DFA formula and bone used for analysis should be noted in the comments field. Finally, the bottom of the section contains a field for the final sex assessment, again on the 0-5 numerical scale recommended in *Standards*, as well as a button [Show Help (Sex)], which calls a script, detailed below, to open a pop-up window with various help-files and illustrations. The pop-up window should be closed before data-entry commences.

```
• Commit Records/Requests
• New Window [ Name: "SexAssessmentHelp"; Height: 780; Width: 1041; Top:
      +80; Left: +150; Style: Floating Document; Close: “Yes”;
      Minimize: “No”; Maximize: “No”; Zoom Control Area: “No”; Resize:
      “No” ]
• Go to Layout [ “SexAssessmentHelp” (Skeletons) ]
• Show/Hide Menubar [ Hide ]
Show/Hide Toolbars [ Hide ]
```

As the recommended scales in *Standards* contain zero-values, it should also be noted that it is important to enter a value in the final sex assessment field for querying purposes. As Filemaker treats zero-values in text fields the same as blanks, it would otherwise be impossible to distinguish between skeletons that have been assessed, but where the features were undetermined or unobservable (a 0-value on the *Standards* scale), from those where the sex assessment section has not yet been filled in. Thus, the queries can be constructed to find values where: `≠IsEmpty(Final Sex Assessment)`.

The Age (Adult) subsection of the layout contains fields for pelvic morphology, rib phase (Iscan et al. 1984; 1985) dental wear (Lovejoy 1985; Brothwell 1981) and cranial suture closure (Meindl and Lovejoy 1985). The pelvic morphology fields follow the Suchey-Brooks and Todd methods of pubic symphysis morphology (Brooks and Suchey 1990; Todd 1920) and the Lovejoy et al. (1985) method for estimating age from the auricular surface. Below the drop-down fields is a summary field for final pelvic age assessment. The rib phase section follows the phases of Iscan et al. (1984; 1985) for the 4th rib of males and females. However, as later studies have shown that the phases apply to the 3rd and 5th rib as well with little variation (Aktas, et al. 2004), there is also a field for "Rib #" in case another rib was substituted, and radiobuttons for the side analyzed.

The Sutural Closure section follows the Meindl and Lovejoy (1985) system for ectocranial sutures, with the supplement of a score '99' for unobservable sutures in addition to the 0-open, 1-Minimal closure, 2-Significant closure and 3-Complete obliteration. Again, this was necessary for querying purposes, as Filemaker understands '0' and 'blank' as the same value. Underneath the sutural closure fields are two calculation fields for vault and lateral-anterior composite scores, respectively. These are simple calculation fields that tally the scores from sutural sites 1-7 and 6-10, respectively. Thus, if code '99-unobservable' was chosen for any of the observation sites, the score may well be over 100. However, at the bottom of the section are two larger fields, labeled "Composite Score: Vault" and "Composite Score: Lat-Ant" respectively, and these fields are set to perform a slightly more complicated `Case` function, which returns the composite score for valid values only. In other words, if any or all of the fields are empty, or if one or more fields have the value '99', the field will display "Insufficient Data", if the values are zero, the field will display"All sutures open: Subadult", and for remaining valid values the field will display the appropriate mean age, standard deviation (S.D.0 and Inter-decile range for the composite score in question. The Case calculation for the vault composite score is detailed below; the lateral-anterior calculation was accomplished in the same way and is detailed in the database design report.

```
Case ( IsEmpty ( Midlambdoid _1_ ) ; "Insufficient Data" ;
IsEmpty ( Lambda _2_ ) ; "Insufficient Data" ;
IsEmpty ( Obelion _3_ ) ; "Insufficient Data" ;
IsEmpty ( Anterior Sagittal _4_ ) ; "Insufficient Data" ;
IsEmpty ( Bregma _5_ ) ; "Insufficient Data" ;
IsEmpty ( Midcoronal _6_ ) ; "Insufficient Data" ;
IsEmpty ( Pterion _7_ ) ; "Insufficient Data" ;
Vault Sutural Age Sum  > 22 ; "Insufficient Data" ;
Vault Sutural Age Sum  = 0 ; "All sutures open: Subadult" ;
Vault Sutural Age Sum   =  1 ; "Mean Age 30.5 years, S.D. 9.6, Inter-
decile range 19-44" ;
Vault Sutural Age Sum  = 2 ; "Mean Age 30.5 years, S.D. 9.6, Inter-
decile range 19-44" ;
```

```
Vault Sutural Age Sum   = 3 ; "Mean Age 34.7 years, S.D. 7.8, Inter-
decile range 23-45" ;
Vault Sutural Age Sum = 4 ; "Mean Age 34.7 years, S.D. 7.8, Inter-
decile range 23-45" ;
Vault Sutural Age Sum  = 5 ; "Mean Age 34.7 years, S.D. 7.8, Inter-
decile range 23-45" ;
Vault Sutural Age Sum = 6 ; "Mean Age 34.7 years, S.D. 7.8, Inter-
decile range 23-45" ;
Vault Sutural Age Sum   =  7 ; "Mean Age 39.4 years, S.D. 9.1, Inter-
decile range 28-44" ;
Vault Sutural Age Sum   =  8 ; "Mean Age 39.4 years, S.D. 9.1, Inter-
decile range 28-44" ;
Vault Sutural Age Sum   =  9 ; "Mean Age 39.4 years, S.D. 9.1, Inter-
decile range 28-44" ;
Vault Sutural Age Sum   =  10 ; "Mean Age 39.4 years, S.D. 9.1, Inter-
decile range 28-44" ;
Vault Sutural Age Sum   =  11 ; "Mean Age 39.4 years, S.D. 9.1, Inter-
decile range 28-44" ;
Vault Sutural Age Sum  = 12 ; "Mean Age 45.2 years, S.D. 12.6, Inter-
decile range 31-65" ;
Vault Sutural Age Sum  = 13 ; "Mean Age 45.2 years, S.D. 12.6, Inter-
decile range 31-65" ;
Vault Sutural Age Sum  = 14 ; "Mean Age 45.2 years, S.D. 12.6, Inter-
decile range 31-65" ;
Vault Sutural Age Sum  = 15 ; "Mean Age 45.2 years, S.D. 12.6, Inter-
decile range 31-65" ;
Vault Sutural Age Sum  = 16 ; "Mean Age 48.8 years, S.D. 10.5, Inter-
decile range 35-60" ;
Vault Sutural Age Sum  = 17 ; "Mean Age 48.8 years, S.D. 10.5, Inter-
decile range 35-60" ;
Vault Sutural Age Sum  = 18 ; "Mean Age 48.8 years, S.D. 10.5, Inter-
decile range 35-60" ;
Vault Sutural Age Sum  = 19 ; "Mean Age 51.5 years, S.D. 12.6, Inter-
decile range 34-63" ;
Vault Sutural Age Sum  = 20 ; "Mean Age 51.5 years, S.D. 12.6, Inter-
decile range 34-63" ;
Vault Sutural Age Sum  = 21 ; "Mature Adult, over 43 years of age")
```

Below the sutural age section are fields for occlusal dental wear ages according to Lovejoy (1985) and Brithwell (1981) respectively. As detailed above, these dental wear stages are also entered on the Dental Inventory and Wear: Adult sublayout, but there they are evaluated by quadrant (left and right maxilla, and left and right mandible) in the case of the Lovejoy system, and separately for each molar in the case of the Brothwell system. The fields on the Age and Sex Assessment sublayout are meant to summarize these scores with the most likely dental wear stage for the whole dentition. Therefore, no values are looked up from the main dental inventory layout – a wear stage has to be chosen manually.

At the bottom of the section is a field for final age assessment. As in the case with sex assessment, it is important that this field is filled in when age has been assessed for a skeleton, as any queries on age data (which may contain null values) will be dependent on whether or not this field is filled in. For help with adult age assessment, a button to the right of the final age assessment field, [Show Help (Age

A)], which calls a script similar to the one above, and detailed in the database design report, which opens up a window with various help files related to age assessment.

The Age (Subadult) subsection contains fields for scoring epiphyseal closure on a scale of: O-Open, 1-Partial Union, 2-Complete Union and 99-Unobservable. The scoring scale is adapted from *Standards*, but 'O' was substituted for '0', and '99' was substituted for blank to avoid issues with querying zero and blank values. At the bottom of the epiphyseal closure section summary field with a drop-down list of the age groups *Fetal, Birth-5 years, 5-10 years, 10-15 years, 15-20 years* and *20+ years*, following the recommendations in *Standards*. (Buikstra and Ubelaker 1994, Chapter 4 and Attachment 12). Below the epiphyseal closure section is a drop-down field for dental eruption stage according to Ubelaker (1978), which again is meant to summarize the dental eruption stage for the whole dentition, as the eruption stages on the subadult dental inventory form are recorded separately for each quadrant. An additional field below this is meant for summarizing the long bone age according to Fazekas and Kósa (1978) and Maresh (1970), which is detailed on the Subadult Measurement sublayout. To the right of the long bone age field is a button [Show Help (Age S)], which opens a window with various help files. Finally, the field at the bottom of the section is meant for a final age assessment, based on all available information.

Below the Subadult age section is a large button [View/Enter Sex and Age Assessment Notes], which opens the notes field pertaining to all layout subsection in a separate pop-up window. The notes window should be closed before data entry can commence on the main form.

3.3.2. Adult Measurements:

The Adult Measurements sub-layout is based on the recommendations in *Standards* (Buikstra and Ubelaker 1994) and follows the numbering of the various measurements there. However, instead of marking a measurement for the right side with an asterisk as recommended in *Standards*, fields are provided for both sides and they are denoted _Left or _Right in the base table **`SkeletonsAdultMeasurements,`** which is linked to the **`Skeletons`** table with the `SkeletonNumber` field. Each field on the layout has a tooltip with the definition of the measurement showing up as a pop-up box when the pointer hovers over the field. All measurements should be entered in cm. There is also a field for notes, where approximated measurements should be noted. Finally, the button [Show Meas. Help] opens a pop-up window with help files containing illustrations of cranial landmarks and cranial and postcranial measurements, again taken from *Standards*.

3.3.3. Stature:

The Stature sub-layout is based on the table **SkeletonsStature** (again linked to the **Skeletons** table with the `SkeletonNumber` field) and follows the updated Raxter et al. (2008) formulae for calculating stature of ancient Egyptian remains. Thus, for any skeletal material from outside Egypt, the formulae need to be amended. For reference, the formulas used along with notes and citations will show in a pop-up window when the button [View Formulae] is pressed.

On the left side of the layout are fields for Male and Female stature calculations respectively. Again, rather than noting with an asterisk when right side measurements were used, fields are provided for both sides. Further, the Raxter et al. measurement based on $Tibia_m$, (i.e. Tibia max including intercondylar spines) was omitted, as this measurement is not one of the recommended ones in *Standards*. The fields are all calculation fields, and will automatically grab data from the relevant fields on the previous layout Adult Measurements and calculate the Raxter et al. formulae when the button [Assess Stature] is pressed, so no manual data entry is needed. The button runs a script that commits previously entered records, and grabs the `SkeletonNumber` from the **Skeletons** table to the **Stature** table. To the right of the fields the SEE (Standard Estimation Error) for each formula is displayed.

When the field "`Sex`" in the header of the layout is set to "M" or "M?" the formulae for males will be used, displaying the result of the formulae in the appropriate fields of the Male box in bold (using conditional formatting). Empty fields in the Adult Measurements layout will return "no data" in the Stature fields. The fields in the Female box will all display "N/A" when Sex is set to "M" or "M?". When the "Sex" field is set to "?", the fields in both boxes will display "Sex undet." When `Sex` is set to "F" or "F?", formulae for females will be used and the results displayed in bold in the female section, while "N/A" is displayed in the Male box. If the `Sex` field in the header is blank, the fields with corresponding entries on the Adult Measurement layout will simply be blank, while empty fields will show "No data". The calculations were accomplished with the case function, as in the example below, showing the calculation and male formula for *Standards* measurement 69: Tibial length.

```
Case ( Skeletons::Sex = "F" ; "N/A" ; Skeletons::Sex = "F?"; "N/A" ;
Skeletons::Sex = "?"; "Sex undet." ; IsEmpty (
SkeletonsAdultMeasurements::_69_TibiaLengthSin ); "No data";
Skeletons::Sex = "M" ; (2.552 *
SkeletonsAdultMeasurements::_69_TibiaLengthSin) + 70.18 ;
Skeletons::Sex = "M?" ; (2.552 *
SkeletonsAdultMeasurements::_69_TibiaLengthSin) + 70.18 )
```

In the right column of the layout is a box that calculates the deduction in cm to be made from stature assessments of individuals over 30, according to the formula (0.06 * (age in years – 30). The formula is calculated with values from the

Age Point field, when the field value is > 30.but if needed a different value can be entered manually in the Age in Years field before pressing the button [Calculate]. The button triggers the script below:

```
• Commit Records/Requests
• If [ not IsEmpty ( SkeletonsStature::AgeforFinalStature ) ]
• Exit Script [ ]
• Else If [ Skeletons::AgePoint < 30 ]
• Exit Script [ ]
• Else If [ not IsEmpty ( Skeletons::AgePoint ) ]
• Set Field [ SkeletonsStature::AgeforFinalStature; GetAsNumber (
      Skeletons::AgePoint ) ]
End If
```

Below the subtraction box is the Final Stature Assessment section. This section is meant for manual entry of the automatically calculated stature assessment deemed most appropriate. To make the decision easier, the fields in the Male and Female boxes are ordered by lowest to highest SEE, so unless there is a problem with one of the measurements from the previous layout (such as the measurement being approximated for example), the stature assessment displaying highest on the list should be the most accurate. Note that the Final Stature Assessment fields are the ones that will display on the summary report for each skeleton, so if left blank, no stature will be reported.

3.3.4. Subadult Measurements:

The Subadult Measurement sublayout is based on the table `SkeletonsSubadultMeasurements`, and is also adapted from *Standards.* (Buikstra and Ubelaker 1994) It is linked to the `Skeletons` table with the SkeletonNumber field. As in the case of the adult measurements, fields for both left and right sides are provided when appropriate, and each field is provided with a tooltip that shows up as a pop-up box when the pointer hovers over the field, explaining the definition of the measurement as given in *Standards*. A button, [Show Help], in the bottom right corner, opens a pop-up window with the illustrations of the measurements from Standards. All measurements should be entered in cm.

In the top right corner of the layout, there is also a section for Long Bone Age, with fields for each long bone. These fields have drop-down lists with diaphyseal lengths of subadult individuals from the age of 38 fetal weeks to 12 years of age. Prenatal diaphyseal lengths (38 and 40 fetal weeks) are taken from Fazekas and Kósa (1978), and the remaining diaphyseal lengths are taken from Maresh (1970), though the Maresh measurements have been combined for males and females from the separate lists provided in the original. The drop-down lists provide the range of diaphyseal lengths for each age (scroll down the drop-down list to see the full list), and fields should be filled with the appropriate age-choice for the length of each bone, based on the entries in the measurements section. A summary field meant for assessment of long bone age for all long bones combined is provided on the Sex and Age Assessment sub-layout.

3.3.5. Nonmetric Traits:

The Nonmetric Traits sub-layout consists of three tabs, each based on its own table: **`NonMetric_Cranial, NonMetric_Postcranial`** and **`NonMetric_Dental`**. All three tables are using the `SkeletonNumber` field as the key.

Tab: Nonmetric Traits: Cranial

The Cranial tab is based on the table **`NonMetric_Cranial`**, with fields to record all primary traits recommended in *Standards* (Buikstra and Ubelaker 1994), as well as the majority of the supplementary traits mentioned. The layout itself mainly follows the *Standards* recommendations, with drop-down lists specifying the different scores for each trait. In general, the scoring also follows the recommendations in *Standards*; however, since the scoring system in *Standards* differs for almost every trait, it has been simplified to Absent (0) – Partial (1) – Complete (2) – Unobservable (9) whenever possible, using the a drop-down list based on the table **`ListNonMetricScore_APC`**. The scores that could not be simplified have drop-down lists based on separate tables, all prefaced with **`List`** in Manage Database view. In all, there are 16 such list tables connected to the tab.

A button, [ShowHelp] opens a pop-up layout with illustrations of the primary traits taken from *Standards*.

Because the *Standards* scoring system employs code '0' for 'absent', there is also a checkbox labeled "Non Metric Traits Assessed", which has to be checked in order to perform queries. This is necessary whenever traits are assessed but absent (0) as FileMaker cannot distinguish between zero values and blank fields. Thus, the queries on nonmetric traits are all set to count zero fields *only* when the "assessed" checkbox is filled in.

Reports/Queries have been prepared for searching for specific traits, as well as according to Standards classification (Primary/Supplementary), or according to the Saunders (1989) division in Iscan and Kennedy (eds) *Reconstruction of Life from the Skeleton.*

Tab: Nonmetric Traits: Postcranial

The Postcranial tab is set out in a similar way to what is detailed below, but is based on a separate table, **`NonMetric_PostCranial`**. Further, all the traits on the Postcranial tab are scored with the simplified drop-down list based on the **`ListNonMetricScore_APC`** table. As on the previous tab, there is a check box labeled "Non Metric Traits Assessed" that should be checked if assessment has been carried out. There is also a [Show Help] button that opens a pop-up window with illustrations of all nonmetric traits listed.

Tab: Nonmetric Traits: Dental

The Dental nonmetrics tab is based on the table **`NonMetric_Dental`**, and modeled after OsteoWare with contextually driven scoring boxes that show when the trait in question is selected from radio button lists for either Maxilla or Mandibula. The scoring boxes are arranged around an illustration of the dental arches numbered according to the Universal Numbering System for easy visual reference. As with OsteoWare, the list of traits on the layout is the subset of ASUDAS (Turner et al., 1991) recommended in Standards (Buikstra and Ubelaker 1994). Whenever a trait is selected, the corresponding description from Turner et al. (1991) is displayed in the box below the radio button list labeled “Trait Help”. In the center of the layout is the button [Show Plaques], which opens a window with images of the ASUDAS dental plaques illustrated in Hillson (1996) and Burnett, Irish and Fong (2013). It should be noted that these illustrations are meant for quick reference only, and that scoring should be done with the help of the actual plaques.

Below the selection lists are separate Comments/Notes fields for Maxilla and Mandible respectively. Finally, as in previous layouts, a checkbox labeled “Non-Metric Traits Assessed” is provided to solve the issue with zero fields for traits assessed but scored as ‘Absent’ (0).

3.3.6. Musculoskeletal Stress Markers:

The Musculo-Skeletal Markers sub-layout follows Killgrove (2013) and employs a scoring system adapted from Hawkey and Merbs (1995). The base table for the layout is the **`MSM`** table, again using the `SkeletonNumber` field as the key field. For space purposes, the layout is divided in two identical tabs, MSM Left Side and MSM Right Side, but both tabs are connected to the same base table.

The scoring system closely follows the recommendations in Hawkey and Merbs (1995), but in addition to the scores for Robusticity, Stress and Ossification, a further drop-down list has been added to each marker labeled “Obs” (Observation) with the scores 0-Absent, 1-Present, 9-Bone present but unscoreable and 99-No bone present. Again, a checkbox labeled “MSM’s Assessed” is added to the layout to avoid issues with zero fields for bones that have been assessed but for which MSM’s are scored as ‘Absent’ (0). Notes fields are separated by side with one notes field on each tab. Finally, the [Show Help] button opens a pop-up window with the illustrations of the scoring categories provided in Hawkey and Merbs (1995).

3.4. Pathology by Individual:

The Pathology by Individual layout contains sub-layouts with one record per skeleton number. The `SkeletonNumber` field is also the key field for all tables used on this layout, though some tables also have record ID's for each individual record to enable counts. The layout has four sub-layouts on tabs: Pathology: Overview, Pathology: Field Description, Dental Pathology Adult and Dental Pathology Subadult. The header of the layout is based on the **`Skeletons`** table, and has the same fields as the Description and Inventory and Morphology layouts, along with buttons to navigate between the different layouts.

Sub-layouts:

3.4.1. Pathology: Overview

The Pathology: Overview layout is based on the **`SkeletonsPathologyOverview`** table, and contains simple checkboxes for various common or expected conditions, along with a large filed for general notes. The purpose of the layout is to provide a quick overview of observed conditions for each skeleton, to be used in any general reports or catalogues. The layout can be easily customized by adding or deleting fields in the base table.

3.4.2. Pathology: Field Description

The Pathology: Field Description is based on the table **`SkeletonsPathologisFieldNotes`**, and is specific to the Giza material field recording forms; I kept it in the database because it contains information imported from a previous database. The sub-layout/tab is not used in any scripts or reports, and could be deleted if the database is used for other skeletal materials. The layout is a simple portal, containing a field for pathology type, with a drop-down list containing the following options, based on the division of pathological conditions in Aufderheide and Rodriguez-Martin 1998:

Pseudo-pathology
Trauma
Congenital Anomalies
Circulatory Disorders
Joint Diseases
Infectious Diseases
Genital Disease/Pregnancy-Related Conditions
Metabolic Diseases
Endocrine Disorders
Hematological Disorders
Skeletal Dysplasias

Neoplastic Conditions
Diseases of the Dentition
Miscellaneous Conditions

There is also a notes field for further description, as well as a checkbox for "Pseudo-pathology" if the lesion could be the result of excavation damage or similar.

3.4.3. Dental Pathology: Adult

The Dental Pathology: Adult layout contains fields and graphics based on several different tables, and displayed on several tabs. On the main tab is a visual dental inventory, based on the **`DentalInventoryAdultMain`** table, intended as a visual aid during data entry. It displays the teeth of the current dentition as white if coded as "Present, not in occlusion" (1) or "Present, development completed" (2). This is accomplished by hiding the white dental graphic whenever the corresponding fields in the **`DentalInventoryAdultMain`** table is NOT 1 or 2, with the following formula in the "Hide object when" field in the inspector:

```
IsEmpty ( FilterValues ( List ( "1"; "2") ;
DentalInventoryAdultMain::_ToothNumber ))
```

where _ToothNumber is the corresponding inventory field 1-32.

When a tooth is coded as "Present, damaged and unmeasurable" (7), the visual inventory displays a red graphic, and when the tooth is coded as "Present, unobservable" (8) the graphic displayed is gray. This is done with a slightly simpler formula in the "Hide object when" field in the inspector:

```
DentalInventoryAdultMain::_ToothNumber ≠ "7"
```

and

```
DentalInventoryAdultMain::_ToothNumber ≠ "8"
```

In a similar way, boxes with the letter designations "M" for "Missing, no associated alveolar bone" (3), "PE" for "Missing, premortem loss, alveolus resorbed/ing" (4), "PO" for "Postmortem loss, no alveolar resorption" (5) and "CA" for "Congenital absence, missing" (6) are shown in place of the teeth graphics when the corresponding inventory fields are coded with the respective numbers, again by hiding the graphic when the field does NOT contain the corresponding number. At bottom right is also a button [Show Help], which opens a pop-up window with help files.

To the right of the visual inventory is a tab-control with six tabs: Caries, Abscesses, Calculus, Enamel Defects, Modification and Indices. The data collection protocol follows the recommendations in Standards, with the exception of the "Indices" tab, which calculates dental pathology indices for carious, abscessed and missing teeth following Waldron (2009: 265-266).

It should be noted that as the *Standards* protocol was developed before the widespread use of computers for data collection, many of the numerical codes employ a “0” for “absent”. Since Filemaker (and other databases) does not differentiate between a field containing the number “0” and an empty field, the prompt “Absent (0)” has been removed from the drop-down lists. Instead, there is a checkbox for “Caries Assessed”, “Abscesses Assessed” etc. at the bottom of each tab, denoting that the dentition has been analyzed. This checkbox should be checked whenever a dentition has been assessed, even if no lesions where present, to indicate that any inventoried teeth with no lesions recorded were in fact assessed as such rather than just overlooked during analysis.

Tab: Caries

The Caries tab is based on the table **`DentalPathCaries_Adult`**, and contains a portal with fields for tooth number, and the possibility of entering four observations for each tooth. The table is connected to the Skeletons table via the `SkeletonNumber` field, and this is the primary key field for the table. However, there is also a local ID field, `CariesID`, automatically populated with an auto-enter serial key, to enable lesion counts. If more than four carious lesions would be present on a single tooth (though highly unlikely), a new portal record (row) must be created. (Note that if this should occur, the DT index must be calculated manually, as the decayed tooth count is based on the number of portal rows). Each observation field has a drop-down list for surface of origin based on the value list CariesLocationDesc with the values:

Noncarious pulp exposure (7)
Occlusal Surface (1)
Interproximal Surfaces (2)
Smooth Surfaces (3)
Cervical caries (4)
Root Caries (5)
Large Caries (6)

The number code for each value is automatically entered in the field `Type_Code`, which is a calculation field. This approach was chosen over a two-column value list (which will only store one field) so that both the numerical code and the text description for each lesion would be stored and searchable in the database. There is also a notes/description field for each observation.

The `Tooth` field at the top of each portal row is a drop-down field, with a dynamic value list based on a portal in the hidden layout DentalInventoryAdultforPath. This value list shows all teeth inventoried as present in a two-column list displaying both the tooth number and a slightly shortened description (including the teeth coded as "Present, damaged and unmeasurable"), and is populated by pushing the button [Update Value Lists] in the center of the visual dental inventory. The visual inventory and dynamic value lists are meant to minimize mistakes and make it less likely that any pathologies are entered for teeth that were not present in the inventory, though tooth numbers can also be entered manually, without choosing from the value list.

Tab: Abscesses

The next tab is based on the table **`DentalPathAbscess_Adult`**, which again is accessed through a portal. Each portal row has a drop-down field for tooth number, using the same dynamic value list as the Caries tab, and fields for Location, Code and Description/Notes. Location is coded as Buccal/Labial (1) or Lingual (2). As in the previous tab, the drop-down list displays only the text description, while the numerical code (1 or 2) is entered automatically in the Code field through a calculation. If there is more than one abscess associated with a tooth, each abscess should be entered on its own row, even if both abscesses are draining through the same surface, so that the total count of abscesses is correct in the AT index calculations. The table is connected to the Skeletons table via the `SkeletonNumber` field, and this is the primary key field for the table. However, there is also a local ID field, `AbscessID`, automatically populated with an auto-enter serial key, to enable lesion counts.

Tab: Calculus

The Calculus tab is based on the table **`DentalPathCalculus_Adult`**, and the data collection protocol follows that of *Standards* (Buikstra and Ubelaker 1994; Ch. 5). In addition to the `Tooth` number field using the previously described dynamic value list, there are also fields for description of the amount of calculus (small [1], moderate [2], large [3] and unobservable [9]) with an accompanying field for numerical code (Code (D)), location (Buccal/Labial [1] or Lingual [2]), again with a code field (`Code (L)),` and a text field for general comments. As on the previous tabs, the code fields populate automatically with the numerical codes corresponding to the description/location chosen from the drop-down lists.

Tab: Enamel Defects

The "Enamel Defects" tab is based on the table **`DentalPathEnamelDefects_Adult`**. The table is connected to the **`Skeletons`** table via the `SkeletonNumber` field, and this is the primary key field for the table. However, there is also a local ID field, `EnamelID`, automatically populated with an auto-enter serial key, to enable lesion counts. The tab contains a portal with fields for tooth number, defect type, code (type), number of grooves, color, and code (color). With the exception of the field for number of grooves (`# Grooves`), which is an addition meant for LEH observations only, documentation follows the guidelines in Standards (Buikstra and Ubelaker 1994; Ch. 5). Enamel defects are scored according to the options below, using a drop-down list with the following choices:

Linear horisontal grooves (1)
Linear vertical grooves (2)
Linear horisontal pits (3)
Nonlinear array of pits (4)
Single pits (5)
Discrete boundary opacity (6)
Diffuse boundary opacity (7)

The numerical code for each choice (in parentheses above) is automatically entered in the `Code (T)` field, to facilitate searches in the database for both numerical code and text descriptions. The "`# Grooves`" field is a text field, where the number of linear enamel hypoplastic grooves should be entered. It should be left blank when recording any other type of enamel defect. The `Location` field is another text field, where the distance in mm from CEJ to the most distant (occlusal) aspect of defect should be entered. Both of these fields are set with explanatory tool-tip descriptions. The last two fields should be filled in for hypocalcifications only ("Discrete boundary opacity [6]" or "Diffuse boundary opacity [7]"). As for the `Type` field, the `Color` field has a drop-down list with text descriptions: Yellow (1), Cream/White (2), Orange (3) and Brown (4), where the corresponding numerical code is automatically entered in the `Code (C)` field when a description is chosen.

Tab: Modification

The Modification tab is based on the table **`DentalPathModification_Adult`**, and fields follow the data collection protocol of *Standards* (Buikstra and Ubelaker 1994; Ch. 5). The drop-down list for `Tooth` number is the same dynamic value list used for previous tabs, showing only inventoried teeth. The `Modification Type` field has the following options, with the numerical code for each (in parentheses below) auto-filled in the `Code` field:

Surface Modification: Filing (1)
Surface Modification: Drilling (with or without inlays) (2)
Dental Restoration and Appliances (3)
Dental Wear Associated with Artifact Use or Production (4)
Tooth Ablation (5)

There is also a field for free-text description of modifications, where the classification of various modification types according to *Standards* (Buikstra and Ubelaker 1994; fig 30a) should be entered whenever appropriate. Images of the classification system are available in the dental pathology help files, which open in a pop-up window with a press of the [Show Help] button.

Tab: Indices

The Indices tab is not based on a specific table, but contains fields from several tables to enable the count of inventoried, missing and decayed teeth in each dentition. Following Waldron (2009; 265-266), indices for dental pathologies were calculated by dividing the number of decayed/carious teeth (**D**), teeth missing premortem (**M**), and the number of abscesses (**A**) with the number of observable teeth for each dentition (**T**), resulting in an index ranging from 0 for each category if no observable teeth in the dentition were affected, to 1 if all teeth were affected.

To count the numbers of observable teeth, a set of 32 calculation fields (`_1Obs` through `32Obs`) was created in the **`DentalInventoryAdult_Main`** table with the function

```
Case ( _1 = 1 ; 1; _1 = 2; 1 ),
```

thus returning a "1" in the field whenever a tooth was inventoried as "1 – Present, not in occlusion" or "2 – Present, development completed, in occlusion". These fields were then summed in the `SumObs` field in the same table, returning a count of observable teeth, which was placed on the Indices tab under the heading "Observable".

Similarly, and in the same table, a set of calculation fields was also created for teeth missing pre-mortem and inventoried as "4 - Premortem loss, missing, alveolus resorbed/ing" (fields `_1MPreM` through `_32MPreM`) with the function

```
If ( _1 = 4 ; 1),
```

returning a "1" if the condition was met. The fields were then summed in the `SumMPreM` field, returning a count of teeth missing pre-mortem. The `SumMPreM` field was placed on the Indices tab under the heading "Missing".

The number of abscessed and decayed teeth was obtained by counting the number of auto-entered ID keys in the **`DentalPathAbscess_Adult`** and **`DentalPathCaries_Adult`** tables respectively, through two calculation fields (`CountAbscessedTeeth` and `CountDecayedTeeth`) in the **`Skeletons`** table, using the following formulae (Note that the `If` function was used to set the field to zero if no entries had been made in the database):

```
Skeletons::CountAbscessedTeeth=
If ( IsEmpty ( Count (DentalPathAbscess_Adult::AbscessID) ) ; 0 ;
Count (DentalPathAbscess_Adult::AbscessID) )
```

```
Skeletons::CountDecayedTeeth=
If ( IsEmpty ( Count (DentalPathCaries_Adult::CariesID) ) ; 0 ;
Count (DentalPathCaries_Adult::CariesID) )
```

The fields `Skeletons::CountAbscessedTeeth` and `Skeletons::CountDecayedTeeth` were placed on the Indices tab under the headings "Abscesses" and "Decayed".

Finally, the MT (Missing Teeth), AT (Abscessed Teeth) and DT (Decayed Teeth) indices were calculated automatically in three calculation fields in the **`Skeletons`** table with the following formulae:

```
Skeletons::Index_MT=
DentalInventoryAdultMain::SumMPreM /
DentalInventoryAdultMain::SumObs

Skeletons::Index_AT=
CountAbscessedTeeth / DentalInventoryAdultMain::SumObs

Skeletons::Index_DT=
CountDecayedTeeth / DentalInventoryAdultMain::SumObs
```

The fields were placed on the indices tab under the heading "Indices for current skeleton: MT, AT and DT". As the indices are all based on calculation fields in the abovementioned tables, they will auto-fill when records are entered in the database, and no data-entry is required on the Indices tab.

3.4.4. Dental Pathology: Subadult

The Dental Pathology: Subadult tab is very similar to the Dental Pathology: Adult tab in layout, though if has fewer sub-tabs; there is no Calculus tab and no Indices tab for deciduous teeth. On the main tab is a visual dental inventory, based on the **`DentalInventoryDeciduousMain`** table, and functioning just like its counterpart for permanent teeth. It displays the teeth of the current dentition as white if coded as "Present, not in occlusion" (1) or "Present, development completed" (2). When a tooth is coded as "Present, damaged and unmeasurable" (7), the visual inventory displays a red graphic, and when the tooth is coded as "Present, unobservable" (8) the graphic displayed is gray. In a similar way, boxes with the letter designations "M" for "Missing, no associated alveolar bone" (3), "PE" for "Missing, premortem loss, alveolus resorbed/ing" (4), "PO" for "Postmortem loss, no alveolar resorption" (5) and "CA" for "Congenital absence, missing" (6) are shown in place of the teeth graphics when the corresponding inventory fields are coded with the respective numbers. The graphics are displayed and hidden using the same formulae as in the visual inventory for permanent teeth, adapted for the **`DentalInventoryDeciduousMain`** table. At top right is also a button [Show Help], which opens the pop-up window with dental pathology help files.

To the right of the visual inventory is a tab-control with four tabs:

Caries: based on the table **`DentalPathCaries_Subadult`**
Abscesses: based on the table **`DentalPathAbscess_Subadult`**
Enamel Defects: based on the table **`DentalPathEnamelDefects_Subadult`**
Modification: based on the table **`DentalPathModification_Subadult`**

The tabs are set out identical to their counterparts for adult teeth. As on the tabs for permanent teeth, the tooth number fields on each tab are drop-down lists, derived from a dynamic value list based on a portal in the hidden layout DentalInventorySubadultforPath. If the value list is empty, it can be populated by clicking the button [Update Value Lists] in the center of the visual dental inventory.

Each tab also has a checkbox for 'Caries assessed', Abscesses Assessed' etc. at the bottom of the tab.

3.5. Pathology by Bone

The Pathology by Bone layout is modeled closely after the OsteoWare pathology module, which has an extensive user manual available here: http://OsteoWare.si.edu/sites/default/files/content-pdfs/OsteoWare_Vol-2_Feb2012.pdf

The OsteoWare manual describes closely how to enter specific pathological conditions, and thus instructions for data entry per se can be obtained from there; the documentation here will focus on the database architecture rather than data entry.

The Pathology by Bone (PbB) layout is based on the table **`PathologyDetail`**, which is linked to the **`Skeletons`** table by the `SkeletonNumber` field in a one-to-many relationship. As the layout itself is based on the **`PathologyDetail`** table and not the **`Skeletons`** table, this means that each record represents a bone, and not a skeleton – each skeleton can have many records of pathological bones. There is also a record id for each pathological observation, `PathDetailID`, as well as a foreign key identifying bones added to the table from the Pathology by Joint table (described below), `JointIDFK`.

Just like other layouts, the PbB layout contains the basic information on each skeleton in the header: Skeleton and Burial number, Coffin number (if any), Sex, Age Group, Age range and Age point (the midpoint of the age range), phase, whether primary (P) or secondary (S), and whether the grave contained a skeleton or not (if the grave was empty, the 'No sk!' checkbox is checked. Instead of the notes field present on the other layouts however, the PbB layout header has a box in its place, which displays bone type, side and Bone ID.

Sub-layouts:

3.5.1. Pathology by Bone

The sub-layout Pathology by Bone consists of a tab with a box for choice of bone across the top, and a series of smaller tabs across the lower half of the page. The first field in the choice box is a dropdown labeled "Choose Skeleton#". This is a drop-down list, based on entered burial numbers. The list displayed shows both skeleton number and burial number; however, only the skeleton number is stored in the database. The field is set with a script-trigger OnObjectEnter, which runs the script NoEntrytoTextField_PathDetail. This script prevents changes to the field after initial entry, so that the skeleton number cannot be accidentally changed after data entry is completed. It is a simple script, which moves the cursor to the next field if the `SkeletonNumber` field is not empty. If any attempts at changes in the field are made, a custom dialogue pops up, stating:

"The skeleton number cannot be changed after initial data entry. To choose a different skeleton number and discard the current one, delete the current record and create a new one."

Below the drop-down is a box labeled "Added as Joint". This box is automatically filled with the `JointID`, if the bone was added from entries in the Pathology by Joint layout, detailed below.

The next field allows for choice of bone with a drop-down list based on the dynamic value list "Path_ListChooseBone", which in turn is based on the table **`BoneListPath_PortalList`** on the hidden layout BoneListPath. The value list displays only bones that have been inventoried for the chosen skeleton, along with a few less specific entries:

SKELETON_TOTAL
SKELETON_AXIAL
SKELETON_APPENDICULAR
CRANIUM
VERTEBRAE
UPPER LIMB
LOWER LIMB
Long Bone Fragments
Cranial Fragments
Vertebral Fragments
Unidentified Fragments

These entries are still dynamic in the sense that at least one bone in the group would have to be inventoried in order for the group to display – a skeleton without a skull would not have an entry for 'CRANIUM' in the value list for example.

The **BoneListPath_PortalList** is populated from the **BoneListPath_PortalBase** table, which in turn is based on the **SkeletalInventory** table. This is accomplished by two sub-scripts, UpdatePathologyPortalBase and PopulatePathInventoryPortal respectively, which are both run through the script UpdatePathValueList, which is triggered when the [Update Value List] button is pressed. As the scripts are quite long, they will not be detailed here, but can be accessed in the database design report.

Below the [Update Value List] button is another button, [New Record/Bone], which creates a new record. A new record can also be created through the menu command Records→ New Record or through the keyboard shortcut ⌘N.

Once a skeleton number and bone have been chosen, the remaining fields in the box allow for the choice of side, section and aspect of the bone. The side field is a radio-button field that only allows for one choice (right, left, midline or unsided), while the section and aspect fields are check-box sets allowing for multiple choices. Thus, when exported to Excel or similar, the fields `Bone_Aspect` and `Bone_Section` can have multiple return-separated entries. To allow for quick counts of specific sections or aspects (for example, a search for all bones on which the outer table was affected, or all proximal epiphyses), there are also a number of hidden (i.e. not placed on the layout) calculation fields in the table, which are automatically populated with a '1' when the specific section or aspect is checked in the respective checkbox sets. These are:

Bone aspect:
`Asp_Sup_Out` = Superior surface/Outer table
`Asp_Inf_Inn` = Inferior surface/Inner table
`Asp_Med` = Medial
`Asp_Lat` = Lateral
`Asp_Dors_Post` = Dorsal/Posterior
`Asp_Vent_Ant` = Ventral/Anterior
`Asp_Circ` = Circumferential

Bone Section:
`Sec_PE_AS` = Proximal Epiphysis/Articular Surface
`Sec_PT` = Proximal Third
`Sec_MT` = Middle Third
`Sec_DT` = Distal Third
`Sec_DE_AS` = Distal Epiphysis/Articular Surface

The calculation is accomplished with an If function:

```
If ( ValueCount (FilterValues (Bone_Aspect ; "Superior
Surface/Outer Table")); "1" )
```

Across the lower half of the page are a series of seven tabs. The default front tab is empty, except for the text "Choose Pathology Type". From this tab, you can choose "Trauma", "Porosis", "Arthritis", "Size/Shape/Bone Specific Anomaly", "Abnormal Bone Formation" or "Abnormal Bone Loss".

The fields on all six data-entry tabs are based on the same table, **`PathologyDetail`**. Since the same condition may warrant entry on more than one tab – for example, there may be arthritic changes associated with a traumatic injury – it is possible to enter data on all tabs for the same record, though a new record should be created for unrelated conditions. For ease of reference, a checkmark is displayed in the box above each tab whenever the tab contains data.

Tab: Trauma

In terms of osteological recording and analysis of trauma, the BADaBooM database follows the same data entry protocol as OsteoWare, which in turn is based on *Standards*. (It should be noted, however, that the BADaBooM database does NOT store the numerical *Standards* codes in the database, but the actual text descriptions from the data entry fields.) For instructions on osteological aspects of data entry, please refer to Chapter 5 in the OsteoWare manual (O'Brien and Dudar 2011), which includes a detailed outline of the data entry protocol as well as excellent illustrations drawn from the Smithsonian collection of human remains.

The trauma tab contains the same fields as the corresponding data entry screen in OsteoWare. Thus, it contains the same additions to the *Standards* protocol, in that a selection of "other" has been added to the `Fracture Type` heading, and selections for deformation and traumatic enthesopathy have been added to the `Trauma Complications` field (O'Brien and Dudar 2011). As in OsteoWare, fractures are classified first by `Fracture Type`. This field is a radio-button field, allowing for only one choice per record. If there is more than one fracture on the same bone, e.g., both a simple and a compression fracture, they should be entered as separate records. Following OsteoWare, fractures involving the vertebral body or classified as spondylolysis should be recorded on the Vertebrae pathology data entry screen, while all other vertebral fractures should be recorded on the Trauma tab.

Below the `Fracture Type` field is the field for `Fracture Characteristics`. This is a checkbox field, where multiple choices can be made. All choices will be stored in the same field in the **`PathologyDetail`** table, and will export as return-separated lines in the same cell if exported to Excel. The same is true for the fields `Trauma Complications` and `Antemortem Fractures: Healing`, while the fields for recording dislocations and peri/post mortem fractures are radio-button fields, allowing for only one choice to be made. The last field on the tab is a Notes field, where more details can be entered in free-text.

Tab: Porosis

With some changes in layout, the BADaBooM Porosity tab follows the OsteoWare "Porosity and Vascular Channel" data entry screen very closely. Thus, for instructions on osteological aspects of data entry, please refer to Chapter 6 in the OsteoWare manual (Wilczak 2011).

The Porosis tab is probably the one that diverges the most from the *Standards* data recording protocol, since the understanding of cranial porosity has changed significantly since its publication. Under the *Standards* protocol, porosity was scored as porotic hyperostosis or cribra orbitalia only, and assumed to derive from marrow hypertrophy/iron deficiency anemia. Recent research has shown, however, that the etiology of both these conditions is more complex than previously thought (Walker et al. 2009), and that some causal agents can result in porosity in other locations than the cranium (Ortner and Mays 1998; Ortner et al. 1999). To that end, the BADaBooM Porosis tab follows the changes made to the *Standards* protocol in OsteoWare, as follows (Quoted from Wilczak 2011; 55):

- Scoring for channel formations has been added to record serpentine impressions or deeper channel structures on the orbits, endocranium, or other cranial locations.
- Diploic hyperostosis is scored separately to enable description of porosity without evidence of marrow proliferation.
- Porosity can be scored on any bone.
- Degree of porosity is scored by specific pore size.
- Estimates of pore density per cm^2 have been added.
- "Other features" that often co-occur with ectocranial porosity have been added, such as pitting and striations.

To the left of the tab are four fields that are available for all bones: `Pore size (all > 10%)`, `Density of porosity (count per 1 cm2)`, `Activity` and `Notes`. As on the trauma tab, any checkbox fields will allow for more than one choice to be made, and the `Notes` field is a free text field.

The right side of the tab contains a box with fields meant for the recording of cranial porosity only: `Ectocranial porosity: Location`, `Diploic Hyperostosis`, `Vascular channels: Location`, `Vascular channels: Density` and `Other features present`. These fields will only be visible when a cranial bone is selected in the Choose bone drop-down list; if a postcranial bone is selected the box will instead display "CRANIAL ONLY: NOT APPLICABLE", and the fields will be hidden through the 'Hide Object When' function in the inspector with the following calculations:

To hide data entry fields:

```
IsEmpty ( FilterValues ( List ( "CRANIUM" ; "Frontal" ;
"Parietal" ; "Occipital"; "Temporal" ; "Maxilla" ; "Palatine" ;
"TMJ"; "Mandibula" ; "Sphenoid" ; "Cranial Fragments" ) ;
PathologyDetail::Bone ))
```

To hide the 'CRANIAL ONLY' text:

```
Not IsEmpty ( FilterValues ( List ( "CRANIUM" ; "Frontal" ;
"Parietal" ; "Occipital"; "Temporal" ; "Maxilla" ; "Palatine" ;
"TMJ"; "Mandibula" ; "Sphenoid" ; "Cranial Fragments" ) ;
PathologyDetail::Bone ))
```

Tab: Arthritis

The BADaBooM Arthritis tab follows the OsteoWare "Arthritis" data entry screen very closely. Thus, for instructions on osteological aspects of data recording, please refer to Chapter 9 in the OsteoWare manual (Dudar 2011).

In terms of data entry, the PbB Arthritis screen need only be used to record arthritis on isolated bones. If recording a joint, it is generally better to use the "Pathology by Joint" layout instead, which allows for simultaneous entry of all involved bones in a specific joint. Data entered on the joint layout can then be sent to the "Pathology by Bone" layout as separate entries for the specific bones, where eventual differences in degree of arthritis can be edited if necessary. The Pathology by Joint screen is described in detail below.

Vertebral Arthritis: Diarthrodial spinal joints should be recorded on the Arthritis data entry tab. For this reason, available vertebrae are included in the dynamic drop-down list on the Pathology by Bone tab. Other spinal conditions such as osteophytosis should be entered on the Vertebral Pathology sublayout.

Fields: As on the previous tabs, with the Arthritis tab fields are with the exception of the Notes field either radio-button fields, allowing for only one choice to be made, or check-box sets, where multiple choices are stored as return-separated lines of text. Field types follow that of OsteoWare, and are denoted below.

Radio-button fields (one choice) – Field names	Check-Box sets (multiple choice) – Field Names
Surface Porosity: Joint Portion Affected	Surface Porosity: Degree
Lipping: Extent	Lipping: Degree
Eburnation: Extent	Eburnation: Degree
Surface Osteophytes: Extent	Surface Osteophytes
Erosion: Extent	Erosion

Table 5: Arthritis tab - field types

Tab: Size/Shape/Bone Specific Anomaly

The Size/Shape tab is mainly modeled after *Standards* and the OsteoWare database, with some modification. In terms of content, the main difference between BADaBooM and OsteoWare is that the anomalies that can be classified as non-metric traits appear on the Non-Metric Traits tab of the Skeletal Morphology layout in BADaBooM rather than in the pathology section. However, following OsteoWare, the "Gigantism" option has been added to the Total Skeleton field of the BADaBooM database as well.

The remaining changes are slight differences in layout: instead of the dynamic tabs used in OsteoWare, the bone specific fields for Cranium, Long Bones and Total Skeleton are set out in demarcated boxes across the tab in which the fields are hidden and a "Not Applicable" text field lights up when field entries would not apply to the bone chosen in the Bone/Side/Aspect box. The fields are hidden using the following functions in the "Hide object when" field of the inspector:

<u>CRANIUM:</u>

```
IsEmpty ( FilterValues ( List ( "CRANIUM" ; "Frontal" ;
"Parietal" ; "Occipital"; "Cranial Fragments" ) ;
PathologyDetail::Bone ))
```

<u>LONG BONES:</u>

```
IsEmpty ( FilterValues ( List ( "Clavicle" ; "UPPER LIMB";
"Humerus"; "Radius"; "Ulna" ; "HAND" ;"Metacarpals" ; "MC I" ;
"MC II" ; "MC III" ; "MC IV" ; "MC V" ; "Hand Phalanges" ; "Hand
Phalanges Proximal" ; "Hand Phalanges Medial" ; "Hand Phalanges
Distal" ; "Pollical Phalanx Proximal" ; "Pollical Phalanx Distal"
;  "LOWER LIMB" ; "Femur" ; "Tibia" ; "Fibula" ; "FOOT";
"Metatarsals" ; "MT I" ; "MT II" ; "MT III" ; "MT IV" ; "MT V" ;
"Foot Phalanges" ; "Foot Phalanges Proximal" ; "Foot Phalanges
Medial" ; "Foot Phalanges Distal" ; "Hallucial Phalanx Proximal"
; "Hallucial Phalanx Distal" ; "Long Bone Fragments" ) ;
PathologyDetail::Bone ))
```

TOTAL SKELETON:

```
IsEmpty ( FilterValues ( List ( "CRANIUM" ; "SKELETON_TOTAL" ;
"SKELETON_APPENDICULAR" ) ; PathologyDetail::Bone ))
```

The same functions were used to hide the "Not Applicable" text box when data entry was enabled, by prefacing the function with "Not IsEmpty" instead of "IsEmpty"

Despite the changes to layout in BADaBooM, the instructions on osteological aspects of data entry in the OsteoWare manual pages 11-21 (Madden 2011) are still applicable, and will not be detailed here. It should be noted however that the choices "HAND" and "FOOT" are not automatically included in the dynamic value list and have to be entered manually in the Choose Bone field if needed.

Tab: Abnormal Bone Formation

The BADaBooM Abnormal Bone Formation tab follows the corresponding OsteoWare data entry screen very closely. Thus, for instructions on osteological aspects of data recording, please refer to Chapter 4 in the OsteoWare manual (Wilczak and Jones 2011a).

Following OsteoWare, a compact/remodeled selection has been added to the `Periosteal Surface` field, and selections have been added under a `Surface Appearance` heading to describe external cortical texture in addition to the recommended *Standards* data collection protocol. A selection of "Other" has also been added as a choice under ossified tissue. (Buikstra and Ubelaker 1994, Wilczak and Jones 2011a).

The first field on the Abnormal Bone Formation tab refers to the periosteal surface with the choices "Woven bone", "Sclerotic reaction" or "Compact/Remodeled". The field is a check-box set, meaning that all three options can be selected if needed. Below the `Periosteal Surface` field is a box with two fields: `Productive Reaction Type` and `Surface Appearance`, the latter another check-box set, and the former a radio-button field, allowing for only one choice. These fields should only be scored for periosteal surface reactions.

The remaining fields (`Endosteal Surface, Abnormal Matrix, Ossified Tissue` and `Specific Structures`) are all check-box sets, with the exception of the radio-button field for `Extent` (of Involvement) and the free-text `Notes` field.

Tab: Abnormal Bone Loss

As above, the BADaBooM Abnormal Bone Loss tab follows the corresponding OsteoWare data entry screen very closely. Therefore, please refer to Chapter 3 in the

OsteoWare manual for instructions on osteological aspects of data recording (Mulhern 2011).

Additions/changes to the Standards protocol on the Bone Loss tab consist of a separate field for lytic lesions at muscle/ligament attachment sites labeled "`Entheseal Defects`", and the addition of selections for moth-eaten and permeated destruction in the `Bony Response to Local Bone Loss` field. On this tab, only the "`Location`" and "`Bony Response`" fields are check-box sets allowing for multiple choice. The remaining fields - other than the free-text `Notes` field – are radio-button fields where only one choice can be selected.

3.5.2. Vertebral Pathology

The Vertebral Pathology sub-layout consists of only one tab of data entry fields, identical to those in OsteoWare with the exception of the free-text `Notes` field. The changes to the *Standards* data collection protocol are thus the same as in OsteoWare, and instructions on osteological aspects of data entry can be found in Chapter 7 of the OsteoWare Pathology manual (Mulhern and Jones 2011). The differences from the *Standards* protocol consists of the addition of the field `Porosities around margins` to score porosity associated with vertebral osteophytes, an expanded section on Spina Bifida (`Cleft Sacra/Spina Bifida`), where the two conditions can be differentiated, the move of Spondylolysthesis to `Vertebral Pathologies` instead of under `Splondylolysis`, and the addition of the a separate field for `Vertebral Body Fractures`. In addition, a field for `Abnormal Shape: Spinal Column` has been added here, instead of under its own section as in *Standards* (Buikstra and Ubelaker 1994; 114-115). With the exception of the fields `Spondylolysis` and `Cleft Sacra/Spina Bifida`, which are both radio-button fields, all data entry fields other than the `Notes` field are check-box sets allowing for multiple choice, and exported as return-separated text when more than one option has been checked. Finally, BADaBooM also contains an additional entry for "Other" under the heading `Vertebral Pathologies`, which is not included in OsteoWare.

The main difference between OsteoWare and BADaBooM is that vertebral pathologies are housed on a separate sub-layout, rather than as a dynamic set of fields depending on the choice of bone. The vertebrae tab has a box across the top, similar to that on the Pathology by Bone sub-layout, but with a different set of choices possible for bone section. The first field in the box is a dynamic drop-down list for choice of skeleton, `Choose Skeleton#`. As on the PbB sub-layout, the drop-down list displays both skeleton and burial numbers, but only the skeleton number is stored in the database. As with the `Choose Skeleton#` field on the PbB sublayout, he field is set with a script-trigger OnObjectEnter, which runs the script <u>NoEntrytoTextField_PathDetail</u>. This script prevents changes to the field after initial entry, so that the skeleton number cannot be accidentally changed after data entry is completed. It is a simple script, which moves the cursor to the next field if the `Choose Skeleton#` field is not empty. If any attempts at changes in the field are made, a custom dialogue pops up, stating:

"The skeleton number cannot be changed after initial data entry. To choose a different skeleton number and discard the current one, delete the current record and create a new one."

The next field is the `Choose Vertebra` field, which again is a drop-down list based on a dynamic value list "Path_ListChooseVert", which in turn is based on the table **`VertListPath_PortalList`** on the hidden layout BoneListPath. The value list displays only bones that have been inventoried for the chosen skeleton, along with a few less specific entries:

SKELETON_AXIAL
VERTEBRAE
Vertebral Fragments

These entries are still dynamic in the sense that at least one bone in the group would have to be inventoried in order for the group to display – a skeleton without spine would not have an entry for 'VERTEBRAE' in the value list for example.

The **`VertListPath_PortalList`** is populated from the **`BoneListPath_PortalBase`** table, which in turn is based on the **`SkeletalInventory`** table. This is accomplished by two sub-scripts, <u>UpdatePathologyPortalBase</u> and <u>PopulateVertInventoryPortal</u> respectively, which are both run through the script UpdatePathValueListsFromPathByBone_Vert, which is triggered when the [Update Value List] button is pressed. As the scripts are quite long, they will not be detailed here, but can be accessed in the database design report.

Below the [Update Value List] button is another button, [New Record/Vert], which creates a new record. A new record can also be created through the menu command Records→ New Record or through the keyboard shortcut ⌘N. By default, a new empty record is also created when switching to the Vertebral Pathology sub-layout, since the current record from the PbB layout would otherwise be carried over in the `Choose Skeleton#` and `Choose Vertebra` fields, which might cause confusion. As this will cause new empty records to be created when browsing the database, a script-trigger is set to run a script that deletes any records where the fields `Choose Skeleton#, Choose Vertebra` and `Section` is empty upon exiting the layout. The script is detailed below.

```
Go To Layout ["Pathology: by Bone" (PathologyDetail)]
Go to Object [ObjectName: "PathbyBone_Vert"]
Enter Find Mode[]
Set Field [PathologyDetail::SkeletonNumber ; "="]
Set Field [PathologyDetail::Bone ; "="]
```

```
Set Field [PathologyDetail::Vert_Section ; "="]
Set Error Capture [on]
Perform Find []
Delete All Records [no dialog]
Enter Browse Mode []
Exit Script []
```

Once a skeleton number and vertebra have been chosen, the remaining fields in the box allow for the choice of section and aspect of the vertebra. These fields are both check-box sets allowing for multiple choices, and store data in the same fields as on the Pathology by Bone sub-layout; there are no separate fields for data entry on vertebrae in the **`PathologyDetail`** table. When exported to Excel or similar, the fields `Bone_Aspect` and `Bone_Section` can have multiple return-separated entries. To allow for quick counts of specific sections or aspects (for example, a search for all vertebrae on which the dorsal aspect was affected, or all spinous processes), there are also a number of hidden (i.e. not placed on the layout) calculation fields in the table, which are automatically populated with a '1' when the specific section or aspect is checked in the respective checkbox sets. These are:

<u>Section:</u>
`Vert_Sec_Body` = Vertebral body
`Vert_Sec_Arch` = Vertebral arch
`Vert_Sec_Spinous` = Spinous process
`Vert_Sec_Transverse` = Transverse process
`Vert_Sec_SupArtProc` = Superior articular process
`Vert_Sec_InfArtProc` = Inferior articular process

<u>Aspect:</u>
`Asp_Sup_Out` = Superior surface/Outer table
`Asp_Inf_Inn` = Inferior surface/Inner table
`Asp_Med` = Medial
`Asp_Lat` - Lateral
`Asp_Dors_Post` = Dorsal/Posterior
`Asp_Vent_Ant` = Ventral/Anterior
`Asp_Circ` = Circumferential

The calculation is accomplished with an If function:

```
If ( ValueCount (FilterValues (Bone_Aspect ; "Superior
Surface/Outer Table")); "1" )
```

3.6. Pathology by Joint

The tabs on the Pathology by Joint sub-layout are identical to those on the Pathology by Bone sub-layout, with the exception that the Porosis and Abnormal Size/Shape tabs have been combined on one tab, since the fields for Cranial porosities under the Porosity heading and the boxes under the Abnormal Size/Shape heading pertaining to the Cranium and Total Skeleton have been removed. There are no changes to the Trauma, Arthritis, Abnormal Bone Formation or Abnormal Bone Loss tabs.

The purpose of the layout is to enable simultaneous data entry of all bones/bone sections in a joint. Data entered on this layout will be stored in the **`PathologyDetailJoints`** table, where it is searchable by joint. However, after completion of data entry, records can also be sent to the **`PathologyDetail`** table as entries for separate bones. The records are retained in both tables, so that reports can easily be prepared either by bone or by joint.

The ability to simultaneously enter data on the various bones in a joint is also a feature of OsteoWare (accessed by pressing the 'Joint' button on the Side/Aspect screen), but in OsteoWare the records are immediately stored as separate bones, and no separate records are retained for joints.

The box above the tabs of the layout contains a `Choose Skeleton#` drop-down field, based on the same value list as on the previous layout. Both Burial number and skeleton number are shown; only the skeleton number will be stored in the database.

To the right is the `Choose Joint` field, which again is a drop-down list based on a dynamic value list "Path_ListChooseJoint", which in turn is based on the table **`JointListPath_PortalList`** on the hidden layout BoneListPath. The value list displays only joints where at least one bone in the joint has been inventoried for the chosen skeleton. The joints considered are TMJ, Shoulder, Elbow, Wrist, Hip, Knee and Ankle.

The **`JointListPath_PortalList`** is populated from the **`BoneListPath_PortalBase`** table, which in turn is based on the **`SkeletalInventory`** table. This is accomplished by two sub-scripts, UpdatePathologyPortalBase and PopulateJointInventoryPortal respectively, which are both run through the script UpdatePathValueListsFromPathByJoint, which is triggered when the [Update Value List] button is pressed. As the scripts are quite long, they will not be detailed here, but can be accessed in the database design report.

To the right of the `Choose Joint` field is a radio-button field for choice of side. The `Side` field includes an "unsided" option, for incomplete or highly fragmented elements.

When a joint has been selected, the last field in the box displays check-boxes for the appropriate bones/bone sections involved in the joint. For example, if "Shoulder" is selected in the Choose Joint field, the "Specific bones involved" section will display checkboxes for:

- Lateral Clavicle
- Proximal Humerus Articular Surface
- Scapula: Acromion
- Scapula: Glenoid Fossa

If more than one checkbox is selected, the entries will be stored as return-separated lines of text in the `BonesAffected` field of the **`PathologyDetailJoints`** table. The joint in question will still be treated as one record by the database, as all bone sections involved are stored in the same field in the database. The unique ID number (`JointID`) for the current joint record is displayed in the header of the layout. If the expression of the pathology being entered differs between the various bones in the joint, the most severe expression should be scored.

After completion of data entry for a specific joint, the bones involved can be sent to the **`PathologyDetail`** table as separate records, where they can be edited by bone if the expression of the pathology differs between the various bones in the joint. It should be noted that any edits made to the separate bone records will be exclusive to the **`PathologyDetail`** table, and will not be reflected in the **`PathologyDetailJoints`** table.

The records are copied by pressing the [Add as Bones] button below the `Choose Skeleton#` field. The button runs the script AddJointRecordsWithButton, which will copy the records from the current front tab to the **`PathologyDetail`** table. Thus, if one joint record contains information on more than one tab, the [Add as Bones] button must be pressed separately for all tabs containing data, with the data to be copied visible on the front tab at the time the button is pressed.

In the dynamic check-box sets that appear when a specific joint is chosen, there are a total of twenty-one different bones or bone/section combinations: for example, when the shoulder joint is selected, a check-box for "Proximal Humerus Articular Surface" appears, while if the elbow is selected, the humerus is instead described as "Distal Humerus Articular Surface". When copied from the **`PathologyDetailJoints`** table, this information is split between the `Bone,` `Section` and `Aspect` fields in the **`PathologyDetail`** table.. Table 6 outlines the specific bones, sections and aspects copied for each joint.

Joint	Bone	Section	Aspect
TMJ	Temporal	--	--
	Mandibula	Proximal Epiphysis/Articular Surface	--
Shoulder	Clavicle	Distal Epiphysis/Articular Surface	Lateral
	Humerus	Proximal Epiphysis/Articular Surface	--
	Acromion	--	--
	Glenoid Fossa	--	--
Elbow	Humerus	Distal Epiphysis/Articular Surface	
	Radius	Proximal Epiphysis/Articular Surface	--
	Ulna	Proximal Epiphysis/Articular Surface	--
Wrist	Carpals	--	--
	Radius	Distal Epiphysis/Articular Surface	--
	Ulna	Distal Epiphysis/Articular Surface	--
Hip	Acetabulum	--	--
	Femur	Proximal Epiphysis/Articular Surface	--
	Femur	Distal Epiphysis/Articular Surface	--
	Patella	--	--
	Tibia	Proximal Epiphysis/Articular Surface	--
Ankle	Calcaneus	--	--
	Talus	--	--
	Tibia	Distal Epiphysis/Articular Surface	--
	Fibula	Distal Epiphysis/Articular Surface	--

Table 6: Bone/Section/Aspect combinations copied to the PathologyDetail table.

The AddJointRecordsWithButton script calls several sub-script, each depending on an IF scrip-step for the current front panel. The script is detailed below:

```
Commit Records/Requests
If [ GetLayoutObjectAttribute ( "PathDetailJoint_Trauma" ;
"isFrontPanel" ) ]
Perform Script [ “AddJointRecordsAsBones_Trauma” ]
End If
If [ GetLayoutObjectAttribute ( "PathDetailJoint_PorSizeShape" ;
"isFrontPanel" ) ]
Perform Script [ “AddJointRecordsAsBones_Porosis_ShapeSize” ]
End If
If [ GetLayoutObjectAttribute ( "PathDetailJoint_Arth" ; "isFrontPanel"
) ]
Perform Script [ “AddJointRecordsAsBones_Arthritis” ]
End If
If [ GetLayoutObjectAttribute ( "PathDetailJoint_BoneForm" ;
"isFrontPanel") ]
Perform Script [ “AddJointRecordsAsBones_BoneForm” ]
End If
If [ GetLayoutObjectAttribute ( "PathDetailJoint_BoneLoss" ;
"isFrontPanel") ]
Perform Script [ “AddJointRecordsAsBones_BoneLoss” ]
End If
Show Custom Dialog [ Title: "Records added"; Message: "The pathologies
entered on the active tab panel have been copied as individual records
```

```
to the PathologyDetail table. If more than one pathology type has been
recorded for this joint, records from each tab panel must be added
separately."; Default Button: "OK", Commit: "Yes" ]
Exit Script [ ]
```

When the script has determined which tab (Trauma, Bone Loss etc.) is the front tab, it then runs the appropriate sub-script for that pathology group. There are five such subscripts:

- AddJointRecordsAsBones_Trauma
- AddJointRecordsAsBones_Porosis_ShapeSize
- AddJointRecordsAsBones_Arthritis
- AddJointRecordsAsBones_BoneForm
- AddJointRecordsAsBones_BoneLoss

These scripts perform a search for the specific bones chosen in the check-box set in the current joint record using an If script-step, and runs additional sub-scripts to copy any found bones as new records to the **`PathologyDetail`** table if the If script-step evaluates as 'True'. As the scripts are very long, only the first lines from one of the scripts (the find requests for the TMJ in the AddJointRecordsAsBones_Trauma script) are copied below as an example (the full scripts can be found in the Database Design Report). This script first saves the current `JointID` as a variable, and then checks to see if the `BonesAffected` field contains the value "Mandibular Condyle", using a FilterValues function. If the value is found, the sub-script NewRecord_JointTrauma_MandibularCondyle is called, which creates a new record in the **`PathologyDetail`** table for the mandibula. If the value is not found, no new record is created. The script then enters find mode and pulls up the records for the saved `JointID` again, this time to search for the next possible value, "Temporal Fossa". If the value is found, the sub-script NewRecord_JointTrauma_TemporalFossa is called, which creates a new record in the **`PathologyDetail`** table for the temporal bone. If the value is not found, no new record is created. The script moves through all 21 possible bones or bone sections in the same way, and copies the found bones to the **`PathologyDetail`** table.

```
• Commit Records/Requests
• Set Variable [ $FindJointID;
      Value:PathologyDetailJoints::PathDetailJointId ]
• #
• If [ not IsEmpty ( FilterValues ( PathologyDetailJoints::BonesAffected
      ; "Mandibular Condyle" ) ) ]
• Perform Script [ "NewRecord_JointTrauma_MandibularCondyle" ]
• End If
• #
• Enter Find Mode [ ]
• Set Field [ PathologyDetailJoints::PathDetailJointId; $FindJointID ]
• Perform Find [ ]
• #
• If [ not IsEmpty ( FilterValues ( PathologyDetailJoints::BonesAffected
```

```
      ; "Temporal Fossa" ) ) ]
• Perform Script [ “NewRecord_JointTrauma_TemporalFossa” ]
End If
```

The sub-scripts prefaced with “NewRecord_” are the scripts that perform the actual copying of records from the **PathologyDetailJoint** table to the **PathologyDetail** table. There are a total of 126 such scripts – 21 (one for each bone or bone section) for each of the six pathology groupings: Trauma, Porosis, Shape/Size, Arthritis, Bone Formation and Bone Loss. However, as can be seen in the example above, only the scripts corresponding to bones actually entered on the current front tab as part of a joint (and found by the AddJointRecordsAsBones script) will be run when pressing the [Add as Bones] button. The pertinent scripts then copy the bones, sections and in the case of the clavicle the aspect to the corresponding fields in the **PathologyDetail** table, along with the side chosen, and any data entered in the fields of the current Pathology by Joints tab. The script also copies the `JointID` to the `Added as Joint` field on the Pathology by Bone layout. The NewRecord_JointTrauma_MandibularCondyle script is outlined below as an example; remaining scripts can be found in the Database Design Report.

```
• Commit Records/Requests
• Set Error Capture [ On ]
• Set Variable [ $SkeletonNumber;
      Value:PathologyDetailJoints::SkeletonNumber ]
• Set Variable [ $BurialNumber;
      Value:PathologyDetailJoints::BurialNumber ]
• Set Variable [ $JointID;
      Value:PathologyDetailJoints::PathDetailJointId ]
• Set Variable [ $AddedAsJoint; Value:PathologyDetailJoints::Joint ]
• Set Variable [ $Side; Value:PathologyDetailJoints::Side ]
• Set Variable [ $FractureType;
      Value:PathologyDetailJoints::Trauma_FractureType ]
• Set Variable [ $Dislocation;
      Value:PathologyDetailJoints::Trauma_Dislocation ]
• Set Variable [ $FractureCharacteristics;
      Value:PathologyDetailJoints::Trauma_FractureCharacteristics ]
• Set Variable [ $Complications;
      Value:PathologyDetailJoints::Trauma_Complications ]
• Set Variable [ $Perimortem;
      Value:PathologyDetailJoints::Trauma_Perimortem ]
• Set Variable [ $Healing; Value:PathologyDetailJoints::Trauma_Healing ]
• Set Variable [ $TraumaNotes; Value:PathologyDetailJoints::TraumaNotes
      ]
• Go to Layout [ “Pathology: By Bone” (PathologyDetail) ]
• New Record/Request
• Set Field [ PathologyDetail::SkeletonNumber; $SkeletonNumber ]
• Set Field [ PathologyDetail::BurialNumber; $BurialNumber ]
• Set Field [ PathologyDetail::Side; $Side ]
• Set Field [ PathologyDetail::Bone; "Mandible" ]
• Set Field [ PathologyDetail::Bone_Section; "Proximal
      Epiphysis/Articular Surface" ]
• Set Field [ PathologyDetail::JointIDFK; $JointId ]
• Set Field [ PathologyDetail::AddedAsJoint; $AddedAsJoint ]
```

```
• Set Field [ PathologyDetail::Trauma_FractureType; $FractureType ]
• Set Field [ PathologyDetail::Trauma_Dislocation; $Dislocation ]
• Set Field [ PathologyDetail::Trauma_FractureCharacteristics;
     $FractureCharacteristics ]
• Set Field [ PathologyDetail::Trauma_Complications; $Complications ]
• Set Field [ PathologyDetail::Trauma_Perimortem; $Perimortem ]
• Set Field [ PathologyDetail::Trauma_Healing; $Healing ]
• Set Field [ PathologyDetail::TraumaNotes; $TraumaNotes ]
• Go to Layout [ original layout ]
Exit Script [ ]
```

After the scripts have finished running, a dialogue window opens, stating:

"The pathologies entered on the active tab panel have been copied as individual records to the PathologyDetail table. If more than one pathology type has been recorded for this joint, records from each tab panel must be added separately."

To check the copied entries on the Pathology by Bone layout, press the [View/Edit Bones] button. This button calls the script ViewEditAddedJointRecords, which performs a find for the current `JointID`, and displays the found set on the Pathology by Bone layout. The script is copied below.

```
•  Commit Records/Requests
•  Set Variable [ $JointID;
   Value:PathologyDetailJoints::PathDetailJointId ]
•  Go to Layout [ "Pathology: By Bone" (PathologyDetail) ]
•  Enter Find Mode [ ]
•  Set Field [ PathologyDetail::JointIDFK; $JointID ]
•  Perform Find [ ]
•  Exit Script [ ]
```

The records can then be amended or edited on the Pathology by Bone layout (if, for example, the expression of arthritis differs slightly between the different bones in a joint). The edits will only affect the separate bone records; no changes will be made to the joint records.

3.7. Dissertation Specific

The Dissertation Specific layout contains the tables specific to my own dissertation research, and were mainly carried over from my old Access database. As such, the layout is somewhat simpler than the rest of the layouts in the database, and the data entry also duplicates the information contained in the more detailed database tables and layouts, but in a slightly different format. I have included it in the final version of the database since it offers a quicker way to code some pathologies, but the whole layout and its tables can be deleted without compromising the integrity of the rest of the database if the more detailed approach to data collection is preferred.

The layout contains sub-layouts for scoring six non-specific stress markers (Linear Enamel Hypoplasia (LEH), Cribra Orbitalia (CO), Porotic Hyperostosis (PH), Degenerative Joint Disease (DJD), skeletal trauma and general infections. All are scored closely following the criteria developed for the Global History of Health Project (GHHP) by Richard Steckel and colleagues (2006; 2002). In addition, there is also a sub-layout for assessing the prevalence of Periostal New Bone formation (PNB)/Periostosis. As on many other layouts, the DS layout is based on the **`Skeletons`** table, and contains the same fields in the header to identify and give basic sex/age information on the current skeleton as other layouts.

3.7.1. Linear Enamel Hypoplasia (LEH)

The LEH sub-layout has two tabs, one for permanent and one for deciduous teeth.

Tab: Permanent Teeth

On the left side of the Permanent Teeth tab is the same visual dental inventory used on the Dental Pathology: Adult layout (see section 3.4.3. for description). As before, it is based on the **`DentalInventoryAdultMain`** table.

The data entry section of the tab is based on the **`LEH_Adult_DissertationSpecific`** table (linked to the **`Skeletons`** table via the `SkeletonNumber` field), and contains fields for scoring teeth 6 through 11 and 22 through 27 (incisors and canines) according to a scoring system based on the guidelines of Steckel and colleagues (2006: 15-16) as:

0: Tooth not present or unobservable owing to wear or other causes
1: No linear enamel hypoplasia
2: One hypoplastic line present (can be felt with your fingernail)
3: Two or more hypoplastic lines present

Each field has a two-column value list; only the numerical value is stored in the database. Below the dental fields is also a free-text Notes field.

Tab: Deciduous Teeth

The Deciduous Teeth tab contains the same visual dental inventory used on the Dental Pathology: Subadult layout (see (see section 3.4.4. for description). The visual inventory is based on the **`DentalInventoryDeciduousMain`** table.

The data entry section of the tab is based on the **`LEH_Subadult_DissertationSpecific`** table (linked to the **`Skeletons`** table via the `SkeletonNumber` field), and contains fields for scoring teeth 53 through 58 and 63 through 68 (incisors and canines) according to the same scoring system used for permanent teeth. Again, each field has a two-column value list; only the numerical value is stored in the database. Below the dental fields is also a free-text Notes field.

3.7.2. Cribra Orbitalia/Porotic Hyperostosis (CO/PH)

The CO/PH sub-layout is based on the tables **`CO_DissertationSpecific`** and **`PH_DissertationSpecific`**. Both tables are linked to the **`Skeletons`** table by the `SkeletonNumber` field. The layout contains two boxes of fields, one for Cribra Orbitalia, and the other for Porotic Hyperostosis. The boxes are both divided in the same three sections: "Availability", "Score/Activity" and "Notes". The Availability sections contain calculation fields tied to the **`SkeletalInventory`** table, which show the inventory status of the orbits and parietals of the current skeleton. For the orbital roof, the fields displays "No orbit present" when the corresponding inventory field is blank, "Unobservable" when it was inventoried as "UO", and "Present, Complete" for an inventory of "O". The parietal fields display "No parietal present" when the inventory field is blank, "Present, fragmentary" when the bone was inventoried as "PF", and "Present, complete" for an inventory of "PC". The fields are included to eliminate the need for switching back and forth between the current layout and the Skeletal Inventory layout during data entry, and are auto-entered based on the following Case functions (left side shown as example):

```
Case ( IsEmpty ( SkeletalInventory::Orbital Roof_Left ) ; "No orbit
present"; SkeletalInventory::Orbital Roof_Left = "UO"; "Unobservable";
SkeletalInventory::Orbital Roof_Left = "O"; "Present, complete" )
```

and

```
Case ( IsEmpty ( SkeletalInventory::Parietal_Left ) ; "No parietal
present"; SkeletalInventory::Parietal_Left = "PF"; "Present,
fragmentary"; SkeletalInventory::Parietal_Left = "PC"; "Present,
complete" )
```

However, in order for these calculations to fire, an entry <u>has to be started</u> in the score field for both sections – i.e. whenever a value is entered from the dropdown list in "Score", the Availability fields for the orbits will fill with either "No orbit present", "Present, complete" or "Unobservable", while the corresponding fields for the parietals will fill with "No parietal present", "Present, fragmentary" or "Present, complete". Thus, whatever is written in the availability fields when first switching to the tab will not be accurate until a score is chosen in the drop-down field, so the entry has to be done twice – once to trigger the availability fields, and once for final entry.

"The Score/Activity section contains four fields. On the left are two fields with dual-column value lists for "Score" and "Activity". The drop-down lists display both a numerical code and a text description; only the numerical code is stored in the database, in the `CO/PH_DissertationSpecific::Score` and `CO/PH_DissertationSpecific::Activity` fields respectively. However, once a score is chosen, the corresponding text description is automatically copied to the adjacent text field with a Case function (CO Score shown as example):

```
Case ( Score = "0" ; "No observable orbital roofs"; Score = "1";
"Absent with at least one observable orbit"; Score = "2"; "A cluster of
mostly fine foramina covering a small area (≤1 cm2)"; Score = "3";
"Substantial area (>1 cm2) covered by small and/or larger foramina with
a tendency to cluster together")
```

The text descriptions are stored in the `CO/PH_DissertationSpecific::ScDescription` and `CO/PH_DissertationSpecific::AcDescription` fields respectively, and are included on the layout to give a better overview when browsing the database.

Entries for "Activity" are the same in both the Cribra Orbitalia and Porotic Hyperostosis sections, per the Standards protocol (Buikstra and Ubelaker 1994: 115):

1 = Active (woven) at the time of death
2 = Healed (sclerotic)
3 = Mixed active and healed present

In the box to the left, Cribra Orbitalia is scored as:

0: No orbits present for observation.
1: Absent with at least one observable orbit
2: A cluster of mostly fine foramina covering a small area (≤1 cm^2)
3: Substantial area (> 1 cm^2) covered by small and/or larger foramina with a tendency to cluster together.

Porotic Hyperostosis is scored as:

0: No parietals present for observation
1: Absent with at least one observable parietal
2: Presence of slight pitting or severe parietal porosity
3: Gross parietal lesion with excessive enlargement of bone

Scoring schemes for both Cribra Orbitalia and Porotic Hyperostosis follow Steckel et al. (2006: 12-14).

The bottom section of both boxes contains a free-text Notes field, where additional information can be added.

3.7.3. Degenerative Joint Disease (DJD)

The DJD sub-layout has three tabs: Synovial Joints, Intervertebral Joints and Schmorl's Nodes.

Tab: Synovial Joints

The Synovial Joints tab is based on the **`DJD_Synovial`** table, and contains description and score fields for both left and right shoulder, elbow, wrist, hip, knee and ankle joints. The table is linked to the **`Skeletons`** table by the `SkeletonNumber` field. The `Description` fields are drop-down lists displaying text description of the various DJD stages. When a DJD stage is chosen, the `Score` fields are automatically set with the corresponding numerical code for each stage. The scoring stages and codes are adapted from Steckel et al. (2006:32) as follows:

> 0: Joint not available for observation.
> 1: Joint shows no evidence of pathological changes.
> 2: Slight marginal lipping (osteophytes less than about 3mm) and slight degenerative or productive changes are present. No eburnation is present but the surface may include some porosity.
> 3: Severe marginal lipping (osteophytes greater than about 3mm) and severe degenerative or productive changes are present. The surface may include substantial porosity.
> 4: Complete or near complete (more than about 80%) destruction of articular surface (margin and face), including ankylosis.
> 5: Joint fusion (synostosis).

In addition, a free-text `Notes` field where further details can be entered is available at the bottom of the layout.

For statistical purposes, it is important to assess all joints of every skeleton, and specifically to note whether or not the joint is available for observation. To make this process easier, a button at the top left of the layout labeled [Load Joints] runs a script that checks the availability of each joint for the current skeleton, and auto-enters the text "Joint not available for observation" in the fields corresponding to joints for which no bones have been entered in the **`SkeletalInventory`** table. The auto-entered fields are also greyed out if the skeletal inventory is empty for all components of the joint. The fields corresponding to joints where at least one component *has* been inventoried stay white, and instead display the text "Joint available: Choose DJD stage". The auto-fill of the fields is accomplished with the script <u>LoadAvailableJoints_DissDJD</u>, which in turn calls the sub-scripts <u>UpdatePathologyJointsForDiss</u> and <u>AutoCompleteDJDSynovial.</u>

The first of these two scripts updates the **`JointsPresentforDiss`** table on the BoneListPath hidden layout by checking for the presence of any components in a joint in the **SkeletalInventory** table. If at least one bone element in a joint has been inventoried, the **JointsPresentforDiss** table is updated with the joint name. The lines of the script pertaining to the left shoulder are detailed below; the full script is quite long, and can be found in the Database Design Report.

```
• Go to Layout [ "-----Hidden Layout: BoneListPath" (Skeletons) ]
• Set Field [ JointsPresentforDiss::SkeletonNumber;
• If ( not IsEmpty ( Skeletons::SkeletonNumber ) ; GetAsText (
      Skeletons::SkeletonNumber ) ) ]
• Replace Field Contents [ JointsPresentforDiss::LeftShoulder;
• Replace with calculation: If ( not IsEmpty (
      SkeletalInventory::Clavicle_Left ) or not IsEmpty
      (SkeletalInventory::Humerus_Left_PE) or not IsEmpty (
      SkeletalInventory::Acromion_Left) or not IsEmpty (
      SkeletalInventory::Glenoid_Left) ; "Shoulder") ] [ No dialog ]
```

The next script, AutoCompleteDJDSynovial, then uses an IF script-step to check which fields were filled in the **JointsPresentforDiss** table and which were left blank, and enters the appropriate text on the Synovial Joints tab ("Joint not available for observation" in the fields corresponding to blank fields on the BoneListPath layout, and "Joint available: Choose DJD stage" for the joints corresponding to filled fields on the BoneListPath layout). The first lines of the script, pertaining to the left shoulder, are detailed below; the full script is quite long, and can be found in the Database Design Report.

```
• Go to Layout [ "-----Hidden Layout: BoneListPath" (Skeletons) ]
• If [ not IsEmpty ( JointsPresentforDiss::LeftShoulder ) ]
• Set Field [ DJD_Synovial::Shoulder_Left; "Joint available: Choose DJD
      stage." ]
• End If
• If [ IsEmpty ( JointsPresentforDiss::LeftShoulder ) ]
• Set Field [ DJD_Synovial::Shoulder_Left; "Joint not available for
      observation." ]
• End If
```

Since healthy joints are more common than degenerated ones (at least in my material) a second button labeled [Load No Path] is provided to speed up data entry. This button triggers the script LoadAvailableJoints_DissDJD_NoPath. Similar to the above script, this script first runs the sub-script LoadAvailableJoints_DissDJD to check for available joints, but the second sub-script, AutoCompleteDJDSynovial_NoPath also enters the `Description` "Joint shows no evidence of pathological changes" and "1" in the `Code` field. As entries can easily be changed after the script has run, use this button to speed up data entry if only a few joints are afftected as well, changing the score for these joints only.

Tab: Invertebral Joints

On the next tab, which is based on the **DJD_InvertebralDiscs** table, Invertebral Disc Disease (IVD) is scored separately for the cervical, thoracic and lumbar spine -

though not for each individual vertebral junction - according to the criteria of Steckel and colleagues (2006: 33) in the following way:

0: Vertebral bodies not available for observation.
1: No degenerative joint disease in preserved vertebral bodies.
2: Osteophyte formation on at least one vertebral body.
3: Extensive osteophyte formation on at least one vertebral body.

The tab is very simple, with only seven fields: one each for the description and numerical code scored for each vertebral segment, and one free-text `Notes` field allowing for more detailed information to be entered if necessary. The description fields, labeled Cervical, Thoracic and Lumbar Spine, respectively, consist of drop-down lists with the text descriptions of each IVD stage. Data entered in the drop-down boxes are stored in the `CervicalSpine_Desc`, `ThoracicSpine_Desc` and `LumbarSpine_Desc` fields of the **`DJD_InvertebralDiscs`** table. Once an IVD stage has been chosen in the drop-down list, the numerical code corresponding to the IVD stage is automatically copied to the adjacent `Code` field. The numerical codes are stored in the `CervicalSpine_Code`, `ThoracicSpine_Code` and `LumbarSpine_Code` fields of the **`DJD_InvertebralDiscs`** table. These fields are calculation fields, auto-filled by the following Case function (`CervicalSpine_Code` field used as example):

```
Case (CervicalSpine_Desc = "Vertebral bodies not available for
observation"; "0"; CervicalSpine_Desc = "No degenerative joint disease
in preserved vertebral bodies" ; "1"; CervicalSpine_Desc = "Osteophyte
formation on at least one vertebral body"; "2"; CervicalSpine_Desc =
"Extensive osteophyte formation on at least one vertebral body"; "3" )
```

Tab: Schmorl's Nodes

Since Schmorl's nodes are very rare in the cervical spine (Aufderheide and Rodriguez-Martin 1998:96; Waldron 2009:45), the Schmorl's layout contain fields for assessing the thoracic and lumbar spine only. The tab contains two portals: the upper one for assessing the thoracic spine, and the lower one for assessing the vertebrae of the lumbar spine. Both portals are based on the same table, **`DJD_Schmorls`**, as is the free text `Notes` field to the right of the portals. The **`DJD_Schmorls`** table is linked to the **`Skeletons`** table by the `SkeletonNumber` field. Both portals have a Vertebra field with a drop-down list. In the Thoracic Spine portal the drop-down list gives the options Thoracic 1 through 12, as well as an option for "Undetermined Thoracic". There is also an option for "Thoracic 1-9" for cases when the vertebra could not be identified more specifically than as one of the upper nine thoracic vertebrae. In the Lumbar Spine portal the choices on the drop-down list consist of Lumbar 1 through 5, and a choice for "Undetermined Lumbar". Unlike the drop-down lists on many of the other layouts, the drop-down lists for vertebrae on the Schmorl's tab are *not* tied to the **`SkeletalInventory`** table, and all vertebral designations will show in the drop-down lists, regardless of whether they were inventoried for the current skeleton or not. This is necessary since the Thoracic vertebrae 1-9 are not inventoried individually in the **`SkeletalInventory`** table.

The `Description` and `Code` fields are identical in both portals. As on the previous tabs, the former fields are drop-down lists, with only the text description. Once a description has been chosen, the corresponding numerical code is automatically entered in the `Code` fields. The descriptions and codes used are as follows:

1: No depression on either vertebral surface.
2: Depression on superior vertebral surface.
3: Depression on superior vertebral surface.
4: Depression on both superior and inferior vertebral surfaces.

As before, the `Code` fields are calculation fields, auto-filled by way of the Case function below:

```
Case ( Description = "No depression on either vertebral surface"; "1";
Description = "Depression on superior vertebral surface"; "2";
Description = "Depression on inferior vertebral surface"; "3";
Description  = "Depression on both superior and inferior vertebral
surface"; "4" )
```

To speed up data entry, two buttons are provided. The first button, [Load with No Bone] runs the script LoadSchmorlsPortal_NoVert, which fills both portals with entries for each vertebrae, and fills each `Description` field with "Vertebral body not available for observation" and each `Code` field with "0".

```
• Go to Layout [ "DissertationSpecific" (Skeletons) ]
• Go to Object [ Object Name: "DJD_Schmorls_Th" ]
• Go to Portal Row [ Select; First ]
• Set Field [ DJD_Schmorls::Vertebra; "Thoracic 1" ]
• Set Field [ DJD_Schmorls::Description; "Vertebral body not
  available for observation" ]
• Go to Portal Row [ Select; Next ]
• Set Field [ DJD_Schmorls::Vertebra; "Thoracic 2" ]
• Set Field [ DJD_Schmorls::Description; "Vertebral body not
  available for observation" ]
```

And so on for each Thoracic and Lumbar Vertebra. The script ends with:

```
• Go to Object [ Object Name: "DJD_Schmorls_Th" ]
• Go to Portal Row [ Select; First ]
Exit Script [ ]
```

The second button, [Load with No Path] runs the script LoadSchmorlsPortal_NoPath, which is similar, but fills each `Description` field with "No depression on either vertebral surface" and each `Code` field with "1".

3.7.4. Trauma

The Trauma sub-layout has five tabs: Dislocations, Trauma: Cranial, Trauma: Long Bones, Trauma: Hand and Trauma: Foot.

Tab: Dislocations

The Dislocations tab is based on the **`Dislocation_Dissertation`** table, and is linked to the **`Skeletons`** table via the `SkeletonNumber` field. In layout, it is identical to the DJD: Synovial Joints tab, with description and score fields for both left and right shoulder, elbow, wrist, hip, knee and ankle joints, and a [Load Available Joints] button in the top left corner. The `Description` fields are drop-down lists displaying text description of the various dislocation stages. When a dislocation stage is chosen, the `Score` fields are automatically set with the corresponding numerical code for each stage. The scoring stages and codes are as follows:

0: Joint not available for observation.
1: Joint shows no evidence of pathological changes.
2: Evidence of dislocation with slight tissue involvement
3: Evidence of dislocation with pseudo-arthrosis

As on the Synovial tab, pressing the button [Load Joints] loads the available joints (i.e. joints for which at least one component has been inventoried as present in the **`SkeletalInventory`** table) in the portal showing the text "Joint available: choose dislocation stage" in the `Description` field, while the `Description` fields for joints where no skeletal elements have been inventoried will be greyed out with the text "Joint not available for observation" and the `Code` fields set to "0". This is done with the help of a script, <u>LoadAvailableJoints_DissDislocations</u>, which in turn calls two sub-scripts: first the same <u>UpdatePathologyJointsForDiss</u> as on the Synovial tab, and second the script <u>AutocompleteDislocation.</u> A second button, [Load No Path], instead runs the scrip <u>LoadAvailableJoints_DissDislocations_NoPath,</u> which also first checks for available joints through the script <u>UpdatePathologyJointsForDiss</u>, and subsequently loads the `Description` field of the available joints with "Joint shows no evidence of pathological changes" and the `Code` field with "1"

As the scripting is very similar to that used on the Synovial tab the scripts will not be detailed here, but are available in the Database Design Report.

Tab: Trauma: Cranial

The Trauma: Cranial tab is based on the table **`CranialTraumaDissertationMain`** and linked to the **`Skeletons`** table via the `SkeletonNumber` field. The tab contains two boxes, labeled "Cranial Trauma: Choose Bone and Fracture Code" and "Detailed Description (Auto-Enter)", both containing a portal, and a free-text `Notes` field. However, as suggested by the labels, only the top portal is used for data entry; the bottom portal is auto-filled based on the choices in the "Choose Bone" box. This box contains a portal with two fields: Available Bones and Code. The former is a drop-down field with a dynamic value-list, displaying the cranial bones inventoried as present in the **`SkeletalInventory`** table. The value-list is populated when the [Update Value List] button in the top right corner of the tab is pressed, with the help of the script UpdateCranialTraumaBones, copied below:

```
• Go to Layout [ "-----Hidden Layout: DissertationTrauma" (Skeletons) ]
• Perform Script [ "UpdateCranialPathologyDissPortalBase" ]
• Perform Script [ "PopulateCranialTraumaPortal" ]
• Go to Layout [ original layout ]
• Go to Object [ Object Name: "TraumaCranial" ]
• Exit Script [ ]
```

This script in turn calls two sub-scripts: UpdateCranialPathologyDissPortalBase and PopulateCranialTraumaPortal. These scripts are similar to other update value lists scripts with the exception that only bones inventoried as "Present Complete" (PC) in the skeletal inventoried are copied to the value list, since only bones at least 75% complete are used in the analysis. There is no separate field for side – instead, the drop-down lists each available sided bone on a separate line (i.e. Left Frontal, Right Frontal etc.). However, the left and right nasal bones are combined in one entry of "Nasals", as these bones are not evaluated separately in the trauma analysis. The first few lines (inventory of the left and right frontal bones) of the UpdateCranialPathologyDissPortalBase script are copied below as an example, the remainder of this script and the PopulateCranialTraumaPortal script can be found in the Database Design Report.

```
•   Set Field [ CranialTraumaDissertation_PortalBase::SkeletonNumber;
    If ( not IsEmpty ( Skeletons::SkeletonNumber ) ; GetAsText (
    Skeletons::SkeletonNumber ) ) ]
•   Replace Field Contents [
    CranialTraumaDissertation_PortalBase::LeftFrontal; Replace with
    calculation: If ( SkeletalInventory::Frontal_Left = "PC" ; "Left
    Frontal") ] [ No dialog ]
•   Replace Field Contents [
    CranialTraumaDissertation_PortalBase::RightFrontal; Replace with
    calculation: If ( SkeletalInventory::Frontal_Right = "PC" ;
    "Right Frontal") ] [ No dialog ]
```

Scoring of cranial fractures is done following Lovell (1997), using the codes and designations outlined below. Only Ante- and Peri-mortem fractures are scored on the Trauma sub-layout – clearly post-mortem fractures should be entered in the Taphonomy section.

0: No observable bone
1: No observable fracture
2: Fracture with evidence of healing (ante-mortem) – linear
3: Fracture with evidence of healing (ante-mortem) – depression

4: Fracture with evidence of healing (ante-mortem) – puncture
5: Fracture with evidence of healing (ante-mortem) - multiple
6: Non-recent fracture with no evidence of healing (peri-mortem) - linear
7: Non-recent fracture with no evidence of healing (peri-mortem) – depression
8: Non-recent fracture with no evidence of healing (peri-mortem) - puncture
9: Non-recent fracture with no evidence of healing (peri-mortem) - multiple

Both numerical codes and text description are displayed in the two-column value list of the `Code` field drop-down; only the numerical code is stored in the `Code` field. However, to enable detailed searches, the information entered in the "Choose Bone" box is also auto-filled in separate fields in the lower box on the tab. This box contains the fields `Bone` and `Side` separately, as well as a field for (fracture) `Presence`, `Timing` (Ante/Peri-mortem) and (fracture) `Type` (linear, depression, puncture or multiple). These fields are all calculation fields, using a Case function to copy the information from the "Choose Bone" box. In addition, the `Bone` and `Side` fields use the PatternCount function to parse the text from the `Available Bones` field to separate fields for bone and side. The calculation for the Bone field is shown below as an example.

```
Case (
PatternCount ( BoneSided ; "Frontal" ) ; "Frontal" ;
PatternCount ( BoneSided ; "Parietal"); "Parietal";
PatternCount ( BoneSided ; "Occipital" ) ; "Occipital" ;
PatternCount ( BoneSided ; "Temporal"); "Temporal";
PatternCount ( BoneSided ; "Nasals" ) ; "Nasals" ;
PatternCount ( BoneSided ; "Zygomatic"); "Zygomatic";
PatternCount ( BoneSided ; "Maxilla" ) ; "Maxilla" ;
PatternCount ( BoneSided ; "Mandible"); "Mandible")
```

Tab: Trauma: Long Bones

The Trauma: Long Bone tab is based on the **`LongBoneTraumaDissertation`** table, and is linked to the **`Skeletons`** table by the `SkeletonNumber` field. The data collection protocol is based on the recommendations by Lovell (1997, 2008) and Judd (2004, 2012). The data entry is done in a portal, labeled "Long Bone Trauma Inventory". For statistical purposes, it is important to assess all long bones of every skeleton in the trauma analysis, and specifically to note whether or not the bone is available for observation. To make this process easier, and to make sure no bones are overlooked, a button at the top left of the layout labeled [Load Long Bone Records] runs the script LoadLongBones_TraumaPortalSetField which loads the names of all long bones for both sides (The first lines, pertaining to the clavicle, are posted below. The remainder of the script can be found in the Database Design Report).

```
• Go to Layout [ "DissertationSpecific" (Skeletons) ]
• Go to Object [ Object Name: "LongBoneTraumaPortal" ]
```

```
• Go to Portal Row [ Select; First ]
• Set Field [ LongBoneTraumaDissertation::Bone; "Clavicle" ]
• Set Field [ LongBoneTraumaDissertation::Side; "Left" ]
• Go to Portal Row [ Select; Next ]
• Set Field [ LongBoneTraumaDissertation::Bone; "Clavicle" ]
• Set Field [ LongBoneTraumaDissertation::Side; "Right" ]
• Go to Portal Row [ Select; Next ]
```

This script is not linked to the **`SkeletalInventory`** table; since all bones have to be documented as present/not present in addition to being assessed for trauma, the script simply loads all possible bones, regardless of whether or not they are inventoried as present. Use this script when entering data in the lab in real time.

Once the `Bone` and `Side` fields have been filled, the next field is the `Code` field. This is a drop-down list, offering the following choices:

0: No bone available for analysis
1: Complete bone, no evidence of trauma
2: Fracture with evidence of healing (ante-mortem)
3: Non-recent fracture with no evidence of healing (peri-mortem)

Only the numerical code is stored in the database. If the code "0" or "1" is chosen in the Code drop-down list, the fracture description fields will all display "N/A" (not applicable). If a fracture is present, the next field, `Sect:`, should contain the affected section of the bone – a drop-down list supplies the abbreviations PE, PT, MT, DT and DE for Proximal Epiphysis, Proximal, Middle and Distal Third, and Distal Epiphysis. If more than one section is affected, multiple choices can be made by holding the command (Mac) or Ctrl (Windows) key while making a selection. If multiple choices are made, the entries will be stored as return-separated lines in the `Section` field of the **`LongBoneTraumaDissertation`** table.

To speed up data entry when analysis has already been completed, a second button, labeled [Load Existing with No Path] is provided, which similar to the DJD and Dislocation tab scripts checks for presence/absence in the **`SkeletalInventory`** table, and enters the code "1" for "Complete bone, no evidence of trauma" in the `Code` field of bones that were inventoried as present. This is done via the script LoadLongBones_TraumaPortalSetFieldNoPathCheckPresence, the first lines of which is provided below:

```
• Go to Layout [ "DissertationSpecific" (Skeletons) ]
• Go to Object [ Object Name: "LongBoneTraumaPortal" ]
• Go to Portal Row [ Select; First ]
• Set Field [ LongBoneTraumaDissertation::Bone; "Clavicle" ]
• Set Field [ LongBoneTraumaDissertation::Side; "Left" ]
• If [ IsEmpty ( SkeletalInventory::Clavicle_Left ) ]
• Set Field [ LongBoneTraumaDissertation::FracturePresence; "0" ]
• Else If [ not IsEmpty ( SkeletalInventory::Clavicle_Left ) ]
• Set Field [ LongBoneTraumaDissertation::FracturePresence; "1" ]
• End If
```

```
• Go to Portal Row [ Select; Next ]
• Set Field [ LongBoneTraumaDissertation::Bone; "Clavicle" ]
• Set Field [ LongBoneTraumaDissertation::Side; "Right" ]
• If [ IsEmpty ( SkeletalInventory::Clavicle_Right ) ]
• Set Field [ LongBoneTraumaDissertation::FracturePresence; "0" ]
• Else If [ not IsEmpty ( SkeletalInventory::Clavicle_Right ) ]
• Set Field [ LongBoneTraumaDissertation::FracturePresence; "1" ]
End If
```

Note that this script does not differentiate between poorly preserved bone (which should be coded as "9" for "Fragmented/Poorly preserved bone, no evidence of trauma", but that this distinction has to be entered manually. To eliminate the need for switching back and forth to the inventory section to check the preservation of individual bones, the final button in the top right of the tab labeled [Show Available Bone Sections] opens a pop-up window showing the long bone inventory for the current skeleton, meant as a visual aid.

The remaining fields pertain to the description of eventual fractures. The fracture should first be classified as Intraarticular (involving a joint, including the metaphyseal region) or Extraarticular in the `Fracture Class` field. The next field, `Fracture Type`, is a drop-down list with the following choices:

Penetrating
Comminuted
Segmented
Crush
Transverse
Spiral
Oblique
Torus
Greenstick
Impacted
Avulsion
Stress/Fatigue
Secondary/Pathological
Other
Unknown

Note that the choice "Impacted" fracture should only be used for description of intraarticular fractures, while the term "Segmented" should be used only for the description of extrarticular fractures (Lovell 1997, 2008).

The next column of fields denotes anterior-posterior (`Apposition AP`) or medial-lateral (`Apposition ML`) apposition – i.e. the amount of end-to-end contact of the fracture fragments after healing. If there is no displacement, apposition should be noted as 100% (Lovell 1997). If there are x-rays of the fracture (in both planes), apposition can be measured with a ruler, and the exact percentage can be entered manually in the respective fields. If there are no x-rays, note bone displacement as "anterior", "posterior", "medial" or "lateral" only, though the percentage can be estimated and noted in the `Notes` field.

The `Length (Gen):` field is a drop-down list, with the choices "Normal", "Distracted" and "Shortened" available as a general description of the length of the fractured bone in comparison with its opposite. If the bone is complete, the length in cm, obtained through measurement with an osteometric board, should also be entered in the `Length (Cm):` field. If the contralateral bone is available and complete, the difference in length between the sides should be noted in the `Description:` field.

The next group of fields are for describing the direction of angulation (if any) of the fracture: in the `Angulation AP` field as "Anterior" if the fracture site is posteriorly bowed in lateral view (i.e. the distal end of the distal fragment is displaced anteriorly, or the "apex" of the angle points anteriorly), or "Posterior" if the displacement is anteriorly bowed, and the distal end of the distal fragment is displaced posteriorly (apex points posteriorly), and in the `Angulation ML` field as "Varus" if the distal end of the distal fragment has moved medially in anterior-posterior view (apex medial), and as "Valgus" if it has moved laterally (apex lateral) (Lovell 1997, 2008).

The angle of the fracture in degrees should be entered in the adjacent fields (`Degree:`) for both planes. This measurement should be taken with a goniometer, and can be obtained from the dry bone itself if an x-ray is not available, by placing one end of the instrument on the midline of the proximal fragment's longitudinal axis, and the other on the axis of the distal fragment with the goniometer centered over the fracture site. The angulation measurement is the number of degrees of displacement between the distal fragment and the midline of the proximal fragment (Lovell 1997, 2008).

Rotation should be recorded (in the `Rotation:` field) as the direction the distal fragment has rotated relative to the proximal portion of the bone, either internally or externally. If rotation is present, adjacent joint surfaces should also be assessed for osteoarthritis or ankylosis, which are both commonly encountered with this type of fracture (Lovell 1997, 2008).

The final field in the portal is the free-text `Description:` field.

Tab: Trauma: Hand

The fields on the Trauma: Hand tab are divided between a portal for the carpals and metacarpals (based on the table **`HandTraumaDissertation`**), and a box on the lower half of the tab for the phalanges (based on the table **`PhManTraumaDissertation`**). The portal is very similar to that on the Long Bone tab, but with the fields in a slightly different order. For details on how to fill the fields, please refer to the Trauma: Long Bone section above. As on the previous tab, a button (here labeled [Load Carpals/MC]) loads all carpals and metacarpals in the portal through a script, here named LoadHandTraumaBones, while the adjacent button [Show Carpals/MC Inventory] opens a pop-up window displaying the bones inventoried for the current skeleton. Use this option for real-time data entry.

The Code: field offers a drop-down list with the same options as on the previous tab:

0: No bone available for analysis
1: Complete bone, no evidence of trauma
2: Fracture with evidence of healing (ante-mortem)
3: Non-recent fracture with no evidence of healing (peri-mortem)

If “0” or “1” are chosen, the remaining fields are hidden, and instead display “N/A” for “Not applicable”. If a fracture is present, fracture type and class should be entered for all bones. However, the fields to the right of the `Description:` field (`Rotation, Apposition AP` and `ML`, `Length (Gen):` and `(Cm)`, `Angulation AP/Degree` and `Angulation ML/Degree`) need only be filled out for metacarpals, and should be left blank when describing carpals, as should the `Sect:` field.

As on other tabs, a third button is also provided, which checks for presence/absence of carpal bones and metacarpals, and fills the `Code` field with “1” for “Complete bone, no evidence of trauma”. This is accomplished through the script LoadHandTraumaBones_NoPathCheckPresence.

On the bottom half of the tab is a box displaying the number of inventoried complete phalanges manus for the current skeleton. The `Complete:` fields are auto-filled by the same script (LoadHandTraumaBones) as the Carpals and Metacarpals portal fields when the [Load Carpals/MC] button is pressed, though in the case of the phalanges box, the bones displayed are based on the content of the **`SkeletalInventory`** table, while in the Carpals and Metacarpals portal all bones are loaded, whether present or not. There are no prompts for fracture description in the phalanges box, but simply fields for filling in the number of proximal, intermediate and distal phalanges where fractures were noted. Any additional comments can be entered in the free-text `Description:` field.

Tab: Trauma: Foot

The fields on the Trauma: Foot tab are divided between a portal for the tarsals and metatarsals (based on the table **`FootTraumaDissertation`**), and a box on the lower half of the tab for the phalanges (based on the table **`PhPedTraumaDissertation`**). The tab is otherwise identical to the Trauma: Hand tab, and for details on how to fill the fields, please refer to the Trauma: Long Bone section above. As on the previous tab, a button (here labeled [Load

Tarsals/MT]) loads all tarsals and metatarsals in the portal, while the adjacent button [Show Tarsals/MT Inventory] opens a pop-up window displaying the bones inventoried for the current skeleton.

The Code: field offers a drop-down list with the same options as on the previous tab:

0: No bone available for analysis
1: Complete bone, no evidence of trauma
2: Fracture with evidence of healing (ante-mortem)
3: Non-recent fracture with no evidence of healing (peri-mortem)

If "0" or "1" are chosen, the remaining fields are hidden, and instead display "N/A" for "Not applicable". If a fracture is present, fracture type and class should be entered for all bones. However, the fields to the right of the `Description:` field (`Rotation, Apposition AP` and `ML`, `Length (Gen):` and `(Cm)`, `Angulation AP/Degree` and `Angulation ML/Degree`) need only be filled out for metacarpals, and should be left blank when describing carpals, as should the `Sect:` field.

As on other tabs, a third button is also provided, which checks for presence/absence of tarsal bones and metatarsals, and fills the `Code` field with "1" for "Complete bone, no evidence of trauma". This is accomplished through the script LoadHandTraumaBones_NoPathCheckPresence.

On the bottom half of the tab is a box displaying the number of inventoried complete phalanges pedis for the current skeleton. The `Complete:` fields are auto-filled by the same script (LoadFootTraumaBones) as the Tarsals and Metatarsals portal fields when the [Load Tarsals/MT] button is pressed, though in the case of the phalanges box, the bones displayed are based on the content of the **`SkeletalInventory`** table, while in the Tarsals and Metatarsals portal all bones are loaded, whether present or not. There are no prompts for fracture description in the phalanges box, but simply fields for filling in the number of proximal, intermediate and distal phalanges where fractures were noted. Any additional comments can be entered in the free-text `Description:` field.

3.7.5. Periostosis

The Periostosis sublayout is divided in two sections: an upper section for scoring long bones, and a smaller bottom section for scoring general infection. The upper section consists of a portal based on the table **`PeriostosisLongBones`**. The portal contains the fields `Bone`, `Side`, `Code`, `Description` and a free-text `Notes` field. For statistical purposes, it is important to assess all long bones of every skeleton in the analysis, and specifically to note whether or not the bone is available for observation. To make this process easier, and to make sure no bones are overlooked, a button at the top left of the layout labeled [Load Bones] runs the script LoadLongBones_PNBPortal which loads the names of all long bones for both sides (The first lines, pertaining to the humerus, are posted below. The remainder of the script can be found in the Database Design Report).

```
• Go to Layout [ "DissertationSpecific" (Skeletons) ]
• Go to Object [ Object Name: "PNBLongBonePortal" ]
• Go to Portal Row [ Select; First ]
• Set Field [ PeriostosisLongBones::Bone; "Humerus" ]
• Set Field [ PeriostosisLongBones::Side; "Left" ]
• Go to Portal Row [ Select; Next ]
• Set Field [ PeriostosisLongBones::Bone; "Humerus" ]
• Set Field [ PeriostosisLongBones::Side; "Right" ]
```

This script is not linked to the **`SkeletalInventory`** table; since all bones have to be documented as present/not present in addition to assessed for PNB, the script simply loads all possible bones, regardless of whether or not they are inventoried as present. However, the button in the top right of the tab labeled [Show Available] opens a pop-up window showing the long bone inventory for the current skeleton, meant as a visual aid.

Once the `Bone` and `Side` fields have been filled, the next field is the `Code` field. This field is not a data-entry field, but a calculation field, auto-filled with a numerical code based on the choices in the adjacent `Description` field. As on other layouts, this approach was chosen so that both the code and the text description could be stored in the database.

The `Description` field is a drop-down list, with the choices outlined below. The numerical code corresponding to each description is automatically entered in the `Code` field. The scoring system is a modified form of the criteria from Steckel and colleagues (2006):

1: No PNB present
2: Markedly accentuated longitudinal striations
3: Slight, discrete patch(es) of reactive bone involving less than one quarter of the long bone surface
4: Moderate involvement of the periosteum, but less than one-half of the long bone surface
5: Extensive periosteal reaction involving over half of the diaphysis, with cortical expansion, pronounced deformation
6: PNB likely associated with a fracture
9: Bone missing or unobservable.

Since periostosis or periostal new bone formation (PNB) is part of the normal growth process in juvenile bones these should be excluded from analysis. For adult individuals, PNB should be scored for each long bone, both left and right sides.

As on previous tabs, a third button, labeled [Load with No Path] runs a similar script as above named LoadLongBones_PNBPortal_NoPath, which also checks for absence/presence of long bones, graying out the bones that have not been marked as present in the **`SkeltalInventory`** table and enters the text "Bone missing or unobservable" in the `Description` field and "9" in the `Code` field. For inventoried bone, the `Description` field is set to display "No PNB present" and the `Code` field to "1". Entries can be changed after the script is run, so this button is useful for individuals with only one or two bones showing evidence of PNB as well.

The bottom section of the sub-layout contains three fields for scoring general infection: `Description`, `Code` and a free-text `Notes` field. It is based on the table **`PeriostosisGeneralInfection`**. The general infection category includes periostosis of bones other than the long bones, and other disease states, such as osteomyelitis and mastoiditis. The lesions were scored using criteria adopted from Steckel et al. (2006).

0. No periosteal reaction on any other bone than the tibiae
1. Periosteal reaction on any other bone(s) than the tibiae
2. Evidence of systemic infection involving any of the bones (including the tibiae) of the skeleton.

As above, it is the `Description` field that is set up as a drop-down list, and the numerical code corresponding to each category is instead automatically entered in the `Code` field. As the data-entry in this section does not specify the bone, it is important that the location of the periosteal reaction scored is detailed in the `Notes` field.

4. LAYOUTS: Reports

4.1. Overview

The reports section is still under development, though it is of course already possible to run ad-hoc queries using FileMaker's internal search function. While working on the pre-programmed reports, I have also found the free add-on database "SQLExplorer" by SeedCode useful. SQLExplorer is a stand-alone database, to which you can add table occurrences from your own database in order to run SQL queries. I have used it with good results, as it is similar to what I was used to from the Access environment. The SQLExplorer file contains an internal help-section with links to instruction videos. SQLExlorer is a free, share-ware database, and is downloadable from: http://www.seedcode.com/sql-explorer-for-filemaker-12/

4.2 Report Navigation

The Report Navigation Layout is reached by the navigation tab labeled "Reports" at the top right of each layout, and contains tabs for various types of reports and queries, only a few of which are currently functional. In FileMaker, reports not in table form need to be sorted a specific way to display as intended, so most of the reports include sort buttons. Click this button if the report behaves unexpectedly. In addition, built reports are viewed in Browse mode and List view (you can change the "View" mode from the Status Bar), while table based reports are viewed in Browse mode and Table view. Catalogues generally have to be viewed in Preview mode (this can be changed by pressing the "Preview" button in the Status Bar) to display as intended. If a report does not display as expected, experiment with different view modes before changing anything on a layout.

All reports can be exported to pdf or excel from buttons in the Status Bar. A pdf export returns a printout that looks like the Preview of the report. Excel exports are more variable, depending on how the report was built and sorted, and are not always useful for export of built reports. However, for table-based reports, the Excel export option returns a spreadsheet with the same configuration as the report. This includes the configuration after a Find request is performed – in other words; the same table report can be exported as a spreadsheet with records by age, by sex, or any other search criteria depending on various Find requests performed before exporting.

Tab: Catalogues

The first tab currently holds navigation buttons for five reports: the [Burial Catalogue], [Object Catalogue] and [Pathology Catalogue_Main] with additional versions of the latter: [Pathology Catalogue (Bone Loss/Formation)] and [Pathology Catalogue (Vertebral Pathologies)] These are all functional.

APPENDIX X: DATABASE DOCUMENTATION

Burial Catalogue (Appendix I)

This catalogue meant as a printable overview of analyzed/entered burials. It is based on the **Skeletons** table, but also contains fields from **BurialForm_BurialsMain, BurialForm_Squares, BurialDescription, SkeletonsStature, BurialDescription_CoffinDescription, TaphonomyGeneral, Photos_BurialCatalogue_Photos, SkeletonsPathologyOverview** and **Items_ObjectRegistry**. For a full list of fields, see the Database Design Report. The first few pages of a complete burial catalogue are included in the database documentation as Appendix I.

The final view should be Preview mode, but sorting is done in Browse mode. Pressing the button [Hide Coffins] runs the script SortByBurial, which hides the coffin section for each burial. Pressing the button [Show Coffins] runs the script SortByBurialthenCoffin, shows the coffin section for each burial. Once a selection has been made as to whether or not the coffins should be included, the report is best viewed in preview mode.

The report contains information on age in years and age group, sex, burial position and orientation, stature, taphonomy (truncation, disarticulation, preservation and notes), as well as a basic list of pathologies culled from the "Pathologies Overview" tab on the Pathology: Individual layout. In addition, if a photo has been sent from the Photos inventory on the Description layout (using the [Send to Bur Cat] button), a photo of each burial is also displayed. Finally, a list of objects is displayed below the photo.

To print a catalogue of a subset of data, simply enter Find mode (⌘F for Mac, Ctrl-N for Windows), or through the View menu in the Status Bar) to search in any field of the report before exporting. For example, to display the records of all Males (M) and Probable Males (M?), enter Find mode, ensure the "Include" button is pressed in the status bar, enter M in the `Sex` field and perform the find. To omit the probable males (M?) from the resulting search, hit "New Request" in the Status Bar, ensure the "Omit" button is pressed, and enter M? in the `Sex` field before pressing Find in the Status Bar again.

Note that many fields on the catalogue layout are merge fields (fields that can combine text and field content, and shrink or expand to fit the amount of text in the field for each record), which makes the layout hard to read in layout mode. In addition, fields are set to slide up if empty to minimize white space in the printed report.

Object Catalogue (Appendix II)

The next button opens the Object Catalogue. This is a simple report, based on the **`Items_ObjectRegistry`** table, but it also contains fields from the **`Skeletons`** table (fields `BurialNumber, Sex, AgeGroup and AgeRange`), **`BurialForm_BurialsMain`** (the `Phase` field), and **`BurialDescriptionMain`** (the PrimarySecondary field). The report has to be sorted by `BurialNumber` to display correctly; a button in the top left corner labeled [Sort Records] accomplishes this by triggering the script SortbyBurial. The first few pages of a complete Object Catalogue is provided in Appendix II.

The subheader of the catalogue displays the Burial and Skeleton number of each individual, below which are the fields for Sex, Age Group (Adult, Juvenile etc.), Age Range (age in years), Phase (for the sample database the phases are Saite and Roman), and P/S (Primary or Secondary burial). These fields can all be searched in Find mode to create catalogues of a subset of the data (objects from a specific burial or objects included in the graves of individuals from a certain age group for example). However, note that in order for the header fields to display in Find mode, the layout has to be in Table View (Fig 2).

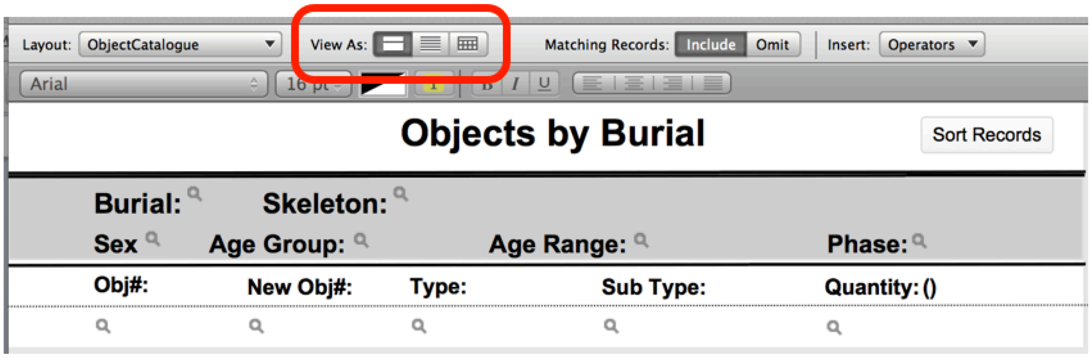


Figure 2: Object catalogue in Find mode and Table View

Once the Find Request is complete, records can be sorted by any field in any order, provided BurialNumber is one of the sort fields. To add sort fields, bring up the sort records dialogue box by typing ⌘F for Mac or Ctrl-N for Windows. Note that for the report to display correctly, the layout has to be in List View (Fig 3). To view the report as it would appear in Print, first enable List View, and then Preview.

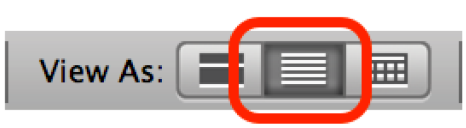


Figure 3: Status bar view mode buttons in List View

Below the subheader are fields for object number (Obj#), new object number (New Obj#), Type, SubType and Quantity. With the exception of the last field, these are all specific to the Giza material and reflect the Egyptian types of grave goods as well as changes to our Small Finds recording system over the years. However, as long as the `SkeletonNumber` and `ItemID` fields are not changed, the fields in the report could be easily renamed to instead reflect another Small Finds recording system. Field names would have to be changed in both the **`Items_ObjectRegistry`** table and on the field labels on the report, and new drop-down value lists would have to be created for the Item Inventory tab of the Description and Inventory Layout.

Pathology Catalogue: Main, Bone Loss/Formation, and Vertebral pathologies (Appendices IIIa-c)

The third button opens the main Pathology Catalogue. This catalogue is based on the **`PathologyDetail`** table, and contains, as the name implies, a more detailed report on entered pathologies. With the exception of the `AgeGroup` and `Sex` fields, which are taken from the **`Skeletons`** table, and the `PrimarySecondary` field from the **`BurialDescriptionMain`** table (all in the subheader), all fields in the Pathology Catalogue derive from the base table.

In order for the Pathology Catalogue to display correctly, fields have to be sorted by BurialNumber and SkeletonNumber – a button in the top left corner labeled [Sort Records] accomplishes this. As with the above catalogues, fields can be added to the sort order (to sort by Age Group first, for example) as long as the BurialNumber and SkeletonNumber fields are included in the sort order. Access the sort records dialogue box by typing ⌘F for Mac or Ctrl-N for Windows. In addition, any of the fields can be used to create finds of subsets of the material, including the fields for specific pathologies. For example, a search for "orbits" in the `Ecto-Cranial Location` field brings up all examples of Cribra Orbitalia, and a search for >0 in the `Vertebral Osteophytes` field brings up all examples of vertebral osteophytic growth. Note that to display all searchable fields, the catalogue has to be in Table View when a Find is requested. To view the catalogue as it would appear in a .pdf export, press the Preview button from Table View.

All the fields in the Pathology Catalogue is set to hide if empty, and slide up and shrink depending on content. However, FileMaker does not shrink white space between fields, and it is impossible to eliminate all white space between rows. For that reason, the bottom sections of the report (specifically the sections on Abnormal Bone Loss, Abnormal Bone Formation and Vertebral Pathology) export with a rather large swath of white space above the titles in the main Pathology Catalogue. For internal reports this shouldn't matter, but for publication or official reports the large gaps may be unsightly. For that reason, two partial copies of the Pathology Catalogue have been prepared, that print the Abnormal Bone Loss/Abnormal Bone Formation and Vertebral Pathology sections separately, eliminating the accumulation of white space. For these versions of the catalogue to display correctly, all pathologies that are NOT listed under Abnormal Bone Loss/Formation or Vertebral Pathologies have to be omitted in the respective reports. This is accomplished by pressing the [Omit] button in the top right corner of each report. (If this option is chosen, the Abnormal Bone Loss/Formation and Vertebral Pathologies should be removed from the Main Pathology Catalogue using the identical [Omit] button on that report layout.) As with other reports, the catalogues have to be sorted (again by `BurialNumber` and `SkeletonNumber`), and this is accomplished by pressing the [Sort Records] button in the far right top corner of the reports. Again, additional fields can be added to the sort order using the sort records dialogue. Additional finds can also be performed to display subsets of the material (by age, sex, etc) after the Omit request has been performed.

Alternatively, the Pathology Catalogue (Main) can be exported as a .pdf, then saved as a word file, and opened in Pages for Mac (Not Word!), where the superfluous white space can be deleted. However, this is really only feasible for smaller data sets, as it involves a substantial amount of editing.

Examples of all three versions of the Pathology Catalogue are provided as Appendix IIIa (Main), IIIb (Abnormal Bone Loss/Formation) and IIIc (Vertebral Pathology)

Tab: Inventories

This tab does not contain any functional reports yet.

Tab: Grave Goods

Age/Sex/Goods

This tab contains a button labeled [Age/Sex/Goods], which opens a simple report in Table format. (Note that the layout will look empty if not in Table View.) This report contains much the same information as the Object catalogue, with the sole addition of Coffin Feature number, but is based on the Skeletons table. This means that only the top record from the Items table displays – in other words, it can not be used to search for specific object types, but is useful for searching for burials with or without objects, or with a combination of burial receptacle and object. Subsets of the data can be easily exported to excel. In addition, the table format enables combinations of fields that are otherwise in different tables and layouts, for easier searching without having to switch layouts in the database. The Table opens in find mode, and instructions for querying are included in the header.

Tab: Pathologies: Diss Specific

This tab contains buttons for reports on Cribra Orbitalia, Porotic Hyperostosis and LEH. Only the two top buttons are functional. The first button, [Cribra Orbitalia: Description] opens a simple table report very similar to the previous table, which simply displays the contents of the **`CO_DissertationSpecific`** table, with the addition of fields for `BurialNumber, AgeGroup, Sex` and `PrimarySecondary` from the **`Skeletons`** and **`BurialDescription_Main`** tables respectively. The table opens in Find mode, and any of the fields are searchable. After a find request (by age or sex, for example), subsets of the data can be exported to Excel. The table displays correctly when sorted by BurialNumber only.

The second button [Cribra Orbitalia: Count] opens a list view of occurrences of Cribra sorted by Score, Age and Sex, with counts for each section. The report is based on the **`CO_DissertationSpecific`** table, with the addition of fields for `AgeGroup` and `Sex` from the **`Skeletons`** table. To display correctly, the report has to be sorted by `Score, AgeGroup` and `Sex`; as in previous reports, this can be done quickly by pressing the [Sort] button in the top right corner or the report. To display correctly, the report has to be in List View.

Tab: Pathologies: Detail

This tab contains buttons for reports on Adult and Subadult Caries, Trauma, and Vertebral Pathologies. Only the two top buttons are functional. The first button, [Adult Caries] opens a simple table report, which simply displays the contents of the **`DentalPathCaries_Adult`** table for export to excel. Note that only the first two caries observation fields are displayed, though the table actually contains 4 observation fields. If more than two carious lesions were present on any teeth, the additional fields can easily be added by pressing the Modify button on the Status bar.

The second button, [Subadult Caries] opens an identical report, but based on the **`DentalPathCaries_Subadult`** table.

Tab: Data Entry Management

The final tab contains only one button, labeled [Progress Report]. This report is a list view of data entry progress for all records in the database, sorted by progress heading ("Complete: All available data entered", "No Progress Noted", "Partial: All data for current study entered" and "Secondary burial: Not included in study"). This report is based on the entries made in the Pop-Up progress window accessed from any data entry layout through the button [Show Progress], described below.

The [Show Progress] Pop-Up is divided in sections for Layout and Sub-layout, showing the progress for each tab as "No Data", "In Progress" or "Complete" respectively. Note that these entries are not proper database fields, but simply text-boxes set to be displayed or hidden based on presence of records in the various tables and/or the check-boxes labeled "Entry complete" in each section of the database. Before any records have been created in a given table for the current individual, the corresponding progress Pop-Up text boxes will display as "No Data".

When any of the tables represented instead have a record started, the sections will display as "In Progress" (even if the record is empty). When the "Entry Complete" checkboxes are checked on any of the sub-layouts, the corresponding text box on the progress Pop-Up will display "Complete". If the "Entry complete" checkboxes are left empty, all of the corresponding sections in the progress report will be displayed as "In Progress". Note that with the exception of the Taphonomy sub-layout, the "Entry Complete" check-box has to be checked for all tabs for the progress pop-up to display "Complete". Thus, some of the sub-layouts commonly display as "In Progress" although all available data has been entered. For example, for the Dental Pathology: Adult section, the Entry Complete check-box has to be filled for all tabs (Caries, Calculus, Abscesses and Modification) for the section to display as "Complete". Since very few individuals would have entries in all of those tables, the progress-report displays the Dental Pathology section as "In Progress".

In the lower right corner of the Pop-Up is a radio-button list with the options:

Complete: All available data entered
Partial: All data for current study entered
In progress: More data will be entered
Secondary burial: not included in study

This field is then used as the sort field for the Main Progress Report, using the radio-button choices as headings. Thus, to enable the main progress report for the material as a whole, a choice must be made in this field, else the main progress report displays "No progress noted" for the burial in question, regardless of what any listed progress on the pop-up states.

In addition to the more polished reports on the report navigation layout, a few more reports are available from the drop-down navigation menu in the Status Bar. These are all simple table format reports, used for Excel exports.

5. Final Remarks

I am providing this database for evaluation, both in the hopes it may be useful to others, and because I would value feedback on the database. For those of you who are used to Access rather than FileMaker, there may be a pretty steep learning curve, particularly in terms of reporting; however, once you are over the initial hump, FileMaker is actually much more user-friendly than Access. I had never worked with FM before I started this database, but have become pretty adept at it now, just through trial and error. In fact, I have yet to discover anything I haven't been able to make FileMaker do, after a bit of research.

If you have specific questions on database design in FM, there is also a very useful official online forum where you can post questions, at http://forums.filemaker.com/groups/80a7e0f9d5/summary?lang=en_US. One of the moderators there must not have much of a life outside of the FM community, because he answers all questions within 12 hours or so, often quicker. I found the forums very useful for questions on debugging scripts and constructing calculations in particular.

That being said, I am sure there are several bugs in BADaBooM I have not yet discovered, and I would be grateful if you would write me with a description of any problems you may find with the database. Also, if you come up with any useful new layouts or modifications of the database, I would appreciate a copy of your mods, as well. If you have any other questions or comments on the database, I can be reached at jessicakaiser@berkeley.edu

Enjoy!

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