UNIVERSITY OF CALIFORNIA

Los Angeles

A Social History of Coffins and Carpenters in Ancient Egypt

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Archaeology

by

Caroline Joan Arbuckle

2018

ABSTRACT OF THE DISSERTATION

A Social History of Coffins and Carpenters in Ancient Egypt

by

Caroline Joan Arbuckle

Doctory of Philosophy in Archaeology

University of California, Los Angeles, 2018

Professor Kathlyn M. Cooney, Co-Chair

Professor Willemina Z. Wendrich, Co-Chair

This dissertation demonstrates the ability to use the technological developments observable in objects to reveal long-term shifts in society, and to uncover in-depth information about communities of practice. Through an examination of the significant evidence for woodworking practices in both modern and ancient Egypt, universal aspects of the experience of wood technology are discovered, and compared to those that are context specific. The use of ethnoarchaeology and experimental archaeology permit this detailed analysis. The religious significance of timber in ancient Egypt, ancient Egyptian woodworking tools, and the position of the woodworker in Egyptian society, are then discussed, to provide the social and practical background necessary to assess the following data: a thorough technical analysis of coffin construction through time. The material evidence is examined in light of its historical context, demonstrating how the use and access to different timbers shifts in light of political and social

developments, while the woodworkers must also constantly adapt construction techniques to changes that are largely out of their control. Coffins are shown to be particularly sensitive to these large-scale shifts, as visible elements of social competition and display. At times, the changes in material access and construction are shown to be responsible for major changes to religious beliefs and practices as well. In total, it is clear that technological developments can illustrate fluctuations in the Egyptian economy, religion, and society in a manner that artistic and textual evidence cannot.

The dissertation of Caroline Joan Arbuckle is approved.

John K. Papadopoulos

Ellen J. Pearlstein

Anthony Barbieri-Low

Kathlyn M. Cooney, Committee Co-Chair

Willemina Z. Wendrich, Committee Co-Chair

University of California, Los Angeles

2018

To my Dunky.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACKNOWLEDGEMENTS

I am very grateful for the assistance of numerous individuals, societies, and institutions for their assistance in helping me complete this project. On a personal level, my friends and family, particularly my husband, Duncan, have given me endless support, advice, and encouragement through this journey. My co-chairs, Kara Cooney and Willeke Wendrich were particularly active in assisting with my research, and helping me gain access to material. I would also like to thank the rest of my committee, John Papadopoulos, Ellen Pearlstein, and Anthony Barbieri-Low for their suggestions for improvement and support in this process.

There are also a number of colleagues and mentors who lent significant assistance for specific aspects of this project. The generous support and insight provided by Caroline Cartwright from the British Museum was fundamental for my work on wood anatomy. I am very grateful for her assistance with confirming identifications, imaging, and for discussions on interpreting problematic evidence and conflicting publications. My thanks also to Jacco Dieleman for correcting and improving my transliterations and translations of ancient Egyptian texts, particularly spell 193. My colleagues Jeffrey Newman, Jordan Galczynski, and Amr Shahat also provided assistance with pXRF analysis, photography, and translations, for which I am very appreciative.

For the ever-important assistance with funding, I also wish to express my sincere gratitude to the Cotsen Institute of Archaeology, Charlie Steinmetz, the Graduate Division of UCLA, the Fowler Museum at UCLA, the American Research Center in Egypt, the Egyptian Exploration Organization, and the American Society of Oriental Research. Without this support, this project would not have been possible.

For assistance with access to objects, I also want to thank the curators and staff at the Museo Egizio di Torino, the British Museum, the Egyptian Museum in Cairo, the Denver Museum of Nature and Science, and the University of Manchester Museum. These individuals spent significant time moving around coffins, providing me with updated photographs, and answering questions about objects. I appreciate the time and effort that was dedicated on my behalf.

Finally, I wish to acknowledge that aspects of chapter 4.iv will be published as MacLeod, Caroline Arbuckle. "Transformations in the Materiality of Death: *Rishi* Coffins and the Second Intermediate Period" in *Proceedings of the Second Vatican Coffins Conference, June 6-9, 2017, Rome, Italy*, Alessia Amentia and Mario Capozzo, eds. Vatican City: Edizioni Musei Vaticani. Aspects of chapter 4.vi will be published as: MacLeod, Caroline Arbuckle. "The Creation of a Third Intermediate Period Coffin: Coffin EX 1997-24.4 in the Denver Museum of Nature and Science" in *Third Intermediate Period Coffins from the Denver Museum of Nature and Science*, edited by Michele Koons and Caroline Arbuckle MacLeod, University Press of Colorado.

VITA

EDUCATION

University of California, Los Angeles, Cotsen Institute of Archaeology
Ph.D. Expected June 2018
Thesis: A Social History of Coffin Construction and Carpenters in Ancient Egypt

University of Oxford, Oriental Institute
Mphil Egyptology 2013

University of British Columbia, Department of Classical, Near Eastern, and Religious Studies
B.A. Honors Ancient Near Eastern Archaeology and Ancient History 2010

RESEARCH AND TEACHING INTERESTS

Ancient Egypt pharaonic history; *chaîne opératoire*; ancient technologies; ethnoarchaeology; the impact of warfare and conflict on society; woodworking; wood anatomy; Egyptian coffins; museology; digital archaeology; 3D imaging.

SELECTED PUBLICATIONS

Forthcoming. Caroline Arbuckle MacLeod, "Transformations in the Materiality of Death: Rishi Coffins and the Second Intermediate Period" in *Proceedings of the Second Vatican Coffins Conference*, edited by Alessia Amenta and Mario Capozzo, Rome: Musei Vaticani.

Forthcoming. Caroline Arbuckle MacLeod, "The Creation of a Third Intermediate Period Coffin: Coffin EX 1997-24.4 in the Denver Museum of Nature and Science" in *Third Intermediate Period Coffins from the Denver Museum of Nature and Science*, edited by Michele Koons and Caroline Arbuckle MacLeod, University Press of Colorado.

Forthcoming. Caroline Arbuckle MacLeod, Christopher H. Baisan, and Pearce Paul Creasman "Analysis of the wood from a Third Intermediate Period Coffin at the Denver Museum of Nature and Science (EX 1997-24.4 A&B, EX 1997-24.2 A&B): identification and dendrochronology" in *Third Intermediate Period Coffins from the Denver Museum of Nature and Science*, edited by Michele Koons and Caroline Arbuckle MacLeod, University Press of Colorado.

Forthcoming. Kathryn Howley, Caroline Arbuckle MacLeod, and Pearce Paul Creasman "Artistic and textual analysis of the Third Intermediate Period Coffins at the Denver Museum of Nature and Science" in *Third Intermediate Period Coffins from the Denver Museum of Nature and Science*, edited by Michele Koons and Caroline Arbuckle MacLeod, University Press of Colorado.

Forthcoming. Caroline Arbuckle MacLeod, "Egyptian Coffins and Sarcophagi" in *All Things Ancient Egypt: An Encyclopedia of the Ancient Egyptian World*, edited by Lisa Sabbahy. Santa Barbara, CA: ABC-CLIO Inc.

SELECTED CONFERENCE PRESENTATIONS

2018. "The Religious Significance of Timber in Ancient Egypt" (Paper) The Annual Meeting of the American Research Center in Egypt. April 2018, Phoenix, Arizona.

2018. "Ethnoarchaeology in Egypt's "City of the Dead" (Paper) The Annual Meeting of the Society of American Archaeology. April 2018, Washington, DC.

2017. "The Layered Life of JE26204: the Construction and Reuse of the Coffins of Henuttawy" (Paper) The Science of Ancient Egyptian Materials and Technologies. Cairo, Egypt.

2017. "Transformations in the Materiality of Death: Rishi Coffins and the Second Intermediate Period" (paper) Second Vatican Coffin Conference. Rome, Italy.

2017. "The Significance of the "Rishi" Coffin in Egypt's Second Intermediate Period" (paper) The Annual Meeting of the American Research Center in Egypt. Kansas City, MO.

RECENT INVITED TALKS

2017. "Ancient Wood Identification and Sampling: A Practical Discussion" Stanford University, San Francisco, November 2017.

2017. "ARCE Preview: The Significance of the "Rishi" Coffin in Egypt's Second Intermediate Period". Egyptian Exploration Organization, OC. Los Angeles, April 2017.

2017. "People in Production: Accessing Ancient Egyptian Woodworkers" American Research Center in Egypt OC event: "Wepwaut: Ancient Technology: the People who made the Artifacts". Bowers Museum, Santa Ana, January 2017.

2016. "Crafting a Body for the Dead: Understanding the Production of Ancient Egyptian Coffins". Society for the Study of Egyptian Antiquities. Vancouver, September 2016.

2016. "The Construction of Rishi Coffins and a Reassessment of their Significance". Presented to: American Research Center in Egypt OC, Bowers Museum, Santa Ana, March 2016.

1.I: INTRODUCTION

When Howard Carter peered into the tomb of Tutankhamun, his dreams of making a substantial archaeological discovery and changing the face of Egyptology were realized. The objects in the tomb were indeed, "wonderful things". The beautiful and somewhat haunting golden death mask of the young pharaoh is one of the most recognizable objects from the ancient world, let alone Egyptian civilization. The tomb is still the only (mostly) intact royal burial found in the Valley of the Kings. The hord of dazzling objects demonstrates the potential for preservation in the desert tombs of Egypt with which no other ancient Mediterranean society can compete. Not only were the fabulous golden objects perfectly unspoiled, but the organic materials such as linen, flowers, and wood, were also found in almost an identical state to that with which they were laid to rest. While no other single tomb would provide such dense and substantial amounts of material, other burials and sites have revealed a similar level of preservation.

It is this rate and quality of survival that provides archaeologists working in Egypt with a unique set of tools for exploring life in the ancient world; however, it is also the reason that thorough scientific, material analyses have been slow to affect the discipline. There are countless preserved texts written on papyri, painted on tomb walls, and carved into monuments, and Egyptologists have long prioritized the textual record as the most effective and accurate window into the minds and practices of these ancient peoples. Moreover, the golden, painted, and inlaid treasures won the heart and imagination of explorers, archaeologists and the public. These glittering pieces have been treated as works of art to be admired, have been highlighted in museum collections, and considered most worthy of salvage during excavation. This focus on high status objects and texts has fostered an elite-centric view of society, based largely on a

surface analysis of the archaeological record. The incomparable preservation of objects in Egypt however, particularly as regards organics, has the potential to provide a degree of detail and insight into ancient cultures that is not possible in other areas of the world. It is for this reason that I have chosen to demonstrate how a close, technical analysis of wood working technology, based on coffins, can provide a less biased view into Egyptian society and its transformation over time. This study is able to provide a more nuanced understanding of individual lives, than is possible through textual and art historical analyses alone.

As with so many of the wonderful objects from ancient Egypt, the analysis of wooden coffins has so far been focused almost entirely on trying to understand the decoration of the final product. While these aspects may contribute to the overall significance of the object within society, they provide insight into only the final stages of production. Moreover, such studies necessarily ignore the undecorated objects, and the revelations that they may provide into a wider segment of society. A technological investigation sheds light on the full construction process, demanding an analysis not only of the choices of the owner and scribes, but also the craftspeople involved in creating these wooden artifacts. By placing these choices in their historical context, the larger ramifications and motivations for these actions are assessed.

All construction projects involve choices that are socially embedded, framed by a person's beliefs, their socio-economic position, and the method by which they learned their craft. Changes in religion, trade, politics and the environment that may have had an impact on any aspect of a social system have the potential to transform the technologies used in that society. It therefore stands to reason that an analysis of products can also reveal aspects of the social systems in which they were produced, and shed light on the lives and choices of the individuals who created them. Over time, as production changes, it is possible to question the reason for

these developments, and see the impact that large-scale transformations can have on craftsmanship and the everyday decisions of individuals. The following analysis examines the shifts in construction choices selected to produce Egyptian coffins over the pharaonic history of ancient Egypt. This *longue durée* view demonstrates how these objects become records of social interactions, religious transformations, and political and economic revolutions, built by the often ignored and invisible craftspeople involved in production.

COFFINS IN EGYPTIAN SOCIETY

The coffin was a particularly visible and important element of the funerary assemblage in ancient Egypt. The Egyptian belief system places significant emphasis on attaining and maintaining a good position in the afterlife, and on obtaining all the elements necessary to survive and flourish after death. The definition of a "good" afterlife changed throughout Egyptian history, but in every period, the coffin was seen as a particularly important piece of equipment (see section 4). Despite the changes in the meaning of the coffin, as well as its shape, decoration and construction, it remained the primary element of an elite burial from its introduction in the Predynastic Period (see chapter 4.II). Those who could scrape together enough capital to commission a coffin did so, even if all they could afford was a poorly constructed box of hastily cut boards. The Egyptian funeral included a long procession, and ceremonies were performed in public on the coffin, to ensure that the body of the deceased was protected, that it would reach the afterlife, and that it would receive the necessary sustenance (Taylor 1989:7–8; Ikram and Dodson 1998:15–21; Cooney 2015:269–270). Images of these events decorate private tombs, and demonstrate the visual aspect of the coffin. These containers would be seen by the community in which the deceased lived, and as such, their production and decoration was individual, and provided a means of competitive display. As a highly visible wooden object that

was used by different segments of society, in all regions of Egypt, and during all periods, the coffin is the ideal object to witness transformations in production that might be affected by shifts in religion, politics, and society. As a funerary object, it was placed in dry desert tombs, and so also survived in more significant numbers, than other pieces of furniture, permitting detailed analysis. For this reason, the coffin was selected as a case study in order to examine the development of woodworking technology and the choices of craftspeople throughout the pharaonic history of Egypt.

THE STATE OF THE FIELD

The study of technology has long been an aspect of anthropological and archaeological theory. In the 1960s, processual methods for examining ancient cultures replaced culture historical approaches. Focusing on technological processes and decisions made during production was seen to be a way to make analysis more exact, objective, and scientific. Scholars, particularly Lewis Binford, believed that technological "behavior" could be studied systematically as a direct response of humans to their environment (for example, Binford 1973; Bamforth 1986; Gamble 1986; Kelly and Todd 1988; Nelson 1991). Archaeologists and anthropologists soon realized, however, that technologies developed for multiple reasons that included but were not limited to adaptations to the environment. It also became clear that we could not easily divorce the study of technology from other aspects of society such as religion, politics, long-distance relations, and education, leading to decades of work on the subject and a number of different approaches (for example, Lemonnier 1992; Sassaman 1993; Schiffer 1992; Schiffer et al. 2001; Skibo and Walker 2002; Miller 2009). This abundance of theory, largely related to prehistoric societies, has only recently begun to affect the fields of Classical and Near Eastern history and archaeology. As noted, this is largely due to the fact that scholars working in areas where historical archaeology is

possible have largely privileged textual sources, perceiving them to be more reliable than interpretations of physical remains (Andrén 1998:2). In addition, many theoretical approaches to archaeology are presented in such a complicated, convoluted fashion, that they are inaccessible for Classicists, Egyptologists, and historians who are unfamiliar with such scholarship. As a result, many Egyptologists remain unaware of the potential information that could be gathered from their rich sources of data if integrated into rigorous anthropological and archaeological approaches. The incredible preservation of Egyptian material could have the ability to shed light on social practices that most archaeologists believe to be lost forever; nevertheless, only a handful of relatively recent contributions to the field of Egyptology acknowledge the social importance of technologies, or provide a theoretical or methodological model for assessing craftsmanship.

Within the last two decades, work has been done to show that by questioning the process of production, particularly aspects of change and innovation, we can understand much more about the decisions made by groups of people in ancient Egyptian society. David Wengrow, in his work, *The Archaeology of Early Egypt* (2006), highlights the social importance of technologies, and their systemic nature. He provides a uniquely insightful discussion of stone tools and objects from Egypt's Predynastic Period, using them to analyze early Egyptian history and the lives of the people in existence at this time. Likewise, in his book *Ancient Egyptian Technology and Innovation* (2013), Ian Shaw examines a handful of crafts to see how they changed over Egypt's history, or how they were originally introduced into Egypt. It contains many insights into how ideas about crafts developed, and his chapter on chariot construction, in particular, highlights the need to think about people and technical choices (92-109). Many of Shaw's somewhat general observations will be valuable for a complete study of any one

technology, and show the need for a more in-depth analysis of each of the crafts that he summarizes. Andrew Shortland's (2001) edited volume on *The Social Context of Technological Change*, provides additional case studies that demonstrate how an integrated analysis of people and technologies could inform our views on crafts, the people who made them, and the society in which they lived. Only a few of these chapters focus on Egypt, but these demonstrate how archaeological theory can be easily integrated to assess the rich evidence this region can provide. Willeke Wendrich, in *The World According to Basketry* (Wendrich 1999), provides a unique example of a detailed, theoretically sound analysis of a single technology that takes into account the actions of the craftspeople. In her work she emphasizes the importance of ethnographic comparisons for understanding the movements of weavers during each step of production. In the collected volume, *The Arts of Making in Ancient Egypt* (Miniaci, García, and Stauder 2018), a number of the papers do include scientific and theoretical methods for the study of Egyptian crafts. The chapters offer a snapshot, however, and not a thorough analysis of any one craft. None of these more theoretically informed approaches have, as of yet, made their way into the discussion of woodworking or Egyptian coffins.

Nicholson and Shaw's *Ancient Egyptian Materials and Technology* (2000), provides a comprehensive vew of all of the technologies used by the ancient Egyptians. It is the most frequenly cited reference work on the topic, providing an introduction to the use of each material and production technique. The chapter on wood, provides a useful overview of the types of timber used by Egyptian carpenters and where it comes from, as well as the most frequent techniques and steps used in woodworking (Gale et al. 2000). Although an exceptionally valuable contribution to the field, the objective of this volume is not a critical analysis of the social significance of materials. Geoffrey Killen's short book from the Shire Egyptology series,

Egyptian Woodworking and Furniture (1994), is a more simplistic overview of his contribution to the Nicholson and Shaw volume, but at the time of its publication provided a much needed update to Joachim Śliwa's *Studies in Ancient Egyptian Handicraft: Woodworking* (1975). Killen's updated version of his three volume *Ancient Egyptian Furniture* (2017a, 2017b, 2017c), provides a more detailed assessment of furniture construction over time, but largely serves as a catalogue of objects and technical descriptions, without providing significant contributions to an assessment of the socially entangled status of these objects. Cheryl Ward's (2000; 2006) work on boatbuilding in ancient Egypt takes into account the materials used, construction techniques, and the social significance of the finished product, but is of course limited to ship construction.

A number of works have also discussed the development of Egyptian coffins, though mostly in regards to decoration. John Taylor's (1989; 1999; 2003; 2009) extensive work provides valuable information about how to understand the religious and social significance of the materials, decoration, and completed objects, but again largely overlooks the contribution of the craftsmen. His articles on the coffins from the 22nd to 25th Dynasty (2003, 2009) are particularly valuable for highlighting the "north-south" divide present during these dynasties, as it was throughout Egyptian history. Similarly, Kara Cooney's (2007; 2011) work on coffins examines the social and economic value of the complete object, its materials, and the significance of reuse. While Cooney acknowledges the value that could be contributed by craftsmen, she does not explore the steps involved in construction, or their significance. Harco Willems (1988), Günther Lapp (1993), and Marcel Zitman (2010a), discuss the paleography of Middle Kingdom coffins. This is useful for understanding chronology, but these scholars do not acknowledge the materiality of these objects, which could have greatly assisted in their attempts to understand patterns of use and the production of these pieces. In a separate work, *The Coffin of Heqata*

(1996), Willems does provide a detailed analysis of this single coffin, including construction; however, his descriptions are clearly not based within a woodworking framework, as he overlooks several crucial details of construction, including joint types, and does not return to the signficance of these choices in his conclusions. An early work that does discuss the construction of mostly Middle Kingdom coffins is the two volume *Sarcophages antérieurs au Nouvel Empire,* by Pierre Lacau (1904, 1906). While exceptional for its inclusion of carpentry, it is unfortunately not particularly precise or accurate, nor does Lacau provide wood identifications. Death *and the Nile: Uncovering the Afterlife of Ancient Egypt* (2016), edited by Julie Dawson and Helen Strudwick, is unique in its discussion of coffin construction and materials, though it discerns mostly general trends, with a small number of detailed examples. Despite the limited focus of this work, it clearly acknowledges the significance of construction choices, and the socially embedded function of these objects.

These scholars have laid the groundwork necessary for a complete analysis of wooden objects within ancient Egypt, and a more thorough discussion of each of these works has been integrated into the following chapters. Archaeologists and anthropologists have shown how technologies are deeply embedded in society, and have provided methodological approaches for accessing the dynamic aspects of production. Egyptologists have emphasized the complicated nature of materials in ancient Egypt, and have acknowledged that a comprehensive technical study could provide potential insights into Egyptian society. The steps and tools used in ancient coffin construction have been described, and the significant value of the completed objects has been analyzed. In this study, I will combine all of the valuable insights provided by these scholars with new data on woodworking and the completed objects. I will take into account not only the religious and cultural importance of coffins and the timbers used in their production, but

also examine the actions and choices of carpenters. All of these aspects combine to produce a complete analysis of the significance of the technological production of coffins in ancient Egyptian society.

CHAÎNE OPÉRATOIRE AND TECHNICAL CHOICE

Trying to arrive at a definition for the term "technology" poses a challenge because of its complicated and systemic nature. In her discussion of the Greek roots for the term "technology", *tekhnē* and *logos*, Marcia-Anne Dobres (1991) emphasizes that the "art, craft, skill, and methods" as well as the "reason" and knowledge about these skills must be combined to create a complete definition (50-53). This is similar to the use of the term by other scholars in the field. Pierre Lemonnier, emphasizing production, notes that technology involves "all aspects of the process of action upon matter" (1992:1), while Ursula Franklin (1992:6) suggests that technology is simply "ways of doing". Both of these approaches are combined in Robert Merrill's (1968:576) definition of technologies as "bodies of skills, knowledge, and procedures for making, using, and doing useful things". Production, on the other hand, is defined more narrowly by Heather Miller as "the process of fabrication or creation" (Miller 2009:5). Considering these approaches, I understand technological production to refer to the way that an object is created, as well as the knowledge that made this creation possible. For this project, I believe that the best method for retrieving this information is by attempting to understand the *chaîne opératoire* of coffin production.

A group of French sociologists have contributed a number of volumes to concepts relating to the *chaîne opératoire,* the "chain of operations", necessary to create an object. Pierre Lemonnier (1992:26) has defined this concept as the "series of operations involved in any transformation of matter (including our own body) by human beings". This means not simply

suggesting that a step in the creation of a piece of furniture involves the nailing of one piece of wood to another, but also observing the way the hammer is held, how the hand moves to swing the hammer, how many times the nail is hit, and so on, until you have accounted for every action. Lévi-Strauss (1976:11) and Lemonnier (Lemonnier 1992:17) stress that at every step and in every movement, a choice is being made. Within a specific community these choices are repeated, often subconsciously. As Lemonnier notes, "it is as if, during its history, a society, for unknown reasons, had come to rely on one particular technique, even though others were potentially available to it that could have produced the same kind, or nearly the same kind of result. It is this open possibility of developing two or more alternative techniques at a given time in a society's history which leads me to use the term 'choice'" (1992:17–18). These choices exist within a specific, cultural context. The reason a certain method of construction is used could be based on the traditions of a specific society, passed down through apprenticeships or other methods of learning. How and why individuals arrive at specific choices has been the topic of much discussion, and understanding why certain coffin construction choices were selected is the goal of the current project.

Marcel Mauss (1968 [1934]) has suggested that once societies develop a certain method for accomplishing a task, they pass this method, including how to move the body, on to the next generation through a form of apprenticeship. The method of moving the body, repeated numerous times, becomes habitual. It is then very difficult to teach the body to move differently. He refers to this concept as "les techniques du corps", or, "techniques of the body" (Mauss 1968 [1934]:365). Mauss realized that this also held true for concepts that were not explicitly taught, but simply subconsciously absorbed. By watching how people function in society, the next generation learns how to act (1968 [1934]:368). Mauss called this the *habitus*, a concept that was

famously developed by Pierre Bourdieu (1977). Bourdieu describes the *habitus* as a structuring background that effects which choices a person is likely to make. As each person grows up in a certain cultural context, they learn, both by design and unconsciously, the beliefs and actions that their culture views as acceptable or unacceptable, correct and incorrect. This creates the background against which decisions are made (Bourdieu 1977:72). Just as with Mauss, Bourdieu suggests that the *habitus* can also refer to the practiced actions taught within a society that become second nature, like how to swing an axe, or saw a piece of wood. Willeke Wendrich (2012:2) has referred to these learned actions of the body as "body knowledge", acquired after many years of learning and repeating the same movements. In chapter 2.I, I will explore how modern and ancient carpenters acquire this knowledge, and how it relates to the ancient Egyptian education system.

A group of people who work together on the same type of craft, teaching each other their techniques, and passing their "body knowledge" on to the next generation is referred to as a "community of practice" (Lave and Wenger 1991). A community of practice has a similar way of doing and thinking. Those senior in the society will teach their techniques to a new group of initiates by explicitly telling their apprentices how to complete a task, by allowing them to watch, or, usually, through a combination of the two. By participating within the community, and practicing their craft, the new initiates develop a similar *habitus* to those who taught them. As Etienne Wenger (2008:227) notes, "communities of practice constitute elemental social learning structures". This means not only the methods deemed correct for completing a task, but also the etiquette and values held by the community; however, even as these individuals are being taught a certain method and design, they are not infallible, nor are they blind to forces and individuals beyond their immediate social group. While a community of craftspeople may design and follow

a basic chain of operations for the creation of an object, mistakes, imagination, and outside influences can alter an individual's practice. While these shifts are usually gradual, the sudden loss or availability of access to materials or dramatic changes in society that demand a renegotiation of values can force relatively immediate changes in practice. These changes must, however, still align as closely as possible with the remaining structures of the community's *habitus* (Wenger 2008:233).

Every choice that can be identified within the process of production has the potential to reveal a much wider set of beliefs and ideas than may be immediately understood; they can reveal some of the values that have become ingrained within the *habitus*. Pierre Lemonnier suggests that there are three types of actions, in particular, that could reveal information about the craftsmen, their specific methods of creation, and the society in which they live. He refers to these aspects as "social representations". These include the "totally unconscious mental operations" learned through countless repetitions. For example, the exact rhythm of actions and micromovements that experienced craftsmen use but have difficulty explaining verbally. The second category of social representations is "specific technical knowledge" – the operations and facts deemed necessary to complete a functional object. The last category "concerns the immediate informational content of technological actions". The final category is the conscious or unconscious use of symbols, color, and what we might call "style", that have a certain meaning within a specific society (Lemonnier 1992:79–81).[1] Why certain materials are chosen or avoided, for example, could reveal beliefs about taboos, or religious associations with specific products.

[1] My use of the term style, simply refers to a specific, visible, "way of doing" (Shennan 2012:73) when other options were available that would not have disrupted the ability of an object to fulfill its basic function. Trying to rigidly separate style and function, however, has led to problematic discussions, since often the function of objects is not what we would consider practical. Changing the style of a talisman, for example, may cause it to no longer function within its cultural context. (For more information about this debate, see Dunnell 1978; Bamforth 1986; Bettinger, Boyd, and Richerson 2003; Shennan 2012).

This is particularly evident in chapter 3.I, where the relgiious significance of timber is discussed. The selection of materials and styles can therefore reveal the values of a society.

Value, in this context, can best be defined as "conceptions of what is ultimately good, proper, or desirable in human life" (Graeber 2001:1).[2] Nancy Munn (1992:4) has shown that "value emerges in action" as long as society acknowledges that action to be meaningful. The first actions associated with an object are those used in its creation. As noted, the action of selecting a certain type of material for construction may suggest that this specific material has religious meanings that could add value to the completed object. For example, based on textual analyses, the color red, in Egypt, was associated with the desert, heat, passion, solar gods, and men (Pinch 2001). Using red to decorate an object could therefore increase its value by associating it with powerful aspects of Egyptian society. Each choice and resulting action made during the production, use, and reuse of coffins could therefore reveal the values of society. The challenge then becomes how to understand which actions are viewed as meaningful and align with the structures of the *habitus*.

It is necessary to have a detailed understanding of the cultural background of a community of practice in order to be able to understand all the possible choices, why one was selected, and how they might align with or be adopted into the *habitus*. André Leroi-Gourhan, who completed some of the earliest work on an anthropology of technology, describes the external and internal milieus that could effect technical action (1945). The external milieu refers to the aspects outside of the body that effect possible choices (1945:336). These include available resources, environmental factors, the interactions with other communities of practice, and foreigners. The internal milieu are those aspects that are part of the human body, the physical

[2] For an in-depth discussion of the theory and history of approaches to accessing value in archaeology, see John Papadopoulos and Gary Urton's introduction to *The construction of value in the ancient world* (2012:1–47).

actions of which one is capable, as well as the cultural and technical aspects of the *habitus*. Leroi-Gourhan refers specifically to the technological knowledge and traditions within the internal milieu as the technological milieu (1945:340). In order for innovations to be accepted and added into the technological milieu, Leroi-Gourhan suggests that they have to be able to link coherently into the existing mental structures. If a new method, whether introduced via the external or internal milieu, cannot link in to the current traditions, it is not adopted. This suggests that for some reason, it goes against the acceptable structures that have built up the *habitus*.

Related to this concept is Everett Rogers work on how new innovations are adopted and diffuse through society, described in *Diffusion of Innovations* (1962). Rogers explains that new techniques must pass through five steps as they are adopted and begin to diffuse through populations. He has named these steps, "(1) knowledge, (2) persuasion, (3) decision, (4) implementation, and (5) confirmation" (1962:20). Through this process, individuals first become aware of the innovation (step 1), form favorable opinions towards the innovation (step 2), decide to adopt the innovation (step 3), and use the innovation (step 4). If the decision proves favorable and is reinforced, than the innovation is kept (step 5) and others may see and choose to adopt the innovation as well (Rogers 1962:20–21).

Rogers further states that the rate at which innovations are adopted and diffuse through a social system is based on an additional five factors: Relative advantage, compatibility, complexity, triability, and observability (1962:15-6). If the innovation has an obvious advantage to what was previously available, is compatible with the established values of a society (aligns with the established structures of the *habitus*), and is not overly complex, it will likely diffuse quickly. Of course, the visibility of the innovation is also an important factor as it has a substantial effect on an individual's ability to learn about it - step 1 in the decision to adopt it. If

individuals were able to test or experiment with an innovation before adopting it, it would also diffuse through society at a faster rate. Each of these elements has an impact on the choice to adopt a certain style or technique of manufacture, based on a number of social factors. While this model is useful for understanding all innovations, it is particularly useful for explaining the shift to anthropoid coffins, the topic of chapter 4.IV.

With so many factors at play, changes in technology are often gradual, building and transforming the tradition of production one step at a time. Antony Snodgrass (1980), has, for example, outlined the slow process of the transition from using copper alloy to iron at the beginning of the Iron Age in the ancient Mediterranean. The full transition would mean a new technical knowledge, movement, and meaning. Ancient Egypt is a society that particularly valued tradition, and believed that things had to be made, created, and illustrated in a certain way in order to be effective. There are, however, many eras of innovation, and the changes in the way that coffins are constructed throughout space and time helps to illustrate the transformations in politics, religion, and moments in history when shifts in the internal and external milieus forced changes that would become embedded within the *habitus,* as described in detail in section 4.

In this project, I have combined these different approaches of thinking about technology to access the choices of woodworkers over the long history of pharaonic Egypt. I will examine the steps in production from the selection of materials through to the final decoration, religious activation, and possible reuse. By aligning these technological choices with Egyptian social, political, environmental, and religious history, I will attempt to understand the motivations behind these choices: why certain innovations were possible, why they were considered valuable, and how they in turn inspired changes in Egyptian society. What emerges is a glimpse into the minds of craftspeople, living, working, and adapting to the large scale changes in Egyptian

culture that were largely out of their hands. The embedded role of technologies in society is revealed through this careful analysis of Egyptian coffins.

FROM THEORY TO METHOD AND PRACTICE

To move beyond theory, and attempt to understand the actions and *habitus* of the carpenters who were laid to rest thousands of years ago, I have incorporated a number of methodological approaches. Having begun this project with only a rudimentary and theoretical understanding of woodworking, I quickly became aware that I would need the assistance of professional carpenters. I therefore worked with individuals currently living in Cairo's so-called *City of the Dead,* an experience described in chapter 2.I. These talented craftsmen discussed their lives with me, revealing how they learned their craft, and what is involved in obtaining the *body knowledge* necessary to produce wooden objects. With their assistance, I gained an understanding of what choices and movements are significant, and how they might be visible in completed objects. As they described how their practice has changed even within their lifetime, the impact that shifts in religion, politics, and society could have on traditional crafts also became apparent. In addition to this ethnoarchaeological approach, my work with the woodworkers inspired me to experiment with the craft myself, and to test different methods to analyze modern and ancient tool marks. My observations and discussions with these carpenters led me to examine the religious significance of wood, and impressed upon me how quickly traditions can change due to shifts in society. In this chapter, I emphasize the value of not only ethnoarchaeology and experimental archaeology, but also the significant contributions that interdisciplinary collaborations can afford.

In my discussions with woodworkers, it quickly became apparent that the selection of wood is one of the most important aspects of woodworking technology. Unfortunately, this is

also an element of coffin analysis that is rarely published or investigated. It was therefore necessary to complete my own anatomical study of samples from wooden coffins to ensure that I had reliable, identified examples from each period of Egyptian history. In chapter 2.II, I discuss the timbers used in coffin production, aspects of their wood anatomy, and methods for sampling and examination. These results are then integrated into the discussion of coffins in section four.

In section three, I discuss the social and religious background that is necessary for contextualizing a number of the choices made during coffin construction. I begin to address the ancient evidence that is currently available for the study of the religious significance of wood in ancient Egypt, as well as the lives and tools of Egyptian woodworkers. Chapter 3.I highlights the clear significance of timber in ancient Egyptian beliefs. Different timbers were associated with particular gods and underworld concepts. This chapter develops out of a new translation of a Third Intermediate Period spell that lays out the different woods and their importance within the context of the coffin. Such information is particularly important for understanding one aspect of the *habitus* that may have guided construction choices. In the conclusion, this textual information is compared to the timbers within the archaeological record, and the influence that the technological development of coffins had on religious beliefs and trends is made apparent.

The discussion then shifts in chapter 3.II to the evidence currently available for ancient Egyptian tools and woodworking techniques. These technical aspects provide the necessary background for understanding the production choices available to craftspeople at different points in Egyptian history. An overview of the general chaîne opératoire used for the production of coffins is also provided.

In chapter 3.II, I discuss the position of craftspeople in Egyptian society, focusing on woodworkers. Contrary to popular belief, craftsmen were not a homogenous lower class.

Evidence for a varied hierarchy of workers exists, demonstrating that skilled individuals were highly valued and appreciated by the Egyptian elite and royalty. This evidence helps to demonstrate the existence of both attached and household workshops. In light of this information, it becomes apparent that the coffins discussed in section four were made by individuals who would have belonged to different social circles and communities. This assists with our understanding of the access to materials, the organization of craft technology, and the interactions between communities of practice.

In section four, the detailed investigation of the coffins is discussed. As noted, I chose coffins to assist with the analysis of woodworking technology over time due to their tradition of use throughout Egyptian history and in all regions. The chapters are divided based on the significant shifts in coffin development, which do not line up precisely with the standard chronological divisions used by Egyptologists. Within each chapter, the historical context is first described, to better appreciate the background against which construction choices are being made. A thorough and detailed examination of the techniques used to produce the coffins follows, taking into account timber species and decorative materials, joining methods, and tool marks. The combined significance of these construction choices within their historical context is then assessed.

As emphasized in chapter 4.I, it is not my goal to present a definitive or exhaustive analysis of coffins. Indeed my artifact selection was largely forced by my ability to gain access to specific examples. In the six chapters that make up section four, I instead endeavor to include examples from throughout time, in different regions, and from different levels of society, in order to attempt to account for the variety of construction choices present in each period. The irregular survival of coffins has skewed the sample towards the Theban elite, while the practice

of reuse, as discussed in chapter 4.VI, has left scholars uncertain of just how representative the extant evidence truly is. It is therefore my objective to provide an overview of possible choices for each period, to be able to understand what was standard, and what can be considered unique. I hope to start a conversation regarding the relationship between production and carpenters, coffin owners, and shifts in funerary religion. As new coffins are published and discovered, additional construction options will no doubt be revealed.

In the conclusion, it is possible to step back from the details to view the larger patterns of construction choices throughout Egypt's history. It becomes clear that many of the previous assumptions about knowledge networks and the significance of woodworkers must be reassessed. As seen with the modern carpenters, the changes in Egypt's politics, religion, and social hierarchies had a dramatic and lasting impact on construction styles and tradition. In periods of crisis, when the administrative and political centers destabilized and textual evidence was limited, the people of Egypt continued to exist, and carpenters continued to make coffins. These dramatic changes in society often affected the availability of materials, and the economic support systems that funded the production of high quality crafts; nevertheless, woodworkers adapted their techniques to build objects that aligned as closely as possible with their beliefs and what they could salvage from traditional approaches. After the reunification of Egypt, innovative adaptations that had become popular during intermediate periods often remained, and became the new, official system of production. It is apparent that the values of materials often transformed during periods of scarcity, which seems to have had an affect on the religious significance of these products as well.

A social history of Egypt emerges through the *longue durée* analysis of this one object type. The systemic nature of technologies is evident, as changes in production practices are

aligned with religious, political, and social shifts. Carpenters come to the forefront of the discussion, giving primacy to a group of individuals who are often overlooked. By assessing the materiality of coffins alongside their decoration, the position of these objects in Egyptian society becomes much more complicated, and the true extent of their use and significance is readily apparent. The value of technological analysis is not simply in understanding how things were made, but why they were made in a certain manner. These choices help to create a bottom-up history that is not dependent on the speeches and monuments of kings, and goes beyond a basic appreciation for art and "wonderful things".

2.1: UNDERSTANDING WOODWORKING AND WOODWORKERS: ETHNOARCHAEOLOGY AND EXPERIMENTAL ARCHAEOLOGY

The first step in attempting to understand the context of construction choices is to discover which elements are significant and might be the most effective for bearing witness to technological change, and its relationship to social shifts. Possessing only a theoretical knowledge of woodworking, I began by seeking the assistance of expert carpenters. My experience working with these individuals guided the rest of my analysis. Ethnoarchaeology is an approach that involves the observation of modern communities in order to consider questions about how people interacted with materials in the past. Experimental archaeology refers to the efforts of the scholar to use tools or objects similar to those from the ancient world in order to experience and experimentally reconstruct specific practices. Both of these approaches therefore use comparisons or analogies from the present to understand the past. The application of these methods has been criticized, but the problems seem to arise largely from a misunderstanding of how they should be incorporated, rather than from fundamental failings of the sub-disciplines. I consider my involvement with woodworking, both first and second hand, to be instrumental for my project. My observations helped me to gain a better understanding of the choices made during production, and to consider those that are accessible through material remains.

ETHNOARCHAEOLOGY: THEORY IN PRACTICE

The practice of ethnoarchaeology has been criticized since its inception and has most recently come under attack by archaeologist Olivier Gosselain as a series of "analogies without borders", and a sub-discipline without a precise theory or methodology (2016:217). In this article, Gosselain discusses that a lack of an overarching approach to the subject, and the too frequent

over-generalized and borderline racist assessment of modern cultures has led this field to be not only unnecessary, but also dangerous. Gosselain is not incorrect. There have been, and there likely always will be, ethnoarchaeological projects that connect the modern community too closely to the ancient analog. These projects fall into the trap summarized by Richard Gould and Patty Watson as, "a simple and direct reading of the past from the present" (1982:442). I disagree, however, with the idea that the careful and appropriate application of ethnoarchaeology cannot lead to valuable and ethical research projects. Moreover, the fact that there is no absolute methodology in ethnoarchaeology should be seen as one of its benefits, rather than a weakness. Just as each society is unique, the manner in which analogies can be used to compare ancient and modern analogs must be assessed on a case-by-case basis.

In the introduction to David and Kramer's *Ethnoarchaeology in Action* (2001:2), the authors emphasize that this approach is neither truly a theory or method, but a flexible "research strategy" used to understand material culture in both the living context and its entrance into the archaeological record. These new understandings can then be used to "inform archaeological concepts and to improve interpretation". Modern ethnoarchaeologists are consistent in their assertion that this work is not simply studying modern cultures to understand ancient cultures, but rather the study of the modern interactions with material, to assess how archaeological remains may have been manipulated in the past (see further, Wendrich 2013:191). By constantly bringing this work back to the ancient material, they argue that it is possible to avoid making too many assumptions about the similarities between past and present cultures. This is true for the two main uses of ethnoarchaeology: drawing direct relationships between the ancient and modern evidence, and using modern observations to inspire further enquiry into the past. In both

cases, however, it is necessary to carefully consider how the ancient context is being assessed, and to always work to prove, and not assume, analogies with modern societies.

The discussion surrounding ethnoarchaeology is very similar to that regarding the use of analogy in general, which started nearly 60 years ago. As noted, both ethnoarchaeology and experimental archaeology use types of analogies. In archaeology, the use of analogy is based on the belief that by comparing a well-known process or object to initially unknown ancient artifacts, we can interpret the form and function of the material record. As modern archaeologists were not present to witness the events, interactions, and processes they study, all interpretations in archaeology are based on the use of analogy in some form. The explicit construction of analogy, however, became part of the middle range theory used by processual archaeologists in the 1960s in an attempt to make archaeology more scientific (Trigger 2009:511–519). Such a change was seen as necessary because the uncritical use of analogy had led to erroneous, racist assumptions about non-western and prehistoric cultures. The classic example of this misuse is the work of William Sollas (1924) who believed that so-called "primitive" individuals were at the same evolutionary level as prehistoric peoples. He therefore believed that by witnessing the "Bushmen, Eskimo, and Red Indians", he could easily witness the practices and beliefs of the extinct Mousterian culture (1924:599). The leading proponent of the more scientific, processual approach was Lewis Binford, who argued that analogies should be used only to generate hypotheses that could be tested against the archaeological record (1967). Following this model, Binford argued that he was therefore able to follow the scientific method to compare modern and ancient societies and come to more positivist conclusions. Although much more refined, Binford's approach was also imperfect.

Alison Wylie (1985) pointed out that many flaws in Binfords' projects arose because the aspects of the modern source and the ancient analog that were being compared, were still not, in fact, comparable. For instance, in his analysis of the Toothsome site in Illinois, Binford found a number of pits. He compared the form of these features to modern "smudge pits" used for hide smoking, and inferred that the ancient pits must have had a similar function. While this interpretation seems reasonable so far, Binford then extended his analysis. He noted that in all the ethnographic comparisons, smudge pits were used by women, while pottery in these modern communities, was also seen as a feminine occupation. He then hypothesized that the Toothsome smudge pits were also used by women, and noted that he might therefore "expect stylistic variation in smudge pits to vary directly with stylistic variation in other female-produced items such as ceramics" (Binford 1967:8). In extending his analysis to gender roles at Toothsome, he therefore assumed a cultural similarity in pottery production as well as hide working, which had not been attested through archaeological evidence, and so his analogous reasoning was flawed.

Wylie (1985:101), following the lead of Robert Ascher (1961), argued that in order to come to more accurate interpretations, archaeologists had to assess carefully both the modern and ancient elements that were being compared and ensure that the inferences were reasonable. To do this, she argued that archaeologists should base their work on formal and relational analogies. In "formal analogies", archaeologists use a "point for point assessment" of both the ancient and modern artifacts, looking for the similarities as well as differences to understand the extent to which the function of the objects was similar. To extend this analysis, archaeologists should take "relational" features into consideration. In this process, Wylie notes that the archaeologist should consider how the form is related to the function. If these aspects are closely related, the interpretation is likely to be stronger (Wylie 1985:94–95). For instance, if a modern

and ancient tool both had yellow handles, a feature unrelated to their use, then suggesting they had a similar function is not a strong analogy; however, if they both had long metal bits that came to a beveled edge, useful for chipping away wood, suggesting that they were both used as chisels would be a stronger analogy.

Wylie's reaction to Binford, and the understanding that he is assuming too much cultural similarity between his source and subject, seems to also be at the heart of Gosselain's (2016) attack on ethnoarchaeology. The answer here, too, is therefore not to simply get rid of the approach, but to adhere to a critical consideration of the elements that are compared. Wylie's suggestions regarding formal and relational analogies are particularly helpful for interpretations based on direct relations between objects and processes. It is difficult, however, to be certain that such positivist explanations are correct, and has led some scholars to argue that ethnoarchaeology should only be used to inspire further inquiry. Wendrich (2013:191) has instead suggested that scholars should acknowledge "a range of possible interpretations" to avoid creating overly simplistic explanations. This acknowledgement also stresses that archaeologists can never be certain about interpretations. Ethnoarchaeology is simply a way to be explicit about using analogies in research to come to the best possible explanation based on the currently available evidence.

Wendrich also differentiates between these direct comparisons and analogous reasoning, which extends interpretations to more indirect inferences about the similarities between cultures. She argues that with this aspect the approach must be done "with great care, and within its proper context" (2013:192), an argument also emphasized by Ian Hodder (2013). Such reasoning is especially problematic when working with "traditional" practices or crafts, such as woodworking, when there might be an assumed continuity between modern and ancient

practices. Part of the need to keep this approach flexible is therefore to allow the creation of different types of enquiry, based on the hypotheses stimulated by observing modern cultures (see further Wendrich 2013:192, 206). Attempting to force ethnographic analysis into standard laws is in itself assuming that the there is enough similarity between cultures that set rules could be applied to all enquiries in all communities. The only "law" that can be applied is to relate each assumption to the ancient evidence, and never to assume similarities between modern and ancient cultures. In my work with modern carpenters, my goal was to observe the production of wooden objects, and to understand the relationship between the individual and the crafting process. I wanted to witness the *chaîne opératoire* of the construction of wooden objects in order to discover if there were crucial steps in production that I might overlook when examining the ancient materials. My observations then led to experiments to help assess ancient tool marks as well as the associated dynamic actions used for their production.

The final, but perhaps the most important aspect of ethnographic research, is the ethical consideration. Whenever scholars work with human subjects, there is danger of misrepresenting aspects of a culture, of publishing overly sensitive and personal information, and taking advantage of a community or individual for the sole benefit of the academic. Thankfully, institutions usually require their affiliates to submit their projects to an institutional review board to evaluate the ethical ramifications of the work. Such a requirement by itself forces the researcher to consider the consequences of his or her work. This project was submitted and approved by the institutional review board at the University of California, Los Angeles. The participants in my project were made aware, in English and Arabic, of my research questions, and how the information they provided would be used.[3] The woodworkers were enthusiastic

[3] I am very grateful for the assistance of my colleague Amr Shahat, who helped me with my Arabic translations for both my paperwork, and with my in-person interviews.

about this project, and were willing to contribute to the research out of an interest in the subject. They declined the offer to be made co-authors in this work, finding the suggestion somewhat absurd, as they emphasized that they were not scholars. After I had finished gathering data in Cairo, I also ensured that fellow visitors and those with an interest in traditional crafts were made aware of the workshop with which I interacted, and have brought them considerable business. I waited until after my interviews, to ensure that such benefits did not affect responses of the subjects. In this way, I hope that we have both benefitted from our work together.

WOODWORKING IN CAIRO'S "CITY OF THE DEAD"

The goal of my work was to observe the construction of wooden objects in order to better understand the process of production as well as the relationship between the carpenter, timber, and the final object. I chose to work alongside the carpenters in Cairo's "City of the Dead", as they seemed to be the most appropriate community to compare to the ancient Egyptian craftspeople, according to Wendrich's suggestions for selecting comparative communities (cf. Wendrich 1999:18). The men I worked with came from families of woodworkers who continue to construct using hand tools and joining methods similar to those used by the ancient Egyptians. They have experience working in the same type of environment, and are familiar with the local timbers that have grown in Egypt for millennia. These individuals are also part of the *Hands On* project, an effort to support local craftspeople living in this area of Cairo.[4] Their association with this project, specifically designed to make connections with tourists and artists, suggested that these carpenters might be interested in becoming part of my work, as indeed they were.

The "City of the Dead" is the colloquial English name for what most Cairenes refer to as, *el-Arafa / el Qarafa*, which translates as "the cemeteries". This is an area of modern Cairo that

[4] For more information, see http://www.undeadcrafts.com.

consists of groups of cemeteries that cover roughly five square miles. Many of the tombs take the form of large superstructures, built over underground burials, constructed to house families during a mourning period for the dead (Nedoroscik 1997:1–2). The earliest mausoleums date back to the Muslim conquest of Egypt from 639-642 AD. Since that time, hundreds of simple and elaborate tombs and mosques have been constructed, expanding from the base of the Moqattam hills, now surrounded by busy roads and the Salah Salim highway. From nearly their initial introduction, individuals began to set up residence in the tomb superstructures, and the numbers of inhabitants have continued to rise through the centuries. Current population estimates are difficult, as the Egyptian government does not officially recognize these communities. In the last decade, numbers between 500,000 and 3 million have been suggested (Ansah 2010; Jacobs 2014). Larger constructions and apartments now rise among the tombs, and workshops and makeshift storefronts illustrate how the site has been adapted for work and life. Close to the Qaytbay mosque, in particular, are a series of workshops belonging to glassblowers, silver smiths, and woodworkers. It is here that I began my work.

To study the woodworkers, I followed the methodologies suggested by Pierre Lemonnier (1992) and Willeke Wendrich (1999). I examined the workshop and tools as well as the materials, and asked the woodworkers a series of questions from a set questionnaire. I asked how they worked, about their materials, how they learned their craft, and what they thought was the most important element that a student needed to know about woodworking. I then watched as they constructed a wooden object, or an element of an object, taking particular consideration of the steps of construction, and the movements of the woodworkers as they used particular tools. I was given permission to film these processes, so that I could watch each step repeatedly afterwards, and describe the movements in detail (see further, Wendrich 1999:71–73). After

witnessing these processes and interviewing the woodworkers, I considered how I could use these observations to better understand ancient practices.

Ashraf

The first workshop I visited with a few of my colleagues, belonged to Ashraf.[5] His workspace consists of a small brick room, with a narrow added courtyard, framed by walls of scrap wood. In the center of this room is a wooden workbench, and a small side table on which rests an electric saw. The walls of the workshop are lined with patterns for wooden furniture, or with hooks and shelves for both electric and more traditional hand tools. In one corner, a set of wooden drawers holds a selection of smaller tools and measuring devices. A hearth is kept in the small outer courtyard for heating a large metal pot filled with glue.

When I first approached Ashraf, he had been expecting me. He quickly welcomed me inside his shop, and immediately offered tea and food. We accepted the tea, appreciating the familiar custom, and declined, as politely as possible, the offer to send a runner for food. After a series of pleasantries, I asked Ashraf about the types of objects he creates, and the process of construction. He said that for decades he had been making elaborate pieces of furniture, carved with designs and decorated with inlays, based on shapes he saw in his dreams. Sometimes, when he wanted to add pieces of bronze work or marble, he sent word to other craftspeople, who live about an hour away from the shop. He amended his description of his work at this point, saying, well, that was how he used to work. Recently, his commissions came from people who wanted him to follow American and European styles seen in catalogues. He said that since the revolution in 2011, he had received fewer and fewer orders, and so he had to accept all requests, despite the

[5] The personal names of the woodworkers have been changed. Ashraf was uncomfortable having photographs of himself or his workshop made public, and I have respected his wishes.

fact that he did not like making them as much.[6] He preferred to work in the styles he learned from his father.

Ashraf explained to me that his family had been carpenters for generations, stretching back at least 150 years, and probably earlier, but that is as early as he knows for certain. Both his father and his uncle worked in the profession. His father had mostly retired at the age of 60, but still, at 80, came to the shop to help out as well as he could. Ashraf said that his own work had begun at the age of six. He went to school for a few hours during the day, and then helped in the workshop in the evening. At the age of 12, he began building complete objects, and started working full time. He noted that he would be the last in the line of carpenters in his family, because he had only daughters. His daughters went to school, and were training to be teachers. I asked if any of them had wanted to be carpenters. Ashraf told me that only men could be carpenters, and teaching was a better job for women.

As we turned to the work, I examined the tools in Ashraf's workshop. His electric tools consisted of a table saw, a band saw, a drill and an electric planer (a machine used to create level, flat pieces of wood). His collection of hand tools included a series of saws, chisels, planes, hammers, mallets, and various measuring devices. He also had leather straps and a stone for sharpening. The tools were largely made of steel, and had been bought from hardware stores, or the military store – a store that produces functional objects, like the Army and Navy stores in the United States. Many of the tools had also been inherited. Ashraf told me that he completed the larger cuts and preparations with his electric tools, and then completed the details and joints with hand tools. I asked him if he ever worked with local Egyptian woods. He said that yes, he had

[6] In 2011, many Egyptian people rose up in protest of the rule of the president Hosni Mubarak. On January 25th, what had begun as a peaceful protest in Tahrir square turned violent, and led to 18 days of unrest, during which approximately 846 people died, and another 6000 were injured, according to the BBC (BBC 2011). The reasons for this uprising, the outcome, and the effect on Egyptian society and economy are too complicated to discuss here; however, suffice it to say that Egyptian tourism and the economy were severely impacted.

sometimes been asked to work with sycomore fig, but that it was a bad wood, and he would not work with it if he had the choice. Instead, he frequently worked with imported pine and oak timber. He liked working with pine because of the smell. He told me that the sawdust from the workshop was gathered and sold to places like restaurants, where it was spread on the floor so that the room would smell nice too.

Ashraf then showed me some of his current projects. The leg of a cabinet he was building had been pieced together from multiple sections of pine. He told me that he had roughly sawn the pieces, and glued them together. He had then begun shaping with a plane and a collection of chisels. I asked if this was how he constructed most of his objects, and he told me that this was to be elaborately decorated with veneer, otherwise he would have carved it from a single piece of wood. When I asked about whether he combined different species of wood, he explained that no, this would cause the piece to lack harmony. He expanded on this description, noting that the different species of wood shrunk and expanded in dissimilar ways, and would also absorb the glue differently, making the piece weak and ugly. He told me that understanding the different timbers and how they worked with each other was one of the most important lessons a carpenter could learn.

I then asked Ashraf about his usual workweek, and how much he usually charged for his creations. I was told that he usually worked six days a week, 12 hours a day, but he often worked more if a project had to be finished quickly. I learned that this was the usual workweek for Egyptian laborers and tradesmen. A carved cabinet, like the one he was currently working on, would take him about a month to complete. This piece was going to a furniture dealer, who

would pay him 2500 Egyptian pounds (LE), and who would in turn sell it for about 4000LE.[7] He told me that he had once had a regular list of clients, but since the revolution there was nothing, and so he now had to work with dealers and middlemen to obtain orders.

Unfortunately, Ashraf did not have the time to create a complete wooden object for me. He was willing, however, to demonstrate his method of creating dovetail joints, so that I could examine his movements. To begin, Ashraf cut two short pieces of pretreated, pine lumber. He used a rip-saw (a large saw with bidirectional teeth) for these first cuts, holding the plank against a guide that was attached to his workbench. After a few short cuts to establish the groove, or kerf, he began a steady rhythm of movement, drawing the saw back, and then pushing the blade through the wood, with his right hand. As he pulled and pushed his saw, his right shoulder shifted back and forth with his movements. His elbow was at approximately a 90-degree angle. His legs were set slightly apart for balance. It took him only 12 strokes to cut through the plank. He then took the first plank, and placed its edge on the second, using it as a guide to draw the line of the thickness of the wood with a pencil. Ashraf then took the first plank, and placed it in a vice attached to the workbench. He picked up a smaller pushsaw (a thinner saw with teeth facing in only one direction), and poured a small amount of oil on both sides of the blade. Without drawing any additional guide marks on the wood, he leaned down, placed his left hand on the wood to steady it, and began sawing the wood with his right hand. This time, the strokes were short, in keeping with the length of the blade. He cut so that the blade was on an angle, with the tip pointing upwards. His shorter cuts created a new rhythm of work. This time, his shoulder moved only slightly as he sawed. After cutting two angled lines, he picked up a marking tool,

[7] At the time of this interview, 2500 Egyptian pounds (LE) amounted to roughly $350USD, while 4000LE was about 460USD. The value of the Egyptian pound plummeted in 2016, however. Today 2500LE would be about $140USD.

and marked the desired depth of the cut in the plank. He then took the plank out of the vice, and placed it on his workbench.

Ashraf then selected a chisel. He held the chisel very close to the beveled edge with his left hand, and placed it on the plank. He used his left elbow to hold the plank still as he struck the chisel with the flat side of a hammer, which was held in his right hand. When he cut into the side of the plank, against the grain, his strikes were hard. After a few strikes, he shifted to cut into the end of the wood. These strikes were more gentle, and careful. He moved back and forth between these two directions several times before using the chisel to lever out the pieces of wood he wanted to remove. For this, he held the blade in his left hand as a fulcrum, controlling the movement by moving the end of the chisel with his right hand. Once the first dovetailed recess was cut, he flipped the plank over and repeated the process of sawing and chiseling to create another dovetail recess on the other end of the plank.

The cut edges were then used as guides for the second plank. Ashraf held the cut plank against the second plank, and used a pencil to mark the shape of the dovetailed recess. He then measured the depth of first plank on the second, and drew a guideline around the edge of the second plank. After placing the second plank in the vice, he then used the handsaw to cut off the outer edge of the plank, leaving a dovetailed-shaped extension. He had to stop during this cut to re-oil the blade of the saw as it began to stick in the wood. Ashraf then picked up both planks, and started to push the dovetail extension of the second plank into the recess of the first. He held the extension plank in place with his left hand, and the recessed plank in place with his left elbow. He then picked up his hammer in his right hand, striking the extended plank close to the joint, to force the precisely carved pieces together. The result was a very tight dovetail joint, holding two planks of wood together at a 90-degree angle. After Ashraf completed this joint, he

had to begin work on a new project. We therefore thanked him for his time, and moved on to the next workshop.

Yousef and Mohammed

The next workshop, also located near Qaytbay mosque, belonged to Yousef, where he worked frequently with his brother, Mohammed. This shop was larger than Ashraf's, and seemed to have previously been a car garage (see figure 1). The main room had an extension, creating an L-shaped working space. Off of this extension was a small storage room. In the main room, there was a large wooden workbench, an electric table saw, and an electric planer. There was also a sink near a table, which held teacups and an electric kettle. An overhead storage space held pieces of work, and extra tools. Spare planks of wood leaned against the wall in one corner. A half-finished wardrobe stood near the door. Other hand tools, patterns, and metal clamps hung from the walls. In the extension there were also a couple of chairs, some for sitting, and some that Yousef was actively carving. Yousef had some smaller electric saws, drills, and a router, in addition to his collection of hand tools. Again, this consisted largely of several different types of saws, hammers, mallets, chisels, measuring devices, levels, and clamps.

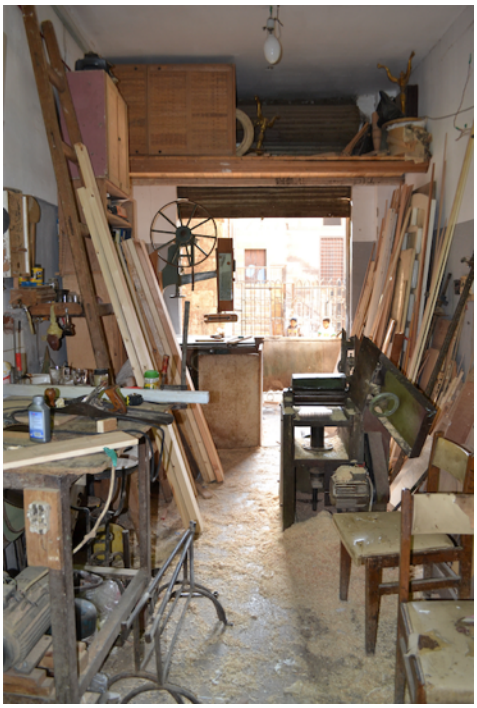


Figure 1: Ashraf's workshop in the "City of the Dead".

On the first day of work, only Yousef was present. His brother joined him intermittently for work, but was in the workshop on our second trip, and was able to contribute a different perspective than Yousef for the interview. I again began by asking the brothers what types of objects they make and how they come up with designs. Yousef answered first. He told me that he

used to make a large collection of furniture and objects for wealthy Egyptians and tourists. He created the wooden interiors of cruise ships, including wooden bars, elaborate staircases, and the furniture for guests' quarters. He even made a desk for the presidential office. When he made these objects, he was inspired by the designs that were around him in el Arafa. He liked to combine patterns from the various buildings and tombs that he saw. He also carved elements from nature, and borrowed patterns from the furniture and statuary of the ancient Egyptians as well. Just as with Ashraf, however, business had been poor for Youself since the revolution in 2011. Now he received infrequent orders for pieces here or there, and instead, largely made standardized boxes and tables for the tourist market. He made the wooden objects, and he hired men to complete the inlays. He would then give them to merchants who worked in the local bazaars and markets, or in private shops. He now only very rarely had the opportunity to design his own pieces.

Yousef and Mohammed also come from a line of carpenters, though their father was a gravedigger, not a woodworker. Yousef instead learned the trade from his uncle, to whom he was an apprentice from the age of 7. At this time, he also went to school during the day, and worked at the shop in the evening. He starting working at the shop full time when he was 10, completing his own objects at either 11 or 12, he believes. Most of his male relatives are craftspeople of some kind. His cousin was a glassblower, and had apprenticed to another man in the community, outside of his family. Yousef had both sons and daughters, but when I asked if one of his sons would take over the business, he shook his head, and laughing said, no, I hope not. Yousef told me that his life had been very hard, and he did not want his children to struggle as he had. With the current state of the Egyptian economy, he had had to labor endlessly to ensure that both his sons and daughters could go to school. One of his sons wanted to be an engineer, while his

daughter was studying to be a history teacher. When I asked if his daughter could have been a woodworker, he simply said no. I asked if he regretted that his tradition would be lost. He said yes, but that it was not worth the struggle and injuries. Yousef had lost the tips of three fingers in an accident with the saw, and he talked about the bruises and shoulder injuries from which many of the men in the community suffered, after a lifetime of carrying heavy loads of wood.

Mohammed had a slightly different approach to woodworking than his brother. He works in both his brother's shop, and also occasionally as a gravedigger. Like his brother, he largely makes furniture, and is usually called in to help with large orders. His designs are different than his brother's, because he learned his trade in a different manner. Mohammed did not learn his craft entirely from his family. He went to trade-school, which in Egypt is called *sanaye*. He therefore stayed in school until his teenage years, learning about woodworking in a classroom setting, and then joining his uncle and brother in the workshop by about 2pm. He therefore integrates designs that he learned in school, in addition to those he creates on his own, often based on inspirations from mosque architecture.

He too, does not wish his children to become carpenters. One of his sons occasionally helps in the shop, but Mohammed has encouraged him to try and follow an academic career. When asked what he thought about the continuation of his craft traditions, he noted that the tradition was collapsing for a number of reasons. The first, he said, was because of the Egyptian economy. Since the revolution, there are too few orders, and the lack in demand is driving down the price of products. He has to keep up his second job in order to continue to provide for his family when the work is too slow. He also believes that traditional crafts are no longer popular among the new generation. "They only care about their phones and new technologies", he says. He also noted that in the 1990s, it became illegal to hire workers in these crafts under the age of

18. He stated that now only children in the family could help with work after school. While this was good, because it ensured that children went to school, Mohammed explained that 18 is too old to begin learning woodworking. The movements and traditions had to be learned when the mind was flexible and young. Mohammed is also disappointed by the prospect of the loss of traditional woodworking in Egypt, but he believes that the new generation needs better opportunities. Mohammed is very proud to be a woodworker, and says that he considers this to be a true art form, and is a way that he can express himself. He describes the possibilities of creation as limitless and rich. I asked Mohammed about whether women could be carpenters, and he said, it was rare, but that they did exist, and he knew of some who were very skilled.

Yousef and Mohammed also usually work six-day weeks, at about 12 hours a day. Often, however, they work well into the night to finish projects, and Yousef noted that he would sometimes sleep at the shop in order to get an early start. The inlaid tables and boxes that they make for tourists and the market do not make much money. He says that the materials to make a table cost about 350LE, and he gives them to the merchants for 450LE. The shops then sell them for 1000-1200LE. To make a worthwhile profit on the boxes, Yousef must make hundreds each week. He therefore takes any furniture commissions he can, and often calls in Mohammed when there are larger orders.

Turning to their work, I asked about the materials that the brothers use in the shop. They also noted that the local Egyptian woods were very poor, and they only used them when there were special requests to do so. Yousef knew that sycomore fig, tamarisk, and acacia had been used to create the ancient objects, and so sometimes he used these in his work. He also noted that the sycomore fig was getting harder to find. Yousef believes that this is due to the large root systems that the tree requires to support itself. Farmers tend to rip out the tree when they find it

on their land, as it can threaten their crops (this is also confirmed through academic articles; see chapter 2.II). Most of the finer pieces he now makes are from pine, beech and oak, largely imported from Romania. The cheaper pieces, like the boxes, are made from particle board. The boxes are all made using electric tools, but he also creates carved chairs, tables, and walking sticks using hand tools. Yousef explained to me that working with hand tools was very important to him. It gave him the chance to really interact with the wood. Wood, he noted, is alive, the grain of the wood is like veins, and it swells and contracts as if it were breathing. He says that when he works wood, it is as if he is carving out the destiny of the tree, shaping the objects that his god intended the wood to become. Often the look of the wood changes his design. Yousef emphasized that understanding wood was the most important thing a carpenter could learn. If they did not know about wood, then they were horrible carpenters.

Mohammed added that they did not like to combine different types of wood in a single project; however, since the revolution, they now did often use the leftover pieces of timber from different projects to create smaller items for the market. He noted that the rising US dollar in comparison to the Egyptian pound, made imported wood more expensive, and so they had to try and conserve whatever they could. They also sold their leftover wood shavings to restaurants to spread on the floor, and spread the fresh pine scent.

The hand tools that the brothers used were also made mostly from steel. These included saws, chisels, hammers, mallets, planes, levels, and measuring devices. Again, some of the tools had been inherited. One plane with a wooden handle, in particular, had been passed on from their uncle, their mentor. Many of the tools, however, had been purchased from the military factory.

In moving to describing their process of work, Mohammed explained that, although their wood usually came pretreated, he often had to season the wood himself to ensure that it was

ready to work. This he did artificially, using a microwave designed for this purpose. He then planed the wood, on his electric machine, creating a level surface for the planks, to prepare for the creation of objects. On the day that they began creating a dovetail-joined box for me, these processes had already been completed.

I arrived at the workshop around 10am on the day that the box would be made. I found both brothers working, and they seemed very busy. Despite this, they greeted me warmly and gave me the customary cup of tea. Mohammed's son was also in the shop, and spent the day in and out running errands. That morning, a number of cats had wandered in from the street, and the brothers had put down some cans of tuna near the entrance for them. Moments after I arrived, a number of customers came to the shop to demand work that had been ordered. I offered to leave and return when they were less busy, but Yousef assured me that it was fine, as long as I was happy to have Mohammed build the box and not him. I agreed, and the work began.[8] Mohammed started with eight planks of pine wood. These had been left over from a previous project. He measured the length of the wood, and marked where to cut with a pencil. He placed the plank in a wooden guide, which hooked on to the workbench, and would hold the piece steady as he cut. He then picked up the pushsaw with his right hand, as he held the plank in place with his left. He placed the saw flat on the plank and, after making a few short cuts to create a groove, moved his arm back and forth for longer cuts. His strokes were smooth and steady, and he established a rhythm of cutting. He repeated this process until he had four lengths of wood. Then Mohammed marked the shape of the dovetail on the edge of one plank, drawing the lines without a guide, but using the width of other planks to note the thickness that he would cut. He put his pencil behind his ear when he was not using it. Mohammed then picked up the saw in his right hand, and held the plank to be cut in his left. He did not put the plank in a vice or guide, but simply raised his

[8] See the included supplemental Video 1 for an abbreviated film showing the different steps of this project.

leg, rested his foot on the workbench, and used his knee to prop up his work. He moved his right arm back and forth smoothly, first with a few short cuts to establish a groove, and then in a longer series of movements. His actions were fluid, as he established a rhythm of work. He held the saw flat as he moved, with his elbow forming a 90-degree angle, as his shoulder and body shifted front and back. When two lines had been cut in the plank, he set it down and picked up his chisel.

Mohammed held the mortise chisel in his left hand, with part of this hand on the handle, and part on the metal bit. He aligned the edge of the chisel with the guidelines he had created, and then lowered his left elbow on to the wood to hold the plank steady. He held a hammer in his right hand, and struck the base of the chisel. After two solid blows in a vertical motion, against the grain of the wood, he lowered the chisel with his left hand to strike the wood at an angle, running closer to the natural grain. In this position, his strikes were more delicate, tapping on the chisel with the hammer, usually with a series of six blows. He then repeated the process until he had removed the dovetail-shaped piece of wood, leaving an angled recess. His chiseling process followed a clear rhythm of work.

Mohammed then picked up the next plank of the wood. He used the recessed piece he had just cut as a pattern, tracing the shape on to the second piece with his pencil. He then picked up the saw, and, once again using his knee to hold the wood in place, sawed two lines into the edge of the plank, moving in the direction of the grain. When these lines were cut, he placed the plank he was cutting down on the workbench, and used the second plank to mark the thickness of the wood across the grain. Mohammed then placed the plank against a wooden frame that hooked on to the workbench, and sawed down along the lines he had just drawn. These cuts, going against the grain, were not as smooth as the previous cuts, occasionally making the rhythm

of work irregular. These cuts were also done more carefully, as Mohammed had to be sure that he did not accidentally cut through the extended tail. With the recess and extension cut, he then connected the two planks with the joint. He first forced the pieces together as best he could, and then, placing his work against the bench, used his hammer in his right hand to knock the tight joint closely together. This was just to test the fit. He took the pieces apart when he was done. Mohammed then picked up a new plank, and, marking the width of the wood for the next cut, began the process over again.

I noticed that, like Ashraf, Mohammed did not use an angle guide to draw the initial dovetails, but simply drew the lines freehand. He then used the thickness of the planks and the cuts he had already made as the other guidelines. As he worked, Mohammed also maintained a particular stance. When his left leg was not propped up against the workbench to support his work, it pointed towards the bench. His right foot pointed outwards. I saw that Yousef took a similar stance as he worked. Mohammed smoked as he built the box, holding the cigarette in his left hand when he was marking the wood, and in his mouth when he cut.

After cutting all of the dovetail recesses and extensions, he used a brush to paint white glue on the extensions. He then connected all the joints, first just pressing them all together. He then placed clamps around the sides, squeezing the joints tightly together. He held up a rule against the wood to ensure that the box frame was square, and used a hammer to tap the pieces gently into a more secure position. Mohammed then scrapped away the excess glue with the edge of a chisel, and wiped away the remains with a rag. This rectangular frame was then left to dry.

Mohammed took a few minutes to help Yousef with a part of another project for a customer. He then returned, and, while the frame was still in the clamps, he picked up a metal file, and began to smooth down the edges of the wood around the joints. One area extended

slightly too far, and Mohammed used the saw to remove a thicker area before returning to the file. To finish the smoothing process, Mohammed used a plane. He propped up the clamped frame on his left knee once again, and, pressing the wood against the workbench began to work. He placed his left hand on the front of the plane, and his right at the back, moving the tool over the wood in a new, fluid rhythm. When he had finished this process on all four sides, he ran his hand along the surface, looking for any remaining rough areas. These few imperfections he removed quickly, holding the frame in his left hand, and moving the plane swiftly in his right hand. When he was satisfied, he began making the second wooden frame.

He placed the completed frame against the new piece of wood, and marked the length. He then used the pushsaw to cut the new pieces, following the lines he had just marked. He repeated the process of cutting the four dovetailed corners, as just described. I noticed only one significant difference in this second round of work. When Mohammed used the chisel to remove the wood, he used a larger chisel for the harder initial cuts going against the grain, but a smaller chisel for the more gentle cuts going with the grain. Previously, he had used the same large chisel for the whole process.

While Mohammed was finishing the second frame, Yousef finished the project for the other customer, and came over to assist with the box. He removed the first frame from the clamps, as the glue had now dried. He measured the frame, and then cut a base from a plank of plywood, using an electric saw. Assuming that the other side of the box would be a similar size, he cut the piece that would act as the lid of the box. He left these materials for Mohammed, and began work on a new project. Once Mohammed had finished the second frame, he placed it within clamps to dry. He then picked up the first frame and the base that his brother had cut. He painted glue on the frame, stuck on the base, and then hammered in 12 small nails. He held the

nail in his left hand, and struck the head with the hammer in his right once or twice, then removed his left hand, and struck another six or seven times. The last three strikes of the nail were always quicker. When he was finished on the base, he attached the next piece to the lid, while it was still drying, following the same process.

After the base and the lid were completed, he stacked the two sides together, and placed them in the vice attached to the workbench. Mohammed then paused to treat his tools. He took apart the plane, and pulled a sharpening stone and a bottle of oil out of the workbench. He poured a few drops on the stone, and then picked up the blade of the plane. He moved the blade back and forth along the stone, pushing down close to the metal edge as he moved, stopping every few moments to run his finger along the edge and gauge his process. Once he was content with the blade, he put it back in the plane, and adjusted the height of the blade. Then he planed the sides of the box, while the two halves were placed together. Once these two sides were joined permanently, the edges would therefore be smooth and flush to one another. After Mohammed planed each side, he turned the box in the vice so that the next side faced upwards, and carefully readjusted the two halves so they aligned as closely as possible, sometimes pausing to tap the pieces into place gently with a hammer.

Once Mohammed was satisfied with this stage, he pulled out two small metal hinges, and took the box out of the vice. He picked up the base, and placed the hinges where they would be attached on the edge. Taking his pencil, he marked their position on the wood. He then picked up the pushsaw, and made a few small cuts at the edge of each pencil mark. He used his large chisel to remove larger portions of the wood between these cuts, creating a rough gouge in which the hinge would sit. The smaller chisel was then used to clean up these grooves, and cut in a precise, sharp edge. He then placed the first part of the hinge in these grooves, using two nails to secure

each in place. No groove was necessary to secure the other side of the hinge on the lid. Mohammed simply aligned the two sides of the box, and attached the other side of the hinge to the edge of the lid, hammering in another two nails for each of the two hinges. He closed the box, and it was complete. After a celebratory cup of tea, we said goodbye and parted ways.

A final note is necessary in regards to this workshop. I have returned to visit these carpenters over the last few years when I travel to Egypt. In 2016, the Egyptian central bank was forced to float their currency in an attempt to stabilize the Egyptian economy. As a result, the Egyptian pound was devalued significantly. When I first started this project, $1USD was worth 7LE. In November 2016, $1USD was worth 20LE. This hit the Egyptian people with significant force. The two brothers could no longer afford their whole workshop in addition to the school tuition of Yousef's daughter. They chose to prioritize the education of their children. As a result, Yousef's landlord came and built a brick wall dividing the workshop in half, as Yousef could only afford half the rent. Business has become even more difficult. As always, however, the brothers are still in good spirits, telling me that they are grateful that at least their families are healthy. As I write this in 2018, their workshop is still bricked in half, and they continue to struggle to support their families. I send tourists and friends their way whenever I have the chance.

INSPIRATION OF THE WOODWORKERS

In moving to considering how these observations could help guide further analyses, I took into account the tools, the movements of the woodworkers and the *chaîne opératoire* of construction, and the learning process, and began to explore how this might be accessed in the ancient record.

To begin, I noted the significant differences between modern and ancient practices. First and foremost, there are very few modern woodworkers who do not own electric tools. Even

those woodcarvers who craft artistic pieces usually complete the rough cuts and initial processing with electric saws and planes before moving to hand tools for more delicate procedures. The hand tools that are used are now usually made from steel or iron. These metals are much more durable than the copper or bronze used by the ancient Egyptians. This means that these modern tools can hold an edge for a much longer working period, and will require less frequent sharpening. The types of hand tools available have changed too. In particular the lack of the plane in ancient Egypt would have made a significant difference. The use of microwaves for seasoning wood also takes months or years off of time estimates for completing projects.

Likewise, access to timber is less complicated. Most woodworkers simply buy timber from a supplier. Local Egyptian woods are now rarely used to construct objects, while imported pine, oak, and particleboard seem to be the most popular options in modern Egypt. The different form of economy will also mean different methods of production. While many projects are still based on individual commissions, there is always the option of producing objects for an open market and working with a middleman, which must be done at times when business is poor. While there is some evidence for an open market in ancient Egypt, it functioned on a much smaller scale, and on an informal basis (see chapter 3.II; Cooney 2007). Finally, new technologies for communication and transportation between workshops, customers, suppliers, and storeowners, will have dramatically changed how these different industries operate. It is therefore clear that only aspects of this modern work will be similar to that in ancient Egypt, and any comparisons must be based on ancient evidence.

There are few formal analogies that can build significantly on what we already understand about Egyptian carpentry. Extant tools, tombs scenes, and models, demonstrate that the Egyptians had a selection of tools that included saws, axes, adzes, and chisels relatively

similar to those used by modern woodworkers (these tools are discussed in detail in chapter 3.II). Scholars have also already demonstrated that these tools leave similar tool marks to those left today, and that the use of specific tools can be identified on ancient objects (Ward 2000:25–30; Killen 2015; Dawson and Strudwick 2016:80–84). What can be better understood from these ethnographic comparisons is a more realistic idea of the steps involved in construction, and the movements of carpenters as they work with these tools. For instance, an important step in woodworking production that is frequently overlooked, and not recorded in tomb scenes and models, is the need to sharpen or oil tools. This is an important step in the production process, and ancient oil bags and sharpening stones did indeed exist (as discussed in chapter 3.II). There presents suggests that individuals involved in woodworking probably had a more thorough understanding of the relationship between wood and metal tools than might otherwise be assumed.

In regards to tools, only the saws, chisels, and hammers could be considered comparable, as the Egyptians did not have the plane. The movements and micromovements of the woodworkers, how they held the tools, and their stance, were unique to each of the three individuals. The similarity in the stance of Yousef and Mohammed, however, might be related to the fact that they have worked together in the same workshop, and so form their own community of practice. Nevertheless, these elements are not related to the ability of the tools to function, and therefore such details about ancient movements are not accessible through comparisons. The use of the body in ancient work, to steady and clamp wood or to test the finish of an edge, for instance, is also now inaccessible. Both Ashraf and Yousef, however, moved their whole bodies as they sawed through the wood, and worked in a steady rhythm. The saws rarely snagged, and they cut in a straight line. When using chisels, less of the body moved, but both carpenters had a

certain "beat" to their work. Developing this rhythm seems to be directly related to their ability to cut clean lines. I therefore believe it likely that the ancient woodworkers also developed a rhythm of work, and a muscle memory that allowed them to competently use their tools, even if the rhythms and specific movements were individual and now inaccessible. As Mohammed points out, these practices are learned from a young age, after years of repeated practice with a master. As discussed in the introduction, Wendrich refers to this as "body knowledge" (2012:13), and it is the type of movement that Mauss (1968 [1934]:365) and Bourdieu (1977) refer to as becoming part of the *habitus* over a period of frequent repetition. Considering this aspect of the work led me to question how the different saw marks of an experienced woodworker would compare to those of a beginner, and encouraged further experimentation and investigation, described below.

Less certain is the time it takes for such "body knowledge" to be acquired. Each of these men relate that they began learning to work wood at age six-seven, and started creating their own objects by age 11-12. This suggests that it took four-five years for the actions to become part of the *habitus*. In searching through the Egyptian sources, there is unfortunately no mention of how long such a stage would have lasted in a woodworking apprenticeship specifically; however, a much-debated passage from the biography of Bakenkhons may provide comparative evidence. Bakenkhons was a high priest of Amun during the reign of Ramses II. On one of his statues, he relates the various steps in his education. He notes that the first stage of school lasted four years, during which time he was referred to as an "excellent youngster" (*nḏs jḳr*) (Kitchen 1969:III.pl.298, I.3). Most scholars believe that Bakenkhons entered this phase of his education at around five years of age as well, though this is contested (cf. Jansen-Winkeln 1993:222). After this point, he takes a position in the stables of Seti I as an apprentice or, "cadet" (*ḫrỉ-ỉḥ*), which

lasts for 11 years. Despite the fact that Bakenkhons is referring to scribal school, not a trade, it is the only direct evidence for the length of phases in Egyptian education or apprenticeships.

These phases of scribal education may be equivalent to titles for younger crew members in the Deir el-Medina work lists. These children would have been training to be craftsmen, working on the tombs in the Valley of the Kings. The youngest were paid much less than the regular workers, and were designated as "child of the tomb" (*ms-ḫr*). They also completed small tasks and errands while they began learning the trade, but were not permitted to work directly on the tombs (Černý 1973:118). These young children seem to have graduated to the slightly older "stripling" (*mnḥ*) when they were unmarried, but of marriageable age, and presumably not yet fully established craftsmen as they were still paid at a lower rate (Černý 1973:113; Janssen 1975:461). We do not have precise age dates for these phases, but I believe it likely that "child of the tomb" relates to this initial phase of developing body knowledge, while "stripling" may relate to the phase of the apprenticeship during which the youths mastered a trade in which they had already gained a passing competence. While the interpretation of these Egyptian terms cannot be confirmed, the fact that Egyptian scribes and craftsmen also had formal phases of education and apprenticeships, just like the modern carpenters, is fairly certain. Moreover, comparisons with other types of craft suggest that these practices are rather universal.

While the time it takes to become a *master* craftsman is likely to be quite different and variable, it seems that for many different crafts and skills, it takes four-five years of training, beginning at ages four-six, to be sufficiently competent to produce completed objects. In Hélène Wallaert's discussion of pottery making and apprenticeship among the Dowayo peoples of northern Cameroon, apprentices also study for approximately five years before they are allowed to make complete objects (2012:29). In San Idelfonso Pueblo, New Mexico, pottery

apprenticeships lasted five-eight years, though students seem to have been able to make complete objects after their fifth year as well (Wallaert 2012:31–37). While we may never be certain that this was the case for woodworking apprenticeships in ancient Egypt, the combination of these different examples, makes it likely that the timeline was at least comparable.

In addition to education, the discussion with the woodworkers drew attention to the relationships that these individuals had with trees and timber. For them, working with a material that was once alive, and is still dynamic in many ways, was particularly meaningful. Understanding how wood swells and moves, how different timbers relate to one another, and how they can impact the final product is knowledge that all carpenters must have to produce functional objects. The Egyptians therefore must have had similar knowledge, and an appreciation for timber.

The spiritual response that the woodworkers felt towards wood also encouraged me to search for Egyptian religious references to timbers. In the end these were so frequent and complicated, that such a discussion became its own chapter (see chapter 3.I). For now, however, I will say that it is clear that the different trees had specific religious associations, and at times these seem to appear in relation to shifts in woodworking practices as well.

Finally, in relation to wood knowledge, at times the Cairo woodworkers were forced to adapt their practice to shifts in the economy. While they would prefer to never combine different species of woods, after the revolution, the carpenters had to combine leftover materials to avoid wasting any usable timbers. They no longer had the means to be selective. As the Egyptian pound dropped, Yousef and Mohammed were also immediately left with the prospect of prioritizing their children or their profession, and chose to lose half of their workshop. As the impact on the economy reached their clientele, the types of objects they were creating, and how

they conducted business was also forced to change. It was this aspect of production that had the greatest affect on the present project. Seeing the immediate and significant impact that changes in society had on the practice of woodworking inspired me to look at the *longue durée* of coffin construction over time, and to discover how changes in production aligned with changes in the social history of Egypt as well. Although these affects were, of course, entirely different than what the modern carpenters experienced, the modern analog suggested that comparable evidence would exist in the ancient record. Indeed, in section four, a detailed analysis of the progression in coffin construction demonstrates that each significant change in Egyptian society is reflected in a corresponding shift in coffin production as well.

EXPERIMENTAL ARCHAEOLOGY: DIY WOODWORKING

Having observed the Cairo woodworkers, I wanted to clarify my understanding of their movements and education, and so undertook a complementary approach from experimental archaeology. This sub-discipline allows the researcher to personally attempt to replicate "materials, behaviors, or both, in order to observe one or more processes involved in the production, use, discard, deterioration, or recovery of material culture" (Skibo 1992:18). Personal experimentation refines the scholar's understanding of the skills required to accomplish tasks, the type of knowledge necessary to produce an object, and what is involved in the learning process. Just as with ethnoarchaeology, this style of investigation is based on the use of analogy, comparing a modern context with ancient practices. As such, this work comes with the same pitfalls and challenges.

As is also seen with ethnoarchaeology, there are two main ways in which experiments are used to learn about the past. Carolyn Graves-Brown (2015:x–xi) differentiates these two as "experimental archaeology" and "experiential archaeology". She stresses that the former is seen

as the more legitimate, scientific work, based on testing hypotheses, while the latter is less scientific, and of more use for inspiration than for the direct accumulation of results. As she notes, however, both are valid and important for the study of archaeology as long as the different variables and contexts are acknowledged.

In Egypt, critical experimental archaeology is not used frequently. Denys Stocks (2003; 2015) has done the most scientific work on the subject, in an effort to better understand the production of Egyptian stone vessels and metal tools. A number of projects related to boat building, largely headed by Cheryl Ward, have also greatly increased our knowledge about sea-faring technology, and about the types of wood that were appropriate for such projects (Ward et al. 2007; Ward 2012). Geoffrey Killen, too, has recently demonstrated different Egyptian wood turning methods, and has created replica bronze and copper woodworking tools as well (Killen 2015). This latter project was part of the volume by Carolyn Graves-Brown and Wendy Goodridge (2015). The variety of these collected studies demonstrate the value of both uses of experimental archaeology. As more projects are completed, hopefully this approach will gain traction as a valuable tool for understanding Egyptian craft production in particular.

The intention of my own experimentation with woodworking falls into both these categories. I was interested in experiencing the effort required to work wood, and how the movements and knowledge of a beginner would impact the process and the tool marks left on objects. To this end, I filmed myself producing objects in a series of woodworking classes led by professional carpenters in Los Angeles.[9] As shall be discussed, these experiments demonstrated the necessity of acquiring body knowledge in order to complete the basic steps of production using hand tools. In addition, I wanted to conduct a controlled experiment in order to compare

[9] I am very grateful to woodworkers at Allied Woodshop and Offerman Woodshop for their assistance and enthusiasm for this project.

the different tool marks left on wood by beginner and experienced carpenters, so that such competencies might be identified in the archaeological record.

To begin this experiment, I acquired samples of common Egyptian woods, frequently used to produce ancient coffins: sycomore fig (*Ficus sycomorus*), tamarisk (*Tamarix aphylla*), and acacia (*Vachellia nilotica*). These pieces are 7.5cm in height, and 1.3cm wide. I also purchased a Japanese pull-saw, rather than a western push saw, in order that the experience of work and the movement of sawing would be similar to that used in ancient Egypt. I then filmed a professional, experienced carpenter sawing these three woods in succession. I also timed how long it took to cut each piece, and asked the carpenter to describe the experience of sawing the different timbers. Then I, as a beginner carpenter, repeated this process. Detailed photographs of the saw marks were taken (see figure 2).

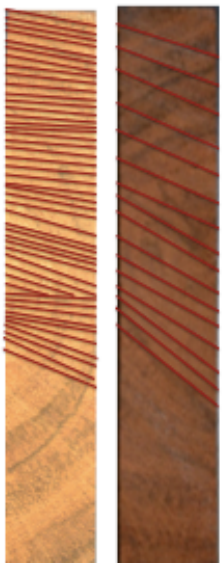


Figure 2: Tool marks on acacia samples. Left: Beginner marks. Right: Professional marks.

The professional woodworker, Nat, cut through the pieces quickly. The sample of *Ficus sycomorus* was particularly dry, and was the easiest to saw. It took him 6.27 seconds to cut through the 7.5cm plank. There was no hesitation, and, despite never having used this specific saw before, his movements were sure, and his strokes were even. The marks on the wood are

evenly spaced, with no evidence of breaks or hesitations. The saw marks are spaced further apart at the top of the piece, and closer together towards the bottom, as Nat slowed, anticipating the end of the plank. Towards the end, he also had to change his saw direction slightly due to the added guard on the back of the saw. The line that he cut was straight, parallel to the straight edge of the plank. The *Tamarix aphylla* was a good quality wood, slightly harder than the ficus. It took Nat 9.40 seconds to cut through this piece, but the rhythm of the strokes was similar, and he never snagged or faltered as he cut. Again, the saw marks are evenly spaced, further apart at the top of the cut, and closer together towards the bottom. The *Vachellia nilotica* was harder than the previous two pieces. It took Nat 14.30 seconds to saw through the wood. At one point, he mentioned that he felt himself catch an edge, though this is not noticeable on the video recording. The saw marks are again even and regular, but are much closer together than on the previous two pieces. Nat remarked that he felt a significant difference when cutting the acacia, and had to concentrate more to keep his strokes even.

My work with the saw was not nearly as smooth. While I cut through the pieces without too much trouble, I snagged on each, miscalculating the length of the blade, and either drawing too far back or pushing too far on some of my strokes. I had to concentrate more than Nat, and worked at a slower pace. It took me 16.90 seconds to cut through the ficus. My saw marks were largely even, but the lines change direction more frequently that Nat's, and the strokes occasionally cut deeper into the wood in areas where I snagged the saw. Two knicks in the wood where I have torn out small pieces of material show where I moved the saw too far out of the kerf while I worked. My line also veers slightly towards the right, at an angle to the straight edge of the plank. I cut through the tamarisk in 29.75 seconds. The tool marks in this wood are much closer together, and I snagged the saw more frequently while working. A subtle difference in the

depth of the cut illustrates where I slipped during several strokes. My line again pulls slightly to the right, as well. I also snagged frequently while sawing the acacia. It took me 45.23 seconds to saw through this piece. The lines of my strokes are very close together, and some lines are raised higher than others, where I have snagged on the cut, or pushed my stroke past the length of the blade. I pulled to the right slightly again on this piece, but not as badly as on the first two pieces.

Woodworker	Wood Species	Time to cut (seconds)
Professional	*Ficus sycomorus*	6.27
Beginner	*Ficus sycomorus*	16.90
Professional	*Tamarix aphylla*	9.40
Beginner	*Tamarix aphylla*	29.75
Professional	*Vachellia nilotica*	14.30
Beginner	*Vachellia nilotica*	45.23

Table 1: Summary of experiment results

This experiment demonstrates some of the fundamental differences between an experienced and beginner carpenter. Nat sawed in a steady rhythm, cut a straight line, without guides, and did not noticeably snag during his work. His only area of difficulty was the acacia, during which he mentioned that he felt the saw catch while working. The even width and depth of his strokes in the tool marks match his movements. As a beginner, although occasionally my strokes fell into a steady rhythm, my snags and inability to properly estimate the length of the blade with which I worked, caused me to falter. I was also unable to cut an entirely straight line, always pulling slightly to the right. My work was also much slower than Nat's. The difference in our ability is visible in the tool marks left in the wood. This information is of use during the assessment of the ancient tool marks found in coffins, as described in section four. Of special note is the challenge that particularly hard woods, like acacia, might pose. Even an experienced carpenter like Nat caught an edge while sawing a small, relatively thin piece of wood with a steel

saw. We might therefore expect some greater difficulty interpreting saw marks on timbers such as acacia and Christ's Thorn in the material record – as rough marks may not necessary suggest inexperience or incompetence.

Figure 3: Dovetail joint constructed by beginner.

Figure 4: Dovetail joint constructed by professional.

In addition to these specific experiments, my experience working with wood helped me to understand and truly appreciate the time and effort required to become a master woodworker. The use of electric tools now ensures that even beginner carpenters can cut flawless edges, and plane a board flat for use. These technologies have significantly cut down on the time, effort, and knowledge required to create complete objects. This also means, however, that there is less opportunity to practice using hand tools, and to acquire the necessary joinery skills. In my efforts to create a dovetail joint, in particular, I had to shave down my tail extensions and recesses for hours in order to have each fit in its place. I worked very carefully to try and ensure a tight joint, but there were nevertheless small gaps in my work, which I had to fill with small fragments of wood (see figure 3). These are not present in the work of the professional woodworkers (see figure 4), who took only minutes to create their much more exact joints, as demonstrated by the work of Mohammed in Cairo, and during demonstrations by the professionals in Los Angeles. In

figure 4, however, the fact that some of the lines extend beyond the intended shape reveals the swift pace at which they were working. In an attempt to control the chisels while cutting the dovetails, I placed my fingers close to the blade. At the end of the day, my fingers were covered in tiny cuts, while the professionals had only a few scratches. Although I have taken intermittent woodworking classes over the last four years, I am nowhere near obtaining the body knowledge of a woodworker. It is clear that this expertise has to be gained through constant practice and instruction over a number of years.

COMMUNICATION BETWEEN THE PAST AND THE PRESENT

The combination of ethnographic work with modern woodworkers, and my own experiments, provided both formal information about woodworking in ancient Egypt, and inspired a number of the research questions addressed throughout the later stages of this project. In each instance, the modern analogs are carefully compared to ancient evidence. Thanks to these ethnographic comparisons, I have a better understanding of the education of ancient woodworkers, how to assess tool marks, the significance of timber knowledge and wood selection, the spiritual connection woodworkers have to wood, and a better understanding of how changes in society and the economy might be represented in the material record. Ethical review boards assessed my project to ensure that the communities with which I worked were treated well, and represented fairly. I found my work with the woodworkers not just helpful, but essential for this project. This process particularly impressed upon me the significant contributions that collaborations with individuals outside of the discipline could afford. I have greatly valued my time working with the woodworkers, and believe that my project is much stronger thanks to their assistance. Ethnographic research can be used responsibly and ethically, and it is a valuable method that can help researchers complete much more thoughtful and holistic projects.

CHAPTER 2.II: ANALYZING WOOD FROM ANCIENT EGYPT

In my discussions with the Cairo woodworkers, the significance of the choice of wood for each project became apparent. Each wood has a different character, and specific qualities that affect its ability to function in the context of different objects. Even for a beginner carpenter, it quickly becomes apparent that mixing species of wood together in a single object is rarely a good idea. The different types of wood used for object construction can therefore reveal information about access to resources, the knowledge of the woodworkers, and the status of the object's owner. Unfortunately, most Egyptologists have yet to acknowledge the significance of this information, and wood types used in objects are rarely identified. It was therefore necessary to gather a selection of samples personally, in order to include reliable examples from each chronological period. In this chapter, I discuss the methodology followed for this aspect of the project, and some of the challenges that arise when attempting to assess archaeological woods.[10]

The most reliable method for identifying wood requires that samples be taken so that the anatomy of the timber can be analyzed. Sampling, however, is destructive by nature, and museum curators are understandably hesitant to allow such procedures. It is therefore important to acquire as much information as possible from a limited sample, and to share those data publically. When analyzing large objects such as coffins, samples can be taken from damaged areas, or from within mortises or joints, where the sampling would have a limited impact on the structural and aesthetic integrity of the object. There are a number of different methods for sampling and analysis that must be selected on a case-by-case basis, depending largely on how well the coffin has been preserved.

[10] I am very grateful to Caroline Cartwright, Senior Scientist at the British Museum, for providing guidance in regards to wood analysis, and for her assistance with acquiring the images provided in figures 5-22.

METHODS FOR PREPARING SAMPLES FOR IDENTIFICATION

The goal of each method of sampling is to take a section of wood that allows three planes of reference to be viewed: the transverse, the radial longitudinal, and the tangential longitudinal. A different set of anatomical features is visible within each plane. A positive identification rests on the ability to view all of these features. Fritz Schweingruber (1978:211) has outlined how to sample and identify woods in ideal laboratory settings, when working with wood that is perfectly preserved. According to this method, a sample of wood with a radial thickness of one cm is removed from the objects with a sharp razor blade or scalpel. Thin sections of the wood are then removed from the sample, either by hand, again using the razor blade or scalpel, or, ideally, with the use of a microtome. At least three sections, one for each plane, must be created. These sections should be 15μ in width, about one-two cells wide, but slightly thicker sections will still permit identification. If the wood is too hard to be cut easily by hand, it should be immersed in boiling water for one-two hours, or placed in a mixture of 96% alcohol, water and glycerin in volume proportions 1:1:3. These sections are mounted on glass slides and analyzed under a transmitted light microscope. If the features of the wood are difficult to see, the slides can be stained. A sample of this size will almost certainly provide the necessary features, and a confident identification can be reached. Unfortunately, these procedures are rarely feasible when working with archaeological woods.

Due to aging and degradation, it is frequently the case that archaeological samples cannot be handled with the force necessary to create thin sections. The cells within the wood are often too fragile – they will simply be crushed when pressure is applied. Moreover, there are few museum curators or conservators who would allow a sample with a radial thickness of one cm to be removed from their objects. Hand sectioning and transmitted light microscopy should

therefore be reserved for fragments of wood that have fallen off the coffin during a move or excavation (though their original location on the object must be known), or dowels and tenons that can be removed, sampled, and replaced, without leaving visible evidence of this procedure. For the larger and more visible areas of the coffins, much smaller samples should be removed for analysis under a scanning electron microscope (SEM).

The SEM method allows for irregular or small surfaces to be examined at high magnification. In this procedure, a small sample is taken with tweezers and a scalpel from areas of the coffin that are damaged, or from within joints or mortises. Areas where the wood is frayed should be avoided, along with pieces covered in paint or any possible conservation materials. Ideally, a sample that is 0.5 cm^2, should be taken; however, much smaller samples will still provide diagnostic material. If there are easily removable fragments that are just a few mm in area, it is likely that an identification can be reached. With samples this small, however, there is always the possibility that the necessary features will not be present in the selection, which would not lead to a positive identification. The larger the sample is, the more certain the wood anatomist can be that an identification will be possible. Once the sample is taken, it is attached to a stub or sample holder by an adhesive. For deteriorated woods, doubled-sided cellophane tape can be used (Zidan et al. 2006:28). Using a variable pressure SEM, the sample does not need to be treated with a sputter coating, which is ideal for the preservation of the sample. The anatomy of the sample can then be examined with the scanning electron microscope.

Both of these procedures are destructive, but they are currently the most reliable and feasible methods for the examination of wood anatomy. Attempts have been made to follow less invasive procedures with varied success. It would be ideal to examine the surface of objects without extracting a sample, as this would permit the analysis of a wider range of artifacts. One

method, examination with the use of a hand lens, is usually too imprecise to allow for a definite identification of archaeological samples. Reflected light microscopy (RLM), however, has shown to be of use in some instances (Ruffinatto et al. 2010). For this type of analysis, the surface of the object being examined must still be cut, or a small chip of wood must be extracted to allow for a clean plane to be visible. Then the object is examined under the microscope (Ruffinatto et al. 2010:318–321). As ideal as this sounds, without cutting a sample from the wood, the necessary planes for identification are unlikely to be readily visible on the outside of an object. In addition, as Ruffinatto et al. (2010:327) note, even "the finest surfacing techniques for the manufacturing of artifacts do not achieve the results provided by thin sections for transmitted light microscopy".

Each of these viewing methods has benefits and drawbacks. Transmitted light microscopy requires a larger sample, but it is a relatively inexpensive method of identification, and there is no need for support staff to maintain equipment. A scanning electron microscope is very expensive, its use requires intensive training, and the instrument requires regular maintenance by a technician. Finally, reflected microscopy may be ideal from a curator's point of view, as it causes the least damage to the object, but it is also the least likely to provide the planes of reference necessary for a positive identification. All three methods were used for this project, though the majority were studied using scanning electron microscopy.

Different SEMs will require slightly different settings. For this project, several different instruments were used, with similar settings. A number of uncoated specimens were mounted with carbon tape on stubs, and examined using a variable pressure FEI NOVA 230 Nano SEM at Low Vacuum (LV) with a Low Vacuum Detector (LVD). The accelerating voltage was set at 10kV, chamber pressure at 50 pa, and working distance fluctuated between 7–7.7 mm,

depending on the sample size. Under these conditions, clear anatomical features were visible (as outlined also in Arbuckle MacLeod et al. forthcoming).

One of the most promising prospects for the future of wood identification is the use of x-ray computed microtomography (μCT). According to this method, radiographic projections are used to create non-destructive views of the wood. As sampling is not necessary, multiple areas can be examined until perfect views of all features in all planes can be located and assessed (Whitau et al. 2016:537). Unfortunately, at the moment, only very small objects can be examined without sampling, as the analysis chambers of these machines are currently quite small as well. The μCT apparatus at the Australian National University, for instance, which has been used to examine wood anatomy, can only be used to analyze objects with a maximum width of 10 cm (Whitau et al. 2016:544). It is also not currently possible to reach a level of resolution that would allow all species to be definitively identified. Some woods have particularly microscopic diagnostic features such as intervessel pitting, which cannot yet be examined with this method. It is likely, however, that such challenges will be resolved in the near future, and completely non-destructive analysis will be possible.

Once the wood anatomy can be viewed, it is compared to reference collections. A number of different sets of standard procedures and terminology for analyzing wood anatomy have been published. I selected those used by the International Association of Wood Anatomists for the present study. This association has set forth a checklist of anatomical features for both hardwoods and softwoods. Using this checklist, a reference collection of known woods is used to create a standard of present or absent features. When the sample is analyzed the features of the unknown wood are then compared to the standards in order to provide an identification (IAWA Committee 1989; IAWA Committee 2004; InsideWood n.d.; Arbuckle MacLeod, Baisan, and

Creasman Forthcoming). The reference collections can take the form of physical, vouchered (definitively identified) wood samples, prepared slides, or published photographs and descriptions. There is no single reference collection that lists all the current or ancient timbers found in Egypt; however, the majority of species can be found distributed among a number of publications and resources (for example, Fahn et al. 1986; Schweingruber 1990; Gale et al. 2000; Neumann et al. 2001). For this project, a reference collection was created based on these publications, as well as from examples collected in the field. This combination has enabled me to describe the anatomy of the most commonly discussed woods in ancient Egypt, which are frequently discovered as materials used for coffin construction.

WOOD IN ANCIENT EGYPT

In discussing the availability of timber in ancient Egypt, scholars frequently repeat the belief that wood was scarce (Alfred Lucas 1962:429; Gale et al. 2000:334; Deglin et al. 2012:85; Killen 2017a:1). This is not entirely accurate. Groves of both wild and cultivated trees grew along the Nile and in the Eastern Desert in ancient times, as they continue to do today. These trees were certainly not as abundant as the forests in the Levant or Europe, but they were sufficient for the provision of building material. The thousands of preserved objects found in tombs, made from local woods, attest to the availability of these resources. It is therefore not the amount of wood that was lacking, but its quality as a construction material. Local Egyptian trees such as sycomore fig, acacia, and tamarisk, rarely grow straight enough to produce long lengths of timber. Sycomore fig and tamarisk, in particular, are also rather soft woods, that are prone to decay and insect infestations. For high quality timber, the Egyptians therefore imported wood from the south, Sudan and Ethiopia, and from the north, the Levant. This greatly increased the

variety of woods available to the ancient Egyptians, and provided them with large, strong, insect resistant timbers.

Of the available trees, only a few were used frequently for the construction of coffins.[11] The local species included sycomore fig, acacia, tamarisk, and Christ's thorn. The only imported species identified regularly in this context is cedar. The significant anatomical features of these woods are discussed below as important elements in identification.

ANATOMICAL CHARACTERISTICS OF SELECTED WOODS

Acacia

Vachellia nilotica (L.) P.J.H.Hurter & Mabb*., Vachellia tortilis* (Forssk*.)* Galasso & Banfi

The scientific name for the Egyptian wood referred to as acacia, used to be either *Acacia nilotica* or *Acacia tortilis*. Recently, however, the tree has been re-classified as *Vachellia nilotica* and *Vachellia tortilis*, belonging to the Fabaceae family (Kyalangalilwa et al. 2013:515, 517). The common name acacia persists, and the previous scientific name may continue to enter into scholarship, as the field slowly adapts. Acacia is also commonly known as *babul*, *kikar*, or the Indian gum Arabic tree. It generally grows to 15-18m in height, and 2-3m in diameter (Bargali and Bargali 2009:11–12). It is drought resistant, and grows throughout the drier regions of Africa, stretching from Egypt to South Africa, throughout Asia, including Arabia through to India, Burma and Sri Lanka, as well as in Australia.[12] It was grown widely in the ancient world, as well as today. The wood of *V. nilotica* is strong and durable. As well as providing good

[11] Cheryl Ward's book on ancient ships provides a helpful discussion on all of the available trees and timbers (2000).

[12] The question of the ancient versus modern distribution of these trees is quite complicated, and rarely agreed upon. An in-depth study of the question is necessary before a definite suggestion can be made, which is beyond the scope of this paper. The regions given here should therefore be understood as an approximation, and refer to the trees' modern distribution unless otherwise stated.

building materials, the bark and wood is often harvested for tannins, and more recently has been acknowledged as a nitrogen fixer (Bargali and Bargali 2009: 11-14).

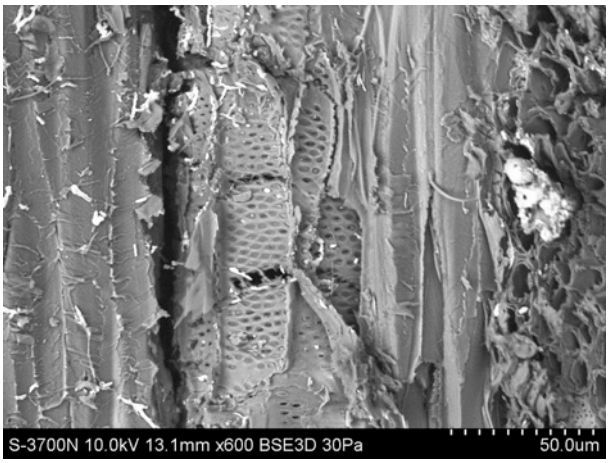


Figure 5: Tangential section. Vachellia nilotica sample from coffin Turin S. 14429.

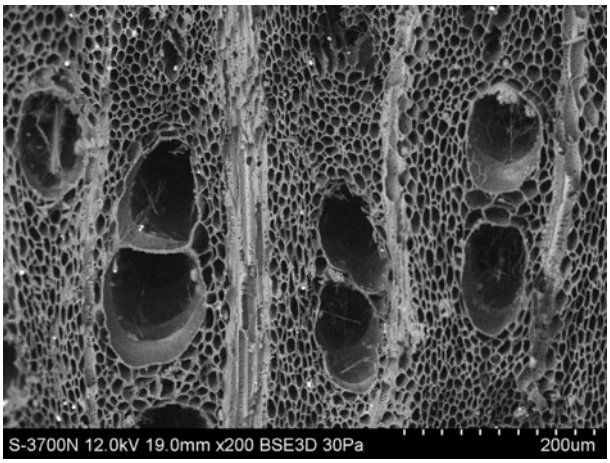


Figure 6: Transverse section. Vachellia nilotica sample from coffin Turin S. 13964.

Three wood samples taken for this project were identified as Acacia. One came from a dowel from coffin S.14429 (fig. 5), while the other came from the base of coffin S.13964 (fig. 6). The third came from a tenon in Denver coffin EX1997-24.4 (images not available).

Transverse features:

The transverse section shows that it is a diffuse porous hardwood, with indistinct or absent growth rings. The pores usually appear as solitary, in pairs, or in radial chains of up to three, but occasionally occur in groups. The width of the vessels tends to lie between 100-200µm. Vasicentric axial parenchyma is present, and ranges from a few cells wide to equivalent in area with the fibers. The presence of vasicentric parenchyma, particularly when aliform (winged-shaped), allows this species of *Vachellia* to be differentiated from others.

Tangential features:

In the tangential section, the width of the rays is seen to be quite large, ranging from 2-10 cells seriate, and 4-58 cells high. Intervessel pits are alternate and vestured, and prismatic crystals can

be seen in chambered axial parenchyma cells. In both tangential and radial sections, minutely bordered pits are present in fibers.

Radial features:

Looking at the radial section, all the ray cells are procumbent, and simple perforation plates are represented. As noted above, both tangential and radial sections show minutely bordered pits present in the fibers (For additional features see Neumann 1989: 76; Gale and Cutler 2000: 24; InsideWood).

Sycomore Fig

Ficus sycomorus L.

Ficus sycomorus is commonly known as sycomore, or sycomore fig, and comes from the Moraceae family.[13] It generally grows to between 8-20m high, and 6-8m in diameter (Baum 1989:19). It was native to Eastern central Africa, and was once cultivated up the Levantine coast and in Cyprus, but it is rare in these areas today (Crivellaro and Schweingruber 2013:412). As the trunk of the sycomore fig can grow to be quite large, it was an important timber resource for arid areas in antiquity, such as Egypt. It was also cultivated for its fruits (Gale and Cutler 2000:115).

The sycomore fig is not native to Egypt, but there is evidence that it was cultivated within the area already by the Predynastic Period. The tree's growth in this region is highly dependent on human intervention. In its native region, a species of wasp, *Ceratosolen arabicus* Mayr, is necessary to induce the pollination of the fruit. In this area, the tree therefore produces seeds that grow, drop, and the tree grows naturally; however, these wasps do not exist in Egypt. In this area, different species of wasps (*Sycophaga sycomori* L. and *Apocrypta lonitarsus* Mayr.) help

[13] In the literature, this tree can be seen with the spelling "sycamore"; however, "syc*a*more" should be reserved for describing the more common American Sycamore, or *Platanus occidentalis*, while "syc*o*more" should be used to refer to the *Ficus sycomorus*, which are different species.

the fruit to mature, but they do not induce pollination. If there is no human intervention, the fruit (the fig, or syconium) fills with wasps and is inedible, and new plants do not grow. Just as the fruit begins to ripen, after female wasps have entered the fruit, a gash can be cut into the fig. This traumatization of the fruit induces the production of ethylene, which causes the fruit to ripen and does not allow the wasps within to mature, which allows the fruit to remain edible, but still does not produce seeds. The only way that the tree can be reproduced in areas without the *Ceratosolen arabicus* species of wasp, is through the transplantation of cuttings and stakes (Galil 1968; Galil and Eisikowitch 1974; Baum 1989:19–21; Abrol 2010:549). The sycomore figs found in Egyptian tombs are usually the cut, or notched, variety, but figs from a 12th Dynasty tomb have been found that are filled with the wasps (Galil 1967; Panagiotakopulu 2001:1243). In modern Egypt, the tree has lost much of its value as a timber and fruit producer, as the true fig, *Ficus carica*, is much more popular, and produces a much tastier fruit with less effort. The *Ficus sycomorus* also has a deep, complicated root system that farmers find too destructive to their fields. It is therefore often cut down in Egypt, and is rarely transplanted. Due to this process, it is becoming increasingly rare in modern Egypt (Galil 1968:189; see also chapter 2.I).

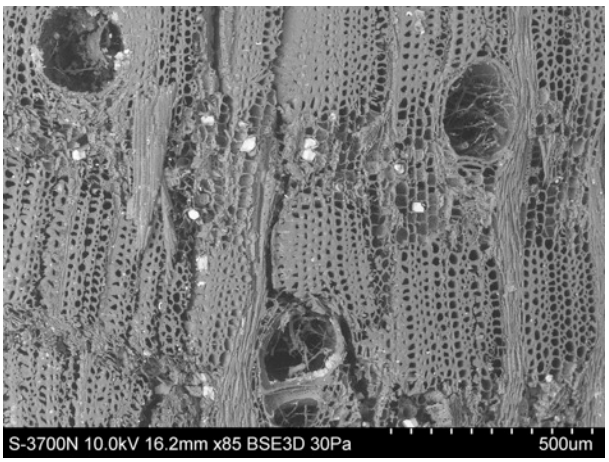


Figure 7: Transverse section. Ficus sycomorus from coffin Turin S. 14429.

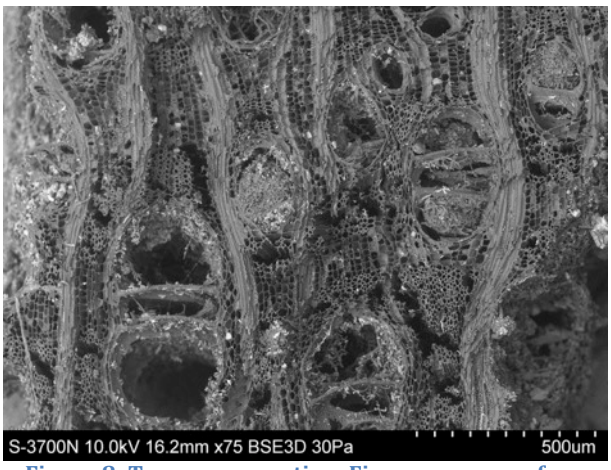


Figure 8: Transverse section. Ficus sycomorus from coffin Turin S. 14429.

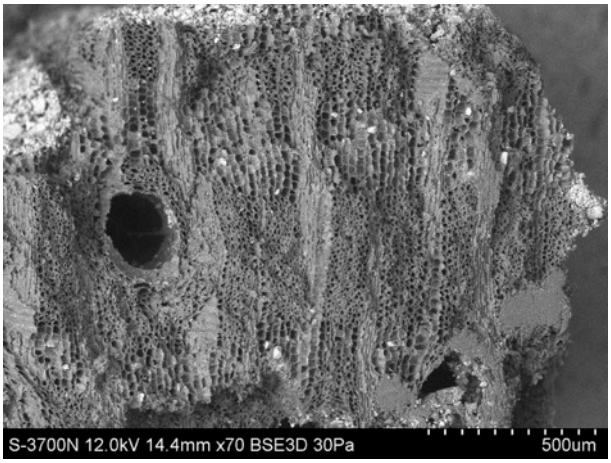


Figure 9: Transverse section. Ficus sycomorus from coffin Turin S. 12428.

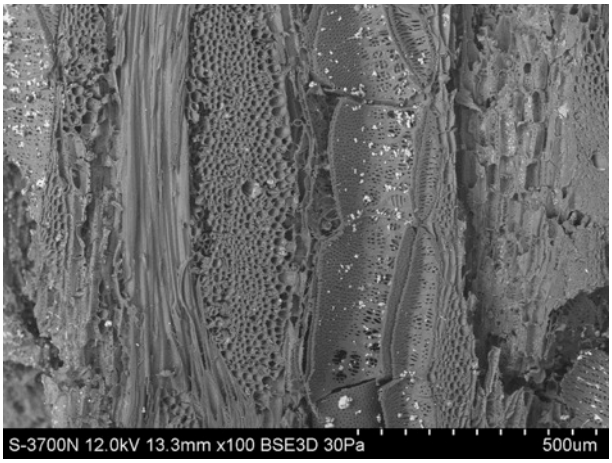


Figure 10: Tangential section. Ficus sycomorus from coffin Turin S.14403.

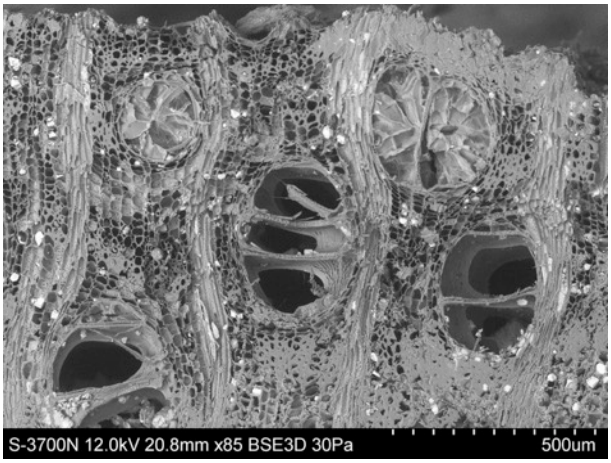


Figure 11: Transverse section. Ficus sycomorus from coffin Turin S. 14381.

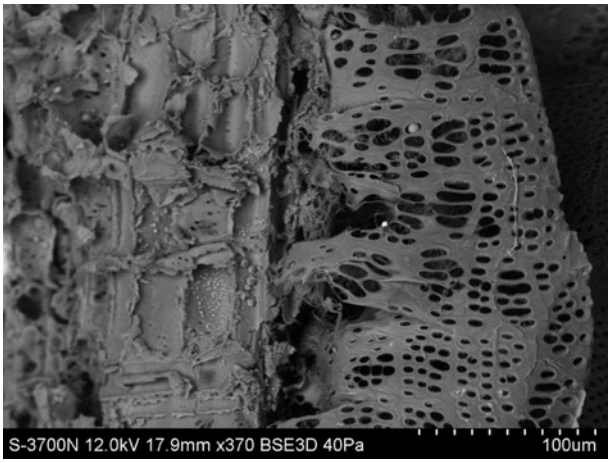


Figure 12: Radial section. Ficus sycomorus from coffin Turin S. 05147.

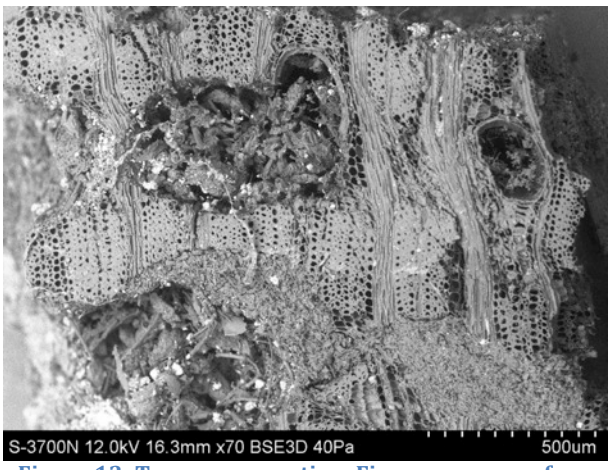


Figure 13: Transverse section. Ficus sycomorus from coffin Turin S. 14385.

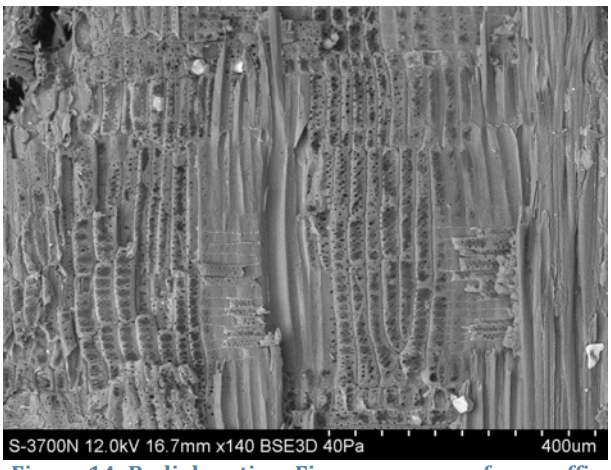


Figure 14: Radial section. Ficus sycomorus from coffin lid Manchester 4724B.

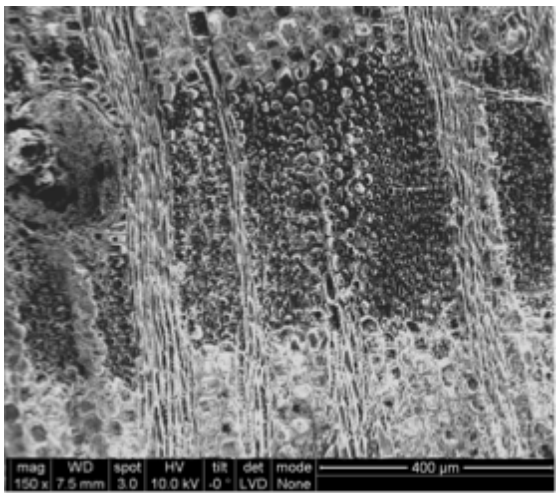


Figure 15: Transverse section. Ficus sycomorus from coffin Denver EX1997-24.4.

The sycomore fig is the most common timber found for Egyptian coffin construction. This is also represented in the samples identified in the present study. It was found in nine instances. These include two samples, one from the head side, and one from the base, of Turin coffin S.14429 (figs. 7-8); the base of Turin coffin S.12428 (fig. 9); the base of Turin coffin S.14403 (fig. 10); the base of Turin coffin S.14381 (fig. 11); the front of Turin coffin S.05147 (fig. 12); the back of Turin coffin S.14385 (fig. 13); the lid of Manchester coffin 4724B (fig. 14); and the lid of Denver EX1997-14.4 (fig. 15).

Transverse features:

In the transverse section, it is possible to see a diffuse porous hardwood, with indistinct growth rings. The cells are solitary or in radial multiples of 2-4, with vessels 100-200μm in diameter. Alternating bands of thick-walled fibers and banded axial parenchyma cells, usually more than three cells thick, are characteristic of this wood. The rays are between 1-13 cells wide.

Tangential features:

Rays of two distinct sizes are visible in the tangential section. Some are uniseriate, while others are larger, generally 4-14 cells wide. Alternate, intervessel pitting is visible. Fusiform parenchyma cells are present.

Radial features:

The body ray cells in the radial section are shown to be procumbent with one to 4 rows of upright and square marginal cells. Simple perforation plates are present. Minute, polygonal, alternate intervessel pits can be seen, as can vessel-ray pits with distinct borders. Fibers can also have minutely bordered pits. Finally, prismatic crystals can occasionally be seen in the axial parenchyma cells (for additional features, see Gale and Cutler 2000: 116; Schweingruber 550-551; Crivellaro and Schweingruber 2013: 413; InsideWood 2004-).

Christ's Thorn

Ziziphus spina-christi (L.) Desf.

Christ's thorn or sidder, also known as jujube or nabk (which may also relate to the fruit), is a small tree that usually only grows to about 5m in height, but can grow to 14m high (Gale et al. 2000:347; Crivellaro and Schweingruber 2013:462). It thrives in dry regions, but grows near water, in Palestine and North and West Africa. Due to the size of the tree, it has been dismissed in the past as a significant construction material (Gale et al. 2000:347), however, more recent analyses of coffin wood have uncovered long planks of sidder. For example, I sampled the coffin

of Puia, Turin provv.0718, and identified the large construction materials, as well as a tenon, as Christ's thorn (see below, chapter 4.V). The timber itself is very hard, and produces a good quality working material.

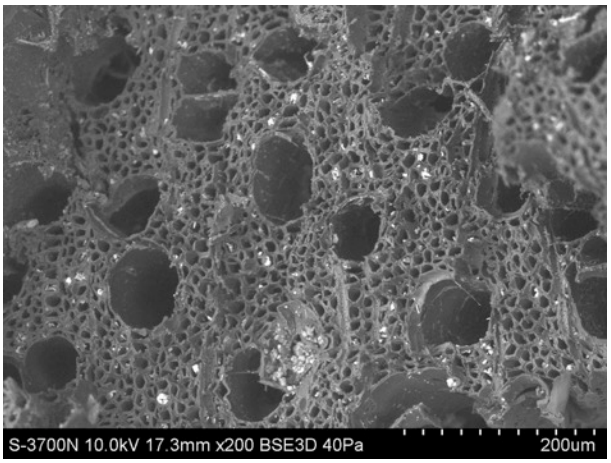


Figure 16: Transverse section. Ziziphus spina-christi wood from coffin Turin S. 14338.

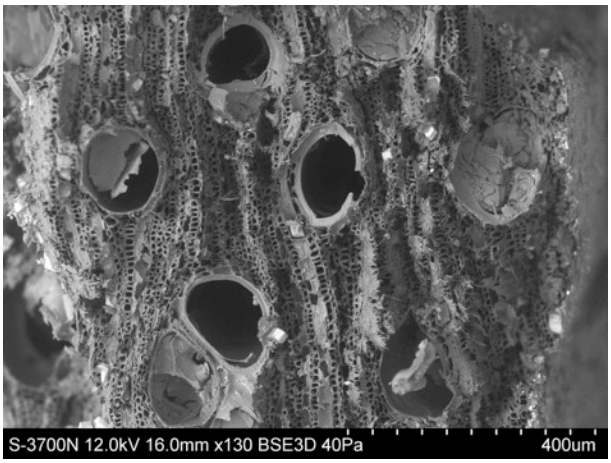


Figure 17: Transverse section. Ziziphus spina-christi wood from coffin Turin provv. 0718.

Figure 18: Transverse section. Ziziphus spina-christi wood from coffin Turin provv. 0718.

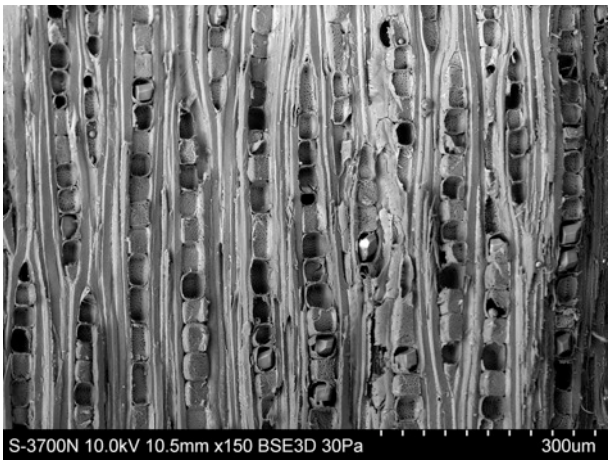


Figure 19: Radial section. Ziziphus spina-christi wood from coffin Turin provv. 0718.

Christ's thorn was identified in two coffins, and four samples in the present study. These include the back side of Turin coffin S.14338 (fig. 16); and the lid, base of the case, and a tenon from Turin coffin provv.0718 (figs. 17-19).

Transverse features:

The growth ring boundaries in the transverse sections tend to be distinct, but they can look indistinct in Egypt. The pores of this wood are diffuse or semi-ring porous, and vary between 40-200μm in width. The pores are frequently solitary, or in radial multiples of 2-4. The axial parenchyma is scanty and diffuse.

Tangential features:

The rays are uniseriate, very rarely biseriate. Helical thickenings can be seen in the vessel elements in both this plane and in the radial sections.

Radial features:

Christ's thorn has simple perforation plates. The vessel-ray pitting has distinct borders. Procumbent, square and upright cells are mixed (for additional features see Schweingruber 1990: 604-605; Crivello and Schweingruber 462-3; Insidewood).

Tamarisk

Tamarix nilotica (Ehrenb.) Bunge, *Tamarix aphylla* (L.) Karst.

Tamarix nilotica and *Tamarix aphylla* are sub-species of the Tamaricaceae family. These tamarisks tend to grow in salt marshes, or in brackish water or springs. Their deep roots allow them to thrive in desert conditions that would be inhospitable to other trees. Tamarisks are found in western Europe, the Mediterranean, India and northern China (see figure 4; Gale and Cutler 2000: 251). The anatomy of the tamarisks is so similar that it is virtually impossible to distinguish between the species based on the anatomical features alone (Schweingruber 1990: 709; Neumann 1989: 92).

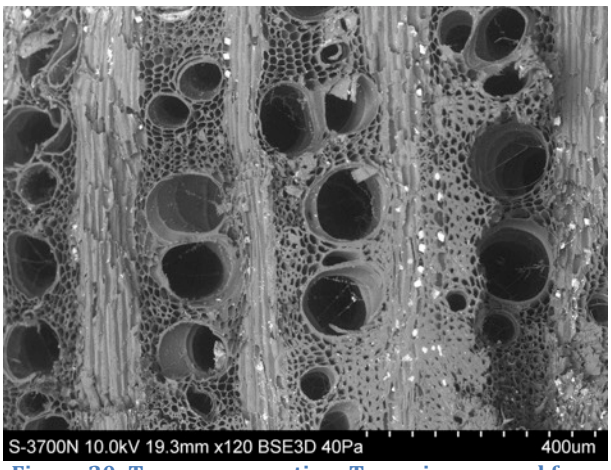


Figure 20: Transverse section. Tamarix sp. wood from coffin Turin S. 14061.

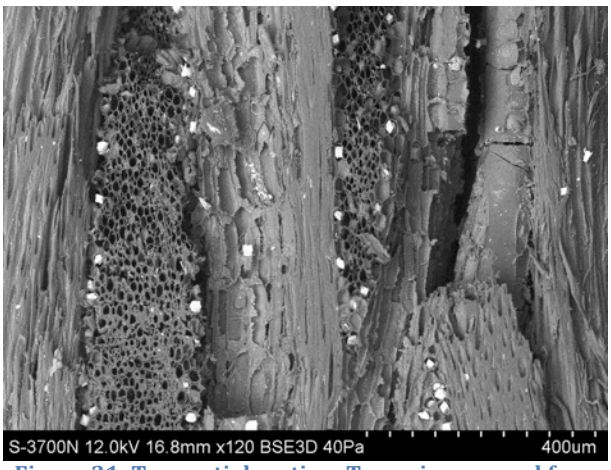


Figure 21: Tangential section. Tamarix sp. wood from coffin Turin S. 15701.

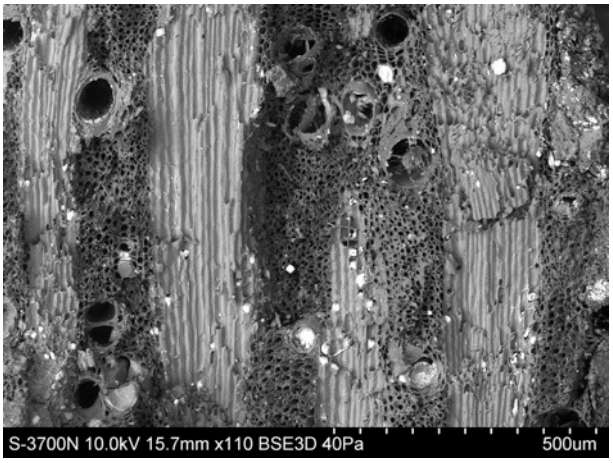


Figure 22: Transverse section. Tamarix sp. wood from coffin S. 16742.

Three samples taken for this project were identified as *Tamarix sp*. These were taken from the foot end of Turin coffin S.14061 (fig. 20); the front of Turin coffin S.15701 (fig. 21); and from the case of coffin S.16742 (fig. 22).

Transverse features:

In the transverse section, the pores of this hardwood are diffuse or semi-ring porous, usually with indistinct growth rings, but distinct growth-rings are possible in temperate regions. The pores are often solitary, but can appear in groups of up to four, and are 100-200μm in width.

Paratracheal axial parenchyma is also visible, usually vasicentric. Large rays are present. Thin- to thick-walled fibers are also evident, often in alternating bands.

Tangential features:

The rays of the tamarisks tend to be very wide, from 10 to over 30 cells seriate, and storied fibers are visible. Fusiform parenchyma can be seen, occasionally in strands with two cells.

Radial features:

In radial sections, ray cells are largely procumbent with anywhere from 2 to more than 4 upright or square marginal cells. The intervascular and vessel to ray pitting is minute, alternate or polygonal, and perforation plates are simple. Crystals can be seen in ray cells (For additional features see Neumann 1989: 92; Schweingruber 1990: 709; Gale and Cutler 2000: 253; Neumann et al. 2001: 416; InsideWood).

Cedar

Cedrus libani A.Rich.

Cedrus libani commonly known as cedar, or more specifically, Lebanese cedar, comes from the Pinaceae family. It can grow very tall, up to 40 m in height in some circumstances. The trees are found in Asia Minor, on Mount Lebanon in the Levant, Cyprus, and on the Atlas Mountains in Africa (see figure 5; Gale and Cutler 2000: 377). The wood of the *Cedrus libani* was highly desirable in antiquity, as it is now, for its durability, long straight grain, its rich, brown color, fragrant aroma, and resistance to insects and fungus (Gale and Cutler 2000: 377). It contains essential oils and ingredients such as αpinene, myrcene, limonene, terpinolene and α-terpinene which act as preservatives and keep away pests (Abdel-Maksoud and El-Amin 2011:142). In addition to its value as a timber resource, it is and was used to produce oil in the Near East (Van de Mieroop 1992).

No samples taken for this project were identified as cedar.

Transverse features:

The tracheids visible in the transverse section of *C. libani* show a gradual change from earlywood to latewood, creating distinct growth rings and confirming the presence of a softwood. Occasionally traumatic resin canals are visible, and sparse axial parenchyma cells are present.

Tangential features:

In tangential sections, mostly uniseriate rays are found, with occasional bi-seriate and 3 seriate examples. The rays can also be seen to be up to 30 cells high.

Radial features:

Cedrus libani has bordered pits visible in a radial section. The scalloped torus of these pits provides one of the most diagnostic features for this species. The pitting seen in the radial walls of tracheids is predominantly uniseriate. The end and horizontal walls of ray parenchyma are distinctly pitted. Cross-field pitting can include piceoid, cupressoid and taxodioid types, with 1-3 pits per cross-field. Prismatic crystals are visible in the rays (For additional features see Schweingruber 1990:110–111; Cartwright 2001:110; IAWA Committee 2004:65; Crivellaro and Schweingruber 2013:67).

Museum	Sample Number	Accession Number	Details	Wood ID
Museo Egizio	1	S 14429	Top of head end	Ficus sycomorus
Museo Egizio	2	S 14429	Base of coffin, next to back	Ficus sycomorus
Museo Egizio	3	S 14338	Back side of coffin, bottom plank	Ziziphus spina-christi
Museo Egizio	4	S 12428	Base of coffin, near front of foot end	Ficus sycomorus
Museo Egizio	5	S 14429	Dowel	Acacia sp.

Museo Egizio	6	S 14403	Base of coffin, near front side	Ficus sycomorus
Museo Egizio	7	S 14381	Base of coffin, near back side	Ficus sycomorus
Museo Egizio	8	S 05147	Front of coffin	Ficus sycomorus
Museo Egizio	9	S 14385/2	Back side of coffin	Ficus sycomorus
Museo Egizio	10	S 14061/1	From foot end	Tamarix sp.
Museo Egizio	11	S 15701	Front of coffin	Tamarix sp.
Museo Egizio	12	Provv 0718	Base of case	Ziziphus spina-christi
Museo Egizio	13	Provv 0718	Lid left shoulder	Ziziphus spina-christi
Museo Egizio	14	S 16742	Case of coffin, near feet	Tamarix sp.
Museo Egizio	15	Provv 0718	Tenon	Ziziphus spina-christi
Museo Egizio	16	S 13964	Base of coffin	Acacia sp.
Manchester	17	4724B	Lid end near boss	Ficus sycomorus

Table 2: Summary of original identifications

COMPLICATIONS WITH IDENTIFYING ARCHAEOLOGICAL WOODS

The difference between modern and ancient wood materials is significant. When analyzing archaeological or decayed samples of timber, the wood anatomy can be difficult to discern, or seem different than what has been described above. Taking larger samples can help reduce the chances that certain elements will be absent, but this is not always feasible. Attempting to identify wood when it is possible that certain features may not be present in the specific selection of wood must be avoided, as this can lead to erroneous identifications, which in turn can lead to misinformation regarding trade, access, and technology. The timbers found in the Uluburun shipwreck, for example, had been identified in the 1980s as fir, *Abies sp*. (Bass et al. 1989:25); however, Caroline Cartwright, senior scientist at the British Museum, reexamined the wood more recently. After carefully analyzing several sections, she arrived at the alternative identification, *Cedrus libani*. Several of the sections did not seem to have the diagnostic scalloped torus margins of bordered pits that are indicative of cedar of Lebanon, but eventually

she was able to locate these elements (Cartwright 2001:112–113). When a number of samples cannot be taken, it is always better to err on the side of caution, and note that a positive identification was not possible, rather than risk an incorrect identification based on only one or two accessible planes of the wood, or based solely on the absence of certain features.

There are also many types of decay and rot than can affect the visibility of features. These include various fungi, brown rot, and soft rot, as well as Bacteria (Blanchette et al. 1994:55; Blanchette 2000:196; Schweingruber 2007:239; Darwish, el Hadidi, and Mansour 2013). In addition, the structural integrity of wooden objects can degrade due to age, which is accompanied by microscopic fractures and a process referred to as delamination, or due to insect infestation (Borgin, Parameswaran, and Liese 1975; Nilsson and Daniel 1989; Cartwright 2015). While rot can entirely obliterate anatomical features, these latter issues pose the greatest challenge during the sampling stage. The wood is often too weak to maintain its structure when sectioned. In these cases, the SEM method will almost certainly be more effective.

The fact that coffins are frequently created from multiple species of wood poses another challenge for archaeologists. The dowels and tenons, in particular, are frequently made from a timber that is different than the wood used to create the larger planks. When possible, multiple samples from separate areas should be taken in order to test whether several species had been integrated into a single object. As shall be discussed in section four, this information can reveal the reuse of materials, and either a lack of knowledge regarding proper woodworking practices, or the forced incorporation of sub-standard construction methods.

Finally, the ancient and modern materials added on top of wood can cause difficulties for both sampling and interpretation. Plasters,[14] paints, gilding, and other additional layers were

[14] The discussion of Egyptian "plaster" is rather complicated. This term can refer to hydrated lime, gypsum, calcium sulfate, or a combination. This should be kept in mind if attempting to match workshops or recipes.

frequently used to decorate Egyptian coffins. These materials make it difficult to sample the wood, and also can seep into the wood or affect its hardness, affecting the ability to see anatomical features. Efforts at conserving the wood, can also pose a challenge for identification. Consolidants such as Paraloid (a co-polymer of methacrylate and acrylate resins), frequently used by conservators in the last century, tend to seep into wood, and completely obliterate anatomical features. Parafin wax was also used during field excavations to consolidate fragile wooden objects, which has a similar negative affect on wood (Cartwright 2015:9–10). Such challenges are particularly important to keep in mind when sampling wooden objects.

Some of the challenges for wood identification are visible in figures 5-22. While in each case an identification was possible, rot, fungus, ancient plasters, sands, insects and modern restoration work made it difficult to take photographs that clearly demonstrate the necessary diagnostic features. In figure 7, for instance, fungus had softened the wood to such an extent that a clean break or cut was not possible, giving a smeared appearance to the wood, and tendrils of the fungus are visible within the pores. The same is visible in figure 8 and 9 as well. Round spores of fungus can be seen in figure 12. In figure 13, significant insect damage is visible, though luckily the characteristic parenchyma bands of the *Ficus sycomorus* were still observable in between the sections of frass. In other cases, as seen in figure 17, modern restoration materials had plugged up a number of the vessels and elements so that some of the cuts and breaks appeared completely featureless. While attempting to break the sample to create clean planes of reference, the consolidated wood simply bent, as if made of plastic. Many of these photographs would not be considered publishable under normal circumstances, due to their "messy" appearance; however, this is unfortunate, as it would provide wood anatomists with a better understanding of the variability encountered in archaeological woods. Such images might also

impress upon museum curators the necessity of taking larger samples to increase the possibility of finding clear sections for analysis, and encourage conservators to apply consolidants only when crucial for stability.

Due in part to these issues, but also because of problematic guesswork in attempts to identify wood, erroneous timber identifications plague many publications of Egyptian coffins. Ideally, I would only include coffins that I have been able to identify myself in this project; however, this would leave such a small sample for discussion, that it would be impossible to comment on the larger patterns of construction. I have therefore decided to include published wood identifications. I have, however, noted the source of the identifications in the supplemental coffin catalogue. I hope that this will permit swift updates of information in the future, and allow researchers to track where errors might have entered into the scholarship.

DISCUSSION

Identifying the species of wood used to create coffins can reveal a great deal of information about the knowledge of woodworkers, the status of coffin owners, the environment, and international relations (see section four). The limited damage inflicted on coffins by sampling is therefore usually worth the risk, as long as sampling is carried out with due care, and an effort is made to avoid disturbing the structural and aesthetic integrity of the object; nevertheless, the process is more complicated than is often acknowledged. Untrained amateur wood anatomists are often unaware of the extent to which age, decay, and natural variability may alter the anatomical features of wood. The combination of these challenges, in addition to simple guesswork, has caused the field to be riddled with questionable identifications. Moreover, for many coffins, only a single sample of wood was taken for examination. A new study of Egyptian wooden objects would greatly help to correct the problematic methods used in the past,

particularly if photos of the wood anatomy could accompany the new identifications so that results were verifiable. As new identifications of wood and coffins are completed, our understanding of woodworking technology and material access will greatly improve.

3.I THE RELIGIOUS SIGNIFICANCE OF TIMBER IN ANCIENT EGYPT

The modern woodworkers in Cairo related a strong spiritual connection to the wood they worked, a sentiment reflected in different forms through discussions with other woodworkers around the world as well. In turning to the ancient evidence, references to the religious significance of timber abound, in Egypt, and elsewhere. It is likely that these added connotations affected the selection of materials. In addition, the structural qualities of the wood, and their potential as construction elements clearly also had an impact on the creation of these religious assocations in the first place.

For millennia the world of the ancient Egyptians has been a source of mystery, fascination and wonder for those who live beyond its spatial and temporal borders. A central reason for its captivation is the strong religious connections that the Egyptians attached to all aspects of life. Much work has been done on the symbolic importance of different types of metals and stone, as well as the colors of various materials and pigments. Gold, red quartzite, and objects decorated with red and yellow are often associated with the sun and deities such as Ra and Amun who are believed to be connected to solar powers of life and regeneration (Raven 1988:238; Pinch 2001:184; Baines 2007a:275–276). Dark soils, mud, and the color black are connected to beliefs surrounding Osiris and fertility (DuQuesne 1996). Despite these acknowledged associations, scholars seem much less willing to appreciate the religious importance of timber. Maarten Raven stated that, "at the present state of our knowledge, it is virtually impossible to state anything definite on the symbolic use of wood in ancient Egypt" (1988:239). Although this statement is from several decades ago, there continues to be little attempt to consider the religious significance of the timber in relation to the materiality of

objects. It is certainly very difficult to say anything definite about ancient Egyptian religion; however, by gathering the numerous references to timber used in religious contexts, we are now in a position to be able to comment on the symbolic importance of specific types of timber from ancient Egypt, particularly where it is used to produce coffins.

There can be little surprise that living trees had many religious connections. They provided much needed shade to the ancient Egyptians, building materials, fire wood, and in many cases, fruit. They are often depicted in groves dedicated to certain ancient Egyptian deities, found growing in front of temples, or noted as belonging to smaller private gardens attached to tombs (Buhl 1947; Wilkinson 1994; Baum 1989; Koemoth 1994; Tietze 2011). The religious significance of trees, therefore, cannot be doubted. Less acknowledged is the fact that the cut timbers carried on a symbolic importance, sometimes connected to the significance of the living tree, but often with associations related directly to their use as construction material. Wood was, and is, one of the most commonly used building materials for people belonging to every socioeconomic level. In most areas of the world it does not survive well in archaeological contexts. For ancient Egypt, however, since objects were placed in desert tombs, there are thousands of surviving wooden coffins, pieces of furniture, statues, figurines, and even boats. Of all these objects, the coffin seems to be the most fundamental part of the burial. Existing within a community steeped in religious and magical beliefs, the coffin became associated with spells and rituals that helped it to magically convey the deceased to the afterlife. Within this context, the timbers used for the construction of coffins also became associated with the deities of the underworld, as well as funerary beliefs. There are therefore many textual and pictorial references that attest to the symbolic importance of specific timbers within their function as coffins. Religious associations of timber with other object types do occur, but not nearly as frequently as

with these body containers.

The specific beliefs and gods associated with certain timbers changes over time, and in many cases the various symbolic connections can be contradictory. As will be discussed below, cedars can be related to light, the sun, and the god Ra, as well as with death and the god Osiris. The Egyptians would not have had a problem with this concept. There are a number of Egyptian creation myths, often telling contradictory tales, but each was considered valid. Moreover, life, death, and birth were viewed as a cycle, and so are intricately related to one another. According to this *multiplicity of approaches*, the significance of the timbers can therefore change depending on their context and desired purpose. By comparing evidence from spells, images, and remaining wooden objects, it is possible to begin to comment on these different beliefs and associations, and how they might have affected the perception of trees and timber. It is also possible to consider whether the natural properties of woods and trees caused the Egyptians to attach these religious associations, which then made them desirable for religious objects, or whether their use in these objects encouraged the accumulation of religious associations. It is likely that the two were in constant flux, affecting one another, as well as influencing the system of beliefs attached to trees, timbers, and objects. By the end of Egyptian history the functional and religious importance of timber was appreciated by the ancient Egyptians, and contributed to the overall value of objects deemed vital for the eternal existence of the Egyptian people.

SPELL 193

One text that explicitly lays out the significance of timber usage in the context of the coffin is an excerpt from the Book of the Dead that was interpreted by Heerma van Voss as a variant of spell 193 (1971a; 1971b:pl. 20).[15] The spell is attested from Leiden Papyrus T 3, dating to the 21st

[15] In appendix 1, I have provided my English translation of the spell, and a plate showing the illustration of this spell. Only the passages pertinent to this discussion will be analyzed in detail.

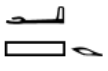
Dynasty, and owned by a woman named Tauheryt (van Voss 1971a:60). Only one other version of this text is currently known, and it is a very abridged, corrupted form of the spell (BM EA 10554; fig. 23) (Budge 1912:Pl. 49; van Voss 1997). Spell 193 is concerned with the production of coffins and the timber that was used in their creation. It opens with the title: "Spell for knowing (about) the coffins of the kings of Upper and Lower Egypt, the noble ones of Heliopolis, Djedu, Herakleopolis, Sais, and Abydos". The spell then continues, describing a number of different types of timber and their religious connections within the context of the coffin.

Figure 23: Variant of BD Spell 193 from the Greenfield Papyrus (Budge 1912:pl. 49).

While several of the timbers mentioned in spell 193 have been identified, a number of the terms await translation, including the word "*ỉmɜ*". The *ỉmɜ* tree is often mentioned in association with the bending Christ's thorn tree, the Egyptian *nbs* (Faulkner 1969:145, 171, 254; PT 437, 482, 610), and occurs frequently in the Book of the Dead as a tree associated with Hathor (Allen 1974:62, 71; BD 68, 82c). Nathalie Baum (1989:192) suggested that it may be the *Maerua crassifolia*, but the variations in how the tree is described and depicted may mean we will not be able to identify it for certain. The term *dpp,* mentioned in the spell, is uncommon, and is also unidentified. One of the only other references to this wood is as a mast for a ship, however, and so must refer to a tall tree (Erman and Grapow 1963:V.447; van Voss 1971a:71). Finally, *tr.t* wood may refer to the willow (van Voss 1971a:71). It is attested in texts and willow timber is found within the archaeological record. The majority of attested material examples come from a group of ancient labels applied

to mummies, dating to the Greco-Roman Period (Davies 1995:151). In Book of the Dead spell 57d, the deceased calls to the willow for protection, and the tree is associated with crocodile demons (Allen 1974:54). To my knowledge, it is not used frequently, if at all, as construction material for coffins in any period. It is possible that the term has been incorrectly translated, but in any case, additional material and textual evidence in relation to *tr.t* must be found before it could benefit from detailed discussion.

The remaining types of timber mentioned in spell 193, which can be identified, are cedar (*ꜥš*)[16], Christ's thorn (*nbs*), tamarisk (*ỉsr*), sycomore fig (*nht*), acacia (*šnd*), and date palm (*bnỉt*). These woods are also the most common types of identified timber found mentioned in spells, in sacred groves, and in the surviving religious objects. In assessing the significance of each type of timber within the context of the coffin, it is useful to begin with the reference in spell 193, and to see how this compares with other symbolic associations. Upon close analysis of the passage, earlier and later allusions and metaphors, as well as depictions from tombs and objects, can be elucidated. While it is always unwise to use later texts as the sole source to suggest meaning in earlier periods, these references must be included for a complete treatment of the topic.

CEDAR – *ꜥš*  and *mrw* 

The first timber reference in spell 193 is to cedar, *Cedrus libani* (*ꜥš*): "As for a coffin of cedar: He enters shrines like a god. He is alive among those who do not perish, truly". For an individual that has a cedar coffin, he has the qualities of a god. In this context, the reference is likely meant to allude to Osiris, the god of the afterlife. By the Middle Kingdom, each deceased person became connected to Osiris once the appropriate rites and spells had been enacted to transform them into effective spirits. This gives them the power to enter the underworld, and to live among

[16] See appendix 2 for a discussion of aS and mrw, and the translation as cedar.

their ancestors in the circumpolar stars – those who do not perish. He or she can also move through shrines, probably a reference to receiving offerings and staying in contact with the living. The fact that the reference to cedar appears first in the list of timbers may show that it is the most important. These lines lead into the epithets of Tauheryt, for whom the spell was written, and an invocation of the gods to allow her to pass freely into the underworld. The cedar reference is also separated from the other timbers by the list of epithets, thus giving it a particular significance and potency. The rest of the sections of the spell are short, with each timber and its religious interpretation simply following one after the other.

Cedar (referred to in Egyptian as either *ꜥš* or *mrw*; see appendix 2) was frequently referred to as the most prestigious construction timber available for the Egyptians (Meiggs 1982:49–87; Davies 1995; von Falck and Waitkus 2011). It is identified frequently in coffins from the archaeological record (see below, section 4, and table 1), and is referenced in administrative texts as the wood used for royal barges and ships, temple doors, and royal coffins and shrines (Breasted 1927:I.146; Kitchen 1969:IV.155-158, O. Cairo 25504, rII, 6-10; McDowell 1999:223–225). As cedar was imported from the Levant, the initial emphasis on the tree as prestigious and sacred is likely to have been adapted from Near Eastern beliefs and values. Other trees in the Levant, such as Cypress and Juniper, produce similar, strong and fragrant, close-grained timber; however, the cedar was by far the most impressive tree in the Lebanese forests. In antiquity, cedar trees grew much taller than other species. For instance, Pliny records a cedar growing on Cyprus that was 130 feet high, while junipers rarely grow higher than 80 feet (Meiggs 1982:54–55).[17] As the king of the forest, it therefore was given a

[17] During the Greek and Roman periods, cedar was still valued, but the Greeks, who were more familiar with northern species, seem to have preferred fir and pine for construction materials, particularly for ships. Without the affect of the religious and cultural value, fir and pine do make better construction materials in a ship context (Meiggs 1982:56–57).

higher status than the shorter trees, despite its similar quality as a construction material. While the Egyptians would have understood these differences during their visits to the Levant, the local inhabitants in Lebanon would have always been aware of the differences, and so are likely responsible for the initial separation of significance. Moreover, the trees were stripped of their identifying foliage before being transported to Egypt, and so, again, the differences between the softwood species would have been most apparent before the trees were cut. As with the Egyptian texts, Near Eastern sources frequently associate cedar and cedar forests with religious contexts. In the epic of Gilgamesh, for example, Gilgamesh and Enkidu find themselves in the Lebanese cedar forests, and as they marvel at the majesty of the cedar trees, they describe it as the "dwelling of the gods, the throne of the goddesses" (George 2003:602–603). Such references have been found that date to as early as the 18th century BCE in Old Babylonian, but the concept likely originated from an earlier, more eastern text, as the original location of these forests. The concept of the cedar forest as the home of the gods is also reflected in the New Kingdom Egyptian text, the *Tale of Two Brothers*, which is likely borrowing from Near Eastern versions of the tale (Ayali-Darshan 2017:188).

From as early as the Old Kingdom, cedar products are mentioned as potent magical materials. In the Pyramid Texts from the tomb of King Unas, Pyramid Text (PT) 77, "fine quality cedar (ꜥš) oil" is addressed as an ointment to anoint the brow of the king as Horus. It was called to "grant him to have power over his body", and to cause that "terror be in the eyes of all the spirits when they look at him, and of everyone who hears his name" (Allen 2005:22: W51). By the Middle Kingdom, cedar had become closely associated with Osiris, as the god of the underworld. Coffin Text (CT) spell 275 states: "N is the cedar-tree (ꜥš) in front of Osiris, which gives what N needs" (Faulkner 1973:207; Carrier 2004:I.652-653). Trees are often seen as being

able to sustain the deceased (see the discussion of sycomore below). In this case, it is possible that the "cedar-tree" is actually a euphemism for the coffin, in front of and surrounding the deceased. In this vessel, the deceased would then be given all the supplies necessary to prosper in the underworld. In CT 601, the cedar is referred to as both *ꜥš* and *mrw*, related to the rebirth of Osiris as Re-Atum: "I am Re-Atum who molded himself; I groaned at the occurrence of my birth. They come to (give) my offerings in this my name of cedar-wood (*ꜥš*); they have loved me because what they have given to me is praise in this my name of cedar-wood (*mrw*)" (Faulkner 1973:193–194; Carrier 2004:II.1394-1395). This too could be understood as descendants and friends bringing offerings to the deceased and laying them before the cedar coffin. By this time, the coffin owner has reached the rebirth phase of the life cycle, taking the form of the solar gods.

As discussed below in chapter 4.III, by the Middle Kingdom there are additional references that make it clear that high-ranking elite individuals were seeking cedar wood and oil for their burials. *The Admonitions of Ipuwer*, a text from this era, believed to refer to the chaos occurring in the First Intermediate Period, describes the distress at not being able to access this sacred and prestigious material: "Indeed, there are none who sail North to Byblos today. What will we do for cedar (*ꜥš*) for our mummies? Priests are buried with their products, and the great ones are embalmed with their oil as far as Crete" (Pap. Leiden 344, recto, lines 3,6-3,8; Gardiner 1969). The significance of the wood as an important sacred, and elite material, was therefore acknowledged. As shall be demonstrated in section 4, this wood is also found only in the best quality coffins, and is frequently associated with additional valuable materials, such as gold.

Naming the coffin as cedar, and physically acquiring the material for the coffin, may also be a way of further aligning the deceased with Osiris. In the myth cycle of Osiris, after being murdered by his brother, Seth, the limbs of the god are said to wash up on the shore in Byblos,

where a cedar tree grows around it to protect the body, and keep it for Isis and Nephyths who will cause the deceased the be reborn (Sethe 1911:71; von Falck and Waitkus 2011:74). In this way, the original coffin was therefore seen as cedar wood. This is likely the reason for the references in the New Kingdom Book of the Dead spell, 168B, when the deceased is addressed as "the weary one within the cedar (*mrw*) coffin" (Allen 1974:174, D S7). The "weary one" being an epithet of Osiris, referring to the time before his rebirth and regeneration (Frankfort 2011:130). In addition to spell 193 from the Third Intermediate Period, a list of trees and related gods from the Saite Period, Dynasty 26, has also been recovered. In this Papyrus Berlin 29027, we are told simply, "As for the cedar tree (*ꜥš*), it is Osiris". The next line, says, "As for the *mry*-trees, it is the same"[18] (von Lieven 2004:169–170; pBerlin 29027, lines x+2,X+3). In this brief text, it is therefore clear that by this time, cedar, in both its names of *ꜥš* and *mrw*, was aligned with the god Osiris.

Although these types of allusions to the Osiris myth cycles can be found throughout Egyptian history, the full tale is only known from much later sources. In earlier periods, religious knowledge was usually kept secret, and known only to temple scribes and priests. In the Greco-Roman Periods, however, the temple beliefs, activities, and rituals, almost certainly passed down from pharaonic traditions, were inscribed on temple walls. Much of our religious knowledge therefore has to rely on these later sources, and we can only hope that they are not significantly anachronistic. This association of Osiris buried in a cedar coffin or dwelling in cedar branches is reflected in the texts and reliefs from the Ptolemaic temples at Dendera and Philae (Mariette-Bey 1873:Pl. 36, line 42; Buhl 1947:90).

At Dendera, this association is made particularly explicit. A number of rituals related to Osiris, fertility, and rebirth, occurred at this temple. In particular, there was a ritual of recreating

[18] "*mry*" is a variation of the spelling of "*mrw*".

an effigy of Osiris in his guise as Sokar and Khenty-Imentit. These effigies, were made of soil and ritual ingredients, as well as seeds. This mixture was packed into moulds in the shape of Osiris, and then removed, wrapped in linen like a mummy, and burried in a coffin. Calendars of the "great mystery of the Earth-hoeing-Festival" from the Osiris chapels on the roof of the temple of Hathor at Dendera provide the specific days in the month of Khoiak in which the steps of creating these figures were to occur. These steps also include the specific materials needed for this rebirth of Osiris ceremony. In that related to the effigy of Sokar-Osiris, on the 24th Day, the figure is to be placed in a cedar (*mrw*) coffin; For that of Osiris Khenty-Imentit, on day 12, it was placed in a greywacke coffin with a cedar (*mrw*) lid (Centrone 2006:41). Elsewhere in the Khoiak texts, we are told that, "as for the coffin of Osiris Khenty-Imentit, it is made of sycomore wood covered in cedar (*mrw*)" (Dendera X, 32.8-33.1; Cauville 1997:18; Centrone 2006:43). This initial death and burial in a cedar coffin, reflects the sequence of events in the myth cycle of Osiris as told by Plutarch (von Falck and Waitkus 2011:74). That the spells specify the type of wood that would be used, demonstrates the significance attached to the timber as an aspect of the magic responsible for the rebirth of Osiris.

Several Greco-Roman versions of the *Second Book of Breathing* (Papyrus Louvre 3148, 3174) also appear to demonstrate the importance of various timbers for the construction of coffins and embalming (Goyon 1972:233–250; Baum 1989:304). The spell invokes the trees, and notes that they are associated with specific gods. ***Mrw*** is referred to as "issuing forth from Khepri", a manifestation of the sun god Re. The tree is referred to as "master of prestige", and "master of great trees issuing forth from Osiris". The timber is called upon to, among other things, be a "guardian" and to "ensure (the deceased's) protection, maintain his body in good condition" (Goyon 1972:239). Although several trees are mentioned in the text (discussed

below), *mrw* is singled out as the most prestigious. The wood is therefore associated with both Osiris and Re, the gods of death and rebirth, and is referred to as a guardian, a potent association for coffin material.

The Second Book of Breathing goes on to describe *ꜥš*-wood as "issuing forth from Osiris, a perfect emanation from north of the sea" (Goyon 1972:240). Only *ꜥš* and *mrw* are described as coming from Osiris in this text. They are also said to come from across the sea, which may refer to Byblos, whence cedar derived. Whereas *mrw* is called upon specifically as a tree, strong and large enough to protect the body, *ꜥš* is called upon in its role as incense. In describing the deceased's desire, the text states: "He (the deceased) calls to you, this *ꜥš* fluid, and you hear his cry for help...welcome his body like that which issues from you, render his odor agreeable with that which you create". The final lines of invocation state: "Come *ꜥš*! Come, great one! Come incense! Come oil! Come scented gum!" (Goyon 1972:240–241). As an incense, *ꜥš* is used to help prepare the body for its entrance to the Duat. In this text, it seems clear that cedar (*mrw*) as a tree for the creation of coffins, and incense as a product of cedar (*ꜥš*) is of particular religious importance, and can magically assist the deceased with reaching the afterlife. The various religious associations of these products in this late text are all reflected in early, pharaonic examples, as seen above, and so seem to be in keeping with the earlier tradition.

Cedar was also used as sawdust for embalming the dead. Embalming sawdust from the abdomen of a Late Period mummy was analyzed by Amorós and Vozenin-Serra (1998:228–229). They discovered that it was made of 70% cedar and 10% tamarisk. The decision to include cedar, a costly, imported timber in the sawdust used to embalm the deceased was likely an intentional choice, and a way to ensure that all remnants of the wood were used. The practice of incorporating imported timbers in the abdomen of mummies is attested for the mummy of

Ramesses II, which was found to have small pieces of cypress and fir in the abdominal cavity (Plu 1985:167–170). The inclusion of sawdust in the mummies may have had not only a structural purpose, helping to maintain the shape of the body as it decomposed, but may also have improved the smell. This may therefore provide physical evidence for the ritual actions described above in the *Second Book of Breathing*, where *ꜥš* incense is called upon to render the odor of the deceased agreeable. This concept is strengthened with comparisons from the archaeological record. An analysis of the remains of what has been understood as "unused embalming material" found at Deir el-Bahari has been proven to be largely cedar products (Koller et al. 2005:609). Tablets and jars that describe seven oils central to funerary rituals, of which one is *ꜥš,* have also been found in tombs (Strudwick 1988:81–82).

Cedar has clear religious significance throughout Egyptian history. It is particularly related to the god Osiris, and has potent powers of protection and regeneration in the funerary sphere. Seen as the king of trees, it was also viewed as the most effective and prestigious construction material for coffins, despite its physical similarity to other softwood species that would have been accessible to the Egyptians. The experience of working this wood, with a smooth, straight grain, that released a powerful fragrance, would have been very different than working with local woods as well, further emphasizing its unique position among craftspeople. Its frequent appearance in elite coffins in the archaeological record demonstrates that these concepts had a direct effect on material choices.

CHRIST'S THORN – *nbs* 

The next coffin described in spell 193 is of Christ's thorn (*nbs*), *Ziziphus spina-christi*, also known as sidder, nabek, and jujube: "As for a coffin of Christ's thorn, it is the divine timber on which Osiris lives, truly. He comes out (with) food and offerings. It transfigures who is in it, the

Osiris Tauheryt, the justified". The religious significance attributed to the tree and its associated timber is related to its ability to provide the deceased with food and offerings, as a powerful protective element, and as a possible material for constructing divine figures. Its multiple functions are likely related to the biological aspects of the tree. The tree produces a very high quality, close-grained, hard, timber; however, the tree tends to be rather short, growing to approximately 4-10m, and often resembling a shrub, rather than a true tree. Large objects are therefore rarely produced from the timber, however, in Theban tomb 100, it is noted as a good wood for producing weapons such as bows (Sethe 1906:IV.1121,I). The fruit of the tree was edible, and seems to have been ground down and mixed with grain to produce a flavored bread and beer (Baum 1989:171).

In the Pyramid Texts (PT 437, 482, 610), the *nbs* bends its head to the king, probably in reference to providing the deceased with sustenance (Faulkner 1969:145, 171, 254). A similar belief continues in the Middle Kingdom Coffin Texts as well (Faulkner 1973:275; CT 724). In CT 1012, the deceased notes that they will be able to live on the bread and beer from the Christ's thorn tree. In these texts from Assiut, specifically, *Ziziphus* is also named as a tree that should be planted in the funerary garden, perhaps also so that it may provide sustenance as well as shade for the deceased (Barguet 1986:386; Baum 1989:298; CT 119; CT II 144a-b). In this context, the Christ's thorn can therefore be likened to the tree-goddess Nut, with whom the sycomore is usually associated. In the 26th Dynasty papyrus, Berlin 29027, this comparison is made directly, as we are told that both sycomore and Christ's thorn are Nut (von Lieven 2004:169–170; pBerlin 29027 lines x+6, x+7).

Also in the Coffin Texts, the tree becomes associated with the motif of the "tree-mound", which is often related to birth as well as the entrance and exit to the afterlife. As the deceased in

the spell states, “I have entered into the Christ’s thorn tree of the Mound of the Double Gate” (CT 420; Faulkner 1973:67). The Christ’s thorn was a tree that grew in rather wet areas, generally near the Nile. As the river flooded and receded, this hydrophilic tree would often be left on small mounds of earth or islands. This image is reflected in a number of the Egyptian creation myths, in which life emerges from a mound in the middle of the river, often described with a tree standing upon it. Suggesting that the deceased “entered into the tree” may also be an illusion to the coffin, as a gateway to the afterlife.

The Christ’s thorn is also given specific significance as a material from which to carve religious figurines. CT 472 provides instructions for the creation of shabti (Faulkner 1973:106). Shabti are figurines that were buried with the dead and believed to come alive in the afterlife to work for the tomb owner. The spell states specifically that either Christ’s thorn or tamarisk is the appropriate material for this object. Similarly, in the Ptolemaic Period, the Khoiak texts from Dendera state that Christ’s thorn can be used to carve effective Osiris statues as well (Chassinat and Daumas 1978:141.11–14; Derchain 1990:235). This function may relate back to the reference in spell 193, as the material on which divine spirits could reside.

In the later periods of Egyptian history, sacred associations with the *Ziziphus* become particularly frequent. It is listed as a sacred tree related to a number of different nomes in the Geographical list from Edfu temple, where it is also specified as the material used to create the spear of the god Horus, in his battle against Seth (Chassinat and Rochemonteix 1896:I.329-342; VI.83,13; Baum 1989:171, 173).

In the material record, Christ’s thorn timber is probably used much more frequently in coffin construction than has previously been acknowledged. In Nicholson and Shaw (2000:347), it is noted as occurring frequently in coffin dowels and tenons, but the authors suggest that the

tree is too small to be used in larger plank construction; however, it has recently been identified in coffin planks. Substantial components of Christ's thorn were used for the construction of the Third Intermediate Period coffin of Nespawershefyt, for example (Fitzwilliam Museum E.1.1822; Dawson and Strudwick 2016:184–187; see chapter 4.VI), and my analysis of the New Kingdom coffin of Puia (Turin Provv.0718; see chapter 4.V) revealed that it was entirely made of this timber. The reference to the wood in spell 193 is therefore fitting.

TAMARISK – isr 

Tamarisk (*ỉsr*) is the next timber for coffin use described by spell 193: "as for a coffin of tamarisk, he travels to the field of reeds. He drinks at the eddy of the river". It seems that this tree is closely connected to an area of the next world perceived as a particular paradise, the "field of reeds". The Tamarisk was one type of tree that existed in many of the different regions of Egypt. It has a deep root system, and has the ability to withstand high levels of salinity. It is found in the marshy Delta waters and in the Nile Valley, as well as in the desert. Its position in dry areas often marks the existence of deeper water wells and underground streams following wadis. On journeys through the desert, the tamarisk may therefore have served as a mark of refuge for weary travelers (Baum 1989:201, 296), and such associations may be at the root of this spell reference. The tree is often associated with provisions, as well as with flood and mound symbolism, as seen with the Christ's thorn. The tamarisk may also be used in the creation of statues and weaponry in addition to coffins.

References to the tamarisk in clumps, along the river, and as sitting atop the primeval mound are particularly frequent, and often draw a connection between the tamarisk and Osiris (Koemoth 1994:72). Coffin Text 682, for instance, states that Nut bore Osiris in the "field of tamarisk" which protected the god in the nest (Faulkner 1973:II.247), while CT 989 states that he

was born in the "tamarisk-clump" at the edge of the river (Faulkner 1973: III.98). Along with sycomore trees, roots and fragments of tamarisk trees were found during the excavation of the mortuary temple of Mentuhotep II in Deir el-Bahari. These trees may have been specifically chosen to adorn the temple because of their association with the god Osiris (Winlock 1992:28).

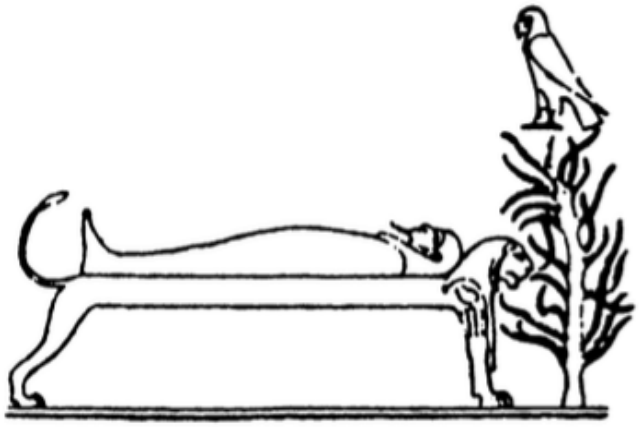


Figure 24: Osiris on a couch, with his ba in a tamarisk tree. Depicted in a roof chapel in the temple of Hathor at Dendera. (Wilkinson 1994:fig. 2)

In the 19th Dynasty, a symbolic mound was built at the temple of Osiris in Abydos by Seti I, atop which fragments of tamarisk trees were found, perhaps as a material representation of such beliefs (Baum 1989:205; Koemoth 1994:168; Wilkinson 1994:3). Such relationships continue into the later periods as well. At the temple of Hathor at Dendera, an image of the *bꜣ* of Osiris resting in the tamarisk tree has been carved into the walls of the roof chapel (fig. 24; Baum 1989; Wilkinson 1994:4, fig. 319).

The association of the tamarisk with deserts is perhaps the reason for Pyramid Text spell 210 (Faulkner 1969:39). In this spell, the jackal-god, Wepwawet is described as "coming forth from the tamarisk". Jackals were frequently associated with deserts, as well as the boundary between life and the afterlife. Wepwawet, as the "opener of ways" would often lead the deceased to the afterlife. In this manner too, reference to the tamarisk as marking this boundary, could also be seen as a reference to the coffin as the boundary between life and death. A similar allusion is found in the Book of the Dead spell 178 (Allen 1974:187).

The tamarisk is also referenced frequently as a potent construction material. As noted above, CT 472 cites tamarisk as an effective material from which to carve shabtis (Faulkner 1973:106). In addition, a club made from tamarisk was also considered to be an effective weapon for protection in the afterlife. Coffin Text 857 notes that such a club "smites the disaffected" (Faulkner 1973:III.37).[19] The inclusion of this wood in the construction of coffins may therefore have added an element of protection for the body as well as the soul.

In the calendar of the "great mystery of the Earth-hoeing-festival" from the temple of Dendera, described above, the effigy of Osiris Sokar was said to be placed in the "crypt of the tamarisks" on day 30 (Centrone 2006:41). This location may be an allusion to the clump of the tamarisks, from the Coffin Texts.

Finally, in the 26th Dynasty Papyrus Berlin 29027, the tamarisk is said to be "Horus" (von Lieven 2004:169–170, 172; pBerlin 29027 line x+12). This association of the tree with the solar god is rather rare, but again demonstrates the multiple religious connections that the Egyptians could attach to a single tree.

Tamarisk coffins are found very frequently in the archaeological record, as demonstrated below in section four. They were not a particularly high quality construction material, but they were sufficient for the needs of the Egyptians, who would take advantage of any accessible timber. The frequent religious references to the timber may have enabled coffin owners using the material to find it more appropriate than its structural qualities would have otherwise allowed.

SYCOMORE FIG – *nht* 

Sycomore fig (*nht*) is the next coffin material described in spell 193: "as for a coffin of sycomore, it is given to her bread, beer, ox and fowl, upon the offering table of this goddess,

[19] Also described in Papyrus Salt 825 (Derchain 1965:139: VI,3–5; 165–166, n.63).

every day, Osiris, mistress of the house, Tauheryt, justified". It is somewhat unclear in the text whether "this goddess" refers to the deceased as Osiris, or the sycomore goddess who provides offerings. The gender and agreement confusion that plagues this papyrus make it particularly difficult to be certain. Nevertheless, the spell makes it clear that in this instance, sycomore was associated with offerings and the sustenance of the dead. The sycomore was very frequently depicted as part of the funerary garden in private tombs, and seems to be particularly potent for magic and religion (Baum 1989; Assmann 2011). The popularity of the tree may be related to the human intervention necessary to reproduce the tree (see chapter 2.II), or perhaps due to frequent use of sycomore as a coffin construction material.

Just as in spell 193, the sycomore is usually associated with provisioning the deceased, particularly in relation to the associated tree-goddess, the "Lady of the Sycomore". The cult of the "Lady of the Sycomore" was originally associated with the goddess Hathor, and dates to at least as early as the Old Kingdom, at which time it seems to be located at Memphis (Newberry 1912; Buhl 1947:86; von Falck and Waitkus 2011:69). In the Coffin Texts, Hathor is also referred to as being "under her sycomore", as the deceased begs to join her retinue (CT 710, 203; Billing 2002:230–231; von Falck and Waitkus 2011:69). References to this goddess, however, are rare until the 18th Dynasty. At this time, inscriptions and images of the tree goddess in the form of Hathor, Nut, or, more rarely, Isis, are rather suddenly abundant. While only a few of these references can be discussed here, over 150 are known, almost entirely dating to the 18th Dynasty and later (Baum 1989:38–44; Billing 2002:199ff).

References to the lady of the sycomore are common in the *Book of the Dead*. Spell 52 states that the place where the dead goes to eat is "under this sycomore of Hathor" (Allen 1974:52). Spell 152 describes the speech of such a goddess: "Utterance by the sycomore, lady of

offerings, to Osiris: I have come to bring you my bread'" (Allen 1974:151). Spell 59, perhaps the most frequent occurrence of this motif, states: "O you Sycomore of Nut, may you give me water and the breath that is in you" (Allen 1974:55; Billing 2002:234). To give a final example, in BD 64, the deceased declares, "I have embraced the sycomore, the sycomore has enclosed me" (*ḥpt.n=i nht ḫnm.n wi nht*) (Naville 1886:76, 43–44; Billing 2002:241). This seems to very clearly relate to an individual receiving death and being placed in a sycomore fig coffin. The texts and images from private tombs reflect these beliefs as well.

Figure 25: Pool and garden from the tomb of Nebamun, with sycomore tree goddess (upper right). BM EA37983. © Trustees of the British Museum.

In depictions, the sycomore tree is frequently illustrated next to or surrounding the pool and garden that was said to exist in front of the tomb. In many of these images, the tree goddess emerges from the branch of these trees, either in full, or simply her arms, as she reaches out to give the deceased or their *ba* offerings. Such scenes are illustrated, for example, in the 18th

Dynasty Theban tomb of Nebamun (fig. 25)(Parkinson 2008:133, fig. 142), or the 19th Dynasty tombs of Panehsey (TT16: Baud and Drioton 1932:37, fig. 19) and Nedjemger (TT138; Rosellini 1834:134, fig. 3). Such scenes were also painted on shabti boxes, like that of Henutmehyt (British Museum EA 41549), stele (BM 307), and coffins, such as the 19th Dynasty coffin of Sennedjem (Cairo JE 27308; Baum 1989:47; Cooney 2010:229, fig. 5), and the coffins and mummy board of Henutmehyt (BM EA48001; Taylor 1999). While Nut is the most common tree goddess in depictions in Thebes, in Memphis, Hathor remains the dominant goddess in this role on stelae (von Falck and Waitkus 2011:70, fig. 80).

Figure 26: Ramesside stele from Saqqara showing the sycomore tree goddess. August Kestner Hannover Museum Inv.-Nr. 2933. (Teitze 20111:fig. 80)

The texts associated with these images describe the deceased venturing out of his tomb to relax under the sycomores in his garden, and to partake in the goods that the goddess offers. In Theban tomb 81 of Ineni, the deceased states: "My *bꜣ* goes forth, it has an abundance of land, and travels around the garden as much as it desires; I take form and I go out during the day, I refresh myself under the sycomores of Nut" (Urk. IV 65, 1-9; Baum 1989:31). In the tomb of

Kenamun (TT93), an inscription above an elaborate depiction of a sycomore tree notes that the goddess could also be seen as the mother of the deceased: "Said by the sycomore Nut: I am Nut...Sit beneath me and cool yourself under my branches...I permit you to drink of my milk and to live and be nourished by my two breasts...Your mother provides you with life, she places you in her womb where she conceives" (Davies 1930:Pl. XlV B). This further connects the deceased to Osiris, as Nut was this god's mother as well. The association with Nut continues throughout history. The 26th Dynasty Papyrus Berlin 29027, for instance, makes this connection: "As for sycomore, it is Nut" (von Lieven 2004:169–171; pBerlin 29027 line x+7).

Already in the Old Kingdom, the coffin had come to be seen as the womb of Nut that would help the owner be reborn. In the Pyramid Text spell 364, the deceased is said to have "been given to your mother Nut in her name of 'sarcophagus', she has embraced you in her name of 'coffin'" (Allen 1974:199).[20] In the New Kingdom, as Nut becomes more frequently associated with the Lady of the Sycomore as well, the sycomore coffin can then be seen as the womb of Nut, supplying the deceased with life, and helping the deceased regenerate and be reborn.

In the *Second Book of Breathing*, sycomore is called upon to assist as a coffin construction material as well, named as a tree that comes forth from "the Lady of the Sycomore". It is stated that, with the help of the sycomore wood, the deceased can "suck the milk of the mother" and be satisfied "with what comes out of Nut" (Goyon 1972:241). Greco-Roman inscriptions from temples at Philae and Dendera also relate this theme of Nut as a sycomore, providing protection for Osiris (Mariette-Bey 1873:IV Pl. 38, line 98; Koemoth 1994:203, 206).

Separate but related to these references to Nut, sycomore is also related to Osiris. In the Calendar of the "great mystery of the Earth-hoeing-festival", the priests are instructed to place

[20] There are many more examples described by Schott (1965) and Billing (2002).

the initial moulded figure of Sokar-Osiris in a silver container with sycomore branches on the 14th day. Then, after the figure had been buried for a year in a cedar coffin, it was to be uncovered on 30th day, and placed in a new sycomore wood coffin, before being transported to the "crypt of the tamarisk". The figure of Kenty-Imentit is also to be reburied in a chest of sycomore on the 22nd day (Centrone 2006:41). Finally, as noted above, elsewhere the Khoiak texts also note that the coffin of Osiris Khenty-Imentit was to be made of "sycomore wood covered in cedar" (Dendera X, 32.8-33.1; Cauville 1997:18). The discovery of sycomore fragments in the tree pits at the temple of Mentuhotep II in the 11th Dynasty, are believed to be related to trees growing on the tomb mound of Osiris as well, suggesting that these direct associations began earlier (Winlock 1992:28)

Sycomore trees were also frequently associated with gateways, sometimes referred to as the two turquoise sycomore trees, said to mark the entrance to the Eastern Horizon, through which Re goes forth (Faulkner 1973:138-139 CT 159, 161; Allen 1974:86, BD 109). As early as the Pyramid Texts, a high sycomore is already associated with the horizon, and the sky gods who rest in its branches in the afterlife (PT916a-b; Buhl 1947:88; PT 574; Baum 1989:44). In another version (PT 569), the king seizes the two sycomores of the sky, and they ferry him across to the eastern side of the sky (Allen 2005:176, P 507; Baum 1989:62). As a construction material for coffins, the sycomore may therefore again be seen as a threshold or gateway between the lands of the living and the dead. The tree can therefore assist with the entire rebirth cycle. At death the coffin owner enters into the sycomore coffin, transfigured into Osiris through the assistance of Nut, and is reborn as a solar god through the sycomore gateway to the afterlife.

Sycomore fig is the most common material from which coffins were created. It is possible that their frequent use helped to inspire or popularize several of these religious

associations. As noted in chapter 4.IV, during the Second Intermediate Period, the all important cedar wood was not available as a coffin construction material. The elite of Egypt, including the kings, were therefore forced to find a new way to demonstrate prestige through the woods available locally. They chose to find rare, large local tree trunks, and carved them into anthropoid coffins. Sycomore fig would have been the most appropriate wood for this purpose, and can be seen in the coffins of kings in this period. Perhaps the search for these extraordinary sycomore fig trees, and the need to build on their significance, increased the importance of the Lady of the Sycomore. It might explain the rather sudden explosion of the cult's popularity in the 18th Dynasty, as well as the new association of the cult with Nut, and not just Hathor. Nut, who had already come to be seen as the embodiment of the coffin as the womb from which the newly reborn Osiris emerged, would be associated specifically with the sycomore coffin, and then the sycomore tree goddess. The possibility of this impact is discussed further in chapter 4.IV.

ACACIA – *šndt* 

According to spell 193, for a person who has a coffin made out of acacia, *Vachellia nilotica*, (*šndt*), her "corpse is that of a god together with her people forever and ever. She strengthens for him who is strong, who is not abominated". The eternal state of the corpse is specified, emphasizing themes of strength and regeneration. Acacia timber itself is a particularly hard wood, which is rather difficult to carve. Perhaps the physical properties of the timber encouraged this religious association. The acacia is also another tree associated with the mound of Osiris, rebirth and water, which fits in well with the significance suggested in this spell. In addition to Osiris, the acacia is frequently related to the solar and royal god, Horus.

One of Pyramid Text spells for the "spirit's rebirth" (PT 294) makes the association with Horus clear: "N is Horus who comes forth from the acacia" (Allen 2005:54, W 200). This would

refer to the king, reborn after death through the influence of the acacia. I would suggest that this could again allude to the context of the acacia as the coffin, which would assist in the regeneration of the king. No royal wooden coffins from the Old Kingdom have been found, however, so it is unclear whether this could have existed in reality. In the later periods, this association with Horus continues. Acacia is mentioned very frequently as a sacred tree belonging to a number of nomes, in the geographical list from the temple of Horus at Edfu (Chassinat and Rochemonteix 1896:I.329-342; Baum 1989:171). It is one of the sacred trees related to Edfu, and appears as part of a ceremony inscribed on the walls in the "Chapel of the throne of Re". These rituals have to do with the crowning of the king, who is related to Horus, and his defeat of Seth. At the end of these rituals, the king receives his power (*ḫpš*) from Isis and Nephthys under the "great acacia tree of *st-wnp*", the "place of piercing" where Horus defeated Seth. As part of the ritual, the king was expected to say, "the divine acacia blinds my enemies, Horus of Edfu gives me strength". In the doubled scene accompanying this text, Horus stands with the king and the goddesses under an acacia tree (Ibrahim 1975:57–58, pl. 21–22; Baum 1989:312; Koemoth 1994:68).

One of the earliest references to the acacia is as the tree of life, associated with Heliopolitan religion, the god Atum, and the goddess Iusaset, a creation deity (PT: 519; von Falck and Waitkus 2011: 74). In the New Kingdom, references continue to describe the acacia tree on top of the primordial mound or on the mound atop the tomb of Osiris. A relief from the edifice of Taharqa in the temple of Karnak shows a single acacia tree growing on the Osirian mound (Koemoth 1994:168). A similar reference is found in the Ptolemaic papyrus Jumiliac: "as for the hill which is North of this place, on which have grown acacias, it is the mound of Osiris" (Koemoth 1994:175). As a tree growing on this mound, whether the primordial mound or the

grave of Osiris, it is a symbol of rebirth and regeneration. In the *Second Book of Breathing*, acacia is also called upon as a material that can assist the deceased in his transition to the Duat (Goyon 1972:240). As a construction material, the acacia coffin might therefore help the deceased gain access to the afterlife, and be reborn.

Finally, in rare circumstances, the acacia was also associated with tree-goddesses. On several diorite statues of Sakhmet from Karnak temple, for instance, the goddess is labeled as "lady of the two acacias" (Koemoth 1994:79); while Nut was also occasionally referred to as, "she who resides in the acacia" during the New Kingdom (Koemoth 1994:177). These references associate the tree with strength and hardness, as well as rebirth.

Acacia coffins are found frequently throughout the history of ancient Egypt. This hard wood can be used to create quality objects, if worked by a skilled and patient carpenter. In chapter 4.II, I discuss the construction of a remarkable, very large acacia coffin from the Old Kingdom. The crisp, though somewhat erratic tool marks demonstrate the struggle that these early woodworkers suffered in attempting to shape such a tough material with bronze tools. With the use of this wood for such a strong outer coffin, it is difficult to avoid thinking of this tree as a powerful protector for the deceased.

DATE PALM – *bnr.t* 

One of the most curious lines of spell 193 regards the date palm tree (*bnr.t*). This line states, "You should not allow a coffin of palm wood to be made, the divine body itself, which is not made!" Creating coffins from the wood (or, more technically speaking, woody fibres) of a date palm could therefore be seen as taboo. The material that comes from the date palm is very fibrous and soft, and so is not good for construction, nor does it survive the test of time well. The quality of the finished object would therefore also be quite low. It is possible that while structural

inferiority was the initial reason that date palms were not used for coffin construction, the aversion to this material may have caused them to be considered taboo as well. It is also possible that the products of the living palm tree – the dates, and the fronds, which supplied an important, sweet food, and weaving and roofing materials – were seen as too valuable a sacrifice in exchange for poor quality timber. Other religious texts also frequently refer to the date palm as being part of the body of various gods.

In the Coffin Texts, the eye of Re-Atum is said to appear in the date palm (Faulkner 1973: 273, I.252; CT 325). The eye of Re was powerful, and related to the solar disk. That the palm would be associated with sun gods is not surprising, as it is a tall, narrow tree reaching up to the sun. In the later periods, however, the palm was specifically related to the body of Osiris. In Papyrus Jumilhac, we learn that one district of Dounanouny is called "the entry-of-the-domain-of-the-date-palms" (*rȝ-n-pr-bnrw*). The district apparently owes its name to the date palms that grew from the decomposing humors or viscera of Osiris (P. Jumilhac VIII 20-21; Koemoth 1994:104). Moreover, the mixture that was used to create the Osiris effigies, as described on the walls of the temple of Hathor at Dendera, was said to include dates (Centrone 2006:41). It may be that dates were included in this mixture because of the association between the body of Osiris and the date palm.

This significance may help to interpret another coffin text that references the date palm. This spell states, "a path is prepared for me in front of the temple, and the embalmer belongs to those who are in the date-palm" (CT 1084: Faulkner 1973:III.148). This could refer to the funerary procession. The statement that the "embalmer belongs to those who are in the date-palm" may be understood as a reference to a deceased individual in the coffin; however, "those who are in the date palm" may also refer to either the solar gods who sit atop the date palm, like

Figure 27: Sycomore fig and date palm tree combined with offering goddess. Cairo JE 52542. (Keimer 1929:pl. 1)

the eye of Ra, or to the deceased people who have been transformed into the god Osiris, whose body is the date palm.

Finally, the date palm, as a tree that provides significant amounts of fruit, was also frequently depicted in private tomb gardens, and was sometimes seen in the guise of a tree-goddess. For instance, a date palm goddess is depicted supplying the deceased with provisions on Cairo coffin JE 29663 (Baum 1989:103). Occasionally, too, an amalgam of the sycomore fig and the date palm was illustrated, out of which the tree goddess extends her arms, as seen on two reliefs (see fig. 27; Cairo JE 52542, Berlin 7322; Keimer 1929:pl. 1, fig. 2; von Falck and Waitkus 2011: 72).

As reflected in the spell, date palm timber is rarely used for coffins. Some examples of the timber in this context have, however, been identified (Březinovà and Hurda 1976:140–141). Nevertheless, it was clearly avoided when possible, as perhaps the lowest quality timber available to the Egyptians. It deteriorates quickly, into straw-like fibers, and its unsuitability for this purpose would quickly have been realized. It is therefore likely that the aversion to this wood for the construction of coffins created this taboo within Egyptian religion.

CONCLUSIONS

The evidence for the religious significance of trees and timber in ancient Egypt is extensive. I have only described a sample of these numerous references. Although in many cases, only the sacred aspects of the tree, specifically, are described, I believe it is safe to extend such associations to the processed timber as well. Indeed in some cases, it is clear that the timber is

specifically being imbued with magical powers of regeneration. Spell 193, in particular, provides an important reference demonstrating that these associations are valid for the context of coffin timber. The religious associations also frequently seem to be related to the physical properties of the trees or the wood. Cedar and sycomore are often mentioned in spells and on tomb walls, and it is likely no coincidence that they are also the most common timbers used for the construction of elite and lesser elite coffins, respectively. The date palm, which is structurally one of the worst timbers for the construction of coffins, is considered to be religiously inappropriate in this context, to the point of being considered taboo.

In examining the appearance of these different beliefs within the context of coffin construction, it is also occasionally possible to suggest how and when the spells and associations emerged, or at least why they became popular. These associations, however, must be based on the data currently available. As the timber of additional coffins is identified, it will be possible to be more certain about these suggestions, and also to come to new conclusions. It is possible for now, however, to say that, just as with many other types of materials, the Egyptians believed that specific types of timber had specific religious associations. In the context of the coffin, the timber acted like a talisman, offering additional power and protection for the deceased.

The historical context of spell 193 may also be illuminating in this regard. It was written in the 21st Dynasty, during the Third Intermediate Period. As shall be discussed in chapter 4.VI, this was a time when many coffins were being reused, and multiple types of wood were frequently integrated into a single coffin – a practice that is not recommended in woodworking, as the Cairo carpenters made clear. It is possible that a spell such as this may have allowed this necessary practice to be seen as combining the multiple, magical properties of wood into a more effective rebirth machine for the deceased. This would have helped the coffin owners at this time

reconcile with the unavoidable necessity of creating patchwork coffins from the scraps of multiple species of wood.

In regards to the construction of coffins, the physical properties of the wood and the religious significance of the timber most likely played a part in both the selection of materials, and the choices of the carpenters and their patrons. As coffin woods are so infrequently identified, it is difficult to be fully aware of the extent of these associations. Once curators and scholars involved in coffin studies acknowledge the significance of the material, this may change. It is only by combining these different types of information that we can begin to reevaluate how we see wooden objects from ancient Egypt, and understand how important they truly were in the ancient world.

3.II ANCIENT EGYPTIAN WOODWORKING TOOLS AND TECHNIQUES

The physical properties of trees and the religious significance associated with different timber types provides contextual information for the first step in the series of decisions made by the woodworker: the selection of materials. In this chapter, I will layout the tools and techniques that the Egyptians used throughout the pharaonic period, as well as the general chain of operations used to complete a coffin. With this background in mind, it will be much easier to understand the steps and choices selected for each individual coffin, which is the topic of section four. While there were relatively few shifts in the fabrication of tools over time, the woodworkers adapted different styles of joints and construction methods to the availability of different materials, religious developments, and fashion. The type of joints that are used at different times, and for different segments of society, is particularly helpful for tracking changes in construction and for discussing different workshops.

TOOLS OF THE TRADE OVER TIME

The full complement of woodworking tools changed very little over the long history of ancient Egypt. It included axes, saws, adzes, chisels in a variety of shapes and sizes, awls, mallets, bow-drills, sharpening stones, and sandstone blocks used to smooth the wood in the final stages of production (fig. 28). There were also measuring devices and levels used not exclusively by wood workers, but by many different types of craftsmen. Our evidence for these tools are the extant examples themselves, usually from funerary contexts, miniature tools from tomb models, and depictions in tomb scenes. The set of tools is very similar to the hand tools that are used by modern woodworkers. The only significant difference is the ancient lack of the plane. This was a tool used to begin smoothing the wood, and creating an even surface. It is not attested in Egypt

until the Greco-Roman period. During the Predynastic Period, metallurgy in Egypt improved dramatically, and already by the Early Dynastic Period, the full assemblage of copper tools was available. The earliest discovered full set was found in the First Dynasty Tomb number 3471 at Saqqara, dated to the reign of King Djer (Emery 1949:18–57; Odler 2017:1).

Figure 28: The full selection of bronze woodworking tools available to the ancient Egyptians. British Museum EA 6046 © Trustees of the British Museum.

The saw was one of the most important developments necessary for creating good quality, even planks of wood, and for cutting against the grain. The earliest saws were rounded in shape. The teeth of the blade were punched out irregularly towards one side, so that all the teeth pointed in the same direction. This would have caused difficulties for the woodworkers, as the teeth must have frequently snagged in the kerf, the groove created while cutting wood. These types of saws were still used in the New Kingdom, as demonstrated by a bronze push-saw in the British Museum (EA 6046). These later versions, however, were used for more delicate joinery work, rather than rough cuts which were largely completed with the pull-saw (Killen 2017b:18). By the 5th Dynasty, the back of the saw

Figure 29: Model saw from the 18th Dynasty. British Museum EA 6065. © Trustees of the British Museum.

was straight, and the teeth were being cut so that they pointed towards the handle. This enabled the saw to cut only when it was pulled back by the carpenter, and so is referred to as a pull-saw (Killen 2000:355). Modern saws that are used for initial, rough processing have teeth that alternate in direction, and will cut when either pushed or pulled. Detailed work however, is at present frequently done with either push or pull saws. The direction of cutting, and the movements of woodworkers as they pull back on the blade are often referenced in tomb scenes and models (see Newberry 1893:pl. XXIX, models from the tombs of Meketre). Geoffrey Killen (2017b:19) notes that using a pull-saw as a rip-saw (for completing the large, rough cuts) would have required a lot of effort, and the use of the entire body in order to move the saw through the wood.

The axe was used for felling trees, and sometimes for the rough shaping of the wood as well. Until the end of the Predynastic Period, it was used frequently to cut wood to size, but this task was largely taken over by the saw in the Early Dynastic Period. There are three types of axes found in ancient Egypt: the plain round bladed axe, the lugged axe, and the socketed axe. The rounded axe (top, fig. 28) seems to have been used most frequently by woodworkers throughout dynastic Egyptian history (Killen 2017b:15).

Figure 30: Adze from 18th Dynasty Egypt. British Museum EA 26279. © Trustees of the British Museum.

The adze was used to do most of the rough shaping of the timber, and to produce a smoother surface. Again, the earliest examples of the tool are found in the Early Dynastic Period, and continue in use through to the modern period. Initially, the handles of the adze were straight, but in later dynasties they were shaped (Emery 1949:fig. 19; Killen 2000:355). An image of two men using adzes to process a

log can be seen, for instance, in the 5th Dynasty tomb of Nefer and Kaha at Saqqara (Moussa and Altenmüller 1971:pl. 20; Killen 2000:355). The blades of the adze were cast then forged, which increased their hardness (Killen 2017b:14).

The chisel is probably one of the earliest copper tools discovered in Egypt, and they are already present during the Predynastic Period (Killen 2017b:16, pl. 10b; 2000:355). By the Early Dynastic Period, both mortise chisels and firmer chisels were in use. A mortise chisel is very thick, and is chiefly used to create mortises. Its breadth helps it withstand bending when prying out wood from inside the cuts. These chisels also usually have a flat top that carpenters hit with mallets (Emery 1949:42–6, fig. 22; Sliwa 1975:33–4; Killen 2000:355). "Firmer" chisels are not as thick and often had carved handles that could be held more easily to complete more detailed work. Awls and engraving tools were used to create holes in the wood and complete fine details.

The bow-drill was used to drill deeper and more precise holes. Its earliest appearance is on the walls of the 5th Dynasty tomb of Ty at Saqqara; however, drilled holes found in earlier pieces of furniture suggest that it was already in use by the Early Dynastic Period (Killen 2000:356). A bow-drill consisted of a curved piece of wood with a cord fastened at either end. This cord was looped over a stick, or stock, with a metal drill bit, so that when the bow was moved back and forth, the bit turned quickly, drilling into the wood. Often the carpenter would place a cup on the stock and press down while working the bow, in order to add pressure to the drill (Killen 2017b:19).

The concise joining techniques used by the Egyptian woodworkers required careful measuring and the use of straight edges. An image from the New Kingdom tomb of Rekhmire shows one carpenter at work with such tools. Beside this individual are a number of tools

including the square and a mitre-cutting aid, to help ensure the cutting of precise angles for joints (Davies 1943:pl. LV; Sliwa 1975:39–40; Killen 2000:356).

Finally, the rough tool marks left during production were removed during the finishing process. Usually, the roughest of the marks would be removed with the adze, and then the carpenter would rub the timber with abrasive blocks of quartize (siliceous sandstone) (Killen 2000:356).

An important note about the use of these tools is their constant need to be sharpened. Copper and bronze are very soft metals, especially in comparison to iron and steel. They do not hold a sharp edge for long. As noted in chapter 2.I, even the forged steel chisels used today need to be sharpened several times an hour during work. Although this element is not regularly depicted in tomb scenes or models, sharpening stones, or "hones" have been discovered. One currently in the British Museum (EA36728) dates to the New Kingdom. The tool marks left on the hone demonstrate how the woodworker sharpened the blade along the length of the stone, and then scraped off the burr along the stone's edge (Killen 2000:356; 2017b:17). Oil was also used to help sharpen tools, or to allow blades to move swiftly through wood. Such an oil flask (BM EA6037), created from a horn, and dating to the New Kingdom has also been found (Killen 2000:356).

Bronze, or copper-tin alloy, for tools in ancient Egypt was adopted late in its history. The deliberate creation of bronze, identified based on an alloy that includes 2% or more tin, has been found in the Early Dynasty Period, with higher levels of tin in objects from the 2nd Dynasty tomb of Khaskehmwy (Cowell 1987; Ogden 2000:153); however, tin-bronze was still found in a minority of objects well into the Middle Kingdom, with unalloyed copper or other softer alloys being more common. It was not until the Ramesside period that this became a dominant metal in

Egypt (Ogden 2000:153). Surprisingly, the shift to tin-bronze tools from copper does not seem to be related to a significant shift in woodworking technology. Although the harder bronze tools may have been able to keep an edge longer, both copper and bronze are perfectly suited for cutting through wood, as demonstrated by experiments completed by Denys Stocks (2016).

CONSTRUCTION TECHNIQUES:

THE CHAÎNE OPÉRATOIRE OF COFFIN CONSTRUCTION

As noted in the introduction, *chaîne opèratoire* refers to the series of operations used to produce an object. This includes the initial gathering of materials through to the creation of a finished product. A detailed understanding of the chain of operations should also include the specific movements of producers and the choices made as they work. Here I will provide a general overview of steps and possible choices available to woodworkers, particularly as they relate to the production of Egyptian coffins. More detailed and specific analyses will be considered in section four.

The first step in the creation of a coffin is acquiring the wood. The choice that will have had the largest affect on the work is whether to use local or imported timber. This selection is most likely related to the wealth and access of the individual commissioning the coffin; however, as shall be shown, it is likely that only particularly high-ranking woodworkers would have had the opportunity to work with such high quality imported materials such as cedar. In addition to access, as already discussed at length in chapters 2.II and 3.I, the physical properties of the trees and the religious significance of the wood, may have impacted the selection of materials. The actual cutting of the tree may have been done by the woodworker himself, or it may have been accomplished by a different woodcutter or, more likely, team of woodcutters. This is particularly likely in the case of imported timber.

Tomb scenes usually show groups of men cutting trees with axes. The images illustrate both single notches cut into one side of the tree, and a double-notched technique, working from both sides of the tree. Such depictions occur on tomb walls from as early as the 4th Dynasty, in the tomb of Khafra (Hassan 1943:115, fig. 60; Killen 2000:353). In the scenes carved into the Great Hypostyle Hall at Karnak Temple, an image dating to the reign of Seti I illustrates the particular technique for cutting large trees in the Levant, most likely Lebanese cedars. In this image, one man cuts the tree with an axe, while his associates hold ropes tied to the tree in order to lower it down to the ground carefully, thereby avoiding damaging the wood (Killen 2000:353). The branches were then removed from the trees, and the logs were transported, most likely along water routes, to an area where the initial processing could begin.

For coffins, the initial processing of the timber usually meant cutting or splitting the logs into planks. Cleaving, a technique whereby the wood is split along its grain, was depicted in the 6th Dynasty tomb of Iteti at Deshasheh (Killen 2000:354, fig. 15.18). Here a pair of men work on a log held within a trestle. One man puts pressure on the wood, while the other forces a pole along the split, forcing the wood apart. In the same scenes, one man works at a log with an axe, while another saws wood into planks. With this latter technique, the carpenter took the log being cut and tied it to a second beam securely held upright in the ground. As the woodworker sawed through the wood, a wedge was pushed behind it, forcing open the kerf, so that the teeth in the saw were less inhibited by the green wood being cut. In the image from Deshasheh, a weighted mechanism acted like a tourniquet to continue to put pressure on the wood and keep it in place (Petrie 1898:pl. XXI; Killen 2000:354). Saw marks are frequently found on the planks of wood used for coffins from as early as Dynasty 0, through to the Third Intermediate Period (see section 4). This therefore seems to be the most frequent technique for processing logs into planks. Killen

notes that the splitting method may have been used for much larger planks; and perhaps also during the Predynastic Period, before the saw came into regular use, to create the early "burial boxes" (Lythgoe 1965:345, fig. 155a-d; Killen 2000:354).

The next step in production is a lengthy one that is frequently overlooked in discussions of work and the time necessary to produce wooden objects. Once green wood is cut, it must be seasoned. In this process, the moisture content of the timber is reduced. This has to be done before the wood is worked any further, or the planks are likely to warp. This process is simple: the wood is left out to dry such that air can circulate around the split timber. The wood must rest until its moisture content is between 8 and 12 percent. The length of time that this requires varies depending on where the timber is being seasoned. In temperate regions, including many areas of the Levant, a usual rule of thumb is one year of rest for each inch of wood thickness. In the dry, hot climate of Egypt, this timeline would have been much reduced, but thick planks of wood would still have needed to season for a number of months. The Egyptian woodworkers seem to have been very good at estimating when wood was ready to work: samples from wood used for the 4th Dynasty funerary boat of Khufu, for instance, suggest an original moisture content of 10 percent (Landström 1970:28; Killen 2000:355).

Once the wood was seasoned, it could be cut and joined into the basic final product. The carpenters frequently created detailed sketches of their projects before cutting. A large collection of these drawings, complete with measurements, were found at Deir el-Medina (Killen 2017a:4–26). These diagrams illustrate that the Egyptians were careful about planning and using precise measurements. A number of measuring devices were used to ensure the correct proportions of the planks, and to ensure that angled cuts were precise. The marks of these measurements and guidelines for joints can sometimes be seen on the wood, demonstrating this process. The most

popular joining methods used to produce coffins changed through time, and are important for understanding the development of techniques and the interactions of woodworkers.

Figure 31: a) Edge joint. b) Edge joint connected with loose tong and dowels. Image by author.

An "edge joint" was used to join the flat edges of two pieces of wood together, creating a longer or wider, flat, wooden board (fig. 31a).[21] These edges could be connected with cords looped through holes cut into each edge, with dowels, or with mortises and loose tenons. In the latter case, a mortise, a rectangular slot, was carved into each edge of the wood. A loose tenon, also called a loose tongue, a rectangular piece of wood, was then placed into the two slots, holding the wood together (fig. 31b). Often, once the tenon was inserted, additional dowels were hammered through the wood to hold the tenons in place.

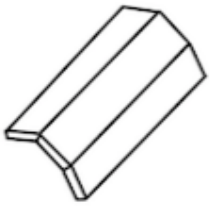


Figure 32: Coopered joint. Image by author.

When joining planks to create a rounded shape, a coopered joint was frequently used (fig. 32). This is especially common in the New Kingdom and later, when anthropoid coffins were

[21] Depending on the carpenter, "edge-joint" and "butt-joint" can be used interchangeably, as technically, in both cases the planks are simply abutting at the edge. In my analysis, however, "edge-joint" will only be used to refer to creating wider or longer flat surfaces, while "butt-joints" will only be used to describe abutting corner joints.

popular. The coopered joint is similar to the edge joint, except that in this case the carpenters cut a slightly angled edge into the planks to create a gradual curve (Killen 2000: 360).

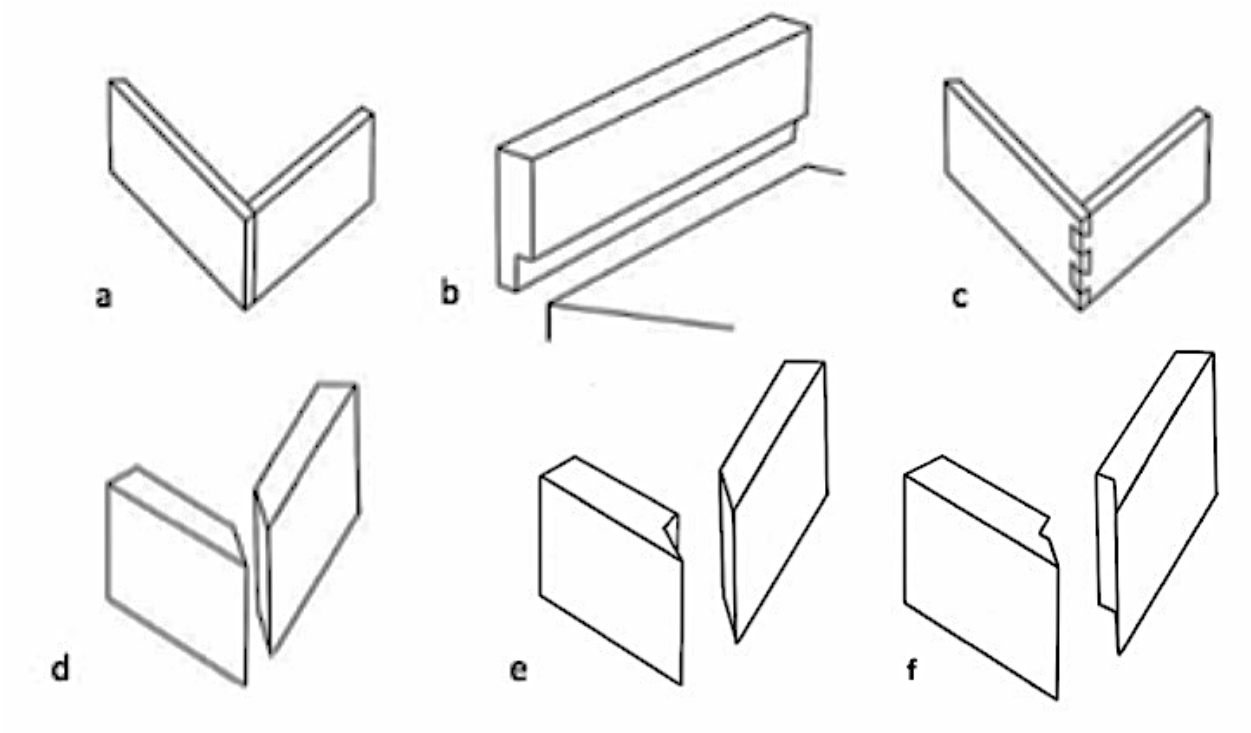


Figure 33: Corner joints. a) butt joint b) half-lap joint c) dovetail joint d) simple mitre joint e) shoulder mitre joint f) double shoulder mitre joint. Image by author.

A number of additional techniques were used to connect corners. The simplest of these joints is called the "butt joint" because the two flat pieces of wood simply abut each other, creating a 90-degree angle (fig. 33a). These joints were either held together with dowels or with cordage looped through drilled holes. As Killen notes, the Egyptians knew that glue could not be used on the end grain, because it would simply be absorbed into the wood (Killen 2000: 358-9).

The half-lap joint, also called the rebated joint, was used frequently, particularly for earlier coffins (fig. 33b). With this technique, a shoulder is cut into one of planks being joined, and the second flat plank is set within it. This creates a more solid joint than the simple butt because of increased surface area for adhesion as well as the strengthening provided by the rebate.

A dovetail joint is a more complicated technique, where one piece of wood is cut with a dovetail shaped extension, while the connecting piece is cut with a matching recess (fig. 33c) (Killen 2000: 363). Multiple dovetails joints may be used to connect two planks of wood.

The final type of joint used frequently to connect the corners of coffins was the mitre joint, of which there are several variations. The simple mitre joint is created by cutting the edge of the two connecting planks at an angle (fig. 33d). Usually this was approximately at 45-degrees, to create a 90-degree corner for the rectangular coffins.

A shoulder mitre is when one of these planks includes an additional shoulder to hold the second plank more firmly (fig. 33e). If both mitred planks are cut with complementary shoulders, this joint is called a double shoulder mitre joint (fig. 33f).

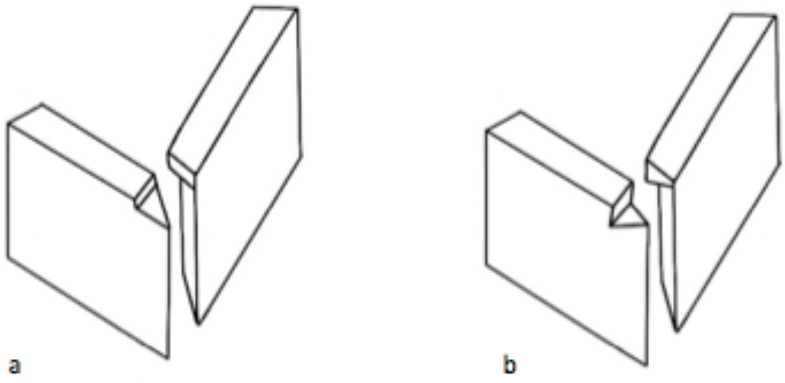


Figure 34: Mitre joint variations. a) mitre surmounted by butt joint b) mitre surmounted by half dovetail joint. Image by author.

Finally, often a mitre joint is surmounted by a second type of joint. The most frequent variation is the mitre joint surmounted by a butt joint, also called a mitre joint surmounted by a thumb or finger joint (fig. 34a). In these examples, the angled, simple mitre cut stops just before the top of the two planks. The edge of one plank is then cut with a flat extension, which sits in a shoulder cut into the second plank. This stops the wood from slipping upwards, creating a firmer joint. A variation of this is the mitre joint surmounted by a dovetail or half-dovetail joint, based

on the tapered shape of the surmounting extension (fig. 34a). Killen notes that these joints have also incorrectly been called mitre housing and dovetailed mitre housing in previous studies (2000: 365). In Egyptian coffin construction, all of these corner joints were also held in place with dowels, ties looped through holes, or mortises and tenons.

Usually, the carpenters would join the wood before completing the final shaping and finishing of the coffin. The initial smoothing and shaping was done with the adze, with additional details carved in with the chisel. Frequently woodworkers would also have to add smaller patches of wood to fill faults or defects in the timber. In higher quality coffins, the carpenters would also take time to rub down the coffin along the wood grain with sandstone blocks to smooth away the remaining tool marks.

Once the woodworking was complete, plaster or paste, and often layers of linen, were frequently used to fill any final holes or faults in the coffin before it was decorated. The decoration might consist of paint, gilding, and layers of varnish or bitumen.[22] The decorative options and techniques vary significantly between different periods, and so shall be discussed in the following chronological chapters (section four).

This brief introduction to ancient Egyptian woodworking provides information regarding the various technical options available throughout the pharaonic period. It does not, however, reveal significant information about the motivations of woodworkers, or their place in society. It can therefore only be used as a contextual introduction, and should not be seen as a full discussion of the craft, though frequently, this is the case (for example, Killen 1994). These

[22] The identification of the final black layers on coffins, particularly from the late Middle Kingdom and later, as discussed in section four, is rather contentious. It seems to usually be either a darkened pisacia resin, or true bitumen; however, early scholars seem to have frequently referred to the layer as bitumen without proper analysis. The source of both materials was the Near East. Specifically, analyzed bitumen frequently seems to come from a source near the Dead Sea (Abdel-Maksoud and El-Amun 2011:139).

technical details are simply an aspect of the total picture, although they provide a vital component.

3.III WOODWORKERS IN EGYPTIAN SOCIETY

The previous chapters have provided the background necessary to understand the importance of timber and the tools and construction techniques available to the Egyptian woodworkers. The final element that is vital for understanding coffin construction choices, is the place of the woodworker in society. In the few instances when craftspeople enter into the discussion of ancient Egypt, they are usually examined as a homogenous mass of nameless, faceless individuals, making up one of the lower rungs on the social pyramid of Egyptian society. This information does not present reality, however, but an elite ideal, based on tomb paintings and literary tales. The organization of work in ancient Egypt was much more complicated, and administrative texts demonstrate that different craftspeople, and woodworkers specifically, were frequently attached to dominant institutions, and could rise through the ranks to achieve high positions in society. Moreover, individuals who were skilled at carving and working wood, were also frequently not limited to a single media, and so sculptures, for instance, might be considered wood, stone, and metal workers, again complicating our understanding of the position of these individuals. Many high-ranking craftspeople also had priestly positions, again demonstrating the religious significance attached to creating potent funerary or temple objects. There were also individuals whose professional, attached identity was unrelated to woodworking, but who managed to make a significant income working as woodworkers on the side. In this chapter, after discussing the elite picture of the woodworker, I will attempt to sift through the complicated administrative and biographical evidence for professional and non-professional woodworkers in Egyptian society. Although these titles are complicated, and it is unlikely that the picture of the Egyptian social structure will ever be perfectly clear, the evidence demonstrates that high-

ranking, attached, professional woodworkers were present in Egyptian society. Understanding the different roles and ranks that were possible, allows us to rethink the position of the individuals who were responsible for crafting the coffins described in section four.

WOODWORKERS IN SOCIETY: THE ELITE PERSPECTIVE

The So-Called Scenes of Daily Life

Much of our information on tools, construction techniques, and workshops, is based on paintings in elite tombs. These images, frequently referred to as "scenes of daily life", often depicted the fields and workshops connected to elite estates. This is a significant source of information, but it can also be problematic for a number of reasons. For one, the Egyptian style of depiction incorporated methods of demonstrating perspective that are unusual for modern western viewers, making some of the depictions difficult to understand. When different planes were shown in the same image, often the important elements were shown one on top of the other, even if they were

Figure 35: Woodworkers in the tomb of Rekhmire. Painted by Nina de Garis Davies. MMA 35.101.1. © Metropolitan Museum of Art.

actually beside each other, or on different sides of the object (Schäfer 1986). For instance, in an image of carpenters from the tomb of Rekhmire (fig. 35), objects seem to float above individuals. It is difficult to know whether this is a representation of objects hung on a wall, or a cluttered workshop with tools spread out on the ground. Similarly, it is unclear whether illustrations of tasks depicted side-by-side are meant to represent the sequence of work, tasks carried out in the same workshop, or simply an assortment of different tasks related to a single craft. Another

possible element of error is introduced because painters were completing the depictions. These individuals may have had varying levels of technical knowledge about the craft being depicted. This may be why the images of the mechanisms used to keep the kerf separated during the sawing process are difficult to interpret.

The separated images of work also mask the interconnections between workshops. We know that metalworking and woodworking are two industries with significant connections. Tools needed to be constantly sharpened, and frequently recast or forged. Moreover, the decoration of wooden objects necessitated the inclusion of painters, stonecutters, and other metalworkers, but rarely are these professionals shown working together. This makes it difficult to understand whether each individual had a single specialty, necessitating the work of multiple individuals to complete an object, or whether particularly skilled masters could complete all the steps needed to create an object independently, which seems likely, at least in some instances. As shall be discussed, the reality was likely a complicated combination of both.

The final problematic aspect of these scenes is the way that the individuals were depicted. With few exceptions, craftspeople were drawn as a homogenous mass of similar, bare-chested men wearing white linen kilts, with short black hair. They are usually unnamed, and are provided without individual features. These images do not show the reality of the woodworker in his workshop, but an elite stereotype of the lower class worker, toiling for a master. As this was the role that these images were meant to accomplish in the afterlife, this is perhaps to be expected. Again, looking at the tomb of Rekhmire, there is row upon row of craftspeople performing different tasks, all illustrated in exactly the same manner. These depictions also did not change signficantly over time; the workers depicted in the Old Kingdom tomb of Ty, or in the New Kingdom tomb of Rekhmire, have very similar characteristics.

Despite these drawbacks, the information that can be gathered from these images is still valuable. In addition to tools and techniques, as described above, they also help to demonstrate the varieties of tasks that carpenters could carry out. In the tomb of Rekhmire, craft workshops attached to the temple of Amun are depicted. The woodworkers are shown constructing or carving cabinets, boxes, headrests, statues, chairs and other pieces of furniture, as well as architectural columns. The carpenters use saws, axes, adzes, drills, and chisels. They complete detailed carving and draughtsmanship, and carve wooden inlays to decorate larger objects. Two individuals also sit together mixing glue or plaster, in what could be considered a rare depiction of cross-craft production, or at least a rarely depicted, though vital, step of production. It seems likely that these scenes represent all of these activities occurring within the same workshop. Such a variety of tasks should be remembered when analyzing the references to craft production. Rarely do scholars consider that textual references to statue carvers, draughtsmen, or individuals who specialize in inlay, could in fact, include woodworkers.

Literary Texts and the Trades

Scribal practice and education was a significant element of elite Egyptian society. The constant practice and drilling in set texts by scribal students is one of the reasons that there is an abundance of textual evidence from ancient Egypt. Scribes copied out a number of different textual selections, including letters, poetry, and literary tales. The *Teachings of Duakheti*, also known as *The Satire of the Trades* (P. Sallier II; LEM 16:7-17:9, 103:1-104:8; Hoch 1991/1992), was one such frequently copied school text.[23] This text is framed as advice from Duakheti to his son Pepy, in which the father encourages his son to become a scribe. To make scribal work sound appealing, he compares this profession to other trades. The speaker goes through a variety

[23] There are a number of different versions of this text preserved on papyri and ostraca. It is a notoriously difficult text, and I have chosen to work from the translation of Hoch (1991/1992) for the following discussion, as a strong translation that combines a number of the different versions with a close examination of the vocabulary.

of occupations, demonstrating their inferiority. This long list includes the coppersmith, the carpenter, the jeweler, the barber, the reed worker, the potter, the bricklayer, the "carpenter of walls", the gardener, the farmer, the mat maker, the arrow maker, the runner, the fire tender, the sandal-maker, the washerman, the fowler, and the fisherman.

The first description of the carpenter is as follows:

> Any craftsman that wields the adze –
>
> He is wearier than the farmer.
>
> His field is lumber;
>
> His Hoe is the chisel.
>
> It is the night that will save (him),
>
> He having done more than his hands can manage,
>
> For at nights he lights (the lamp).
>
> (Hoch 1991:90)

In this passage, craftsman is the translation of *ḥmww*, one of the most common terms used to relate to craftsmen in general, as well as to carpenters specifically, particularly in the New Kingdom (Erman and Grapow 1963:III, 86.10). The speaker seems to be describing a carpenter who makes objects, and has the ability to carve details, since he uses the adze (*ꜥn.t*; Erman and Grapow 1963:I, 187.17) and chisel (*ḥmt* – literally metal; Erman and Grapow 1963:III, 99). The second passage discusses a different type of carpenter:

> It is wretched for the carpenter of walls upon [...]
>
> This is the roofing of a room,
>
> A room of 10 cubits by 6 cubits.
>
> A month passes after the beams have been laid.

The matting is spread out,

After all its construction has been done.

As for the rations given to his household,

None is doled out to his children.

(Hoch 1991:92)

The "carpenter of walls" is a translation of *mḏḥ n ḏrỉ-f*. This first line, as Hoch notes, is the version from P.Amherst, as the other versions of this text include a deteriorated line (Hoch 1991/1992: 92-3). *mḏḥ* with the seated man determinative comes from the similarly written verb that has been translated as "to hew" or "to build", and since it is frequently used in reference to wood, it is often translated as carpenter (Erman and Grapow 1963:II, 190.6-191.5; Lesko I: 260). The *ḏrỉ-f* is a bit more difficult to interpret. *ḏrỉ* as a verb means to "be firm" (Erman and Grapow 1963:V, 599.1-8). It is written here, however, with a determinative that may be an axe, and so might also refer to a woodworking tool. The line may therefore also be translated as "the carpenter of his axe", which is closer to Helck's translation (1970). In any case, the woodworker being described is responsible for roofing, and so is an individual involved in house construction, and not the fashioning of crafted objects.

This text does not describe individuals, but instead refers to each profession as a group. Each trade is also depicted as existing on an equal, socially inferior level to scribes. The lives of these workers are long and hard, and they are barely able to support their families. What is interesting about the references to carpenters in this text, however, is that there are clearly two different professions surrounding woodworking. As relates to the manipulation of timber, there is therefore some room for different tasks and roles. Nevertheless, there is no possibility in this text for the existence of a professional hierarchy. Whether or not this passage may have been the

reality for some craftsmen is debatable; however, the purpose of the text is not to provide an objective view of life in ancient Egypt, but to make the life of the scribe look superior, as it is constantly being made to look cleaner, easier, and more elegant throughout the teaching. It can therefore only be used to demonstrate the different types of professions that existed in ancient Egypt, and possibly how they were viewed by the elite scribal class.

These texts and tomb images leave the impression that all craftsmen occupied a single, lower ranking division of society. This view has been adopted by a number of scholars, and encouraged by such simplistic diagrams as the "social pyramid" (for example, Beyer 1991:80). In this model, craftsmen usually make up a single course, placed towards the bottom ranks. Even those scholars that are more flexible and generous with their descriptions of society continue to lump all craftspeople together, as fairly humble, hard working individuals; however, while administrative texts do discuss groups of craftspeople together, without differentiating specialty, they also relate the existence of high-ranking craftspeople. When more objective evidence is examined, it is clear that woodworkers and other craftsmen were dynamic individuals with a number of professional and social roles and ranks.

WOODWORKERS IN SOCIETY: THE ADMINISTRATIVE REALITY

The administrative records of Egypt frequently recorded groups of craftspeople or "*ḥmwt*" together. Often it is therefore difficult to understand which types of crafts were necessary to complete projects. In trying to access the specific place of carpenters, it is therefore necessary to understand the position of craftspeople in general, and to assess any specific references as they arise. Other problems with interpreting the data are due to the fact that we must rely on titles, and that our evidence is largely funerary in nature. Titles are frequently difficult to translate. Individuals also often selected which of their numerous titles they would use to refer to

themselves in their tombs. Craftspeople, particularly those of higher status, may have had secondary religious or ceremonial titles with which to present themselves. Selective presentation may have submerged their more functional titles, and perhaps the less glamorous aspects of the woodworker's identity. This is the challenge of funerary data, which demands that archaeologists and Egyptologists sift through the ideal, crafted identity of the tomb owner to try and access the reality beneath. Even with these obstacles, however, it is possible to reach a broad understanding of the complicated nature of work organization from throughout pharaonic history.

The Organization of Work and the Hierarchies of Craftsmen

Trying to understand the context of the production, as either "independent" or "attached" (Costin 1991; 2001), in particular, helps us understand how craftsmen may have gained access to different materials, and how their work may have been commissioned. As Cathy Costin has suggested, often work organization exists on a scale. Completely independent craftsmen would produce objects for an open market, and be governed only by the rules of supply and demand. Attached craftspeople, however, must depend on the sponsorship of the government or elite patrons who pay them for commissioned work (Costin 1991:11). From the pharaonic period, there is evidence for workers completing projects for their attached institutions, usually either temples or the palace, for private, elite estates, and as independent contractors; however, a close examination of the evidence demonstrates that the labels "independent" or "attached" cannot be simply applied to individual craftspeople, but should be considered on a case-by-case basis dependent on the specific project in question. Within the hierarchy of control demonstrated through the administrative texts, craftspeople also exist at nearly every level, complicating the attempt to assign these individuals to a single class of workers. In the following few paragraphs, I attempt to tease out these different associations through a series of complicated and problematic

administrative references. While I make suggestions for individual interpretations, the value of this work is actually to show exactly how complicated such a process is, and in so doing, demonstrate the complex role of woodworkers in Egyptian society.

Already in the Old Kingdom there is a distinction between less skilled workers and builders operating in the necropolis, the *ḫrtỉ-nṯr*, necropolis man, and the more skilled craftsmen, *ḥmwt* (Eyre 1987a:26). The organization of these individuals in their day-to-day tasks is difficult to ascertain. Most professions in Egypt's earlier history seem to have been organized into rotating groups of 10 men, referred to as "phyles", though the number does not remain constant. This is true, for instance, for the craftsmen working in tombs, of quarrymen, and of priests. Individuals with the title, "overseer of 10", seem to be slightly higher-ranking individuals, in charge of this basic group (Fischer 1959:266; Eyre 1987a:12). "Royal master craftsmen" were also associated with different crafts, and are likely overseeing a number of phyles. From the Old Kingdom, we have, for instance, the name of Ankhu, the "royal master overseer of metalworkers of the state" (Eyre 1987a: 27). Unfortunately, a carpenter with such a designation has not yet been discovered. The highest-ranking overseers of craftsmen in the Old Kingdom were the two "great controllers of craftsmen" (Helck 1954:102–106; Fischer 1966:63–68; Eyre 1987a:26). After this period, however, this title seems to be held by one individual, the high priest of Ptah at Memphis. Whether or not the later use of the title referred to a particularly skilled overseer of craftsmen, or was used purely as an administrative title is debated, but the latter seems to be more likely.

Most of the evidence for craftsmen arranged in these phyles suggests that they were attached to an institution. The names of these work groups from the Old Kingdom, for instance, often specify that they are "palace craftsmen", "craftsmen of the residence", craftsmen of the

king, or craftsmen of the "*wꜥbt*" (Drenkhahn 1976:139–140; Eyre 1987a:13). The "*wꜥbt*", the "pure place", was often associated with the embalmer's workshop, but it could also be used with different epithets to refer to other craft organizations, including the southern *wꜥbt* or the *wꜥbt* of the king (Drenkhahn 1976:147–154; Brovarski 1977; Junker 1959:22–36). Many different crafts could be linked with these organizations, and carpenters are referenced in this association specifically. For instance, in the tomb of Ptahhotep, there is a man named Shestchef, who is "overseer of the carpenters of the *wꜥbt*" (*ỉmy-rꜣ ḥnḳ wꜥbt*) (Brovarski 1977:114–115). Perhaps these areas too, had to remain "pure". The association with the *wꜥbt* may indicate the presence of specialized workshops that were creating sacred objects for temples or the necropolis (Eyre 1987a:26–27). It is possible that to work with these organizations, the craftsmen had to be initiated as priests. The evidence suggests that this is possible, as throughout Egypt's history, many craftspeople had both religious and secular roles and titles (see below).

In the New Kingdom, there is less evidence for formalized administrative language for the organization of work. There are, however, a number of references to "crews" (*ỉst*) of craftspeople arranged into two "sides". The tomb-builders at Deir el-Medina, for instance, were organized in such a manner, as were workers from Deir el-Bahari, and even men caring for date trees attached to state granaries (Megally 1974; Eyre 1987b:185–186). Foremen and scribes oversaw these crews and their administration (Eyre 1987b:173). Depending on the overarching institution in control of the work being done, it was then up to mayors (*ḥꜣty-ꜥ*), priests, viziers and their various representatives to communicate orders between the state, the temple, or the house of the king (Eyre 1987b:172). In theory, many of these institutions were ultimately under the control of the pharaoh, though in practice he (or she in the case of Hatshepsut) clearly delegated this work.

Like the phyles, the New Kingdom crews were also connected to official institutions, though frequently not as clearly demarcated as simply, "craftsmen of the palace". The Deir el-Medina workmen were designated as "servants in the place of truth" (*sḏm-ꜥš m st mɜꜥt*), and were part of the administrative identity referred to as "The great and noble Tomb of Pharaoh, of millions of years, on the west bank of Thebes" (Eyre 1987b:168). Craftspeople who were attached to temples, might be said to belong to a specific god. For instance, from the beginning of the 19th Dynasty, there is an individual named Dedia, who is "the chief draughtsman of Amun", attached to the temple of Karnak (Lowle 1976). Individual names were often expressed with a combination of title, name, institution, and specific overseer, as seen with "the coppersmith Paykamen son of Tjaroy, of the temple of Usermaatre Meryamon, under the charge of the Chief Priest of Amon" (Peet 1930:pl. 4, 7.7; Eyre 1987b:211). Frequently, however, especially visible in the titles from Deir el-Medina, individuals used different titles and epithets depending on the context in question, again making it difficult to understand the actual institution to which one belonged. Dedia, as mentioned above, worked at numerous temples on the West Bank as part of his association with the Temple of Amun, but states in his tomb that "I was charged by His Majesty to do work for Amun" (Eyre 1987b:194–195). This could at first glance be interpreted to mean that he was actually part of a workshop attached to the royal household, but we know this was not the case.

Craftspeople could also be attached to private estates. This is often clear from the extensive records for tools owned by estate owners and distributed to their craftspeople when they were required (Junker 1940:72–73; Eyre 1987a:13). In Old Kingdom tombs, such individuals were described as belonging to the *pr-ḏt* of the tomb owner. Frequently in tomb scenes, the owner is depicted looking out over his estate, and the groups of connected

craftspeople. Interestingly, carpenters were the only type of craftsmen that were specifically related to the *pr-ḏt* of the king in the Old Kingdom (Drenkhahn 1976:145; Eyre 1987a:27). In the New Kingdom, individuals were usually depicted, instead, examining the estates and workshops that belonged to the institution to which they were attached. While there were still elite household workshops, these seem to be less significant than in earlier periods (Drenkhahn 1976:3, 134; Eyre 1987b:193). The different organization of work, which placed much more power in the hands of high officials, may be partly related to this shift. It seems that these powerful individuals frequently assigned the men under their supervision to complete personal projects in addition to official tasks.

An interesting example of this practice is described in the autobiography of Amenemhet, the steward of the vizier User (Sethe 1906:IV.1043-1048; Davies and Gardiner 1915:70–72; Eyre 1987b:198). Amenemhet states that the vizier had entrusted him with many of the official tasks of the state. Part of this was the creation of jewelry, furniture, and statuary for the palace out of a number of precious materials, including expensive timbers. Amenemhet notes that he saw the accomplishment of these objects, as well as the construction of statues and the tomb of the vizier. In this case, Amenemhet clearly oversaw the work of a multitude of craftspeople attached to the state, including carpenters, who were also used to complete the private projects of the vizier. Such use of power is witnessed frequently in texts from Deir el-Medina, as described below.

Finally, there is also evidence for individuals who were paid directly for their craftwork, with no reference to an attached estate, temple, or the king. The statue of Memi from the Old Kingdom, for instance, states "I have caused this my statue to be made by a sculptor, who was satisfied over its payment (*isw*) which I made to him" (Sethe 1906:I.225, 8-10; Eyre 1987a:25).

It is unclear, however, whether the sculptor was still attached to a workshop, or if he was completing this project independently. In the New Kingdom, again from Deir el-Medina, there are numerous receipts for woodworking projects, particularly coffins. Few of the individuals responsible for these objects are professional carpenters attached to the state, but instead the state tomb-builders, completing carpentry projects as a means of additional income, a situation discussed in more detail below.

There is no direct evidence that individuals who were completely unattached to the state served as professional, specialized craftspeople. Nor is there any evidence for independent guilds (Steinmann 1978; Eyre 1987b:211). It seems, instead, that individuals might create crafts independent of their formal roles, or create additional products that could be sold to supplement their official income. This therefore could have provided a significant means of additional revenue. It is these smaller crafts that were likely produced for a market, or produced for personal use. Due to the fact that they would not be present in the official administrative evidence, completely independent craftspeople could have existed, but it is unlikely that they had a substantial effect on the Egyptian economy – otherwise we would expect to find many more references to trips to the market.

The location of workshops, and how they may have appeared or been organized is almost completely unknown. Few production areas have been identified archaeologically, and none of these can be tied directly to woodworkers. Small-scale production, like that occurring at Deir el-Medina, was probably simply completed wherever space could be found, without the need for specialized workspaces. The frequent depiction of attached workshops in tomb scenes and models are unreliable, as noted above, and can only be of limited assistance. Katherine Eaton (2015) has noted that possible remains of workshops have repeatedly been found outside the

south wall of temples. She argues that this is due to the wind patterns in Egypt, which would blow fumes and smoke produced by crafts away from the sacred spaces. Eaton argues that this location may provide the origin for Ptah's epithet "south-of-his-wall", as the patron deity of craftsmen. In addition, in the 18th Dynasty tomb of Huya from Amarna, a number of workshops are depicted close to the palace, near the window of appearances. This may suggest that the workshops were physically attached to the palace, or it may have simply been artistic license in trying to illustrate all the different elements of the royal estate. The remnants of glass, faience, and sculpture workshops have been identified in other areas of the site at Amarna, but the majority of this evidence did not reveal further information about architectural structures or workshop organization (Eyre 1987b:192).

The discovery of the estate of the chief sculptor Djehutimose from Amarna may shed light on a type of workshop that could have included woodworkers (Borchardt 1913:28–50; Borchardt and Riche 1980:262–268). In addition to the main house, there were additional work areas and buildings that may have been used by assistants. Throughout this estate area there was significant evidence for a number of crafts related to the creation of statuary. Waste chips from sculpting, tools, model pieces, plaster casts, and faience fragments were found. It is possible that wooden statuary was also made in this area, and the organic evidence no longer remains. Despite the fact that this workshop was attached administratively to the state or palace, the fragments of statuary demonstrate that products were being produced for the king and the royal family, as well as private individuals (Kemp 1981:82–86; Eyre 1987b:193; Laboury 2005). That the sculptor Djehutimose was able to afford such a massive estate, clearly demonstrates that he was not a low-ranking individual.

A number of other high status craftsmen are visible throughout Egypt's history. In the Old Kingdom, craftsmen who were attached to the state might be depicted as individuals in tomb scenes. They were not shown completing work, however, but in more elevated positions as, for instance, a ka-priest offering bearer (Junker 1959:52–59; Drenkhahn 1976:66–67). This demonstrates both their higher status among craftspeople, and suggests that depicting these individuals as priests rather than as craftspeople was desirable. Later references to status are more direct, and do not attempt to hide the role of the craftsman.

From the 11th Dynasty, the stele of Irtysen (Louvre C 14) records the biography of this "overseer of craftsmen, scribe, and sculptor" (Badawy 1961:270). Irtysen boasted about his craft skills, and prefaced his artistic knowledge by stating that he knows all the magic and secrets regarding how to depict different styles of figures and how to work with different materials. This suggests that a specific ritual knowledge had to be learned to complete at least selected crafts, and aligns with the above suggestion that some men may have had to be priests as well as craftspeople. The practical knowledge acquired by this artist had apparently included the creation and setting of molded pastes and the carving of inlays. Irtysen noted that nobody else would have this knowledge, except for his elder son, who had the approval of the gods. He closed his boast stating that he has witnessed his son work gold, silver, ivory and ebony, and therefore had the skills to take over the role of his father. As an overseer and scribe, this individual ranked higher than an average craftsman, and he, or his son, was also clearly able to afford a stone stele. Irtysen also seems to have had multiple roles and skills, and knew how to carve wood in addition to other materials. Finally, this stele also demonstrates very directly, the frequently repeated belief that craft positions were passed on to sons through apprenticeships.

The biographies and titles of Pashedu from the New Kingdom shed further light about how an individual could learn craft skills and advance through the ranks. Pashedu was buried in TT3 in Deir el-Medina, during the reign of Ramses II in the 19th Dynasty. In his tomb he was called "servant in the place of truth", meaning that he was one of the builders of the tombs in the Valley of the Kings. He seems to have advanced to the position of foreman by his death, though he did not use this title in his tomb (Davies 1999:166; Kitchen 2003:270). His son was also a servant in the place of truth, demonstrating how such positions were kept in the family. Elsewhere in the tomb, Pashedu also related how he served as a "servant in the workshops of Amun in the southern city (Thebes)" (*bꜣk n šnᶜ m ỉmn m nỉwt rsyt*) (Černý 1973:127). On a stela found in Deir el-Medina, now in Cairo (JE 36671), however, he had advanced to "overseer of the workshops of Amun" (*ḫry šnᶜ n ỉmn*) (Younis 2009:3). Furthermore, Pashedu refered to his own father as a "servant of Amun" (*bꜣk n ỉmn*) in the tomb, without any additional titles. This suggests that Pashedu may have been able to serve different roles, working both in the Valley of the Kings, and at the temple of Amun at Karnak. It is also possible that the two roles were connected at this time. In any case, the relationship between these individuals and their titles demonstrates the ability of the son to follow in the footsteps of his father, and that an individual could advance through the ranks to gain higher positions.

Many high-ranking craftsmen seem to have acquired priestly titles or roles. Those creating objects for temples, particularly the cult statues, were required to be pure, and were initiated into a specific division of the temple cult. Some such individuals were the employees of the "Gold House", part of the temple where cult statues were created. Hatiay, a royal chief sculptor, was inducted into this priesthood during the reign of Seti I (von Lieven 2007:148). In his stele (Kitchen 1969:VII, 26–29), he described being specially selected by the king, and

learning the mysterious rituals that were part of the production process. Additional texts, written on the walls of the Temple of Dendara (Chassinat and Daumas 1978:128, 15–131, 6; von Lieven 2007:149), provide further information about the activities of this group of craftspeople in this later period. Initiates were instructed to purify themselves before entering the temple and beginning their "hidden work". This again stresses the privileged position of these priestly craftsmen, and the specialized knowledge surrounding their role. The Khoiak texts, also from the temple of Dendara, provide further information regarding the craftwork itself. Within these texts, are the instructions for creating statues of Osiris in the Gold House. Of particular interest for the present discussion, the instructions specifically note that statues could be made of wood, noting that Christ's thorn should be used specifically, and then decorated with gold (Chassinat and Daumas 1978:141, 11–14; Derchain 1990:235). At least some of these craftspeople were therefore woodworkers.

A final note should be made concerning the names and titles of woodworkers. From the hundreds of references to individuals who worked with timber, whether as a carpenter, roofer, sculptor of wood, or woodcutter, there is no reference to any females as part of the profession. While it should never be discounted that there may have been exceptions that simply cannot be found among the evidence, woodworking was clearly a male profession throughout its history in ancient Egypt. In discussions with modern woodworkers, it continues to be a profession dominated by males.

To summarize, it is clear that the position of woodworkers in the administration and hierarchy of Egypt is complicated and varied. Most individuals who worked with timber, particularly those involved with the production of furniture and the funerary arts, would not have belonged to the lowest levels of society. Most would have been attached to an institution, though

they could have been producing objects for a market independent of their official tasks. These factors are further complicated in the case of Deir el-Medina.

CARPENTERS LIVING AND WORKING IN THE VILLAGE: THE DEIL EL-MEDINA CASE STUDY

Deir el-Medina is one of the most frequently studied sites from ancient Egypt. As home to the workmen who created the tombs in the Valley of the Kings, it is a key source of evidence for the daily life of tradesmen. The preserved houses, ostraca, and tombs of the men, provide a rare glimpse into all aspects of life, from birth to death (Černý 1973; Meskell 1999; Lesko 1994; Meskell 2005). For the present discussion, the evidence from the site is most useful for examining the complicated position of attached tomb-builders who also worked as unofficial carpenters.

As noted, the site was home to the workmen who created the tombs in the Valley of the Kings, from the 18th Dynasty through to the 20th. The vast majority of the evidence, however, dates to the 19th and early 20th Dynasties. The men who built the royal tombs lived in this village provided for them by the state. Their houses had begun as planned rows of dwellings within a walled space; however, over their 400 years of occupation, the inhabitants adapted and expanded the buildings significantly. At its peak, the village housed approximately 68 families (Bonnet and Valbelle 1975:434). All goods required by these inhabitants were also supplied by the state. There is significant evidence for water carriers and frequent deliveries of clothing and food, in addition to the grain given to the men as their wages. Access to the village was guarded, if not restricted, as suggested by the presence of a gatehouse and guardian (Eyre 1987b:170). As it is an area that is somewhat removed from the river and other sites, the community likely had

limited regular contact with outsiders. The majority of the inhabitants were the tomb carvers and draughtsmen, in addition to a number of support individuals.

Most of the tomb builders were designated as standard *rmṯ-ỉst* workmen. A number earned the position of foremen of the crew, and some were specialized *sš-ḳd*, draughtsmen, or *sš*, scribes. Teams of these crews worked 10-day weeks, with days 9-10 serving as weekends, free from their official tasks. During the workweek, they lived in huts closer to the tombs. Attendance lists for the work at the tomb, however, note that absences were frequent. These were excused due to sickness, to participate in festivals, or to accomplish separate, specialized tasks (Eyre 1987b:176–178). There are no references to carpenters in the official, administrative lists of the crews (Cooney 2007:140), however, some individuals were specifically given time off from constructing the tomb to craft wooden objects. The ostracon O. Glasgow D.1925.68, for instance, relates that several tomb workers had been released from their official duties to complete private carpentry projects (Killen 2017a:2). O. Cairo 25584, a part of a tomb work journal, provides a list of wooden objects that had been made, over a series of years, by the foreman Hay, from the left side of tomb. This seems to be a list of the objects that Hay had created during his excused absences from work, perhaps as a record to justify his time away (Cooney 2007:137, 163).

Beyond the official records of the tomb, there are a number of private work and transaction records or receipts found in the village that reference the creation and sale of wooden objects, especially coffins. The vast majority of these interactions are between inhabitants of the town. Individuals recorded in the crew lists as *rmṯ-ỉst* workmen are usually responsible for these projects, but commissions were also completed by draughtsmen, foremen, and, rarely, scribes (Cooney 2007:132–137, 142). In these unofficial records, eight of the men referred to themselves and each other as *ḥmww*, a title that technically means “craftsman”, but in the New Kingdom was

used specifically to refer to carpenters (Erman and Grapow 1963:III, 86.10); however, only the *rmṯ-ỉst* workmen adopted this title. As Kara Cooney has noted, this suggests that being a specialized carpenter, as oppose to a general *rmṯ-ỉst*, was considered a mark of status. The draughtsman and scribes had already attained a specialized position, and so retained their official work titles in recorded transactions (2007:139-140, 146-7). By fostering this specialized identity, the workmen may have been able to gain more commissions from their fellow village inhabitants.

The workman Maanakhtef, for instance, was listed as a regular *rmṯ-ỉst* in the tomb records, but refers to himself as a carpenter in several texts (Davies 1999:253; Cooney 2007:140, 142; Killen 2017a:1–2). O. DeM 0418 even demonstrates that this individual left the town on occasion to complete projects for outsiders. In this text, Maanakhtef writes back to his colleague Qeniherkhepshef in Deir el-Medina to say that he had arrived at *ḥỉw* safely, and to request that his woodworking supplies be sent to him. In P. DeM 09, Maanakhtef goes one step further, and calls himself "Chief Carpenter of the Lord of the Two Lands", a title that was almost certainly unofficial. Again this helps to show how a status could be claimed through the position of the carpenter, while also demonstrating the difficulty with interpreting individual titles. The amount of extra income that could be earned through this unofficial role was considerable, and helps to show why somebody would want to be known as a skilled carpenter.

Kara Cooney has done the most work on the topic of the carpenters at Deir el-Medina and their "informal workshop" (Cooney 2007:131–175). She has demonstrated that the amount that could be earned by completing wooden objects on commission could be considerably higher than the wages provided by the state. The workmen earned approximately 11 deben a month according to official records (Janssen 1975:460). Based on Cooney's collection of receipts, the

average cost for a standard *wt* coffin was 31.57 deben. The cost for just the labor of construction of the *wt* coffin ranged between 9-80 deben, with an average cost of 22 deben (2007:87, 92). The sale of a completed coffin, or even just the payment for the carpentry labor, could therefore be double or triple the monthly wages of the workmen. It is unclear how many hours these projects took to complete, but if the carpenters completed just a few projects each year, the men could easily make their fortune from unofficial work.

The variation in the cost of coffins suggests that there was variability in the quality of the objects produced. It is unlikely, for instance, that a coffin that cost 20 deben (O. Ashmolean HO 162, 5 rt.) would have been made from similar materials and with similar detail to a coffin that cost 220 deben (O. Berlin P. 14366, 1 rt.). Exactly what caused differences in prices, cannot be ascertained for certain based on the available data; however, in discussing this topic with Kara Cooney (personal communication), she now believes that it is possible that many of these receipts refer to recarving and decorating reused coffins in the late Ramesside Period, while the much more expensive coffin prices may be referring to coffins created from new materials. She continues to work on this concept. Nevertheless, it is important to note that none of the personal transaction records from Deir el-Medina refer to the use of imported timbers for coffins, while the coffin that cost 220 deben is specifically noted to have been made from local Christ's thorn wood. It is therefore probable that these informal carpenters did not have access to imported timbers, particularly in the amounts necessary for coffins. While the receipts largely suggest that they were creating coffins for each other, a few of the more expensive coffins may have been produced for members of the higher elite. For instance, the most expensive coffin set recorded at the site, altogether costing approximately 329 deben, was produced by a scribe of the tomb, Heri-Sheri for the Chantress of Amun, Tanedjem (P. Turin Giornale 17 B; Cooney 2007:160–161).

The receipts and records also complicate the established picture of workshop organization as "crews" of workmen. Most of the receipts simply request or record payment for completed objects, and reference only one workman as responsible. Other texts record the construction of objects being completed by one person, and the decoration of the piece completed by another (O. Ashmolean 119). There are also ostraca that record one person completing carpentry work on a number of objects, and the same individual completing decoration work on a separate set of objects (O. Ashmolean HO 134; O. Ashmolean HO 136; O. Berlin P 12343). Whether individuals usually completed pieces by themselves, or as a team, is therefore difficult to understand. Likely there was a mix of approaches, based on the skills of the individual involved, or perhaps how these abilities were viewed by those commissioning the work. There are no references, however, to crews working to complete coffins, as was done during the construction of the tomb. It is unclear whether this is due to the informal nature of the work in this context, or the different requirements of woodworking in general.

As noted, the individuals commissioning this work were largely other inhabitants from the village. Those being excused from tomb building to complete projects seem to always be constructing objects for higher-ranking members of the crew or the administration. This may have been an official perk, or an abuse of power (Cooney 2007:61, 164). The other, more regular interactions, record the trade of goods and services between individuals in the town. Occasionally, the village carpenters might also receive commissions from outside Deir el-Medina, as with Maanakhtef, though this was rare (seen also in O. DeM 233). There is no evidence, however, that the craftsmen used their own capital to invest in the production of objects for an open market. The closest reference we have for such production is a reference from O.LACMA M.80.203.191, 11-12 rt. In this text, an individual is paying for the decoration

of two *wt* coffins "for the riverbank" (*r mryt*). The riverbank is frequently acknowledged as the site of trade and markets (Berlev and Berlev 1980). While acknowledging the presence of such an area, this text clearly shows that the work was commissioned, and it is possible that the coffins were being taken to the riverbank for transport to a nearby community (Cooney 2007:150). Despite the lack of evidence, it seems reasonable to believe that at least some objects were being produced for an open market, since one does seem to have existed; however, these are likely to have been smaller objects that required less initial capital investment. Such production could very easily have left no official documentation.[24]

There are also references to official, professional carpenters in the tombs surrounding the village of Deir el-Medina, even if they are not mentioned in the royal tomb construction records. One such individual, Huy, however, is somewhat difficult to interpret. He is the owner of TT361 in Deir el-Medina. In his tomb, he refers to himself only as "Servant in the Place of Truth", as he is also referenced on the Turin stela 1609 (Černý 1973:128). In his son Qaha's tomb, TT360, however, he is called "Chief carpenter in the Place of Truth", as he is on an ostracon as well (O. Carnarvon 300 PP) (Černý 1973:126–128). It is unclear whether or not he is using this title in a similar manner to Maanakhtef, as a false honorific, or if this was his official position. If official, it is puzzling why he does not use this higher title himself in his tomb. It is possible that he attained this position after these inscriptions had been completed.

There are other references to carpenters in the place of truth on legal documents, where we might assume that these individuals are using their official titles; however, this full reference, "carpenter in the place of truth", does not seem to occur on the personal transaction records within the town of Deir el-Medina. Perhaps these individuals did not sell their goods to their

[24] The coffins with blank names that are frequently suggested to be made for the market are much more complicated than is usually suggested, and will be discussed further in section four, and in the conclusion.

neighbors, or they may have only been called in for temporary woodworking projects, and then returned to other villages or workshops. There is evidence that outside carpenters were drafted for assignments in the valley. Royal woodworking projects, in particular, seem to have been completed by specialized craftspeople living outside the village. Ostracon O. Cairo 25504 (Kitchen 1969:IV.155-158; McDowell 1999:223–225) describes the visit of the vizier to oversee the final preparations of the tomb equipment of Merenptah. After placing the coffin in the tomb, the vizier brings a scribe and an overseer of carpenters (*ḥmww*) to complete the work on the king's cedar (*mrw*) coffin. These individuals therefore do not seem to come from Deir el-Medina itself, nor were the men with carpentry skills living in the village seen as appropriate for this task. The fact that the local coffin receipts in the village make no mention of imported timbers, in combination with this reference to bringing outside craftspeople in to complete the royal cedar coffin, would again suggest that only high-ranking, specialized carpenters would have been permitted to work with these expensive materials.

DISCUSSION

The elite view of craftsmen from tombs and literary texts, which serves as the basis of many Egyptological discussions of craftsmanship, provides an important view into the elite ideal, but not a realistic understanding of the position of woodworkers in society. The administrative texts, though problematic, clearly demonstrate a much more complicated distribution of craftsman throughout hierarchies and institutions. Individual biographies on stelae and in tombs, illustrate the existence of high-ranking woodworkers, some capable of working in multiple media. These individuals were proud of their profession, sought to keep their sons in the same business, and often held additional, priestly roles and titles related to the institution to which they were attached.

The administrative evidence suggests that professional woodworkers were usually associated with these institutions, and even the less formal carpenters seem to have been employed by the state in other occupations, and completed woodworking tasks in their free time. There is little to no evidence for full-time, professional carpenters who were completely unattached to the state. It is probable, however, that small-scale, independent production of objects was occurring, and it may be these items that were taken to the market. The evidence from Deir el-Medina, however, suggests that even coffins built and sold within a village were commissioned, with little initial capital investment in production. This is important for our understanding of the choices available to carpenters as they built coffins, and to the organization of work.

In the following detailed analysis of coffin construction through time, this administrative background will provide important context for interpreting the material evidence. The details of construction in all periods suggest significant communication between workshops throughout the entirety of Egypt, an unsurprising fact, if all coffin craftspeople belonged to state or temple institutions. Even if they did not specialize in coffin construction, the different craftspeople attached to the instutions would have the opportunity to communicate with one another, and discuss technical approaches. Coffins from the south and north of Egypt, though they may differ in the details of their decoration, share joining techniques and other construction options that are not visible once the object is completed. Woodworkers might have been sent out from the capital to complete projects, or at least communicated with neighbouring institutions, while details were finished by local artists. I would not expect this level of continuity if coffins were created by individual, independent woodworkers, living at opposite ends of the Nile.

In addition, the vast majority of coffins were made of local wood. The quality of these local wooden objects varies considerably, as does the associated investment of time and added materials. I believe it is safe to say, however, that many of them were created by individuals who had significant woodworking skills, but did not have the time to perfectly finish these objects – as indicated by the remnance of tool marks – or perhaps the individuals commissioning the objects did not have enough to pay for these final touches. Few of these pieces incorporated added materials, such as imported gold or stone inlays. On the other hand, as shall be demonstrated, the quality of the imported cedar coffins is almost always considerably superior. Cedar coffins are usually very finely finished, have more complicated, perfected joinery, and frequently include inlays or gilding. As the important, final text suggests, these elite objects were almost certainly created by those high-ranking carpenters who were brought in from the palace or temple workshops to complete these important, commissioned objects. These artists would have had incredible access to materials, demonstrating a level of privilege denied to most individuals. They would have been members of the elite themselves, and not just employees.

The popular, homogenous view of craftspeople makes it impossible to understand this division of work. After all, we have to acknowledge that elite craftspeople existed before we can argue that they were connected to different levels of access. While my assessment of the administrative evidence is no doubt still too simplistic, I have been able to show that the position of woodworkers in Egyptian society is much more complicated than the tomb scenes and literary tales otherwise suggest. Moving now into section four, the detailed assessment of coffin carpentry compliments this more complex view, and helps to clarify both the organization of work, and the relationship of the carpenter to their colleagues, to their commissioners, and to the rest of Egyptian society.

4.I SELECTING AND ANALYZING EGYPTIAN COFFINS

In section one, I laid out the theoretical approach to understanding the significant, entangled role of technology within society, and suggested that by analyzing the construction of objects, we might be able to track social and political changes, and assess the structures of the *habitus.* In section two, I demonstrated how working with modern woodworkers helped to clarify which aspects of production were significant, and how the rest of my investigation would be shaped by interactions with these craftsmen. I also laid out my methodology for analyzing wooden objects, and identifying the materials used for construction based on their anatomy. Moving to section three, I discussed the contextual background necessary for attempting to understand Egyptian woodworking choices specifically. I discussed the religious significance of different types of timber, and how this may have both guided material selection for coffins, and been affected by the physical properties of the wood and its value as a construction material. I laid out the tools and techniques available to the ancient Egyptians, and explored the administrative reality of their organization of work and place in society. All of this information has been gathered in order to better understand the technical production of coffins, and why certain construction options were chosen over others in different historical periods. In this final section, I therefore provide a detailed, technical analysis of coffin construction through time, to assess how these details align with and illustrate shifts in politics, religion, and society. To begin this lengthy discussion, I first want to reiterate why I have chosen to focus this analysis on coffins, as a case study.

As noted in the introduction, a close, *longue durée* analysis of ancient wooden objects in the Mediterranean is only possible with the Egyptian evidence. The practice of placing organic materials in dry, desert tombs, allowed these pieces to survive better than any other

Mediterranean context. Focusing this analysis on woodworking technology therefore provides a unique dataset for cross-cultural comparisons. Although other wooden objects, such as boxes and furniture, were placed in tombs, the coffin was the most essential element of the burial throughout history. Examples from different segments of society and from different regions have survived, allowing for a more complete, in depth analysis of the different construction options.

In the selection of samples for this project, I endeavored to study coffins from throughout each major chronological division, from the Predynastic through to the Third Intermediate Period. I also attempted to integrate selections from different regions in Egypt, and to include variations in quality. My study is not exhaustive, but an attempt to illustrate as many construction choices as possible, and to place them within their historic context. Throughout the course of this study, my method for selecting samples, and my approach to coffin analysis has been forced to adapt to issues with access and permission to publish. In the following description of my methodology, I acknowledge the challenges that I encountered during this study in an effort to be transparent in my approach to this research, and in the hopes that archaeological and cultural heritage communities will be able to work together to make research more manageable in the future.

THE SELECTION OF COFFINS

In the following chronological progression of coffin development, I cover a period of nearly 10,000 years. In order to include a detailed analysis of a wide array of coffins, I have included both published examples, and those that I have been able to assess personally. I admit that it was more challenging to find published data than I had originally assumed. The most immediate challenge is that of survival to the modern era, which every archaeologist must face. Deterioration, along with selective periods of reuse, left the archaeological coffin record

unbalanced. There are far more examples of extant coffins from Third Intermediate Period Thebes than any other period or region in Egyptian history; however, this is unlikely to be an accurate reflection of the coffin numbers that existed in antiquity. In addition, almost certainly due to ancient tomb looting or reuse, very few of the richly decorated coffins of kings have survived, and almost all of these date to the later periods of Egyptian history. It is therefore impossible to be sure that the selection of coffins presented in this study is representative of the full array of construction options that were once available to the ancient Egyptian craftsmen.

The pool for samples is further reduced by the practices of early excavators. In the 1800s, through to the beginning of the 20th century, archaeologists were in the habit of only recording the coffin details that they considered significant. They would then either rebury or destroy the remaining examples, with the exception of truly remarkable specimens. The excavators occasionally describe blazing bonfires fueled by ancient coffin timbers, or the reuse of colorful coffins to build huts and houses in the nearby villages. From the Meir excavations, one witness stated joyfully, "sometimes, there was a bonfire of discarded sarcophagi as high as my tent!" (Blackman 1914:14). In a recent conference paper, Aidan Dodson also noted that early museum curators continued the practice of burning undesirable or "ugly" coffins in order to clear out room for more display-worthy objects.[25] In addition to this intentional destruction, other coffins have been destroyed due to modern conflict, or have greatly deteriorated while sitting in storage rooms.

Furthermore, the vast majority of coffin survey projects in Egyptology are based on epigraphy and art history (Willems 1988; Niwiński 1988; Zitman 2010). Due to this focus, relatively few of the thousands of Egyptian coffins that have been discovered in excavations have been fully published as objects, rather than simply as media for texts and decoration. Even

[25] The paper was given at the Second Vatican Coffins Conference, 6-9 June 2017, Vatican Museums, Rome.

detailed studies often ignore elements of construction, and very few include scientific wood analysis. Unfortunately, many of these fragmentary publications are related to those coffins that no longer survive, and so significant data regarding coffin construction materials and techniques has been irretrievably lost. This is particularly true for undecorated coffins, which may have afforded much more information regarding the funerary technologies of individuals from lower socio-economic communities.

I have been able to supplement this published data with in-person analysis of additional examples of coffins. This selection has largely been based on the response of institutions to my request to study objects, and on the level of access that such establishments were able to grant. I am particularly grateful to the Museo Egizio di Torino, the British Museum in London, The Egyptian Museum in Cairo, and to the Denver Museum of Nature and Science. Unfortunately, multiple promising research trips to several other museums turned out to be rather disappointing. The value of precise observations of coffin construction has yet to be acknowledged, and some curators could not understand why I could not simply use photographs to investigate the objects. On multiple occasions, I was denied access to objects when on site, despite having pre-approved examination requests months in advance. This was particularly frustrating in the instances that had required months of planning, funding, and international travel. Despite detailed explanations of my process, I was simply shown the coffins on display in glass cases, usually with one side against a wall, and the lid in place, and was told that I would not be able to have additional access. As construction details are often visible only from the interior, I am usually limited to less than half of the possible required details in these instances. In conversations with my colleagues, I discovered that this occurs frequently during museum fieldwork all over the world. Such frustrations should be acknowledged on a more regular basis to demonstrate the need for

more communication between individuals in cultural heritage management and researchers. I have no doubt that collaborations between these two groups can lead to mutually beneficial research projects and exhibitions.

Despite these challenges, I have been able to include the analysis of 271 coffins or coffin parts in the present study. The detailed construction of these objects is described in the following chapters, and summarized in my supplemental coffin catalogue. The data gathered for this catalogue includes the date of the coffin's creation, whether it was an outer or inner coffin, the owner's name, titles, and gender, its ancient and modern location, the modern accession number, the species of wood used for construction, the dimensions of the coffin, the number of pieces used in its creation, a brief description, bibliographic details, and the level of access I had to the coffin. Not all of this information was available for each example. In addition, I was forced to include published wood identifications that may not be reliable. I have therefore included the source of the identification in this data cell, so that if more recent analyses of these coffins are completed, the data can be easily updated. My access to the coffins is given as either: "Publications only" or "Personal". Personal access is further noted as "limited", "full", and "samples". "Personal, limited" refers to my ability to examine coffins while on display; "personal, full" refers to full access to the coffin, including the interior and exterior; and a "samples" designation means that I was also able to sample the coffin wood personally for identification. I have included this access designation to acknowledge where I have had to use secondary information. Those coffins to which I have been able to gain full access afforded a number of details that were inaccessible through the published examples.

THE IDEAL COFFIN ANALYSIS

In appendix three, I have provided a sample form that I designed to use in my analysis of Egyptian coffin construction. The first section of the form records information that is largely accessible through a museum database: Modern location, accession number, owner name, provenance, date, coffin type, coffin elements, and any bibliographic information that may be associated with the object. I also include an overview image of the object, to prevent confusion in the future. In section two, I record the visible construction materials, at this point simply as present or absent. I then record a general description of the decoration, and then the construction details. I first note any tool marks, and the types of joints that are visible. After a construction description, I count the number of pieces used in each part of the coffin, and take a series of precise measurements.

In addition to this form, I record the construction details of each coffin through a program called “Procreate”. On an iPad Pro, this program allows the user to take images of objects and annotate them in layers, in a similar manner to Adobe Photoshop (fig. 36). In this way, I can quickly draw and note details that would otherwise take a long time to describe on my forms. When possible, I complete these rough diagrams for the front, back, foot, and head of the coffin exterior and interior, the base, and the lid. These sketches are later used to create detailed construction figures. The use of an iPad also allows me to integrate applications

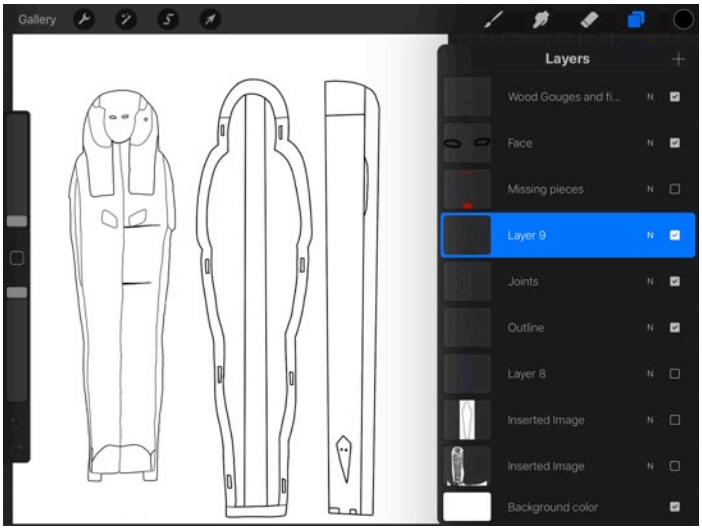


Figure 36: Screenshot of coffin figure layers in the iPad pro application, "Procreate".

such as iDStretch, a color manipulation program that can allow researchers to see faded illustrations and inscriptions. These manipulated images can be transferred into Procreate, to allow the addition of notes while examining the objects (see for example, figure 49).

To complete a comprehensive analysis of a coffin, the researcher should have full access to the object. This means that they must have the ability to walk around the exterior of the object, and to remove the lid to examine the interior. In an ideal situation, wood samples should be taken from multiple areas of the coffin (see chapter 2.II), and the object should be subjected to X-radiography or CT scans so that interior joints are fully visible as well. Only through this close, in-person and scientific analysis, is it possible to be certain about each detail of the different elements of construction; however, even the most flexible museum staff are unlikely to be willing or able to subject multiple coffins to this analysis without a long-term investment in the project. Only in particularly exceptional cases I was able to gain this level of access to the objects; nevertheless, I have found that considerable construction data is available without scanning equipment, particularly in regards to coffins created before the Second Intermediate Period, at which time decoration methods became more intensive. Only with heavily decorated coffins is there likely to be significant discrepancies between details visible to the eye and visible only through scans. This is one reason that my selection of coffins from the Third Intermediate Period is smaller than might otherwise be expected. I only included examples that revealed information about construction, and so, coffins that are heavily decorated and accessible only through publications that neglect construction information were of limited value for this discussion.

CONTEXTUALIZING COFFIN CONSTRUCTION

The previous sections of this project provided the necessary general background information required in order to assess the construction options throughout the pharaonic history of Egypt. In the following five chapters, I provide additional historical context for each time period in question, and then follow with a detailed, close analysis of the construction of coffins through time. I then close each chapter with a summary of the trends, the significant elements of construction, and their social, political, and religious connections.

This sample of 271 coffins includes selections from each time period, from a variety of regions, both decorated and undecorated pieces, and a significant range of construction quality. In this manner, I hope to have considered many of the major construction techniques from each period; however, I do not consider this selection exhaustive. There will be, no doubt, additional examples of construction options that are not included in this relatively small sample. My goal in this project is not to stand as the final word on coffin construction, but to begin a discussion of the repertoire of construction techniques, and to demonstrate the significance of these details within the field of coffin and technology studies. I consider how these objects illustrate the complicated negotiation of identity through object construction, and the interpersonal realtionships between craftspeople, their patrons, and other members of society. As more coffins are examined or discovered, this analysis will grow, adapt, and become more detailed and refined. This initial discussion, however, already demonstrates the significant role that the coffin, in particular, held within Egyptian society, and establishes the incredible social details that can be gleaned through a technical analysis of a single object type within its historic context.

4.II THE BEGINNING OF THE WOODEN COFFIN

When the decision to bury a body in a discrete container emerged in Egypt can only be traced roughly, based on what has survived in the archaeological record; however, the shift is one of the most significant in Egyptian funerary beliefs, and would set the stage for the development of the rich afterlife culture for which this society is so famous. Through an analysis of the evidence from the Predynastic period, it is clear that the emergence of the coffin is directly related to the adoption of agriculture and the birth of elite society. Wealthy individuals used these objects to set themselves apart from the less affluent. As soon as this practice began, the wooden coffin became an ideal piece of elite burial equipment, serving as physical walls between the "haves" and "have-nots", and would remain desirable through to the end of Egyptian history.

While only traces of coffins can be found dating to these earliest stages, extant forms from the Early Dynastic Period have been uncovered, and illustrate a period of experimentation, as the Egyptian craftspeople began to establish a tradition of practice. By the Old Kingdom, these experiments had led to two different forms of coffins: the "plain rectangular" and the "palace façade" or "house" style. Both of these types continue to reflect the significance of the coffin as the eternal dwelling of the deceased, and their design, particularly the house coffins, incorporates elite signifiers seen in tomb architecture and royal iconography as well. Although most coffins were built in either of these two styles, there is still more variation and experimentation in construction throughout the Old Kingdom than there is through the rest of Egyptian history until the Third Intermediate Period. This was probably due to the relative rarity of private tombs and coffins until the 4th Dynasty. During the height of the Old Kingdom, the power of the king was visible and absolute, and individuals seem to have been largely dependent

on their ruler for access to materials, and vied for a burial place near the capital. As the power of the private elites rose at the end of the 4th Dynasty, however, coffin numbers increased, and wealthy individuals were buried in the provinces, separated from the resting place of their ruler. As coffins became more frequent, a standard approach to construction also developed, that would be characteristic of coffins from the late Old Kingdom, through to the end of the Middle Kingdom, as shall be discussed in the following chapter. These social shifts and the struggle for power and access to religious expression, suggested by the textual evidence, is vividly illustrated through the technical development of the coffin.

THE PREDYNASTIC AND THE EMERGENCE OF THE COFFIN

Egypt's development as a powerful civilization in the Old World is rather unique, due to the relatively late introduction of agriculture. By the early Holocene (c.10,000-7,000BCE) in the Near East, the domestication of plants and animals had already begun in earnest. Evidence for permanent and semi-permanent occupation sites alongside mobile pastoralists dates to this early period (Bar-Yosef and Belfer-Cohen 1989; Cauvin 2000; Wengrow 2006:23). On the other hand, there is little indication of Near Eastern cultivars in Egypt until the 5th Millennium BCE. Excavations in the Faiyum region have shown that communities in this area had a mixed subsistence strategy, with some evidence of cultivation shortly before 4000 BCE; however there was no clear evidence of permanent settlements at this site this early (Holdaway et al. 2016). Semi-subterranean oval houses discovered at contemporary Merimda Beni Salama suggest that here at least there was some form of permanent dwelling (Junker 1932:43–51; Einwanger 1982), but most communities in northern Egypt still seem to be largely pastoralist (Wengrow 2006:26–27). There was also little evidence for elaborate funerary practices or significant grave goods (Kemp 1968).

The contemporary communities further south in the Nile Valley were also largely pastoral.[26] Dung piles from Mahgar Dendera 2 attest to the presence of domesticated animals (Wetterstrom 1993:214–216; Midant-Reynes 2000:16), though wild bones with projectile points show the continued practice of hunting as well (Tangri 1992). As with other sites in the Badari region, there was also evidence for hearths, postholes and storage jars, but no permanent architecture for habitation (Holmes and Friedman 1994; Hendrickx, Midant-Reynes, Béatrix, and van Neer 2001; Wengrow 2006:49). The burials from Middle Egypt through to central Sudan had become more elaborate than those of their northern contemporaries, though they continue to display a relatively homogenous nature (Wengrow 2006:27). This, in addition to the materials included in the burials, continues to point to constant interactions between communities, and little interest in sedentary life.

The burials from this period consisted of individuals laid in a contracted position within an oval pit dug into the sand. There is some differentiation between grave goods, suggesting the beginning of social stratification. The body itself was wrapped in an animal skin or a reed mat. At Badari, four individuals were found in the remains of what Brunton described as a "hamper coffin", which seems to refer to reed mat wrapping, partially held together with sticks, providing a more protective body covering. He notes however, that from the Badarian period, "no trace was found of coffins in wood and clay" (Brunton and Caton-Thompson 1928:20; Midant-Reynes 2000:153). The body was often adorned with beads and bands made from materials such as worked stone, bone and shell. Small pottery vessels were placed around the deceased, along with cosmetic palettes and grinding stones that had been used in life. Malachite, in particular, was frequently found in this context along with objects from the Eastern and Western deserts and the

[26] Some scholars have argued that more permanent habitations may have existed near the river and have since been washed away (Hendrickx and Vermeersch 2000: 42-3), a possibility that unfortunately cannot be tested at this time.

Red Sea (Debono 1950; Friedman and Hobbs 2002; Wengrow 2006:51). There is therefore no evidence for true coffins in Egypt before the advent of agriculture and permanent habitations.

The cultivation of cereal grains within Egypt began in earnest in the early fourth millennium BCE, as seen at a number of sites in the Nile Valley (Hadidi 1982; Litynska 1994; Wetterstrom 1993:222–224). Just as occurred in the Levant thousands of years earlier, the investment in cereal production in Egypt is closely associated with an increase in sedentism and the creation of permanent habitation sites. Along with these changes came the transformation of a number of technologies, and an investment in long distance trade. The social division of society increased, such that a clear elite developed along the lines of what Michael Rowland and Susan Frankenstein refer to as a "prestige-goods system". According to this model, a small group of individuals were able to exercise control over access to goods that were obtained through long-distance trade (Rowlands and Frankenstein 1998:337). As patrons were now able to support artists, symbols of elite status became reified through objects, particularly those created from imported goods, and a desire developed to keep this status and its indicators in the afterlife. The coffin quickly became one of the central indicators of this status, by providing walls to separate these wealthy individuals from those of lesser means. These shifts are best illustrated by focusing on the archaeological evidence discovered at Hierakonpolis during the era referred to as Naqada I and II (c. 4000-3300 BCE).

Already during Naqada I, "barnyard-like enclosures" were found at Hierakonpolis, or ancient Nekhen, in an area referred to as HK29. Nearby, an early dwelling was discovered, which dates to approximately Naqada IB-C (c. 3700 BCE) (Hoffman 1980; Hoffman 1982:10–13, 138). Intensification of craft production at this site is indicated by the presence of wasters and fragments of a new polished ceramic ware (Geller 1984). These were found much more

frequently in burials than the rough ware produced for daily use (Friedman 1994:879–881; Wengrow 2006:92). At other sites, too, more habitation areas are present in the evidence, but the microstratigraphy, visible for instance at a site close to modern el-Khattara, suggests periods of "abandonment and reoccupation" (Hassan 1988:155). There is also limited evidence for cultivation. It is therefore likely that most settlements at this time, until Naqada IIB, were occupied only seasonally, with "a growing tendency towards the nucleation of social activity in particular locales" (Wengrow 2006:80).

In Naqada IIC-D (c. 3650-3300 BCE), significant evidence for cultivation and permanent dwellings can now be found, along with specialty crafting areas. With the advent of sedentary farming and habitation, people now had the ability to store goods, and in Egypt this seems to have quickly promoted greater craft production and display of social control and access. Again at Hierakonpolis, there is evidence for breweries by Naqada II, along with a new rough ware vessel, likely related to beer and bread production. Beer production, a Near Eastern innovation, would not have been possible without more intensive cultivation (Kaiser 1957; Friedman 1994:26–8; 900; Wengrow 2006:94). The rough vessels associated with brewing and baking, as well as decorated D- and W-Wares, became part of the burial assemblage throughout Egypt, extending into the north and replacing local practices. This illustrates the spread of a material culture, most likely along with new feasting and display practices as well. In the north at Buto, for instance, a continuous ceramic sequence shows the shift from local forms with parallels in the Levant to the rough wares similar to those from Upper Egypt, occurring in Naqada IIC-D (Friedman 1994:917–919). At Tell el-Farkha, breweries emerge at the end of Naqada II (Cichowski 2008). At this time, the donkey also seems to have been domesticated, providing easier access to trade routes across the Sinai, and more imported materials show up in the archaeological record (Oren

1989; Ovadia 1992; Sherratt 1997:209–211). For example, coniferous wood, most likely cedar imported from the Levant, has even been found as part of a latticework enclosure around the later developments at HK29A (Friedman 1996:24). Wood and stone carving technology increased dramatically thanks to improvements in metallurgy, again based on developments in the Near East (Wengrow 2006:76). It is likely that the individuals who had been able to store wealth in the form of cultivated grain were able to support traders and craftsmen, and control the movement of goods and the production of elite crafts. As Andrew Sherratt (2002:69–70) has noted, the new emphasis on feasting and elite objects suggests a control of social networks to move from simple food and craft production to much more complex items. Individuals from Upper Egypt were most likely in control of this production and trade, as is suggested from the shift in burial goods, and the beginning of significant stratification in funerary assemblages at the end of Naqada II.

Throughout Naqada I and into Naqada II, many individuals continued to be buried in pits, though less frequently wrapped in matting or animal skin. In Upper Egypt during Naqada I, J.J. Castillos (1982) found that there were a higher number of bodies buried in simple pits, while a small number of individuals were buried in larger tombs with additional goods. This means that wealth was becoming concentrated in the hands of fewer individuals who could afford much more substantial burials than the less affluent in society: the social gulf was increasing. At this time, some individuals were buried with pottery decorated with animals and human figures, occasionally shown together in hunting scenes. Maceheads and decorated palettes, often in animal form, were also placed in the larger burials in this period (Midant-Reynes 2000:171). In Lower Egypt, at Maadi and Buto, graves seem to have continued to consist of simple pit burials, with few grave goods (Stevenson 2009:5–6).

In Naqada II, the separation between the wealthy and the rest of society increased dramatically. While there is some evidence that small numbers of wood and clay body containers may have existed in the later Naqada I, it is in Naqada II that the coffin (both wood and ceramic) became an important element of rich burials (Midant-Reynes 2000:170, 187). This emerges alongside the beginning of walled tombs, often lined with mudbrick. One of the most famous examples being Painted Tomb 100 from Hierakonpolis, decorated with images of hunting, smiting, and the "master of animals" (Case and Payne 1962; Kemp 2006:81). These richer tombs also come to be made up of multiple rooms, and offering goods were now usually separated from the body, placed on benches or in separate compartments. Secondary treatment of the corpse is clear in some burials, and at HK43, a number of individuals were wrapped in resin soaked linen, suggesting an early form of mummification (Friedman 1998:5; Stevenson 2009:4). These graves seem to demonstrate the appearance of an elite fairly soon after the adoption of agriculture and the beginning of sedentary life. These individuals were able to take control of social networks to ensure that they could obtain more imported goods. At the same time, they could support craftsmen who created elaborate works - perhaps at least partially ensured by sponsored feasting and the reification of elite patron status through the crafted symbols of power and control. This likely reinforced the concept of elite supremacy in those involved in production, and demonstrates the significant role that the craftspeople played in establishing and maintaining an elite class.

The burials from the Neolithic incporate a different system of symbols, meaning, and beliefs from those in the later Naqada I and II periods. David Wengrow (2006:69–70) has argued that the social structure of the Neolithic period in Egypt was focused not on the house, as seems to be the case in the Near East, but on "the bodies of people and animals". The objects that were

found in the graves during this time were meant to display identity, and could be easily carried and worn. Many of the burial goods, including cosmetic palettes and combs were associated with styling the body, creating identities through the beautification of skin and hair. Wrapping the body in animal skin, matting, or fabrics may have been an extension of this practice. These ephemeral wrappings, again, carried or worn, emphasized the privileged position of the body as a significant aspect of identity. As Wengrow notes, "this body-centered *habitus* was also compatible with the everyday demands of a mobile, pastoral lifestyle, perhaps accounting for the apparent lack of long-term investment in static bounded environments for dwelling and socialisation" (Wengrow 2006:70). Although these individuals may have been, and likely were, concerned with demonstrating status, their mobile lifestyle made it impossible to store significant resources. This ensured that they were limited to being regarded as highly respected members of a community or as a "first among equals", a concept supported by the relative egalitarian quality of the neolithic burials.

With Naqada I and the development of intensified farming in Egypt, society rapidly stratified, and the centralized control of resources is suggested by the widening gulf between simple and rich burials. In Naqada II, feasting and display seem to have become a focus of life that was adopted throughout Egypt, and the burial became a means of demonstrating the separation between elite individuals and the rest of society. Walls became an important element of the burial, creating a physical boundary between the body and the outside world, between the elite and those who labored on their behalf. Whether in the form of wooden or brick-lined tombs, or an enclosed coffin, these boundaries helped to establish a separate, ideally permanent space owned by an individual, and filled with objects representative of stored wealth. These items, no longer necessarily physically associated with the body, were taken out of circulation, and would

support the individual's unique status in the afterlife (Wengrow 2006:115). The early efforts towards mummification suggest that these elite people wanted to hold on to their body, social positions, wealth, and objects for eternity. The symbols chosen to decorate the tomb and pottery, the hunter and master of animals, and the macehead, are those of control and power, held by an individual. As the physical markers of status boundaries, the emergence of the coffin was therefore immediately associated with the elite and the illustration of a physical social separation.

The construction of the earliest examples of coffins cannot, unfortunately, be analyzed, as they survive only in traces and fragments. Our knowledge about this vital period in the history of these objects must therefore rest on the descriptions of early excavators. It is often suggested that the earliest coffins developed out of the wood-lined burials seen in, for instance, the predynastic levels of Qau and Mahasna (van Walsem 2014); however, the excavation reports from these sites make it clear that the archaeologists are often uncertain if the discovered wood remains are liners or enclosed boxes, and so both may have appeared at approximately the same time.[27] At Badari, at least, Brunton and Caton-Thompson state plainly that traces of wooden coffins were visible in "all three predynastic periods" (1928:53), referring to Naqada I, II, and III. One of the richest tombs from Badari, a female burial dated to Naqada II, contained the remains of a coffin, textiles, 2 stone palettes, a bull's head amulet, and several large necklaces with carnelian and lapis lazuli beads. This attests to not only the presence of coffins by this time, but also the

[27] Ayrton and Loat (1911), working on predynastic burials from Mahasna, discuss the dark traces of wood around the body, assuming that the absence of this material below the body should be seen as a wood-lined grave. In two instances, however, the wood is below the body, and objects are placed between the wood and the walls, suggesting that the body was placed in a discrete wooden box, a coffin (1911:7). Later, in their descriptions of the brick-lined tombs, which seem to date slightly later, to the 1st Dynasty, Ayrton and Loat also mention that wood liners here seem to have been joined at the edges, since they were somewhat removed from the walls. Again, they suggest that these are not coffins because there was no evidence of a base (1911:8). Unfortunately, it is now not possible to complete a more thorough investigation of these tombs and reassess whether a base was originally present. John Taylor also notes that these early wooden structures may have been containers, and not just lined burials (1989:13). Peet, working at Abydos, notes that the wood remains in tomb U10 from Naqada I or II did not have a wooden lid or base, as with other predynastic burials in cemetery E, and so this is likely wooden lining as well (1914:15, 18).

associated wealth of its owner, and the presence of imported and high status crafted materials (1928:50). The difficulty in interpreting these wooden remains makes it unclear as to whether the earliest wooden coffins should be seen as an outward extension of ephemeral body wrappings to create a permanent walled space, or a more enclosed version of the desire to turn an unbound, loose sand pit into a bounded container. Perhaps they provided a means to accomplish both goals, though the fact that they created a solid, physical boundary is likely the most important element, ideologically speaking. Although it seems likely that individuals would have already associated these walls with sedentary life and the house, such connotations became particularly clear in the later Naqada III and into the Early Dynastic Period.

EGYPT IN THE EARLY DYNASTIC AND OLD KINGDOM

In the Early Dynastic Period, society changed rapidly. The funerary evidence demonstrates the intensity of social competition, and the desire of individuals to manipulate iconography to indicate social power and access. The tomb became the home of the deceased in the afterlife, and it was equipped with all the supplies that the decased might need, both to sustain them physically, and to ensure their continued high status. Elements such as the "niched façade" became an important indicator of affluence and power, and was integrated into royal iconography, royal and private tombs, and, eventually, the coffin as well. Access to materials and the afterlife was controlled by the increasingly powerful position of the king, which was unquestionally demonstrated by monumental architecture beginning in the 2nd Dynasty, and epitimized by the Giza pyramids in the Old Kingdom. This control meant that coffins and elite burials remained relatively rare and concentrated in areas associated with the royal burial grounds until the 5th Dynasty, at which time provincial nomarchs began to assert their own dominant positions. After briefly describing the historical period in question, I will discuss, in

detail, how the evolution of the technical elements of the coffins helps to illustrate these fluctuating power struggles alongside the development of new construction techniques and traditions that would last for millennia.

By Naqada III (c. 3300-2686 BCE), the beginnings of kingship are visible in the archaeological record. Evidence suggests that these early leaders had significant control of trade routes and specialized production, which is illustrated by elaborate burials. Tomb U-J, for instance, at Abydos, dating to approximately 3150 BCE, is much larger than the elite tombs of Naqada II. This burial consisted of 12 rooms, covering an area of 66.4m^2 (Bard 2004:60). The original excavator, Günter Dreyer, noted that the remains of suspended reed mats seem to have been hung between the rooms. This led to the suggestion that the tomb was meant to reflect a palace or elite house with doors through which the tomb owner could pass (1998:4–7). Although no coffins were found in this tomb, its ideological connection to the eternal dwelling of the deceased is undeniable, and makes it easier to see how a similar significance might have been attached to the coffins at this time as well. The contents of the tomb included 400 jars of what was possibly wine, some clearly imported from the southern Levant, while the other vessels may have been local imitations of foreign pottery styles (Kemp 2006:90–91; Stevenson 2009:5). There was also a cedar box, and a carved obsidian bowl. This suggests the control of long distance trade networks. Approximately 173 tags with proto-hieroglyphs were also found in the tomb, which may indicate the beginning of some sort of administrative system, again illustrating a more centralized network of control in the hands of few individuals (Kemp 2006:91; Wengrow 2006:203–204).

The owner of tomb U-J, may not have been sole king of the two lands, but united rule of Egypt is quite clear by the end of Naqada III, and the beginning of the 1st Dynasty. The Narmer

Palette is one of the earliest representations of united rule, though it should not necessarily be seen as illustrating the victorious moment of unification, as was previously believed (Yurco 1995:85). On one side of this image is a large figure of Narmer, holding a mace to smite his enemies, while on the other side he inspects the defeated bodies of the marsh dwellers in the north. Whether this is commemorative of a physical victory over opposition, or simply a symbolic representation of his dominance over the two lands of Egypt is debated (Bard 2004:60-61), but the message of power and control is clear. Already depicted on this object are images of bulls, the red and white crowns of Lower and Upper Egypt, a falcon supporting the king in his defeat of the enemy, and the name of the king atop a niched façade. These were all elements symbolic of Egyptian kingship that would remain visible through to the end of its history (Kemp 2006:83). The style of the king's name in the niched architectural element, what is known as a "serekh", is likely a representation of the palace or elite architecture (Atzler 1974; Baines 1995:121–122). There is a significant possibility that this imagery and its association with power developed out of earlier royal buildings in the Near East, particularly those related to Uruk (Frankfort 1941). This representation of power is also seen in the burials of the 1st Dynasty kings at Abydos, and would become integrated into the design of the "palace façade" coffin – early versions of which also date to the 1st Dynasty. The incorporation of this symbolism into the coffin serves as an expression of elite power, and demonstrates very clearly that at this time the coffin was understood as the house of the deceased.

While Memphis seems to be the administrative capital of Egypt by the 1st Dynasty (c.3000-2890 BCE), Abydos remained a cult center, and the location of the royal burial grounds. The monumental nature of the royal mastaba tombs from the site demonstrates the new scale of political order and control that the Egyptian kings could harness (Bard 2004:64-7; Kemp

2006:99). Only the substructures of the royal tombs remain, though many are accompanied by subsidiary graves of officials and support staff.

To the north-east of the tombs are the funerary enclosures, perhaps where funerary rituals or the cults of these kings were carried out. The best preserved is the Shunet el-Zebib, which belonged to the 2nd Dynasty king, Khasekhemwy. The niched walls of the enclosure reflect the royal architecture related to the serekh symbol (Bard 2004:69; Kemp 2006:101). No elite habitations have been found that survive from this era, but the 1st Dynasty tombs of North Saqqara, also reflect these niched walls, in burials that seem to represent entire estates. Tomb 3357, for instance, decorated with niched walls, included over 30 different chambers in the sub- and super-structure, with granary-like constructions, traces of a garden, and a mud-brick boat grave (Bard 2004:71). As this likely reflects an elite estate, the niched walls seem to be viewed as a necessary element, and were therefore a widely acknowledged symbol of elite status. The first early versions as of the palace façade coffin also begin in the 1st Dynasty – making the similar association of the grave and this body container more definite, though, as noted above, the religious significance was probably present in the earlier, plain rectangular coffins as well, even if it was not as obviously indicated.

Around the 2nd Dynasty (c. 2890-2686 BCE), or perhaps slightly earlier, interactions with the Near East were transformed by the beginnings of maritime trade. This allowed quicker access to imported goods through the port city of Byblos in what is now called Lebanon. During the 1st Dynasty, the names of kings Djer, Den, Anedjib, and perhaps Semerkhet are found in sites in southern Palestine, such as at Ain Besor. During the 2nd Dynasty, however, these labels are no longer found in this region, and the name of Khasekhemwy instead appears at Byblos, suggesting that the majority of state sponsored trade had shifted to the maritime route by this time (Bard

2004:74). While imported oils, wines, and timbers such as cedar had been accessible over land, the new routes saw an influx in the amount of imported goods, as well as the intensity of crafted prestige objects. The ship itself became an important symbol of power, and also one of the ideological means of transport to the afterlife. Numbers of wooden coffins in the tombs of officials rose quickly in the 2nd Dynasty, as seen at Tarkhan, Helwan, and Saqqara. With the enclosure of the body in a box, more efforts were necessary to preserve the corpse, and there is also an increase in the numbers of bodies wrapped in resin soaked linen. Access to high quality wood for coffins and resin for mummification was made possible with the increased imports from the Levant (Bard 2004:81). Cedar coffins probably existed by this time, though the earliest extant example that incorporates at least elements of cedar dates to the 3rd Dynasty (see below).

During the 3rd Dynasty (c. 2686-2613 BCE), the monumental nature of royal funerary architecture increased dramatically, and began to be centered on the creation of the pyramid, marking the beginning of the Old Kingdom. The step pyramid of Djoser in Saqqara was the first attempt at such a construction, and was surrounded by a niched wall, again reflecting this elite style. Beneath this structure were galleries belonging to the 2nd Dynasty, perhaps built on by the king to connect to the power of his ancestors. The building of this monument is evidence of the ability of the king to control a vast work force. Cultic buildings and large courtyards that would have been used for festivals and rituals dedicated to the king's rule were built within the enclosure. This would have reinforced the increasingly divine nature of the king and the participation of the populace in his worship (Kemp 2006:103–105). The visual, dominant power of the king encouraged the elite to associate themselves with his majesty, in life and in death. The elite in the early Old Kingdom are all burried as close as possible to the king. As we shall see, the most elaborate coffin from the Old Kingdom was found within the Djoser complex,

albeit in a fragmentary condition. In the 4th Dynasty (2613-2494 BCE), the royal complex developed into the true pyramids and the massive monuments at Giza, the largest constructions in the world at that time, not to be surpassed for millennia.

The pyramids of the 4th Dynasty aptly represent the dominant position of the king in life and death. Ideologically he was now seen as a junior god, who would join the full ranks of the Egyptian pantheon after his death. The state, led by the king, did in fact now ultimately control much of everyday life (Kemp 2006:97–98; 99ff.). The administration of land became formalized, moving from a loose census type of organization to a system of provinces or "nomes", governed by a "mayor". This individual ensured that the owners of separate lots of land paid an appropriate amount of tax back to the state and ultimately to the king. This is visually represented, for instance, in depictions from the Valley Temple of Sneferu at Dashur. Here, female personifications of estates, with the name of the landholding written above their heads, carry offerings and goods to the king (Jacquet-Gordon 1962; Kemp 2006:166–167). In the 4th Dynasty, most of the mayors and other higher officials were related to the ruler to ensure their loyalty. Many estates technically belonged to state temples, and were given to individuals by royal decree (Malek 2000:94–95). Long-distance trade was state sponsored, and recorded on temple walls, rock faces near mining sites, on labels found in Byblos and other regions, and on carved stele, such as the Palermo stone. This stele records the royal annals, and mentions, for instance, how Snofru commanded that "40 ships filled with cedar wood" be brought back from the Near East for royal building projects (Breasted 1927:I.146).

When expeditions are described, they are always sent by the king. There is no evidence of privately funded and led large-scale expeditions. On a smaller scale, there was of course personal agency, trade, and movement, as is clear from the existence of market scenes in elite

tombs (Berlev and Berlev 1980). Most imported elite materials, however, would have had to be gained through interactions with the state, and so living life as a prosperous elite was largely dependent on the king's good will. All the cedar coffins at this time were therefore almost certainly created by craftsmen attached to state institutions. The fact that cedar coffins are indeed always found in or near the royal burial grounds until the 5th Dynasty, supports this suggestion.

In the Old Kingdom, "divine access" was almost entirely limited to the king (Sørensen 1989). This means that, ideologically, only the king of Egypt could communicate directly with the gods. All other individuals had to reach the divine through the king as an intermediary.[28] Again, this is illustrated by the difference in the massive pyramid tombs, and the smaller subsidiary burials of officials placed around them. While the king looked forward to an afterlife among his divine ancestors and the gods, the nature of the afterlife for the rest of society is more difficult to ascertain. Most private tomb stele, texts and images, from the 2nd to 5th Dynasties are preoccupied with ensuring that their owners received food and support after death. This aligns with the early concept of the tomb as an estate, working to ensure that the deceased had everything needed to keep him or her comfortable after death (Allen 2006a). No non-royal tombs depicted divine figures. In fact, depicting the gods in any form of private art seems to have been seen as taboo, or going against the socially accepted rules of "decorum". Even ritual texts do not appear in private tombs, the only exception being the *ḥtp dỉ nsw* formula (Sørensen 1989:112). This text is concerned with ensuring that the deceased received offerings after death. The beginning of this formula translates as, "an offering which a king gives". Usually, this offering is given by the king and a god to the deceased, but the king is always listed first, as the

[28] This does not mean, however, that non-royal individuals were not pious and unable to worship the gods – simply that they could not display personal access to gods, and likely had to worship through the king as an intermediary (For more information on this concept of personal piety, see Frood and Baines 2011).

intermediary responsible for ensuring that anything that is given to private individuals by a god must first go through him.

In theory, much of the burial equipment, and even the tomb, were given by the king. A number of texts within tombs refered to the generosity of the ruler as he ensured that tombs, sarcophagi, coffins, stele, and more, were created out of expensive materials for the tomb owner. When the material was to be imported, this might be stated directly. Even the majority of craftsmen assigned to work on these tombs were largely attached to the state, and technically on the orders of the king. Of course, it is likely that many of these commands were only ideologically made by the ruler, and in reality were assigned by specific officials, but this is not stated directly. There is, however, also evidence that people were able to add to their funerary assemblages with objects purchased through the revenues generated by their estates. Tomb owners proudly note when the skills of craftsmen were purchased with their own resources (Sethe 1906:I.225, 8-10; Eyre 1987a:25; see further chapter 3.III), but they also often refer to the favor of the king in acquiring estates in the first place.

In the 5th Dynasty, the overarching power of the king begins to decline. At this time, the highest offices, particularly provincial normarchs, began to be held by individuals who were not related to the ruler. In addition, there are more numerous and longer biographical texts in private tombs, particularly those built in the provinces. In these texts, individuals also more frequently claim to have built tombs themselves, with their own resources. Nevertheless, these autobiographical texts do continue to relate to the king and note any personal interactions between the sovereign and the tomb owner (Malek 2000:100–101). The numbers of coffins found in the provinces that date to the 5th Dynasty are higher than previously, and include those high quality examples made from imported timbers. Craftsmen also began to carve the *ḥtp-dỉ-*

nsw inscription on the coffin lid at this time, as this object began to serve as the full tomb and dwelling of the deceased. Throughout the 6th Dynasty, the power of provincial mayors continued to rise as the dominance of the king waned. This would eventually lead to a breakdown in the traditional power structures, and the beginning of the First Intermediate Period. The technical construction details of the coffins built during Egypt's Old Kingdom vividly reflect the trends suggested by textual references, and help to provide a more detailed understanding of the social relations at this time.

COFFINS IN THE EARLY DYNASTIC PERIOD AND THE OLD KINGDOM: OVERVIEW

All that is usually said about Egypt's earliest coffins, when they are referenced at all, is that there were two types: plain rectangular and "palace façade" (Ikram and Dodson 1998:194–196). According to the most basic distinctions, this is true; however, there are numerous variations in the construction of these two styles. The lack of interest in their study is almost certainly due to the fact that they were mostly uninscribed and undecorated. Owing to their frequently humble appearance, these objects were also only rarely recovered from the field and taken to be protected in museums. The examination of these objects is therefore hampered not only by a lack of published examples, but also by a dearth of surviving specimens, thanks both to natural decay and the indifference of early excavators. Although there is evidence for the existence of wooden coffins in the Predynastic Period (for example Brunton and Caton-Thompson 1928:53), they were uncovered as little more than splinters or brown dust. If excavated today, it is possible that more of the objects could have been conserved, recovered, and studied. The earliest extant coffins date instead to late Naqada III/Dynasty "0", and the 1st Dynasty. These examples are usually short, and held an individual buried in a contracted position.

Many of the earliest coffins come from Tarkhan, a site in Lower Egypt approximately 65 km south of modern Cairo. William Matthew Flinders Petrie, the site's excavator, published few of the hundreds of surviving examples (Petrie 1913; Petrie 1914; Petrie and Mackay 1915); nevertheless, the few pieces that are described in sufficient detail to allow a discussion of production practices include a variety of both early styles. All of the earliest coffins are the plain rectangular style, and they remain the most frequent throughout the Old Kingdom. As shall be shown, there are many different approaches to creating a seemingly simple box, but the most obvious change over time in the development of these pieces is their length. The short box with the contracted body is still in use into the 5th and 6th Dynasties; however, by the end of the 4th, they became less frequent. As early as the 3rd Dynasty, a longer coffin begins to appear in the record. This is associated with the change in burial styles from a contracted body to a supine form, which is probably related to the development of mummification (Taylor 1989:13–14; Ikram and Dodson 1998:195). There is significant overlap in these two styles, but by the First Intermediate Period, the short coffin was now only very rarely used. The long rectangular coffin would remain popular until the end of the 13th Dynasty. These coffins served as the eternal dwelling of the deceased, an interpretation made all the more direct through the construction of the "palace façade" style.

Evidence for the "palace façade" coffin first emerges in the 1st Dynasty, with concrete examples by the 2nd. It is so called due to the niches that were constructed on the object's exterior. In this form, the coffin is therefore a reference to the elite tombs, palaces, and estates of the late Predynastic and early Old Kingdom, as just described. This style therefore very clearly acts as a house or estate for the deceased spirit. Dwelling in this vessel, the dead could emerge to partake in the offerings left by surviving family members. The style may also be referred to as

"house coffins" or paneled or niched coffins. The accuracy of the house interpretation is reflected in the more elaborate decorated forms, where clear images of doors and wall decorations can be seen. In the 4th Dynasty, stone sarcophagi take on this style of decoration as well (Ikram and Dodson 1998:246). Decorated with the physical walls of an elite estate, the coffin in this form also continued to reflect the most obvious and immediate separation between the elite and the rest of society. Although the constructed niched coffins are not seen past the 6th Dynasty, the elaborate doorways became part of the "false door" motif that was popular in the Middle Kingdom. In the later 12th and 13th Dynasties, there is also a brief return to this early style (see chapter 4.III), and in the 25th Dynasty, too, the *ḳrsw* coffin reflects these pieces (see chapter 4.VI).

As has been stressed so far in this chapter, during the early Old Kingdom, the development of Egyptian society was increasingly centered on the all-powerful figure of the king. The major form of state investment in the Old Kingdom was the construction of the monumental royal tomb. Most wealthy Egyptians also wished to be buried near their ruler, and so, despite the fact that the early elite seem to have arisen in Upper Egypt, the majority of this division of the population was buried in cemeteries in the north. In addition, coffins made of imported timber are rarely found outside of Saqqara or Giza, the sites of the royal necropolis, suggesting that this was the location of the wealthiest burials. For kings themselves, there are unfortunately no surviving wooden coffins from the Old Kingdom, despite the existence of a number of royal stone sarcophagi that probably once contained such objects (Ikram and Dodson 1998:195).[29] In the 5th Dynasty, when the power of the king began to wane and provincial centers of power were on the rise, coffins made of imported timber were created in the provinces. The

[29] The coffin of Menkaure (EA6647), now in the British Museum, was constructed in the Late Period, and used to rebury the remains of this king.

numbers of coffins also dramatically increased at this time, as more individuals began to acquire "divine access". These developments mark the beginning of the end of the Old Kingdom, and the shift into the First Intermediate Period. Understanding this overview of the major shifts in construction styles will help to contextualize the following technical description of coffin construction from the Early Dyanstic through to the late Old Kingdom.

TECHNICAL DESCRIPTION OF THE CONSTRUCTION OF "PLAIN" RECTANGULAR COFFINS

Surviving coffins continue to be scarce during Naqada III, or "Dynasty 0". At Qau and Badari, Brunton notes that little is known about the size and materials of these early coffins, "owning to their complete decay in most tombs" (1927:46). An example from this date at Abusir el-Meleq was at least preserved well enough to be measured, but still not well enough to reveal additional information about production processes (Möller and Scharff 1969:12, pl. 4c, 59; Donadoni Roveri 1969:19). In the publication of the excavations at Tarkhan, Petrie found traces of 28 coffins from Dynasty 0 (Petrie 1913:6); however, he offers no photographs or descriptions with the publication. Instead, he provides a diagram of a "typical early coffin" from sequence dates 78-80, which roughly translates to Dynasties 0 and 1 (fig. 37;

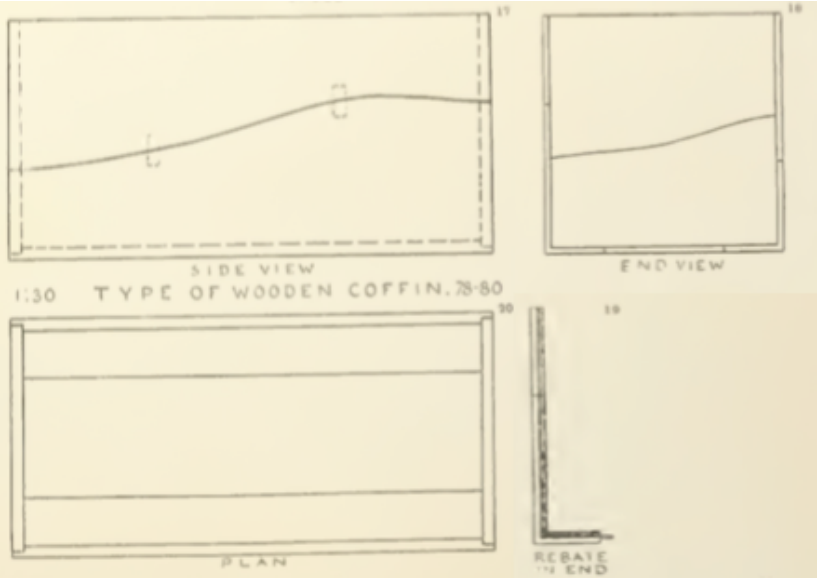


Figure 37: Petrie's "typical early coffin" diagram (Petrie 1913:pl. II).

c. 3200-2890 BCE)(1913:Pl.II, 17-20). We are therefore left to assume that there was little variation in construction between these two time frames.

The recovered wooden coffins from this Early Dynastic Period were short and rectangular. Although excavators note that there does not seem to be any kind of standardization of sizes (Brunton 1927:46), Petrie did suggest two groups of averages for Tarkhan: those found "on the hill" were approximately 132 x 61 x 56 cm and those "in the valley" tended to be smaller, 111.7 x 58.4 x 38 cm, which contributed to his argument that the coffins in the valley belonged to more humble individuals (Petrie 1914:23–24). Petrie's early coffin diagram shows flat, undecorated long and short sides. The long sides are made from curved wood, edge-joined together through the use of mortises and tenons. The edges are connected in half-lap joints, so that the short ends fit into a shoulder or groove cut into either side of the long ends (for descriptions and diagrams of joint types, see chapter 3.II, figs. 31-34). The base is depicted as being made from straight boards. There seems to be a shoulder cut into the bottom end of the planks on the short ends, allowing the base planks to connect to the short sides in a half-lap joint as well. Petrie also notes that many coffins seem to have been made from reused wood (Petrie 1913:22). He associates this practice, for instance, with a 1st Dynasty coffin he discovered in tomb 3 at Tarkhan. For this piece, he suggests that the wood may have originally been used in house construction, though Steven Vinson later convincingly argued that at least some pieces had

Figure 38: Reused boards from a Dynasty 0 coffin (Staatliches Museum Ägyptischer Kunst ÄS 7180).

originally been used for ship planks (Petrie 1913:9, pl. IX, 4; Vinson 1987:39–80). Reused wooden planks from a Dynasty 0 coffin are now in the Staatliches Museum Ägyptischer Kunst (ÄS 7180; fig. 38), and have been identified as a species of acacia. This practice of reuse is therefore present at the earliest adoption of the coffin, and would continue through the end of Egyptian history.

In regards to the materiality of the coffins from Tarkhan, Petrie notes in one publication that they are all made of timber from the "plane-tree" (*Platanus orientalis*; 1913:22), while in another he states that they were all either sycomore fig or plane-tree (Petrie and Mackay 1915:23). This summary identification is at best questionable, as, unless the plane-tree grew in a much different area than in later history, this timber would have had to have been imported from the Near East. It is unlikely that the Egyptians would have imported the twisted wood used to create these objects. As the plane tree can be referred to as syc*a*more, there may be confusion with terminology at work here (Gale et al. 2000:340). In addition, while the anatomy of the plane-tree is mostly different than that of other local Egyptian species, it does tend to have very large rays, which is also a feature of the local species of *Tamarix* and *Ficus sycomorus*.[30] As sycomore fig and tamarisk were the most frequent local species of wood used for coffin construction from throughout Egyptian history, it is more likely that the anatomy viewed belongs to these species; however, as these objects were rarely recovered, it is now impossible to be certain. Moreover, at least a few of the recovered coffins have been subsequently identified as acacia (as with E.08708, see below), shedding further doubt on Petrie's suggestion. Although it may not be possible to uncover more information about the Dynasty 0 coffins, a number of other examples from Dynasty 1 survived in a particularly remarkable state of preservation, and

[30] My thanks to Caroline Cartwright for discussions on this matter.

demonstrate much greater variety in construction styles and techniques than Petrie or other later authors suggest.

One 1st Dynasty coffin that seems to follow Petrie's "standard" style was found in tomb 175 at Tarkhan. Each of the long sides of the coffin is described as being made from a single piece of wood, while the short sides were made from two (1913:10). A second, more atypical coffin was also found in this grave, and is now at the Cinquantenaire Museum in Brussels (E.08708; fig. 39). This coffin was hollowed out of an acacia tree trunk, and two beams were attached to the exterior of the base to raise the coffin off the ground. The lid of this coffin had a "boss" or handle extending from it, and seems to be the earliest extant occurrence of such a practice. I do not believe that this "boss" is a simple handle, but may have been associated with part of the burial procession, and used in the ritual closing of the coffin. This point will be discussed in more detail below. Two holes had been carved at the top of either short end, apparently to enable tying the lid to the case. This coffin was very slender (about 28.6 cm wide), and Petrie suggests that the body was dismembered before being placed within, as it would not have fit otherwise (Petrie 1913:10; Pl. XXIV). Dugout coffins were apparently not unique at this time. Another partially dugout coffin was found at Tarkhan in tomb 203, where the sides and base were dugout of the trunk, and the short ends were made of separate pieces. Here, the planks were again connected by means of the half-lap joint. The raising beams on the base of this coffin were also carved into the main trunk (Petrie 1913:10). These are the earliest known examples of the dugout coffin. This construction technique is found throughout Egyptian history, but it

Figure 39: 1st Dynasty coffin. Cinquantenaire Museum, Brussels E.08708. ©KMKG-MRAH.

remains rare until the Second Intermediate Period (see further, chapter 4.IV). Hollowing out the tree trunk would have served as a means of demonstrating access, being able to incorporate such a large amount of wood, and waste material during the construction phase.

The coffins that Petrie found in the "Valley" at Tarkhan were generally not made out of larger pieces of wood, but multiple, smaller joined boards. The coffin found in grave 2053, now in Brussels (E.04493), can serve as an example (fig. 40; Petrie 1914:6, Pl. XVII). The longer sides of this short coffin were made of edge joined planks, lying horizontally. At the corners, the coffin was again joined with the half-lap joint, with the shoulder cut into the long sides. These boards were held together with a combination of ties and dowels. Museum records indicate that the coffin was made out of acacia wood. The other coffins from this area were of very similar construction. Coffins from tombs 2039, 2040, 2051, and 2054, were all made out of horizontal planks with edge and half-lap joints (see further Petrie 1914:5-6; Pl XVII). The planks seem to have all been roughly cut, with very visible saw and chisel marks left on the wood. These saw marks are also short, uneven, and run in multiple directions, suggesting that the woodworkers had difficulty working the wood at this time (fig. 41; Petrie 1914:pl. XXIV, 3). This may be due to inexperience, but it is more likely due to the challenge of using soft copper tools to work the timber,

Figure 41: 1st Dynasty Coffin. Cinquantenaire Museum, Brussels E. 04493. ©KMKG-MRAH.

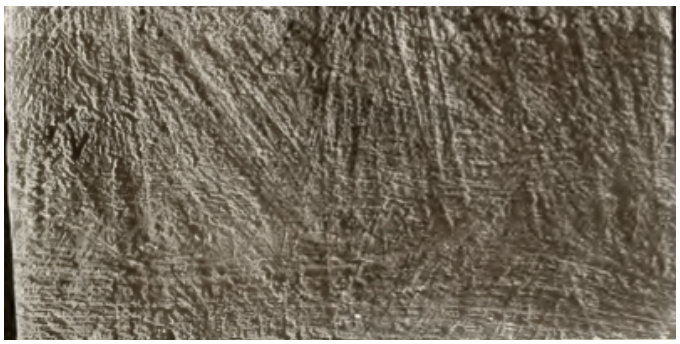


Figure 40: Saw marks on a 1st Dynasty coffin from Tarkhan (Petrie 1914:pl. XXIV, 3).

especially if the wood was acacia, as the coffins in Brussels turned out to be (for discussion regarding the hardness of acacia, see chapter 2.I). As noted in chapter 3.II, the teeth of saws at this time were angled, and likely dragged against the wood. This would pose an additional challenge for working acacia. The coffin in tomb 2054 also has large, irrelevant mortises cut into some of the pieces that may indicate that the timber was reused.

One 1st Dynasty coffin described in more detail by Petrie, from tomb 1973 at Tarkhan, provides a more unique example of construction. This coffin seems to be primarily constructed in the same method as those just described, with the horizontal boards connected with half-lap joints at the corners; however, a v-shaped, carved piece of wood was then added to the exterior of the corners, covering these joints (fig. 42). Unfortunately, Petrie notes that it was too badly preserved to bring out of the field (Petrie 1914:8, Pl. XIX, 4-5; Pl. VIII), and so this example cannot be investigated further; however, it seems likely that this construction may be related to the shift to the "palace façade" style of coffin construction described below.

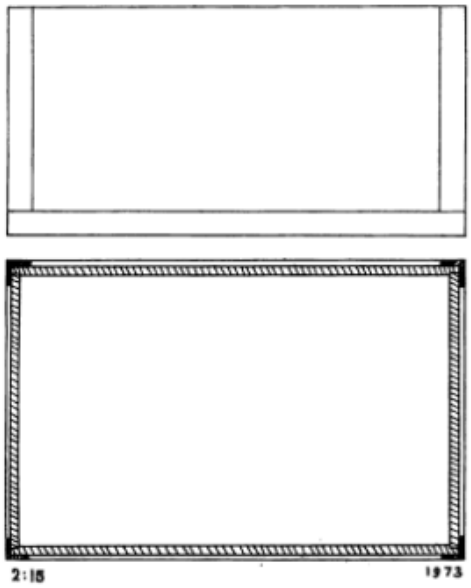


Figure 42: Diagram of coffin from tomb 1973, Tarkhan (Petrie 1914:pl. VIII).

For the plain rectangular coffins from between the 3rd and 6th Dynasties at Tarkhan, Petrie and Mackay decided to summarize the techniques used for their construction, rather than to discuss these examples in detail. These summary descriptions provide much more information than most other early excavators; however, as Tarkhan is the most significant resource for the study of early coffins, it is frustrating that the publication did not take care to note the specific

dates of most of the examples, nor were photographs provided. Given these limitations, the authors do note the presence of seven different types of joints used for plain rectangular coffins from the Old Kingdom at Tarkhan. These are the butt joint, the half-lap joint, the simple mitre, the shoulder-mitre, the double shoulder mitre, the mitre surmounted by butt joint, and the mitre surmounted by half-dovetail joint (Petrie and Mackay 1915:24).[31]

One of the most useful observations is that the simple butt joint, the easiest to complete, is found in only two coffins, that from tomb 217, and in one corner of the piece from tomb 233. I would have assumed that these early coffins would have included the butt joint much more frequently, since it is the simplest to complete; however, the fact that they majority of coffins display more complicated joinery suggests that the woodworkers had already been able to complete significant experimentation. In addition, the object from 217 is likely from the later Old Kingdom, as a pair of black painted *wadjet* eyes have been applied to the exterior, a feature that does not occur in the earlier dynasties (Petrie and Mackay 1915:24). This therefore emphasizes how technically skilled carpenters were in the Early Dynastic Period. Petrie and Mackay note that the half-lap joint is the most common for earlier coffins, found in 10 short coffins, but only in one long. While the mitre and surmounted mitre joints are found with both short and long variations, almost all the coffins from the later Old Kingdom included this style of joint. To connect the corners of the coffins, a combination of dowels and lashings was common, though with the mitred coffins, dowels were frequently used alone. Finally, all early edge joints were connected with mortises and tenons (Petrie and Mackay 1915:24-31). One other point of note is that the coffin from 233 actually had a combination of three different corner joints, the simple butt, noted above, the half lap, and two mitred corners. I have not seen a combination of corner

[31] The authors use different terminology in their publication, some of which is incorrect. They call the joints "square end, halving, mitre, shoulder-mitre, double shoulder-mitre, mitre-housing, and dovetail mitre-housing" (Petrie and Mackay 1915:24). For more information on joints, see chapter 3.II.

joints in any other rectangular coffins. It is possible that this piece was worked by an apprentice experimenting with joint types, or that it was made from reused planks that made a combination of joint types necessary. Although it is frustrating that more information about these objects is largely inaccessible, these observations can at least help in the assessment of patterns of construction choices at this site and others during the Old Kingdom.

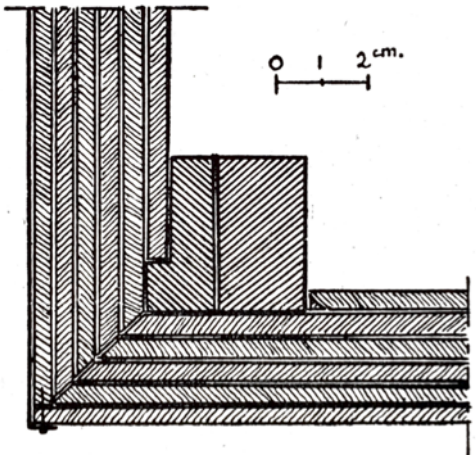


Figure 43: Diagram of the "plywood" coffin from Saqqara. (Lauer 1933:fig. 5).

One particularly unique plain rectangular coffin from the Old Kingdom, and indeed, from Egypt in general, comes from the Step Pyramid of Djoser at Saqqara, and dates to the 3rd Dynasty (fig. 43). This example was found within an outer stone sarcophagus, demonstrating that already by this period the particularly wealthy might possess such a set. The coffin was found in a poor state of preservation, but a number of large fragments survived that allowed much of the construction technique to be assessed. The sides of the coffin were made up of layers of thin planks of wood, each about 4mm thick. The pieces were laid on top of one another so that the direction of the wood grain alternated in a vertical and then horizontal direction (indicated by the lines drawn on figure 43). This is similar to how modern plywood is manufactured. Such a technique indicates that the woodworkers understood how to use the natural strength of the wood grain to increase the structural integrity of the object. In total, this “plywood coffin”, as it is frequently called, was made up of six layers of wood. Instead of glue, tiny wooden dowels were used to keep the layers together. At each corner, the sides were joined with simple mitre joints, reinforced by interior corner beams that cut into the first interior layer of the plywood. If the

mitred edges had been surmounted by a more secure joint, this section does not survive. Beaten sheets of gold were then attached to the exterior of the coffin with tiny golden nails. This decorative layer only survived at the base of the fragments, where it had been overlooked by thieves (Lauer 1933:163–165).

The wood used to create this coffin was analyzed several times after its excavation, and the results were gathered and published by Alfred Lucas (1936:4). Three of the layers were probably either *Cupressus* or *Juniperus* (cypress or juniper), while another was likely *Ziziphus sp.* (christ's thorn), and another probably *Cedrus libani* (cedar). The final layer was an unidentifiable hardwood. Although these early identifications are often somewhat unreliable, much of the wood was clearly coniferous, and so imported. Lucas suggested that this technique may have been introduced to use remaining pieces of expensive materials (Lucas 1936:2). This is possible; however, it is also possible that this object illustrates an experiment with new joining techniques, in which the woodworkers were literally adding layers of value to create a prestigious coffin. Although layers of wooden veneers are found in coffins in later periods (such as in Turin S. 15744), this plywood manufacturing technique is not seen again in Egyptian pharaonic history, as far as I am aware, though it is similar to some of the techniques used to make mummy portraits in the Greco-Roman Period. In addition, extant gilded coffins are very rare from this phase, though additional fragments of a gilded coffin from the 4th Dynasty at Meidum have been found, and are now in the Petrie Museum at University College London (UC30879a-d). Gilding does not seem to become popular, however, until the later Middle Kingdom (see chapter IV.III).

Moving into the 4th and 5th Dynasties, longer coffins became more frequent. The general quality of construction of these objects also improved. This may be related to the improvement in

the metal woodworking tools, as the teeth in saws found from this period now angle straight back towards the handle, and so would not have snagged as frequently when cutting (see chapter 3.II). Long, straight, even construction is seen, for instance, in a long, coniferous wood coffin from the 5th Dynasty at Giza, belonging to a man named Ptahhotep (Junker 1943:227, pl. XXXVIII B; Donadoni Roveri 1969:155–156). The sides of this coffin were simply made from three long horizontal planks of wood, edge joined with tenons. The corners seem to have been attached with simple mitre joints, held together with pairs of dowels. The lid of this coffin was flat.

Figure 44: 5th-6th Dynasty coffin Kunsthistorischen Museum, Vienna ÄS 7512,1.

Many other plain rectangular coffins have also been found at Giza. A set of these coffins dating to the late 5th or early 6th Dynasty were found in shaft 316, belonged to an anonymous female (Junker 1944:50–52), and are now in the Kunsthistorischen Museum in Vienna. The outer coffin (ÄS 7512,1) was made of cedar (fig. 44). It is mostly intact, but the base and one of the walls has degraded. The long, horizontal planks of the sides were edge joined together with mortises and tenons. The corner joints used for this coffin are somewhat unique. Here, a double-shoulder mitre surmounted by a butt joint was used, with a second butt joint at the bottom. These

were connected with ties, set into semi-circular grooves, and held in place with dowels (Haslauer 2009:162–163). The base of the coffin was connected to the sides with the half-lap joint, again held in place with ties. Sections of the coffin planks seem to include old mortises that were not used in this coffin, suggesting that pieces of the wood were reused (Haslauer 2009:154–155). The lid of this coffin is also made of long planks of cedar edge joined by tenons. Unusually, the lid of the inner coffin has been attached to the lid of the outer coffin with ties and dowels. The planks of this coffin were also edge joined together with tenons. On either end of the outer coffin lid, two carved wooden handles have been attached.

The inner coffin of this anonymous woman (ÄS 7512,2) was also made of cedar. The long planks of wood for the sides were edge joined with mortises and tenons. In this case, the woodworkers carved a shoulder into the long walls to connect the short walls at the corners with the half-lap joint. These joints were held in place with dowels only. Finally, a strip of wood was added to the top of the rim of the inner coffin, so that the inner lid, which was attached to the lid of the outer coffin, would fit tightly inside (Haslauer 2009:162, 166). This is one of the earliest visible occurrences of such a construction. The base of this coffin did not survive. The fact that this woman was found in a double set of cedar coffins suggests that she was quite wealthy. This is further supported by the fact that she was found wearing a copper diadem and a gold collar with faience beads, and so perhaps related in some manner to the royal family (Junker 1959:52–54; Haslauer 2009:144), or related to the increased power and wealth of the Egyptian elite at this time.

Figure 45: 6th Dynasty coffin. Kunsthistorischen Museum, Vienna ÄS 7825. © KHM-Museumsverband

A 6th Dynasty coffin from Giza, found in shaft S700, provides a late example of a short coffin (Junker 1947:166). This piece is also made from cedar, and is in the Kunsthistorischen Museum in Vienna (fig. 45; ÄS 7825; Haslauer 2009:149). The coffin was made of horizontal planks of wood edge joined with tenons. The corners are joined with mitre joints surmounted by butt joints held together with ties and dowels set in semi-circular grooves. Junker states that the coffin originally had supports attached to the exterior of the base, but Haslauer (2009:166) states that they are no longer on the coffin, and a lack of dowel holes suggests that they were never present. The floor of the coffin is attached to the sides with the half lap joint, and ties and dowels hold it in place. The planks of the lid were also edge joined with tenons, and two supports on the underside of the lid were attached with ties. There are many patches of wood to repair areas of the coffin, and Haslauer (2009:155) also notes the presence of multiple filled or unnecessary dowel holes, again suggesting the incorporation of reused wood.

Other plain rectangular coffins from Giza were not made from imported woods, and probably belonged to someone of a lower socio-economic standing. One example, another coffin from the Kunsthistorischen Museum, has only been identified as a hardwood species (ÄS 10091; Haslauer 2009:150). Insects and rot have damaged this coffin. Like some of the examples described above, it has unused old mortises and significant wooden patches, suggesting that the timber was reused. A significant amount of added plaster was used to cover the patches and holes in the surface of the wood as well. The planks are often somewhat oddly shaped with projections that have been carved to fit one another (fig. 46). The corners of this coffin were connected with simple mitre joints held together with ties and dowels. A shallow, angled shoulder was cut into the long sides to house the base in a half-lap, in what is almost a mitre joint due to the angle of the cut (Haslauer 2009:165). The lid was edge joined with tenons, and also has a significant number of patches. Two supports were attached to the under side. In addition to these coffins from the north of Egypt, during the 5th and 6th Dynasties, high numbers are found in the south as well.

Figure 46: Deconstructed side of 6th Dynasty coffin. Kunsthistorischen Museum, Vienna ÄS 10091. © KHM-Museumsverband

Figure 48: 5th Dynasty coffin from Gebelein. Museo Egizio, in Turin S. 13964 (Photograph by Jeffrey Newman).

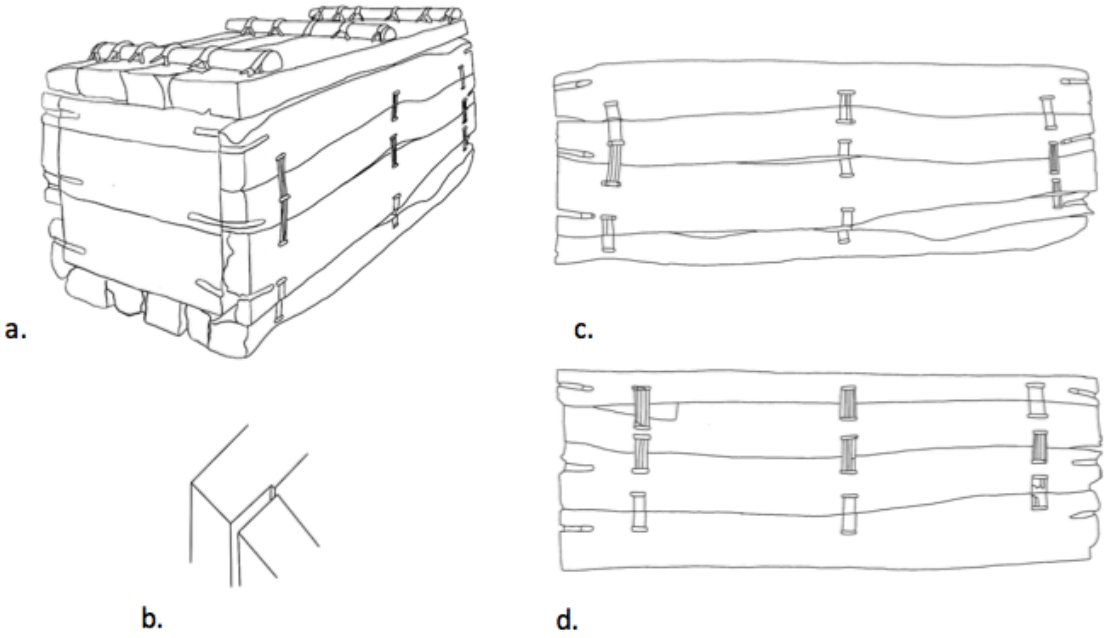


Figure 47: Construction diagram of coffin S. 13964. a) Foot end and front of coffin b) half-lap joint c) Front d) Back. Image by author.

In the northern cemetery at Gebelein, an Upper Egyptian site to the south of Thebes, four coffins were found in an anonymous tomb referred to as the "tomb of unknown", which dates to the 5th Dynasty. All four of these objects are now in the Museo Egizio in Turin, and each one illustrates a different form of construction. Three of these coffins were all found within the same burial

chamber. The largest coffin (S.13964) was made from acacia wood (figs. 47-48).[32] This piece once contained coffin S.13965. Due to its large size and different shape, it is possible that this object should be considered a wooden sarcophagus rather than an outer coffin, but the distinction is challenging during this early period. The sides and base of the coffin have been roughly cut from thick tree trunks or branches. Clear axe, adze, and saw marks remain on the wood. The visible surfaces are covered in crisp, slightly rounded adze marks, while the hidden interior edges often reveal choppy axe marks and irregular saw marks. The woodworkers seem to have first used a saw or axe to produce the initial beams, but the vast majority of the shaping was done with an axe and/or adze. Despite the meticulous efforts to produce a partially smoothed surface, bark still remains in several areas, and other flaws are visible. In addition, the woodworkers clearly made no attempt to erase the tool marks. These large beams were edge joined together with mortises and tenons, and then also secured with leather lashings held in place by tenons. Deep troughs were cut into the wood to house these lashings. The corners of the coffin were joined in a half-lap joint, with the shoulder cut into the long sides, and again were secured with lashings and tenons. On one of the long sides, the bottom most beam curves, carved into an L-shape, and forms part of the base of the coffin as well. On the opposite long side, this does not occur.

The lid of the coffin is also made from roughly cut, thick planks. These have been edge joined with mortises and tenons as well, and then also lashed. For additional support, three wooden beams, flat on the bottom, round on the top, were attached to the top of the lid, again with leather lashings. On one end of the lid, one of the beams extends past the others, and has

[32] The museum records and Donadoni Roveri's publication (1969:171) state that the coffin is made from sycomore fig. During my analysis of this piece, I had reason to doubt this identification. I was able to take new samples and firmly identify the wood as acacia, most likely *Vachellia nilotica*.

been carved into a rounded handle or "boss", demonstrating the continued use of this tradition, and its presence in the south.

Figure 50: Red paint covering an interior joint of coffin Turin S. 13964 (interior mortises visible). (Image by Jeffrey Newman).

Plaster and perhaps glue were used around the areas where the lashings were attached, but not elsewhere. The only other evidence of additional treatment was the use of red paint to cover the inner joints on some areas of the base (fig. 49). We were able to use a pXRF to determine that this was not simply a reddening of the wood, but a true addition of iron-based red pigment, most

Figure 49: Coffin Turin S. 13965. (Image by Jeffrey Newman).

likely ochre.[33] This red paint would not have been visible once the coffin was constructed. It therefore must have had a ritual significance. Painting the inner joints of coffins red is known from the Middle Kingdom, but this is currently the earliest occurrance of such a practice, as far as I am aware – though the red painted interiors of several of the earliest house coffins, described below, may be related. The significance of this feature will be discussed further below.

[33] My thanks to Jeffery Newman for assistance with pXRF analysis.

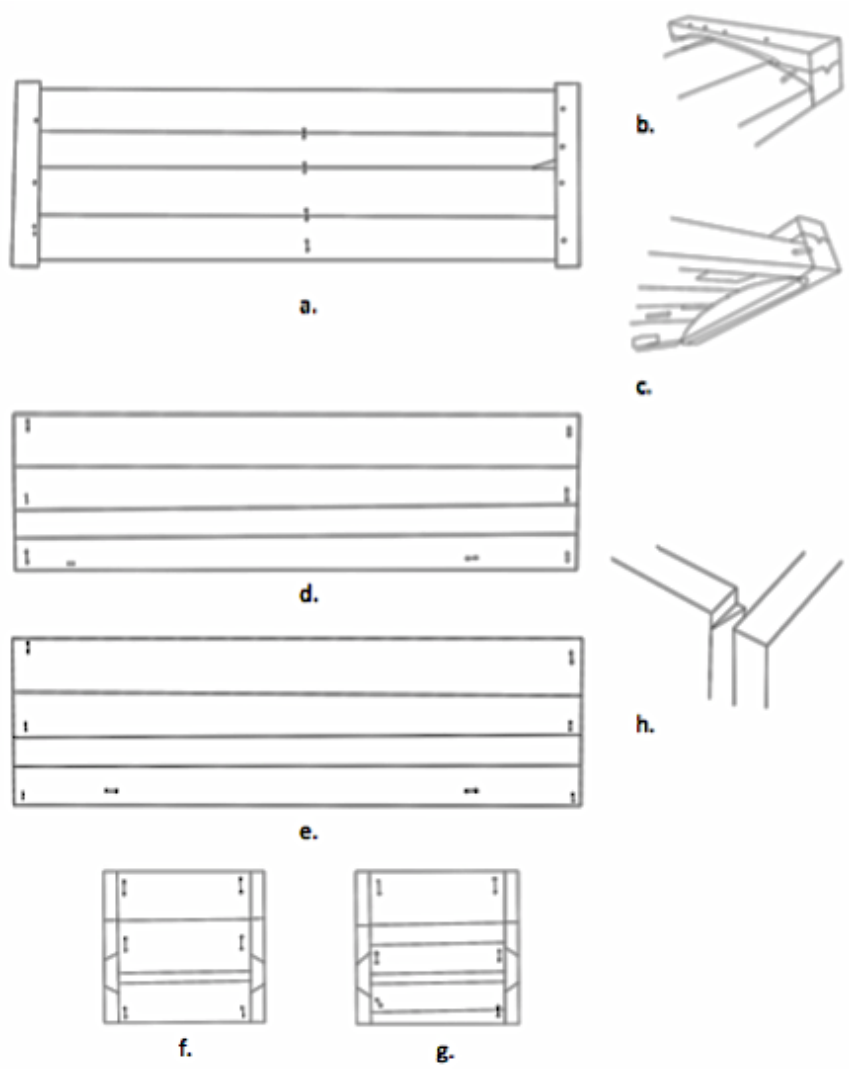


Figure 51: Construction diagram of coffin Turin S. 13965. a) Lid b) top of lid, head end detail c) underside of lid, head end detail d) coffin front e) coffin back f) coffin head end g) coffin foot end h) corner joint detail. Image by author.

The inner coffin of this set (S. 13965) was made of cedar (figs. 50-51; Roveri 1969:172). The planks of this coffin are all straight, and very well finished. No tool marks remain visible. The planks of the case are long, and edged joined with mortises and tenons. Each long side is made of three thick planks of cedar. The long edges are cut in complementary angles, so that they fit together rather seamlessly. The long ends were attached to the short ends using a type of housed shoulder mitre joint. For this, a trough was cut into ends of the long sides, almost to the

top, leaving a few centimeters untouched. This housed the angled edge of the wood on the short side. From the exterior, this makes the coffin appear to be joined using simple butt joints, but a close inspection shows that this is not so. Perhaps this type of joint developed into the mitre surmounted by a butt joint. These corners were held fast with copper wire ties, identified with the use of the pXRF. These were looped through drilled holes, and sat in semi-circular grooves cut into the wood. Although not entirely unique, such metal ties are rare in any period of Egyptian history. The fact that they were covered in plaster is therefore surprising, and must have been an attempt to improve the structure of the piece, rather than to display access. The mummy remained inside the coffin during my analysis, and so I was unable to examine the construction of the base. The description by Donadoni Roveri (1969:172), however, suggests that there is a shoulder cut into the long ends, into which the base boards were inserted. They are also held in place by copper ties, visible from the exterior of the coffin.

The coffin lid was vaulted, with two raised ends, as seen with the "palace façade" coffins, described below. In this case, the curve of the lid was more subtle, created through a very slight coopered joint. The raised ends were constructed from joint pieces of smaller branches, which made up the shape of a thick beam. A semi-circular ledge was cut into these beams in order to house the ends of the long planks. At the bottom of these large blocks, an extended ledge was also cut, that would hold the lid in place when the coffin was closed. The woodworkers hammered round dowels into these beams to hold the inserted planks in place. In the underside of the lid, there are a number of areas of patched wood that are not visible from the exterior. There is no visible decoration on the coffin, and only very small amounts of plaster were used to cover the metal ties. The lip of the coffin is slightly discolored, but it cannot be ascertained whether this is due to added pigment, or because of age. The high quality of the construction of

this object contrasts sharply with the rough, outer acacia coffin. It is therefore likely that the outer coffin was meant simply to protect the inner container. This may be why acacia, an extremely tough wood, was chosen for the protective case. Throughout the history of Egypt, the inner coffin is consistently the highest quality. Often inner cedar coffins have outer local hardwood cases, as well. This tradition was clearly followed in this early period as well.

Figure 52: Coffin Turin S. 13967. © Museo Egizio, Torino.

The final coffin (S.13967) found in this chamber in Gebelein was made of sycomore fig (fig. 52). The sides and base of the case of this coffin were largely hollowed out of a tree trunk, with added pieces for the short ends (Donadoni Roveri 1969:172). Flaws in the trunk necessitated the use of large wooden patches. The woodworkers had clearly attempted to shape squared edges for the coffin, and around the top edge, additional patches help to maintain this shape. Around the bottom of the coffin case, however, it seems that several wood or plaster patches have fallen off, revealing the twisted, knotty shape of the tree-trunk. Tool marks are still visible, demonstrating shaping with the adze, but there are no final attempts to erase these marks. The short ends of the coffin were attached to the trunk with the half-lap joint, and held in place with ties and dowels that are largely hidden by a thick coating of plaster. As noted above, the use of the dugout construction method would have enabled the owner to demonstrate status. While the current state of the coffin looks rather poor, it would have been a much more impressive object in the eyes of the ancient Egyptians.

The lid of the coffin is again slightly vaulted with two end beams. The long planks are edge joined and lashed with what appears to be rawhide ties. The end beams were again carved so that the ends of the long planks could be inserted. Thick dowels that hold the planks in place have started to rise out of the beams. At either end, a pair of rectangular holes had been cut into the beams, where handles could be inserted. Donadoni Roveri notes that in the excavation photos, round handles were still visible (1969:172).

Figure 53: Markings on the head end of coffin Turin S. 13967. Colors altered to highlight ink using iDStretch (left), and then highlighted to mark their position (right).

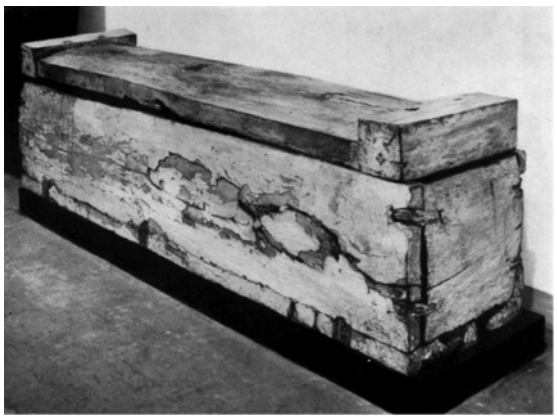


Figure 54: Coffin Turin S. 13954. (Donadoni Roveri 1969:pl. XV).

The coffin seems to have been largely covered in plaster at one time. The remains of red paint are also visible around the top rim of the coffin case, probably related to the red paint symbolism mentioned above. In addition, at either short end Donadoni Roveri had suggested that roughly drawn head (tp) and sandal hierolgyphs,

marking the head and foot end of the coffin had once been visible (1969:173). Through color alteration of photography using the program iDStretch, these marks seem to be visible on the head end of the coffin case, and on the end of the lid that is currently also at the head end of the coffin (fig. 53). The fact that both markings are currently on the same side of the coffin may suggest that the lid is currently in the opposite position to what was intended. The fact that these markings are drawn on the coffin clearly demonstrates the concern of the Egyptians that the body be placed in the right direction.

Coffin S.13954 was found in a separate chamber of the "tomb of the unknown" (fig. 55). The case of the coffin is constructed from thick, long, roughly shaped planks of wood. A number of wooden patches are also visible. The flat sides of the coffin were again joined with the half-lap method. The abutting pieces were held in place with thick leather lashings, and large, thick dowels, and flat tenons. The coffin was then covered with thick layers of plaster and painted a light yellow color. The lid was made from two large planks, also held together with leather lashings, joined on either end by two thick beams. Two tenons held the planks in place within the end beams. These coffins from Gebelein, although mostly plain and rectangular, share the vaulted lid construction of the palace façade coffin, and so should perhaps should be seen as a later melding of the two forms.

Figure 54: 1st Dynasty coffin. British Museum EA 52888. ©Trustees of the British Museum.

TECHNICAL DESCRIPTION OF THE CONSTRUCTION OF THE "PALACE FAÇADE" OR "HOUSE" COFFIN

Shifting back in time, the "palace façade" or "house" style of coffin reflects the niched imagery related to

elite houses and the royal serekh. In the 1st Dynasty, coffins begin to reflect elements of this style, as exemplified in another coffin from Tarkhan, now in the British Museum (fig. 55; EA52888).[34] Although this object is still a short, rectangular coffin, likely for a body in the flexed position, the construction methods are rather different than those described above. Two rectangular frames were first created, which would serve as the bottom and top edge of the coffin case. A shoulder was cut into the interior of the pieces making up the frames. For the sides of the coffin, short planks, standing vertically, were edge joined with mortise and tenon joints. Each side was then placed within the shoulder on the bottom frame. Thicker posts were placed at the corners, also cut with grooves to better house the sides. The top frame was then placed on top of the sides and corner posts, holding everything securely together. The base of the coffin was also made of short planks, which were placed so that they abutted the sides as they rested on the shoulder of the bottom frame. The lid of the coffin was simply created from another layer of flat, joined planks. The wood is still very roughly cut and finished, despite the rather complicated joining technique. The framed sides of the coffin seem to be the first step towards the true "palace facade" style.

In the 2nd – 5th Dynasties, this more complicated style of coffin became more frequent, but it remained rare in comparison to the plain rectangular variety discussed above.[35] In Tarkhan, a number of these early house style coffins were found, dating to the 2nd or 3rd Dynasties (Petrie and Mackay 1915:29–30).[36] The most elaborate example from the site was from tomb 532, and is now in the Egyptian Museum in Cairo (JE 43794). An interesting feature of some of these early

[34] Although this coffin was found by Petrie, he did not publish a description or photograph of the object, and noted only its location on a map in the publication (1914:Pl. XLVII).

[35] See for instance, the discussion in Petrie and Mackay 2015:23-30.

[36] This includes the coffins from grave 51, 215, 238, 245,532, 650, and 651.

coffins is the inclusion of red paint in the interior, as noted above, and discussed further below. Although Petrie discusses the construction of coffin 532 in some detail, I will instead describe a very similar coffin from Gebelein, which is better published, and which I had the opportunity to study in detail.[37] This coffin is now housed at the Museo Egizio in Turin (fig. 56; S.14061). It dates to the 4th Dynasty, and was found containing a mummy bundle, a rather unusual mummification style in ancient Egypt (Fiore Marochetti et al. 2003). I was able to sample the wood of the coffin, and have identified it as tamarisk. The construction begins with a framework similar to the 1st Dynasty coffin in the British Museum (EA 52888), complete with the half-lap edge joints. The bottom and top frames have shoulders into which the short, vertical planks that make up the sides have been inserted. At the top and bottom of each plank, a mortise and tenon system has been used to hold the pieces in place. The short planks are likewise edge joined with mortises and tenons as well. The planks making up the base of this coffin also rest on the shoulder of the frame. L-shaped carved posts are used for the four corners, finishing the framework. At each corner, a system of ties and dowels has been used to provide more secure joints for the frame. To accomplish this, the carpenters drilled holes through the frame and the corner posts. Cordage, probably rawhide, sinew, or animal gut, was then looped through these holes several times to hold them together. A diagonal groove was cut into the wood to hold the ties, so that they could be carefully plastered over and painted, hiding the joints.

Figure 55: "Palace façade" coffin from Gebelein. Turin S. 14061. © Museo Egizio, Torino.

[37] The construction has been described by previous scholars (Donadoni Roveri 1969:153–154, pls VII–IX; XII, 2; Fiore Marochetti et al. 2003:237–238, figs 1–4), and I have been able to confirm and build on their work for my analysis.

The lid is made up from tree longer, slightly curved pieces of wood that have been inserted into two thick beams at each end. The thick beams have been carved with lower projections to hold the lid in place, and with a semi-circular groove into which the longer planks have been slotted. Together the pieces of the lid create an arch shape with two edge projections, which has frequently been compared to the *pr-nw* altar, and, with the case, served as the *ḳrsw* determinative for burial and sarcophagus (Donadoni Roveri 1969:62; Ikram and Dodson 1998:195). Two final tenons secured the edge of the beams to the planks. While this construction provides the structure of the coffin, additional pieces were added that are largely decorative.

On the front side of the coffin, three planks have been attached, creating two smaller panels towards the outer edges of the front of the coffin, and two larger central panels. On the larger panels, five thin, rounded lengths of wood have been attached with small dowels, probably to reflect either doors or shutters. In the smaller panels two rectangular pieces of wood have been added, that were carved in a manner that represented rolled up door coverings (cf. van Walsem 2016). Almost unique among the "house coffins", is the addition of painted decoration to this example. In the small outer panels, red trees have been painted, while dark blocks of color decorate the thin planks within the larger panels. On the back of the coffin, a single plank has been added at the centre, though this may simply be for structural support.

The carpenters constructed this object very carefully, erasing all the tool marks on the coffin. There is some evidence of patches and filled holes that may indicate the reuse of the wood, but each of these instances was carefully plastered and smoothed (Donadoni Roveri 1969:153–154; Fiore Marochetti et al. 2003:237–238). The whole coffin has a thin layer of plaster and yellow paint applied, before the extra decoration was added. It is unusual for coffins to be decorated at this time, and may be a practice particular to Gebelein, a point that will be

discussed further below. In addition to the examples found at Tarkhan, other early "house" or "palace façade" coffins have also been found at Saqqara (Quibell et al. 1907:11, 24, pl. XXIX), Beni Hasan (Garstang 1907:28–29, figs. 17–18), and Sedment (Mogensen 1930:n.47). A variation of the style remains in use in the 5th and 6th Dynasties as well.

Figure 56: "Palace façade" coffin from Gebelein, Turin S. 15701. © Museo Egizio, Torino.

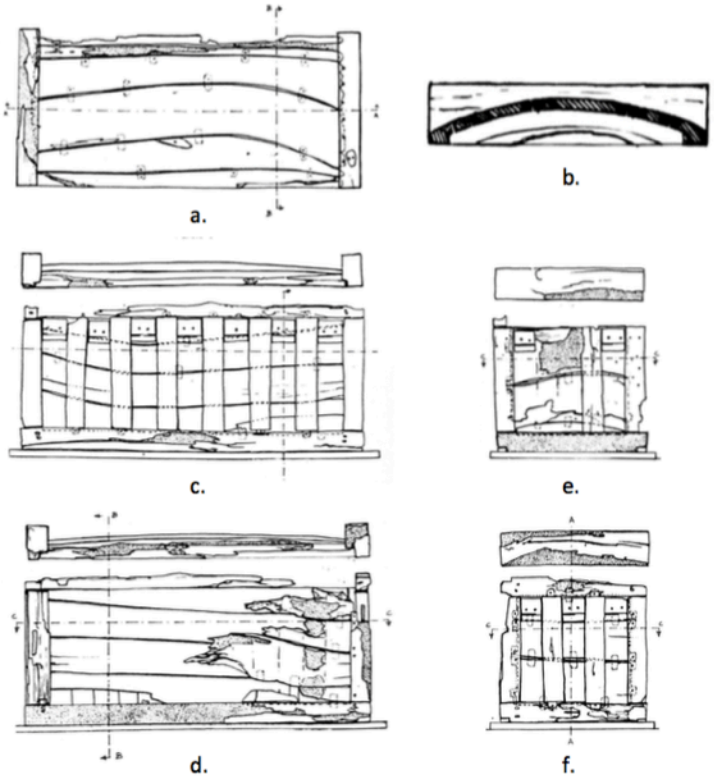


Figure 58: Construction diagram of coffin Turin S. 15701. a) lid from top b) interior of end beam in lid c) front d) back e) head f) foot. Adapted from Donadoni Roveri 1989: 40-41.

The "house" or "palace façade" style of coffins from the later Old Kingdom are slightly different from the earlier versions. Another example from Gebelein at the Museo Egizio (figs. 54-55; S.15701), likely comes from the 5th Dynasty. While similar in construction to its previous counterpart, with the framed vertical plank construction and arched roof, it is slightly longer than the previous versions, though it still contained a contracted burial.

On the front, it also had seven niches or open panel areas with carved "door rolls".[38] I identified the wood from this example as tamarisk as well. This coffin did not have any added decoration.

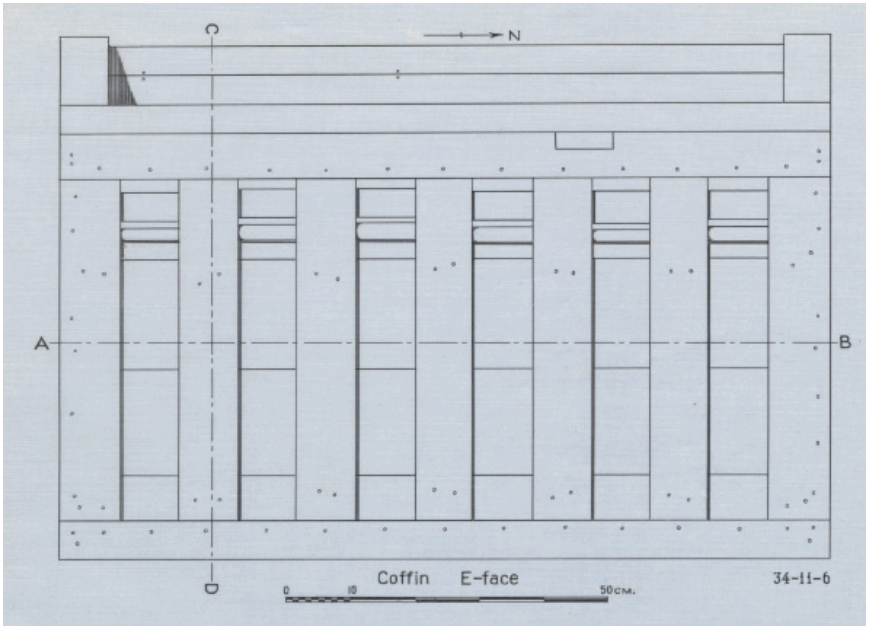


Figure 59: 4th Dynasty coffin from Giza. Drawn by Nicholas Melnikoff. From: http://giza.fas.harvard.edu/drawings/49538/intro/

Coffins that appear to be very similar, with the high numbers of niches, have been found in Giza, dating to the late 4th and 5th Dynasties. The construction of several of these examples, however, is entirely different. For example, the anonymous coffin found by Reisner in tomb G 1451 B in Giza, and now in the Egyptian Museum (JE 67567), likely dates to the end of the 4th

[38] The construction of this coffin is described in detail in (Donadoni Roveri 1989:35–42).

Dynasty (Reisner 1935:72–73; Donadoni Roveri 1969:155, pl X,1). The coffin itself is on display, and difficult to study. The details of its construction, however, are available through the unpublished excavation notes of Reisner and sketches by Nicholas Melnikoff (fig. 59).[39] The sides of the coffin were first constructed from long horizontal planks of wood, edge joined with mortise and tenon joints. The corners are connected with half-lap joints, with the shoulders cut into the long sides. Over top of the corners, two planks were added, joined to each other with a mitre joint surmounted by a thin butt joint. This mimics the four corner posts seen in the earlier constructions. Additional planks were also added to the exterior of the coffin at the top and bottom of the sides, also mimicking the frame, but these are aesthetic additions only, and not necessary for structural support. Five additional vertical planks were added to the long sides, and three to the short, to create the paneled sections. Finally, carved "door rolls" were attached within these niches to complete the appearance of the façade. Only dowels and tenons are depicted in the diagrams, with no references to possible ties for joining.

A double lid was used for this coffin, the first being the arched lid with raised ends, and the second, a simple, flat lid. The arched lid was created from flat planks edge joined at a slight angle to create a curve, and joined below a thick beam, carved with a semi-circular bottom edge to enclose the planks. The planks were supported underneath by three curved support beams. Why two lids were considered necessary is unclear, and to my knowledge, there is no other example of this practice. It is possible that it was added for extra protection. This coffin still contained a contracted burial (Reisner 1935:72).

Another coffin now at the Egyptian Museum (JE 49695), belonging to a Seshat-hetep, was also found at Giza, and is very similar to JE 67567 (Junker 1934:178–179, pl. XIV B, C;

[39] These documents have been made accessible through the online database "Digital Giza" hosted by Harvard University. The site is accessible at giza.fas.harvard.edu.

Donadoni Roveri 1969:155). It is, however, much longer than the previous examples (being 209 cm long vs. the 120 cm of JE 67567). This piece seems to date to the early 5th Dynasty, and is made of coniferous wood, likely cedar, according to Junker (1934:178). The sides are again made from horizontal planks that have been overlaid by a false, mostly aesthetic, frame. It still has the five added planks on the exterior of the long sides to create the paneled sections with the "door roll" at the top. The lid is also vaulted with the two raised ends created from partly carved beams (Donadoni Roveri 1969:155). Junker specifically notes that the coffin does not use ties for the joints (1934:179).

Figure 60: Painted coffin from Gebelein, Turin S. 16765 (Donadoni Roveri 1969: frontispiece).

A final, late variation of the "house" style coffin needs to be considered. This is the creation of the niched façade by simply carving the shapes into the wooden sides of the coffin. This construction was used to create the single surviving side of a 5th-6th Dynasty coffin from Gebelein, now in the Museo Egizio (fig. 60; S.16765; Donadoni Roveri 1969:173). What remains was made of three long planks of flawed wood, laid horizontally on top of one another, and edge-joined with tenons. Nine niches were then simply carved into the coffin, reflecting the same style as earlier examples. The piece was then painted, in a very similar manner to the earlier Gebelein palace coffin, S.14061. The interior niches were painted yellow, while the

remaining wood was painted red. In five of the nine yellow niches, a red tree was depicted, along with the red base of the "door roll". Another coffin from Gebelein, referred to only as "S.N", is a combination of both S.16765 and S.14061. S.N. is short like S.14061, and has the wider panels with the coloured "rods" as well as the similar red trees. As with S.16765, however, the panels are carved into the wood, not created through added pieces (Fiore Marochetti et al. 2003:239–240, fig 5). Coffin provv.3591 at the Museo Egizio from Gebelein, also had the carved rather than attached panels, but had no additional painted decoration. In this case the full coffin was preserved, and included a vaulted lid.

DISCUSSION

The Significance of the Early Coffins

The first coffins, in both wood and clay, were created as a physical boundary between the deceased and the outside world. It is probably not a coincidence that permanent dwellings and coffins emerged at approximately the same time in ancient Egypt, alongside the intensification of cultivation. In Egypt, however, this shift to agriculture was not a necessity for survival, as suggested by the slow adoption of cultivation. It is more likely that the Egyptians finally chose to embrace this lifestyle for more socio-political reasons, to share in the brewing and feasting culture that had already arisen in the Near East, and to be able to store wealth and control trade and access. The coffin became the means of demonstrating this access and for elite separation in the burial and for the afterlife. The beginning of the coffin is therefore entangled with the development of an Egyptian elite, and the dependence of wealthy individuals on their craftsmen, who fashioned these status indicators. The early attempts at mummification, and the inclusion of extensive burial goods associated with status as well as provisions and feasting, would suggest that already in the predynastic the deceased desired to carry their status with them to the afterlife.

As in life, their walled space, created by both the tomb and the coffin, would serve as their eternal house and elite estate.

With the tomb of U-J, and the subsequent elite examples from Saqqara, the tomb as a house, and not just a bounded elite space, is apparent, and the coffin shared in this significance. These tombs are divided into separate rooms and incorporated estate elements such as granaries and gardens, and even boats to enable travel. In the 1st and 2nd Dynasties, the niched walls of the estate also became a necessary symbol of elite status that is incorporated into the tomb. Eventually the niched walls are integrated into the more elaborate coffins to emphasize their connection to the idealized house, necessary for maintaining high status in the afterlife.

Van Walsem seems to be correct that the reference to the niched coffins as a "palace" is probably inaccurate (2016: 8-10). It is unlikely that by adopting this style individuals were attempting to usurp royal power. Even if the serekh had originally been a symbol of the king, by the time the niched facade was integrated into the coffin, it is most likely that the pattern had come to serve simply as a symbol of an elite enclosure. It is also possible, as van Walsem argues, that the *pr-wr* shape of the lid should not connect to the Lower Egyptian shrines themselves, but again to the enclosure architecture that delineated these structures as sacred space. The integration of the two forms of architecture may therefore characterize these coffins as elite, sacred space, in which the deceased could dwell and live on offerings. I disagree with van Walsem, however, when he states that it is not possible to also interpret the plain rectangular coffins as eternal houses (2016:6). He is correct in saying that there is no "unequivocal evidence" for this, but there certainly is strong, archaeological support for such a theory. Moreover, I would state that even the niched coffins are not "unequivocal" proof, but also simply our best interpretation of the evidence that is currently available. When inscriptions were added to the

long rectangular coffins, wadjet eyes and a false door also emerged as frequent motifs. The combination of these elements clearly demonstrate the belief that the deceased dwelled within the coffin, within a dilineated space, living off offerings of the king, gods, or surviving tomb visitors.

Early Woodworking and Woodworkers

While stone tools such as axes, adzes, and chisels were in existence in the prehistoric period, evidence for woodworking increases drastically in Naqada I and Naqada II, at the same time as the development of the elite. This is almost certainly related to the improvements in metallurgy and the creation of copper tools. Copper, however, is a very soft metal. The woodworkers would have had to constantly sharpen their tools as they worked. This suggests that either assistants would have had to work alongside these craftspeople, sharpening the tools, or that the woodworkers would have had to have at least rudimentary metalworking knowledge to care for their tools themselves. Tool marks described in the technical construction details demonstrate the difficulty of working with these tools on hard woods. For instance, in the large acacia coffin from Gebelein, S. 13964, extensive rough, uneven saw and axe marks are visible in the joints of the coffin that would have been invisible after joining. Acacia is a particularly hard wood, and so would have posed a significant challenge for the woodworker, as was demonstrated in modern experiments (see chapter 2.I). It is unlikely that the Gebelein coffin could have been created with the older model saw, which was almost certainly the style of tool used at Tarkhan, judging by the struggle to cut small, straight planks. In these cases, the uneven and rough tool marks should not be seen as incompetence or inexperience, but rather simply due to the struggle to shape acacia with copper tools. Considering this difficulty, the joinery at this time is particularly impressive.

By the Early Dynastic Period, as seen with the coffins from Tarkhan, complicated joining techniques such as the half-lap were already used frequently, connected with an assortment of dowels, mortises and tenons, and lashings. This suggests that already in this early period, carpenters had had the opportunity to experiment and develop a preferred technique of construction. This supports the idea that early craftspeople were sustained by patrons, so that they could focus on perfecting their craft. The constant competition among Egypt's elite required ongoing improvements in finishing these central elements of the burial. By the early Old Kingdom, the full array of joining techniques used in Egyptian history was in use, along with the particularly complicated process of constructing the "palace façade" coffin. In this light, it is also surprising that the simple butt joint, the most intuitive technique, appears so infrequently. As we shall see, the construction techniques used in the early history of Egypt are actually more complicated than subsequent practices. This is opposite to the trend seen in coffin decoration, which became more complicated over time instead.

The fact that similar coffin styles and construction techniques are found throughout Egypt by the later Old Kingdom, also supports the idea that craftspeople would have been attached to institutions that may have travelled and been in contact with one another, and that their patrons, too, were connected over long distances. The techniques used to create the palace façade coffin, seen in Tarkhan, Giza, Gebelein, and more, are too complicated to have developed independently in each of these regions. The analysis of these objects therefore supports the textual evidence for the organization of work as discussed in chapter 3.II ie. that the vast majority of craftsmen at this time seem to be attached to a larger state or temple institution. That these complicated coffins, and imported woods, are seen in southern cemeteries in the later Old Kingdom, also attests to the drop in power of the king, and the rise of the nomarchs. It was now considered acceptable for

individuals who owned elite coffins to be buried outside of the capital and away from the king – at least according to the limited available evidence.

Finally the coffin "handles" or "bosses" must be discussed. These details are present from the Early Dynasty Period through to the end of the Middle Kingdom. Some scholars have suggested that they would have allowed the coffin to be lowered into its correct position in the tomb, but in most instances, this cannot be the case. The handles are too small to carry the weight of the coffin. They are also always only on the lid. If they were meant to help lower the full object, it would make much more sense to place them on the case of the coffin, which would provide more support. They would have, however, enabled the quick removal of the lid from the case, or assisted in the positioning of just this part of the coffin during the burial ceremony. They may therefore have been necessary during the funeral rituals, perhaps to allow the quick opening of the case to perform the final opening of the mouth ceremonies on the mummy, and then to seal it once again. Of significance for this interpretation is the fact that these handles or bosses were frequently removed or cut off of the lid – with increasing frequency in the later Old Kingdom and Middle Kingdom. It has been suggested that this would have made it more difficult to open the coffin, providing greater security. While it may take longer to open the coffin without this handle, it would only have caused a slight delay. From personal experience, opening these containers without a handle can be awkward, but it is not difficult, and it certainly would not have slowed a thief to any great extent. Instead, it is possible that cutting off the handle was one of the last stages of the burial, signifying that the coffin was not to be opened again, and was ideologically closed and protected. As we shall see, in the Middle Kingdom, sometimes the remains of the stump, where the handle had once been positioned, are simply painted on the

coffin, demonstrating that these aspects may have had more symbolic than functional purpose – particularly in these later periods.

Coffins and Timber

Discussing the timber used for coffin construction is a particular challenge for Egypt's early history. Many of the coffins were not recovered from the field, or were in too decrepit a state of preservation to allow the analysis of the timber. Beyond these issues, however, as early coffins are not particularly popular, those that have been brought back from the field are rarely studied or republished. As noted above, some of the early attempts by excavators to discuss wood anatomy are also problematic. As early coffins are so rarely decorated, taking samples should be rather straightforward. This information would be extremely helpful, as assessing the use of wood over time would help improve information about access to imported resources, the control of trade networks, and the display practices of the Egyptian elite. In the few examples from this period that have been identified, acacia seems to be particularly popular. As noted, this was a very hard wood, and may have been valued as one of the best quality construction materials available locally in Egypt. Although it is used throughout Egyptian history, it is not seen as frequently as sycomore fig or tamarisk. Perhaps the clear value placed on woodworking and technical detail at this time made this hard wood more desirable; however, this may also be due to a bias created by the limited sample, or the fact that acacia survives better than other local Egyptian timbers.

Similarly, it may be dangerous to come to the conclusion that cedar, and other imported softwood species, are only found in use for coffins discovered near the royal necropolis until the 5th Dynasty; nevertheless, this data aligns with the additional evidence in the archaeological and textual record. In these texts, such as the Palermo stone, all efforts to acquire imported timbers

are related to the state, under the command of the king. Access to the timber was therefore probably controlled by the king, and granted as a boon to his loyal elite subjects. In most cases, these elites chose to be buried near their ruler as well. It was not until the later Old Kingdom that wealthy individuals who had been granted cedar began to be buried in the provinces, away from the capital. As additional examples are identified, this picture of control may become more substantial. It is even possible that in these later periods the elite may have been able to take over control of trade routes for themselves – which would also explain how cedar coffins are found that might date to the First Intermediate Period (see chapter 4.III). For now, it is only possible to note that the available coffin evidence aligns with the greater picture of Egypt's social and political history. The high quality of these objects, and the supporting textual evidence, also already demonstrate the high value of cedar and its recognition as the best construction material, particularly for coffins of the high elite.

The Decoration of Early Coffins

As demonstrated through the technical descriptions, most of the coffins from the Early Dynastic and Old Kingdom are undecorated. This is significant in and of itself as it suggests that the bare wood was sufficient as a status indicator; however, as noted, there are a few exceptions to this rule. Petrie and Mackay found that several of their early palace coffins, those from tombs 215, 238, and 532, had traces of red paint on the interior and exterior (1915:24). The decoration of the niched coffins at Gebelein is even more extensive, decorated with a yellow background, red palm trees, and additional red paint. The larger plain rectangular coffins in the tomb of the unknown, also from Gebelein, had red painted rims and internal joints. Red was a dominant color in ancient Egypt, and was particularly associated with both solar gods such as Ra, and destructive forces, such as Seth, as well as thresholds (Raven 1988:238; Pinch 2001:184; Baines 2007a:275–276). It

may have been used in this context as an apotropaic talisman. The Egyptians may have painted the interior of coffins red, along with the interior of joints and the rims of coffins, in order to protect these liminal spaces from being crossed by destructive forces. The doorframes depicted in early false door images or niches are also frequently painted red (as seen for example in the wall of the chapel of Kaemsenu from the 5th Dynasty MMA26.9.1). The idea of the necessity of protecting these thresholds is therefore probably at the heart of this practice.

This early trend of protecting coffin joints continues through Egyptian history. In the following chapters, examples are identified in the Middle Kingdom, New Kingdom, and Third Intermediate Period. As we shall see, in the Middle Kingdom and New Kingdom, inscriptions are also occasionally added, with spells that call for the assistance of the gods to strengthen these areas and protect the corpse as well, clearly defining the protective function of this practice. This treatment had previously been acknowledged from the Middle Kingdom on (Taylor 1989), but clearly, it began much earlier.

Painted decoration also seems to be part of a local tradition at Gebelein. It is from this site that the earliest figural decoration on linen emerges (Naqada I-II)(Scamuzzi 1965:pls. 1-5; Donadoni Roveri 1990:23–25), which clearly carries on to the later coffins as well. While other decorated coffins begin to appear during the later 4th and 5th Dynasties, the style of decoration at Gebelein is unique. The coffin construction techniques, however, are similar to those from Giza and elsewhere. This suggests additional finishing stages occurring at Gebelein that are not reproduced in other regions. This may demonstrate the incorporation of multiple workshops - one of carpenters that travelled and were aware of far-reaching construction techniques, and another of local painters. This may also suggest more flexibility in choices in the provinces.

Early Coffins as a Foundation of Tradition

Most discussions of early coffins consist of a few obligitory sentences, or, in the best case, a few pages (Ikram and Dodson 1998:194–196). Indeed, the discussion of these objects is difficult and complicated, due to a lack of surviving examples, and very few published extensive studies; however, these objects are vital for understanding the development of coffins, trade, and the history of woodworking. Already in the Early Dynastic examples, the coffin as a house is clear, and so demonstrates Egyptian beliefs regarding the eternal afterlife that would enter into the traditional belief sytem that would dominate religion for millennia. These structures, formed within the *habitus* from such an early stage of history, clearly affected the construction and style options born in this era. Perfecting the coffin as the elite house became a priority, which would shift in expression from the niched facade to the false door motif at the end of the Old Kingdom, but would retain its significance as an eternal dwelling. As continues today, the wealthy used their houses to demonstrate their social position and affluence, and so it is not surprise they wished to carry a similar symbolism with them to the afterlife.

Woodworking traditions also developed in this period, with the full array of Egyptian joining techniques present by the beginning of the Old Kingdom. The complicated structures of the palace facade coffin were admired throughout Egyptian history, and copied in the both the later Middle Kingdom and the 25th Dynasty, as true and impressive expressions of quality construction and symbols of sacred, elite space. Again, the fact that these objects are found throughout Egypt demonstrates communication between workshops, while regional decoration choices also show individual choice and separate practice independent of the centralized examples from the capital.

The presence of the interior red paint may also seem like a small detail, but again suggests the beginning of a tradition, that may have been particular to craftspeople. Most people would not have seen the interior joints of the coffins, and may have been unaware of the practice of painting these areas red. This hidden religious expression demonstrates that elements did not have to be visible to be effective. It also indicates that the carpenters would have had to have some understanding of the religious significance of the objects they created, and perhaps contributed to them. That this tradition continues through to the Third Intermediate Period also shows a continued tradition, despite the constant changes to other elements of practice.

4.III THE "DEMOCRATIZATION" OF THE COFFIN

At the end of the Old Kingdom, centralized administrative control of the country was weakening, and powerful individuals emerged in nomes that had never been particularly prominent. As these nomarchs and governors built up their regional centers, new groups of elite rose, as did the household staff, craftspeople and laborers necessary to support life in these areas. New styles of art developed in these regions, as did slightly different methods to express religious beliefs. For the first time, individuals began to claim divine access, and used coffins as the medium of display. The numbers of rectangular coffins owned by private individuals were far greater than they were in the earlier Old Kingdom, suggesting that more people had access to materials, craftsmen, and power, than previously. The methods used to construct these containers are somewhat varied, but a standard style of construction can be seen throughout the era. This suggests a continued communication between Egyptian workshops even in the absence of strong kingship. The austere appearance of these objects demonstrates a sophisticated appreciation for high quality timber and perfected joining techniques that would remain dominant until the end of the Middle Kingdom. As reflected in the detailed examination of the construction of the coffins from this period, as society began to destabilize once more, this fine attention to detail also began to deteriorate, and a new method of demonstrating access became popular. Towards the end of this era, the anthropoid coffin would emerge as the dominant new style, changing the face of Egyptian coffins for the remainder of their history.

EGYPT IN THE FIRST INTERMEDIATE PERIOD AND THE MIDDLE KINGDOM

The end of the Old Kingdom comes with the end of the reign of the 8th Dynasty kings at Memphis. After this, united rule is split between a line of rulers from Herakleopolis, and another

at Thebes (Seidlmayer 2004:108–109); however, the beginning of the end truly comes during an administrative reorganization in the 5th and 6th Dynasties. At this time, provincial administrators were placed in charge of nomes, and these individuals took up residence in the provinces. Many of these positions were hereditary, and so families began to build up personal power and affluence unconnected to the capital (Seidlmayer 2004:111). It is at this time that elite individuals were beginning to be burried in their high quality coffins in the provinces, as demonstrated, for example, by the Gebelein coffins discussed in the previous chapter.

At the end of the 6th Dynasty, Egypt was under the reign of Pepy II, who was apparently on the throne for 94 years. It is therefore likely that by the end of his rule, Egypt was under control of an elderly, infirm ruler (Malek 2004:106). The divine power of the king may therefore have been questioned, as the humanity and mortality of this man became particularly evident. This may have emboldened the elite nomarchs, who could act with more independence in the provinces. There is some limited evidence for droughts in the form of low Nile levels at the end of the Old kingdom as well, and so perhaps environmental pressure also caused the efficacy of the king to be questioned. Memphis may have had to focus more on those people immediately connected with the north, leaving the regional centers to fend for themselves. More likely than not, as is usually the case with such large-scale changes in society, the combination of all of these factors led to the rise of competing powers after the death of Pepy II, and the beginning of the First Intermediate Period (Malek 2004:106–107).

Throughout all of these administrative changes, there is also evidence for a significant shift in funerary beliefs. In the Old Kingdom, as noted previously, only the king was able to depict and express divine access. Private individuals were limited to the *ḥtp-dỉ-nsw* inscription, according to which they asked the king to intercede on their behalf and to help their spirit to be

effective in the afterlife. What type of afterlife they could hope for is also unclear, but seems to be an extension of their everyday life as the loyal subjects of their divine king (Allen 2006a). During the First Intermediate Period, however, the Coffin Texts appeared. These were adaptations of the royal Pyramid Texts, and demonstrate the ability of individuals to access the rituals and transformations that had once been limited to the king. For the first time, private individuals were identified with Osiris, and could hope for an afterlife among the gods if they could become a transfigured *akh* (Sørensen 1989:114).[40] The personal nature of these texts is demonstrated through the emergence of a whole new line of spells which were designed to "assemble a man's family in the realm of the dead" (Seidlmayer 2004:115), a concept missing entirely from the Pyramid Texts. Now that the king's power had largely collapsed, private people needed their own religious knowledge and spells to ensure their continued existence after death. The fact that coffins were chosen as the principle media for this change, again attests to the central importance of these objects within the funerary sphere. Despite this new access, and the lessened royal control, there was not a complete breakdown in decorum. During the First Intermediate Period, individuals still did not depict deities in private art, nor did they show themselves worshipping the gods directly.

The shift in funerary art and texts also went from celebrating the relationship to the king, to lauding personal accomplishments or thanking the gods directly. The texts of Ankhtifi of Mo'alla, for instance, only mention his king in a very brief inscription. Otherwise, it is Ankhtifi himself who is apparently responsible for his heroic deeds, and the god Horus who is credited with supporting the population (Seidlmayer 2004:121). As the king's influence became less

[40] Grajetzki (2007:50–51) has pointed out that not all coffins have inscriptions which refer to the owner as Osiris, and so this may be slightly more complicated; however, many coffins do invoke Nut to be a mother of the deceased, a clear allusion to the deceased's transformation of the god, even if it is not explicit in some cases.

significant in reality, so did it become in the afterlife. The dwindling efforts to create centralized state art are visible in the clear lower quality of what was now produced throughout Egypt.

The art created during the First Intermediate Period is often viewed negatively. Individuals are depicted with unrealistic body proportions, with very long arms, and odd faces that lack detail. As Grajetzki points out, however, art was appearing in regions where it had not been produced before. Styles original to certain regions developed, where previously the practices in the capital had been copied. For coffins, this is most evident in the different styles seen in, for instance, Assiut and Giza. This time should therefore be seen not as "a decline, but a new beginning" (Grajetzki 2006:17). New types of objects were also introduced, including those made exclusively for funerary use. This practice had not been possible for the majoirty of the population in earlier periods, when most people were instead usually buried with objects they had used in life (Seidlmayer 2004:114).

The second half of the First Intermediate Period is marked by the competition between the competing Theban and Herakleopolitan kings. The Theban line was eventually successful, and Thebes became the new capital of Egypt as Mentuhotep II reunited the two lands. A stele of the king's steward, Henenu, describes the actions of the king to secure access to foreign lands again as well, describing victories in the "south, north, east, and [west]", and trips to Lebanon for cedar (Hayes 1990a). This king reorganized the administration of Egypt, bringing centralized control back to the forefront, and placing individuals he knew to be loyal in regional positions of power (Callender 2004:141–142; Grajetzki 2006:21). At this time, the king returns as the ultimate intermediary, and is once again given credit for controlling chaos and maintaining Maat. Nevertheless, the Coffin Texts remained a dominant feature of coffin decoration, and private

access to the divine continued to rise, albeit much more gradually than in the intermediate period.

Amenemhet I, probably the vizier under Mentuhotep IV, took over control of the state to found the 12th Dynasty. One of his first actions was to move the capital to Iti-tawy-Amenemhet, a site that has not yet been discovered, but was likely in the region of Lisht in the Faiyum (Callender 2004:137). There is some evidence for disorder at the beginning of this king's reign, which may suggest that there was a battle for power. One of the king's main concerns was clearly stabilizing succession, and he began the practice of coregencies (Grajetzki 2006:32).

While the 12th Dynasty may not have been the wealthiest period in Egypt's history, the state enjoyed an unusually long time of stability and affluence under the reigns of the 8 kings that ruled at this time. Society was much more centralized, and administration was brought under tighter control of the king, particularly under Senusret III (Grajetzki 2006:57). There was a greater focus on an Egypt-wide building program, rather than on Thebes or Lisht alone. Art also became less regional, and high ranking individuals were more frequently buried in the royal necropolis rather than in the provinces (Callender 2004:170). The vizier Antefoker, for instance, who was from Thebes, and built a large tomb for his mother in Thebes, was buried in Lisht, near the pyramid of his king (Grajetzki 2007:50–51). Texts also record provincial governors bringing in royal craftspeople to complete work, rather than relying on those that were locally available. This was the case for Sarenput I, a governor from Elephantine (Grajetzki 2006:44). New administrative posts were instigated under Senusret III as well, which gave rise to new titles, and expanded the numbers of the lower elite, as seen in an increase of individuals able to afford funerary stelae (Callender 2004:164). During the 12th Dynasty, coffin decoration also became

more elaborate, and may be related to efforts to incorporate additional materials in a display of competitive consumption.

Private access to Osiris and the underworld rose in importance in the 12th Dynasty as well. Abydos, in particular, came to be seen as the burial place of Osiris, and the center of his cult. Under the reign of Senusret I, individuals began to erect chapels and stele at the site, demonstrating their personal devotion to the god (Grajetzki 2006:40). While they still did not depict themselves worshipping directly or carrying out duties in temples, they did show themselves performing funerary rituals, and in texts they could refer to performing their priestly tasks well. One remarkable text, the biography of Ikhernofret even goes as far as stating that he himself "overthrew the enemies of Osiris" through his performance of the journey to Abydos and rituals to renew the temple (Nederhof 2006). Even here, however, Ikhernofret notes that he was acting on royal orders, not his own initiative, and so shares credit with his king.

The 12th Dynasty ended with a female king, Sobeknofru, on the throne. Although during her reign there is no evidence of disorder or violence, her rise to power does demonstrate a lack of a more traditional heir, and the stable succession that Egypt had enjoyed ended at her death (Grajetzki 2006:63). How the kings of the 13th Dynasty were chosen is not well known. According to the Turin canon, in the 150 years that followed, between 50-60 kings reigned. Although the person of the king changed rapidly, much of Egyptian bureaucracy seems to have functioned normally (Callender 2004:159–160). Foreigners had been entering Egypt throughout the Middle Kingdom, and joined society without much ado. In particular, individuals from southern Palestine had been settling in the Eastern Delta at Tell ed-Daba, ancient Avaris. During the 13th Dynasty, this society and its leaders, the Hyksos, rose in importance, but there is no evidence that rule was divided at this time.

Although life continued mostly as normal in the 13th Dynasty, the constant change in leadership clearly had an affect on the faith that private people placed in their king and his ability to stand in as an intermediary. As many of the rulers of this period were from different families, a number of the kings would have begun their lives as non-royal individuals. People may therefore have questioned the divine power of their king. This is likely related to the increase in instances of personal dedications to Osiris, and for a number of overly cautious choices in coffin decoration – such as the disabling of harmful hieroglyphs. Eventually, the disorder within royal succession would come to a head, and the Hyksos would take power in the north, pushing the Egyptian line to Thebes, and officially beginning the Second Intermediate Period.

COFFINS IN THE FIRST INTERMEDIATE PERIOD AND THE MIDDLE KINGDOM: OVERVIEW

An incredible number of coffins from the First Intermediate Period and the Middle Kingdom survived to be found in modern excavations. This is unlikely to be due simply to better instances of preservation, but should instead be understand to illustrate the high numbers of individuals who now had access to the divine, and required offerings and eternal upkeep of their own. Initially, coffin decoration was quite simple, but over time the numbers of decorative texts and images painted or inscribed on the exterior and interior of these containers increased. This decoration has been studied in detail, and the decorative types and subtypes produced by scholars such as Harco Willems (Willems 1988), Günther Lapp (Lapp 1993), and Marcel Zitman (2010a) help scholars discuss, date, and compare these objects. The work of these scholars demonstrates that while no coffin was exactly alike, there were a number of features that were seen on nearly every decorated example. Already by the late 5th and 6th Dynasties, long rectangular wooden coffins were being created for a large number of non-royal individuals. Many were decorated

with a pair of wadjet eyes on the exterior, eastern side of the coffin, along with a horizontal band of hieroglyphs at the top of the exterior sides. This text took the form of the *ḥtp-dỉ-nsw* offering formula, asking their king as well as Osiris or Anubis, to help ensure that the deceased acquired a good burial and offerings to keep them satisfied to the ends of eternity. This style of decoration is referred to as Willems' "Type I", and it was the standard form for coffins from the end of the Old Kingdom through to the end of the 11th Dynasty and into the 12th (Willems 1988:122–7; Hannig 2006:16). Variations of this style began to emerge by the end of the First Intermediate Period in regions such as Assiut (Zitman 2010b:155), and the Coffin Texts and friezes of objects began to be painted on the interior. Over time, additional objects, columns of texts, and architectural images were also added to the coffin decoration, which scholars have used as the basis of their types and subtypes. The decoration was largely additive, becoming more complicated over time, but almost always included the wadjet eyes and the offering formula (Willems 1988:120). Such a practice helps to demonstrate the continued social competition practiced by the Egyptian elite.

Just as there is a distinct stylistic base to coffin decoration associated with the Middle Kingdom, there was also a characteristic construction style. The majority of wooden coffins produced at this time were long and rectangular, which suggests that burrying the body in a flexed position was no longer practiced by the elite. The burial containers consisted of four flat, straight sidewalls, a flat base, and a flat lid. The number of pieces of wood used to construct each side varied. Particularly wealthy individuals had cedar coffins, the walls of which were made from as few planks of wood as possible, often just one or two. These planks were straight, and were usually all the same thickness. If the carpenter were working carefully, he would usually ensure that the pieces were well smoothed with sanding blocks or stone rubbers, removing the saw marks from the surface before the wood was joined. When more than one plank was

necessary to produce a single side, lid, or base, the pieces were usually edge joined with tenons or dowels, which were mostly invisible once connected. In some instances, particularly in the earlier examples, as discussed below, a slot was cut into the two pieces, through which a cord of rawhide or vegetable fibers could be looped in order to join the planks. To connect the pieces, the sides were usually placed around the base so that they abutted, held together by either dowels, or with mortise and tenon joints. The method used to connect the corners was somewhat varied, but the vast majority of Middle Kingdom coffins now in museum collections were created with mitre joints surmounted by either a butt or half-dovetail joint (see chapter 3.II). These mitred edges were often thicker at the top than the bottom, so that the exterior of the coffin was usually the same width at the top and bottom, but the interior was slightly narrower at the top. The coffin was then finished again to hide construction marks, and then decorated.

Throughout this period, cedar was, as usual, the most desirable construction material. This was made clear in the *Admonitions of Ipuwer*. This text, written in the Middle Kingdom, laments the fact that cedar was not available in the First Intermediate Period, for the construction of elite coffins and for embalming oils. The large straight planks of cedar were particularly valued during this period, and often left exposed so that their inclusion might be acknowledged. Most coffins, however, were constructed from local timbers. When possible, the logs of these trees would be sawn into straight planks as well; however, as noted previously, most trunks and large branches of local trees were curved, and so the carpenters had to cut and patch together curved pieces to create rectangular sides. As with the straight planks, these were usually edge joined with dowels or mortise and tenon joints. Local wood coffins were rarely left unpainted during this period, and many were covered over with yellow or red paint, or sometimes even a painted wood grain, imitating the straight grain and red colour of the high quality cedar coffins.

In at least one case, a thin veneer of cedar wood was even used to decorate the interior of a coffin (Turin S. 15744).

In the following technical discussion of the production of "box coffins", I shall refer to coffins constructed in the "standard form". This will refer to flat long and short sides constructed from edge joined planks which abutt against the base. The corners of standard coffins from this period were created from mitre joints surmounted by butt joints, held in place with dowels only. The lid of these coffins was flat. All other construction variations will be noted. The coffins have been placed into broad chronological groupings based on a combination of decoration, paleography, and find context. I have avoided providing dates that are too precise, as the dating of these pieces in notoriously difficult, especially as many of the excavation records from this period, particularly those from Assiut, are not published (Hannig 2006:78). As the following detailed description of coffin construction demonstrates, when placed in chronological order, a few further construction trends are visible. There is a tendency to use cordage or ties in addition to dowels in earlier periods, though examples of this technique are still seen in the 12th Dynasty. More elaborate joints are also not seen prior to the 11th Dynasty, and are much more frequent in the 12th. Finally, a number of the so-called "court burials" form a transitional type, some of which included inner anthropoid coffins. The innovation and diffusion of this new mummiform container, however, is largely the topic of the next chapter. Placing the construction and decoration of these coffins in their historical context once again reveals how politics, religion, and shifts in social structure had a direct effect on technology and the development of woodworking techniques.

TECHNICAL DESCRIPTION OF THE CONSTRUCTION OF COFFINS FROM THE LATE OLD KINGDOM TO THE EARLY FIRST INTERMEDIATE PERIOD

An early example of coffins decorated with the "type I" decoration, is provided by the inner and outer coffins of Mery-Ib, found in Giza, and most likely dating to the late 6th Dynasty. The outer coffin (Kunsthistorischen Museum Vienna ÄS 7803,1) was made of sycomore wood, and is now

Figure 61: Inner coffin of Mery-Ib, Kunsthistorischen Museum Vienna ÄS 7803,2. © KHM-Museumsverband

partially damaged (Donadoni Roveri 1969:159). The type I decoration is carved into the coffin, and the construction style is mostly standard as well. A thin layer of plaster and paint covers the exterior. The corner joints, however, are held together with ties and dowels, which are housed in small semi-circular grooves. The curved pieces of wood used for the sides join tightly to one another, and traces of thin lines on exposed areas show the efforts of the carpenters to erase the rougher tool marks. A pair of legs was carved onto the exterior foot end, and a head

Figure 62: Head end of the inner coffin of Mery-ib. Kunsthistorischen Museum Vienna ÄS 7803,2. © KHM-Museumsverband

onto the head end, very clearly marking the manner in which the body was to be laid. This may be an evolution of the practice first seen in coffin Turin S. 13967 from Gebelein, described in the previous chapter.

A similar construction and decoration was also used for the inner coffin (fig. 61; Kunsthistorischen Museum Vienna ÄS 7803, 2). This piece, however, was made of large planks of cedar wood (Donadoni Roveri 1969:160), which were left undecorated, except for the carved inscription, which had originally been filled with blue paste, and the eyes. This seems to be one of the earliest occurrences of blue on a coffin. A head and legs were also carved into the head and foot ends as well (fig. 62). The long sides were each made from a single piece of very well-finished cedar. This is also one of the earliest wood coffins known to contain interior decoration, in the form of carved hieroglyphic offering lists.

Figure 63: Coffin of Hetepnebi. British Museum EA 46629.

The Assiut coffin of Hetepnebi (fig. 63; BM EA46629) was finished with the standard, "type I" decoration (Zitman 2010a:S8L, 92ff). The carving of the eyes and hieroglyphs was very carefully done. The figures are crisp, symmetrical, and evenly spaced. Unusually, this coffin does not carry a reference to Osiris, and is the earliest coffin from Assiut to include interior

decoration in the form of black painted columns of what appears to be a very faded offering list. This follows the model of the coffin of Mery-ib, and it is likely that this decoration style began in the North, at Giza, and then moved south (Zitman 2010a:97). The coffin included the titles of its owner, showing that he was "inspector of priests in a ka chapel of king Pepi". This, along with the date of the pottery in the tomb (Seidlmayer 1990:151, 155), confirms that it was made in the late 6th Dynasty. After construction, a thin plaster layer was applied, and the whole coffin was painted yellow. If the hieroglyphs were once painted, this no longer remains.

This coffin was constructed from local Egyptian tamarisk (Davies 1995:146), and largely follows the standard production method. After sawing and preparing the curved planks of wood, the edges that would join together were painted red, demonstrating the continuation of this practice from earlier periods (see previous chapter discussion). The standard corner construction was held together with dowels and ties, again housed in semi-circular grooves. Some attempt to smooth out the surface of the coffin had been made, but rough saw marks are still visible. The remains of chisel marks along the joints demonstrate the careful effort to shape the pieces so that they fit tightly against one another. Small pieces of wood were, however, still necessary to fill remaining gaps. Plaster was only used to fill minor flaws and voids. The overall construction is of a high quality, though the wood was not smoothed entirely. Another Assiut coffin now at Turin (S.14459), belonging to a Wepwawemhat was constructed in a very similar manner; though much less carefully, and the inscriptions and wadjet eyes in particular, were carved by an individual who does not seem to have had much experience.

Figure 64: Coffin of Khuit, British Museum EA 46634. ©Trustees of the British Museum.

The sycomore coffin of Khuit (fig. 64; BM EA46634) was also found in Assiut, dates to the First Intermediate Period (Davies 1995:146; Zitman 2010a:92ff), and follows the standard construction method. The decoration is also type I, but was painted, rather than incised. In this case, the wood was not as well finished, and more plaster was necessary to fill gaps. In an area towards the head end of the front side, the fill has fallen away, revealing bark and a live edge. This shows that the planks were not entirely finished before construction. Such variation in quality is only found in local wood coffins. The painted eyes and blue hieroglyphs, however, were well executed, on a lightly plastered and yellow painted background.

Figure 65: Coffin of Iu. Museo Egizio, Turin S. 14393 + S. 14394. © Museo Egizio, Torino

The coffin of Iu from Assiut, now in Turin (S.14393 + 14394), shows some other unique construction features (fig. 65). It was dated to the First Intermediate Period based largely on

associated excavation pottery (Zitman 2010a:111). It follows the standard type I decoration, with painted eyes and hieroglyphs outlined in black, and filled in with a grey colour. Through pXRF analysis, this appears to be a mix of carbon black and calcium carbonate, perhaps meant to imitate the more expensive blue pigment frequently found in this position.[41] The interior and exterior of this coffin was plastered, and the exterior was painted yellow. While the coffin largely follows the standard construction method, with three base supports, a number of wooden patches have been added to create the rectangular shape from curved planks, the species of which has not yet been identified. Thin planks were added along the interior of the sides, making each thicker. They are only around the top inner edge of the sides. These added planks extend the width of the wood from approximately 3.2cm to 4.7cm. Why this was done is unclear, as the sides of many coffins appear to be 3-3.5cm thick (see table 1). This decision may have been related to the lid, but unfortunately it no longer survives. The rounded edge of many planks suggests that smaller branches were used for construction, and little effort was spent filling gaps or covering tool marks. The execution of the hieroglyphs and the eyes is also not particularly successful. Overall, despite its poor quality, the coffin helps to illustrate which elements of coffin decoration and construction were probably seen as being particularly fashionable. Though this individual was not able to afford thick planks of wood, or blue pigment, they, or their carpenter, went to great lengths to imitate the elite fashion.

[41] Many thanks to Jeff Newman for assisting with this analysis.

TECHNICAL DESCRIPTION OF THE CONSTRUCTION OF COFFINS FROM THE LATE FIRST INTERMEDIATE PERIOD AND 11TH DYNASTY

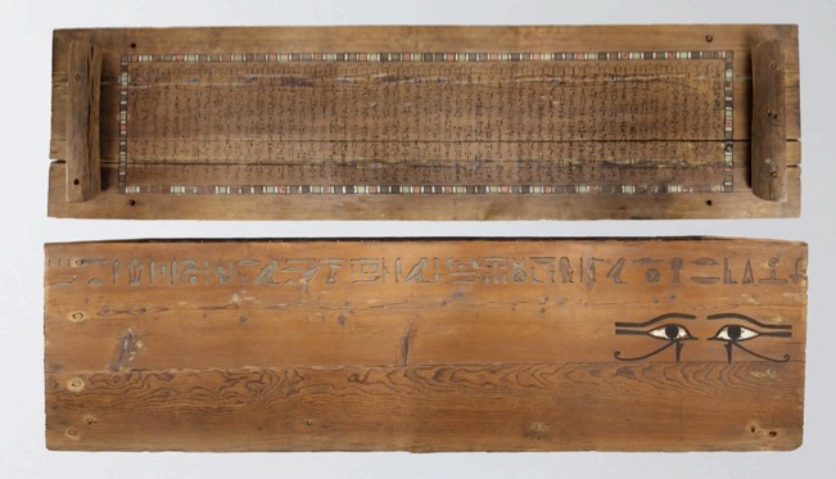


Figure 66: Coffin of Ipihaishutef. Oriental Institute Chicago 12072. © Oriental Institute Chicago.

The cedar coffin of Ipihaishutef from Saqqara (Chicago OIM 12072) has been dated variously to the 9th, 10th, and/or 11th Dynasties based on different interpretations of the stylistic aspects (fig. 66; Lapp 1993: coffin Sq11; Willems 1988: coffin Sq1Ch). The wood has been carbon 14 dated with 95% certainty to between 2081-2064 BCE (Manning et al. 2014). The combination of these dates suggest that it was either a late First Intermediate Period or early 11th Dynasty coffin. If the earlier dates were accurate, this would be particularly significant, as it would suggest that large beams of cedar wood were being imported during the First Intermediate Period, and would suggest that many assumptions about a lack of international trade during this era are incorrect. Unfortunately, as the 14C dates suggest only when the wood was cut, it is not possible to be absolutely sure that the coffin does not come from the early 11th Dynasty, and perhaps made available through the efforts of Mentuhotep II.

The coffin itself is made from thick, straight planks of cedar. The short sides both include two short pieces cut at complimentary angles. The corners are connected by mitre joints surmounted by thin butt joints. The base is now missing, but the shoulder cut into the bottom

edge of all four sides suggests it was attached with a half-lap joint. Only dowels are visible, holding everything together. The surface of the wood is well finished, with no remaining tool marks. The lid is also made of thick planks of cedar, with two supports beneath. On one end of the lid, the remains of a sawn off boss are visible, perhaps demonstrating the continuation of the ritual action described in the discussion of chapter 4.II. At the middle of the short, head end of the coffin, two lines have been cut into the center of the coffin's edge, likely serving as guidelines during the construction process – a practice that is commonly seen in this period. Likewise, two lines have been cut into the corresponding center of the lid support beam. The type I decoration has been incised, and then painted, but the exterior is otherwise undecorated. There is interior decoration in the form of Pyramid Texts, as well as offerings (Allen 2006b:Sq1Ch). The combination of these elements demonstrate the existence of high-quality cedar coffins in either the late First Intermediate Period, or very early in the 11th Dynasty, as well as the continuation of artistic and construction traditions through from the end of the Old Kingdom.

Figure 67a: The front side of the coffin of Idi, Museo Egizio, Turin S. 14391.
© Museo Egizio, Torino

Figure 67b: The front (top) and back (bottom) sides of the coffin of Idi, Museo Egizio, Turin S. 14391. © Museo Egizio, Torino

Three Assiut coffins have been dated to the late First Intermediate Period or early 11th Dynasty based mostly on style (Turin S.14391, S.14385, and S.14381 Zitman 2010a:135-149). Turin S.14391, the coffin of Idi (figs. 67a and b), is decorated with the standard type I wadjet eyes and inscription, though slight alterations in the text suggest that it is later than those previously discussed (Zitman 2010a:135–140). It was constructed using the standard method from what is most likely local wood, judging from the curves and faults, with three base supports. The shape of the planks of wood used for each of the long sides is interesting – they largely mirror each other, suggesting that very thick pieces were cut to create a large rectangle before being sawn in half to create two thinner, long sides. This was not done for the short sides. The coffin is plastered and painted a dark yellowish-red colour. A darker shade is clear on the rim and on the interior of the long sides. Whether this was intentional or due to aging is unclear.

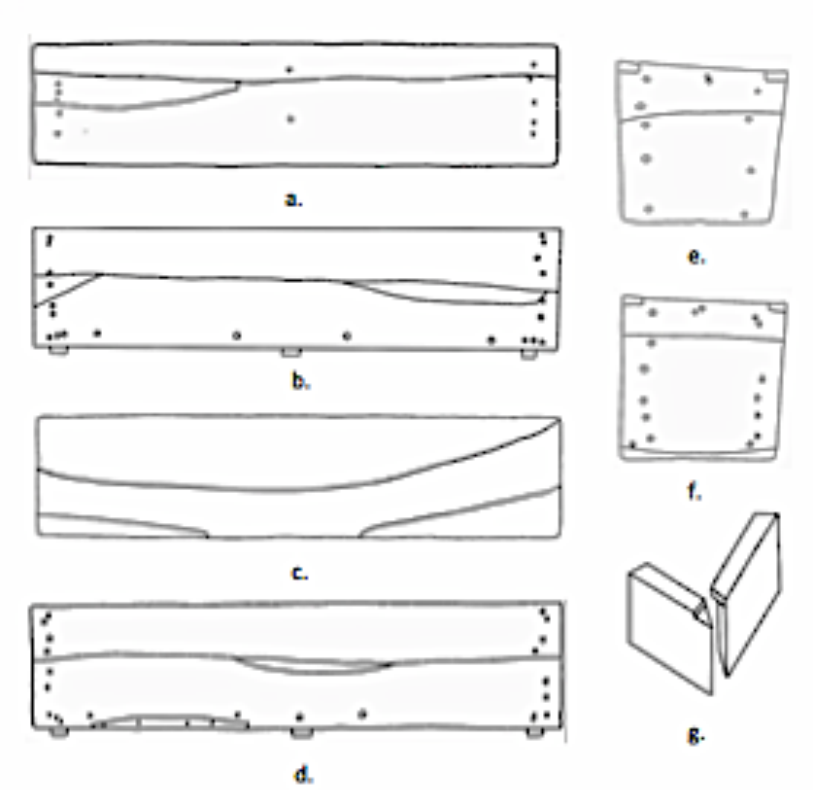


Figure 68: Construction figure of the coffin of Tjanem, Museo Egizio, Turin S. 14381. a) lid (top) b) front c) base d) back e) head f) foot g) mitre surmounted by butt joint. Image by author.

Assiut coffins Turin S.14381 and S.14385 were constructed in a similar fashion to the coffin just described. It is less apparent whether the shapes of the planks are mirror images of each other, however. What is remarkable about these two coffins is that they are painted with a rhomboid imitation wood grain, probably in order to mimic a species of imported softwood such as cedar. Of the two, S.14381, the coffin of Tjanem, has been dated to a slightly later part of the 11th Dynasty by Zitman (fig. 68; 2010a:141–149). The coffin has three, singular vertical columns of text, making it part of Zitman's Assiut type I decoration (2010b:153–155). S. 14385, the coffin of

Figure 69: Coffin of Henu, Museo Egizio, Turin S. 14385. © Museo Egizio, Torino

Henu, on the other hand (fig. 69), is typical Willems Type I, with no vertical columns. This does imply that they were not entirely completed by the same people, perhaps not even at the same time; however, the similarity of the rest of the decoration would suggest that the coffin decorators were at least aware of one another, or that they were created in workshops that shared this decorative style. I have identified the timber for both these coffins as sycomore fig. A similar style of decoration, with the imitation wood grain, was also used for a number of coffins in Meir and Akhmim, though these pieces seem to date to the later Middle Kingdom.[42]

The coffin of Imau from Deir el-Bahri, Thebes (fig. 70; BM EA6654), likely dates to the 11th Dynasty (Willems 1988:T1L, 115). This coffin was made of long planks of cedar (Davies 1995:147), 8.5cm thick. It has a more complicated structure than other contemporary coffins. The bottom of the sides included a shoulder, so that the base could be housed snuggly in a half-lap joint. The corners too, were joined by means of a shoulder mitre surmounted by a butt joint, again creating a more secure joint than the usual mitre style (fig. 71). The coffin was well finished so that tool marks were not visible. The decoration is of the type I form, though the exterior hieroglyphs were incised, and the wadjet eyes were inlaid in stone. Otherwise, the exterior wood was left exposed. The interior was decorated with offering friezes, texts, and a false door, and the underside of the

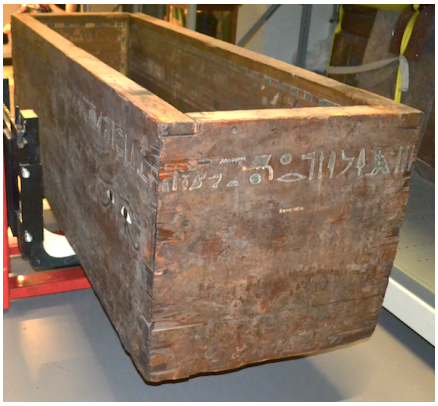


Figure 70: Coffin of Imau. British Museum EA 6654.

Figure 71: Coffin of Imau, British Museum EA 6654. Underside of joint, showing shoulder mitre.

[42] These include Cairo CG 28044, CG 28041, CG 28047, CG 28049, CG 20850, CG 28057 from Meir, and Cairo CG 28012 and CG 28014 from Akhmim. See further Willems 1988: 188, n. 3.

lid was also decorated with columns of text. On the head end of the lid, a rough, reddish circle of unfinished wood indicates that a boss was sawn off. Other coffins from Deir el-Bahri, dating to the 11th Dynasty also have this style of complicated joinery. The coffin of Mentuhotep (CG 28027), for instance, even has a double-shoulder mitre joint surmounted by a butt joint, according to Lacau (Lacau 1903:74). Unfortunately, no information regarding the coffin timber is provided.

A number of coffins from Assiut have been found that likely date to the end of the 11th Dynasty, perhaps even the beginning of the 12th Dynasty, based on both style and excavation records. The decoration of these coffins is quite varied. They include coffins of the standard type I (Turin S.8925 + S.8933 + S.8939), as well as those of Assiut type I (Turin S.8807; S.8912 + S.8922; S.8919; S.8923 + S.8929 + S.8926; S.14457).[43] In addition to the standard horizontal inscription and wadjet eyes on the exterior, the Assiut type I has singular vertical columns of text. This style is similar to Willems type XIV and V, which appear in the mid-12th Dynasty on more northern coffins, but they appear on Assiut coffins in the 11th Dynasty, approximately 100 years earlier (Zitman 2010b:153–155). This helps to place these coffins in a chronological progression.

The construction of all of these coffins is quite standard. Although the timber has not been identified, the curved planks from which they were created, would suggest that they were all made from local wood. The only coffin not created in an entirely standard form is S.8807, which has plain mitre joints only. All the coffins were plastered and painted with a background of a dark yellow or orange-red ochre colour. The rim of four coffins (S.8912 + S.8922, S.8919, S.8923 + S.8926 + S.8929, and S.14457) was painted red, and for coffin S.8919, the interior

[43] See the lists in Zitman 2010b: 138-141 for these designations.

joints were also painted red. The shows not only the continuation of the use of red, described in the previous chapter, but also suggests that it was becoming more popular, particularly at Assiut.

Figure 72: Outer coffin of Sobekhotep. British Museum EA 41571. © Trustees of the British Museum.

The inner and outer coffins of Sobekhotep from Beni Hasan also date to either the late 11th or early 12th Dynasty (Willems 1988:BH1L, BH2L, 64–65). The outer coffin (fig. 72; BM EA41571) is well-made from thick pieces of sycomore fig (Davies 1995:147). It follows the standard method of construction, with three base supports. On the head end of the lid, a rough circle of undecorated wood is visible, indicating that a boss was removed from this area. The coffin is covered with plaster and yellow paint and a border of blocks of colour, in addition to the standard wadjet eyes and offering inscription. The interior was decorated with polychrome texts and friezes. The inner coffin (fig. 73; BM EA41572) was constructed in the standard fashion from long, straight planks of cedar (Davies 1995:147). The wood was carefully finished, and no tool marks remained. Most of the exterior of the coffin remained undecorated, with only the standard wadjet eyes, an incised inscription band, and decorated colourful edge. The interior had polychrome texts, friezes, and

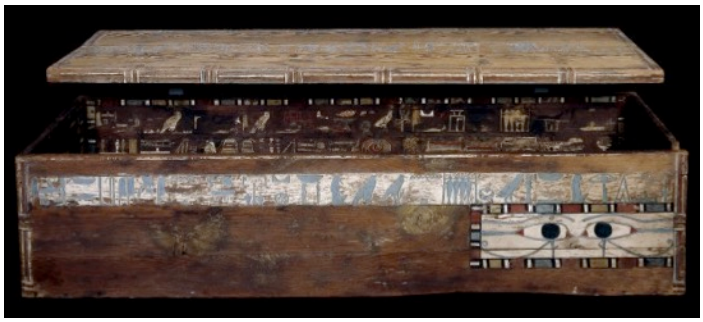


Figure 73: Inner coffin of Sobekhotep. British Museum EA 41572. © Trustees of the British Museum.

an elaborate false door. The higher quality of the construction and decoration of the inner coffin is quite apparent.

Figure 74: Exterior front side of the outer coffin of Djehutynakht, Boston Museum of Fine Arts 20.1822. © Museum of Fine Arts, Boston

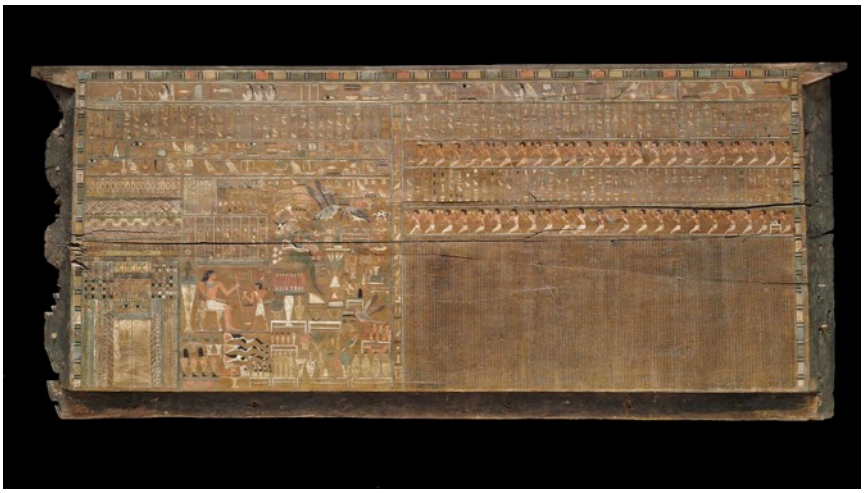


Figure 75: Interior front side of the outer coffin of Djehutynakht. Boston Museum of Fine Arts 20.1822. © Museum of Fine Arts, Boston

Some of the most famous Middle Kingdom coffins, those of the nomarch Djehutinakht and his wife, came from Bersheh, and also date either to the late 11th or early 12th Dynasties (Willems 1988:70–72). Both sets of inner and outer coffins were made from very large, thick planks of cedar. "Lozenge" shaped patches have been added in several areas, perhaps to replace

removed knots of wood. These have been attached with fine, small dowels (Berman 2009:105). The outer coffin of Djehutynakht (MFA 20.1822-27) was very well finished. While the exterior is type I decoration (fig. 74), with the cedar wood left largely exposed, the interior is entirely decorated with offerings, texts, another set of wadjet eyes and a false door, along with an image of the deceased before a table of offerings. The interior base, and the underside of the lid are decorated with coffin texts. Of note in the decoration, is the finish of the false doors painted on the interior (fig. 76). The wood door panels, which are drawn on the interior of the coffin, have also been decorated with a fine wood grain, likely imitating cedar. This is exceptional, as they were being painted on cedar wood. This double emphasis for the use of cedar highlights just how important it was as a status indicator, and for its religious significance.

Figure 76: False doors on the interior of the outer coffin of Djehutynakht. © Boston Museum of Fine Arts

The corner joints of the coffin were precisely finished mitre joints, surmounted by long, thin butt joints. Although they are no longer present, Berman notes that copper ties were once used to secure the joints, in addition to wooden dowels – he seems, however, to be referring to the joints attaching the base, as no ties are visible on the corners. The bottom edge of the sides was cut with a shoulder to more securely attach to the base with a half-lap joint, as seen in the coffin of Imau. The interior joints are inscribed with protective spells, perhaps an elaboration of the use of red paint for protecting interior joints. These can also be seen on the base, in areas that would have been covered by the shoulder of the sides. These glyphs are larger than the other

spells written in columns on the base, and are written in a different direction, highlighing their special status. The lid was also made from thick beams of cedar, and on each end, the remains of two large bosses can be seen. Comparisons with the coffins of the Lady Djehutynakht suggests that gold leaf had been used to decorate the edges of both this and the inner coffins, but it no longer remains (Berman 2009:130–132). Djehutynakht's inner coffin (MFA 21.962-63) is constructed in a very similar fashion, though the lid of this coffin does not have any bosses. The interior decoration is mostly texts, though an elaborate false door and eyes are also present, and the floor is decorated with the Book of Two Ways. The inner joints on this coffin were also inscribed.

The Lady Djehutynakht originally had a set of three nested coffins (Berman 2009:130), which is an unusually high number for this period. The outer coffin had been dismantled in antiquity, and the pieces were not recovered. The middle and inner coffins (MFA 21.964-5, 21.966-7) were constructed in a very similar fashion to those of her husband, including the half-lap lower edges of the sides, and the inscribed joints. As noted, traces of gold were likely used to decorate the edges of these coffins too, though it has mostly been scraped away. Together, these coffins illustrate the fine, technical detail possible for elite coffins, the high value of cedar, and the increased interest in protecting the liminal joints of the coffin. The fact that these coffins come from Deir el-Bersheh, in Middle Egypt, should also be highlighted, as examples of the fine coffins buried in provincial cemeteries until the 12th Dynasty.

TECHNICAL DESCRIPTION OF THE CONSTRUCTION OF COFFINS FROM THE EARLY TO MID-12TH DYNASTY

Another large group of Assiut coffins probably dates to the 12th Dynasty. Zitman places the coffins of Shemes (Turin S.8655) and Rhurawsen (S.8656) in approximately the reign of Sesostris I, based largely on the pottery found with the coffin (Zitman 2010a:226–227). The exterior of S.8655 is painted an orange-yellow colour, with horizontal and vertical inscriptions, along with a pair of wadjet eyes, following the Assiut Type I. The interior is simply plastered white. The construction is largely standard, with three base supports, though a number of added wood patches were necessary to fill gaps. The rim of the coffin was painted red. Coffin S.8656 is made very much the same way, through more pieces of wood were used in its construction, and variations in the inscriptions mark it as an Assiut Type II. The wood was also prepared with less care, and rounded edges of what are most likely unfinished branches are visible where thick layers of plaster have fallen away. The rim is also painted red, and at the center of one of the short sides, two measuring lines have been cut in.

Figure 57: Coffin of Mereru. Museo Egizio, Turin S. 8877.

The contemporary Assiut coffin of Mereru (Turin S.8877) demonstrates some of the most elaborate decoration seen on coffins from this region (fig. 77; Zitman 2010a:224–226). There are three horizontal rows of blue inscription, and triple vertical columns on the exterior. These are painted on an orange-yellow background. A pair of wadjet eyes decorate the front, and offering tables have been painted in between the columns of text. The elaborate exterior decoration places this coffin in the Assiut Type III. The interior was completely decorated as well. The floor was likely also decorated, but this no longer remains. The coffin itself was made from long, well-cut and finished planks of sycomore fig. The construction was mostly standard, though with very thin, almost invisible butt joints, and four base supports. At the short, foot end, two lines were cut into the center of the rim, as seen on the previous coffin as well, and the rim of the coffin was painted red (fig. 78). The lid was fully decorated, with four rows of text on the exterior, and a complicated star clock on the underside, demonstrating another development in coffin decoration. Saw marks on one of the short ends of the lid shows that a boss has been removed. The supports underneath the lid have been carved with particular care. Despite being made in the standard style, this coffin exhibits a great deal more care and attention to detail than many of the other coffins from Assiut. It is almost certainly not a coincidence that such a carefully constructed coffin had significant added elements of religious decoration, such as the star clock. This coffin probably belonged to an individual who had significant means, and wished to participate in layers of social competition, but had not quite reached a status that would afford him access to cedar.

Figure 58: Red rim on the coffin of Mereru.

Coffin Turin S.8908, was found next to the above coffin, also inscribed for a Mereru, and follows the same multiple rows and columns characteristic of the Assiut type III. Whether both were made for the same owner, perhaps at different times, is unclear. They do not fit into one another, and so were clearly not a set. The construction is similar, in that it follows the same standard style with four base supports. The surmounting butts of the latter construction, however, were not as carefully finished. In fact, much of the work on S.8908 was not as careful, and the planks of wood are lower quality, including some pieces with rounded edges, which suggests the use of smaller branches. The inner joints of the lid are visible, and have been painted red, in addition to the red rim of the coffin. The two central carved lines in the short food end of the coffin are also present in this coffin, as is the sawn off boss of the lid.

The exterior vertical columns that seem to have originated at Assiut eventually start to make their way north. They decorate the coffins of Mentuhotep (BM EA6655) and Sobekhotep (BM EA29570), both from Thebes. Willems has suggested that these pieces date to the reigns of Senusret I or Amenemhet II. Unfortunately, an ambiguous context has forced the dating of these pieces on the basis of style alone (Willems 1988:115–116). Coffin EA6655 is made of long, straight, thick planks of cedar (Davies 1995:147). The paint on the exterior is badly affected by what seems to be water damage, but it clearly had more elaborate decoration, with a painted background and vertical columns of texts, part of Willems Type V style. The interior is fully decorated as well, with texts, object friezes, wadjet eyes, and a false door. Much of the construction is standard, though the carpenter seems to have made a mistake with the butt joints, as there is a sizeable

Figure 79: Gap in the joint of the coffin of Mentuhotep. British Museum EA 6655.

gap between the butt and the ledge of the joint on which it should sit (fig. 79). The joints are well cut, which suggests that it was a problem with measurement, not cutting. There is also a remarkable feature on the front side. Directly below the wadjet eyes, a rectangle of wood has been cut out (fig. 80). The patch that no doubt once fit here is no longer in place, but the hole shows it had been connected by a half-lap joint. Above the hole is another patch of wood, that in this context resembles a lintel, placed above the hole. Unfortunately, the decoration here has faded, but as it is directly below the wadjet eyes, and borders of architectural decoration are visible, this seems to be the location of the exterior false door. It is therefore possible that a separate piece of wood was added here to serve as more realistic doors. Whether this was specifically done, or was an opportunistic patch on an existing fault, cannot be known; however, the careful carving of the lapped joint proves it to be an intentional.

Figure 80: The "door" gap on the front of the coffin of Mentuhotep. British Museum EA 6655.

Figure 81: The lid of the coffin of Mentuhotep. British Museum EA 6655.

The lid of EA6655 is also rather abnormal (fig. 81). It consists of two central beams of wood, which have been covered with a series of thin planks, like veneers. This may have been to increase the overall size of the beams, as they were neither wide nor long enough to fit the case. It appears that the inner joints of the lid have been painted red, as well. A combination of dowels and cording were used to join all the pieces of the lid. Finally, on one of the short ends, a large cubed hole has been removed. It is possible that a handle had once been attached here, like the bosses on other lids. The underside of the lid was decorated with "star-clock" texts (Willems 1988:237). Despite these idiosyncrasies, the wood on both the lid and case was well finished, and in most areas were carefully created. The presence of multiple rather unique features within a cedar coffin may suggest that these were experiments meant to help their owner stand out among the other wealthy inhabitants of Thebes.

The cedar coffin of Sobekhotep (EA 29570) was entirely painted, like EA6655, but has been labeled as Type XIV by Willems. Vertical text columns appear on the outside, along with wadjet eyes and a false door, and the interior was painted with texts, friezes, and an image of the deceased before an offering table, apparently a unique occurrence on a coffin this late (Willems 1988:178, n. 13). The interior base was also decorated with a long column of wavy blue lines representing water. Though the accompanying texts have been badly damaged, this is likely a representation of the ferryman spells (Willems 1988:235, n. 237). The construction is not standard. The corners are mitre joints surmounted by long thin butt joints, and held together with dowels and ties, housed in straight grooves. The sides have a ledge cut into the bottom, to house the base, as seen in the earlier coffin of Imau (EA6654). There are four support beams attached below the base of the coffin. There are remnants of paint on these beams that do not match the above decoration on the sides, suggesting that the supports were likely removed and reattached

in the incorrect place in the modern era. Finally, there are markings carved into the rim of the sides, which may have been used to show how the pieces were to be connected.

The lid of this coffin was constructed from two long cedar beams, and three shorter pieces, edge joined with tenons and dowels. On one short end, a boss has clearly been sawn off. The underside of the lid is decorated with a checkered star pattern, and an offering inscription. Although this has been likened to the star clocks occasionally found on coffin lids, it lacks the tables and texts that are usually associated with this decoration. Finally, a gap between one of the joints shows that the interior joint was painted red. It was not possible to view the interior joints elsewhere on the coffin. This combination of multiple elements, as seen in the previous coffin of Mentuhotep (BM EA6655), corroborates the suggestion that these numerous additions were fashionable for the elite in Thebes at this time, and helped them to compete with one another. It is also significant that both complicated construction and decoration could contribute to this practice.

In the 12th Dynasty, some rather exceptional construction options are seen at both Lisht (MMA 14.3.64 and 14.3.65) and Meir (CG 28037). These coffins generally follow the standard construction method, however, the joints that surmount the mitre are semi-circular in shape, creating a hooked appearance. Why this style was chosen cannot be ascertained. Moreover, despite being constructed in a similar fashion, MMA 14.3.65, the coffin of Sithathor, had standard I decoration, while the coffin of Ibsenhotep, MMA 14.3.64, had vertical text columns and so was likely from slightly later.[44] The two were therefore not created by the same person. The similar style of the coffin of Wernefer-Irenhotep (CG 28037) may be from even later, and was created in a different region (Lacau 1903:108-116). Moreover, the lid of this latter piece was vaulted, demonstrating a significant difference. While the two from Lisht may therefore suggest

[44] Note, Willem's L8 (1988) is 14.3.64, but is given as the coffin of Sithathor. This is incorrect.

a continued tradition by a community of practice, the coffin from Meir probably represents either a diverging development, or the same construction style emerging independently.

Figure 82: The coffin of Sepi, British Museum EA 55315. ©Trustees of the British Museum.

A number of coffins from Deir el-Bersheh have been dated by Willems to a slightly later period, likely from the reigns of either Sesostris II-III. In regards to decoration, the exterior continues to exhibit the singular vertical text columns in Willems Type V. The coffin of Sepi (fig. 82; BM EA55315) was made of long planks of cedar (Davies 1995:147). The corner joints were mitred, surmounted by butt joints, and held together with ties and dowels, housed in straight grooves. Four large support beams were added to the bottom of the case. Very light rubbing marks could still be seen on the sides, showing the careful preparation of the wood. Despite this, a light coating of plaster and yellow paint was applied to the background. A decorative blue border was also added, in addition to a false door below the wadjet eyes. It was not possible to view the interior personally, but from photographs, it appears that the base simply abutts to the sides, as usual. The lid is also interesting, being constructed from two angled planks, with a short additional piece at either end. This would make the lid appear to be a uniform thickness, but the interior actually angled inwards. On each short end of the lid, a boss has been removed.

A very similar style of construction was used for both the inner and outer coffins of Gua (BM EA30839, EA30840), also from Bersheh. The decoration is similar, though the inscriptions are part of Willems type IV. These cedar coffins also had mitre joints, though they were surmounted by half dovetail joints, a slightly more complicated style. The corners were held together with a combination of dowels and ties, housed in straight grooves. The exterior cedar wood was left largely exposed, showing that this feature had not yet entirely vanished, while the interior was heavily painted, including the depiction of the Book of Two Ways on the base. Faint marks can be seen on the interior joints, but it is unclear whether these were protective spells, or instructions for joining. The lids were not present.

The outer and inner cedar coffins of Sen from Bersheh (BM EA30841, EA30842) relate to Willems type IV and VIII respectively. They also have mitred corners abutted by half dovetail joints, connected with dowels and ties housed in straight grooves. On the exterior, the cedar has been covered with a very thin wash of light yellow paint. The interiors are entirely painted, and again have the Book of Two Ways depicted on the base. The lid of only the inner coffin (EA30842) was accessible, and was made of thick beams of cedar. The underside was covered with columns of text. As with the coffin of Sepi, there were originally bosses at either end, which have now been removed.

Figure 83: The coffin of Keki. Liverpool Merseyside County Museum 55.82.113. © National Museums Liverpool.

In the mid-12th Dynasty, from approximately the reign of Amenemhat II, a painted "palace facade" appears on the exterior walls of coffins, part of Willems Type VI (1988:99, 161–164). This is often an elaboration of the false door motif, but also recalls similar decoration styles from the Old Kingdom (see chapter 4.II). These coffins have single horizontal inscription bands, and usually four vertical columns of text, separating the architectural motifs that fill the panels these columns border. The wadjet eyes and false door motif are also still present.[45] One such coffin belonged to the steward Keki from Beni Hasan (fig. 83; Liverpool Merseyside County Museum 55.82.113), which has been dated to the later years of Amenemhet II and the early reign of Senusret III (Willems 1988:67). The interior was decorated with offerings, texts, wadjet eyes, and a false door. Despite the elaborate exterior decoration, the construction style remained relatively standard. The long thick, straight planks of wood with a fine grain appear to be a species of softwood timber such as cedar, though they have not been definitely identified. These pieces were edge joined with tenons, and connected at the corners with mitre joints surmounted by half-dovetail joints. The edges were held together with a combination of ties and dowels, housed in shallow, straight grooves. The base abutted the sides, and was held in place with angled dowels. The lid does not survive. Coffins with similar decoration and construction have also been found at Bersheh, Meir, and Saqqara (Willems 1988:163–4).

TECHNICAL DESCRIPTION OF THE CONSTRUCTION OF "COURT TYPE BURIALS" AND LATE MIDDLE KINGDOM COFFINS

Towards the end of the Middle Kingdom, there are fewer burials found in the provinces, particular those that belonged to high-ranking officials. Very few examples from Bersheh and Assiut, for instance, have been securely dated later than the reign of Senusret III, which is a significant change from the earlier period. As the government was increasingly centralized under

[45] Willems "Type VI" (1988:163).

this king, officials seem to be buried more frequently in the royal necropolis, or nearby, where, unfortunately, fewer organics survive. Coffin styles also changed. The palace façade decoration continued to be popular, but in the 13th Dynasty examples, the interiors were now rarely decorated, and Coffin Texts were not often inscribed on coffins.[46] In addition, the hieroglyphs depicting dangerous creatures, such as snakes, were frequently disabled. Snakes were shown stabbed or cut in two, the heads of bees were not depicted, and birds were also frequently shown without legs or with broken necks. The earliest example of this writing style is so far found on the coffin of the princess Neferuptah, daughter of Amenemhat III (Grajetzki 2007:42, 47).[47]

During the late 12th Dynasty, there also emerges a style of burial referred to as the "Court Type". This name was originally assigned by Mace and Winlock during their excavation of the royal court at Lisht, but such assemblages existed elsewhere as well. They tend to consist of objects that were all made especially for burial, and included staves and jewelry, weapons, and often partly gilded coffins (Grajetzki 2014a:19). The coffins of Senebtisi from Lisht, provide one of the best examples of this set, and it is from this burial that the type received its name. Her coffins likely date to the end of the 12th Dynasty, after the reign of Senwosret III (Grajetzki 2014a:34–35).

Senebtisi was buried in a set of three coffins. The outer coffin was rectangular, and made of a local hard wood. The excavators noted that it was badly preserved, though the photographs of the coffin allow the construction techniques to be at least partially described (Mace and Winlock 1916:Pl. X). The sides of the coffin were made of thick planks of wood, edge joined

[46] There are numerous exceptions to this trend, but perhaps the most significant was the coffin of the priest Sesenebnef, which was fully inscribed inside and out. The exterior actually had 56 columns of spells (Gautier 1902:76). Unfortunately, this coffin is known simply from drawings of the decoration and text, and was not otherwise recovered, so the construction cannot be analyzed.

[47] Unfortunately, only very fragmentary remains of these coffins survive, so construction could not be assessed (Grajetzki 2007:55).

with tenons. The corners were created with mitre joints, surmounted by well-cut butt joints. On the interior edge of the case rim, a shoulder or ledge was cut to allow the lid to fit snuggly. Unfortunately the base could not be seen. The lid of the coffin was described as vaulted, a style that became quite common at this time, and recall the earlier Old Kingdom coffins, but images and fragments do not remain. The whole coffin was also painted red.

Figure 84: The inner coffin of Senebtisi. Metropolitan Museum of Art 08.200.45a-b. ©Metropolitan Museum of Art.

Senebtisi's inner rectangular coffin was made of cedar, and survived in a better state, but still displays evidence of water damage and decay in the warped and fractured ends of pieces (fig. 84; MMA 08.200.45a-b; Grajetzki 2014a:21–22). The only inscription on the coffin is found on the lid, in the form of an invocation offering to Nut, an important deviation from the *ḥtp-di-nsw* inscription that continued to decorate most coffins at this time. The rest of the coffin was painted red, with just the wadjet eyes on the front. Gold leaf was also applied to the edges of the coffin's exterior. The sides of the coffin were made of edge joined cedar planks. Unusually, the corners were connected with a plain mitre joint held together with dowels. A ledge was cut into the rim of this coffin case as well, in order to house the lid. The lid of this coffin was vaulted. The long, subtly curved planks were edge joined, and inserted into thick carved beams attached at either end. Four short support beams were added to the case. Despite the richness of

this coffin, the combination of the construction and decoration illustrates an emphasis on added decorative materials, rather than on the perfection of manufacture.

Within this coffin was an anthropoid wooden coffin. This piece was badly damaged, likely originally made out of joined and carved planks of local wood, and decorated with at least substantial gilding and inlaid decoration. Anthropoid coffins were relatively unusual during the Middle Kingdom, particularly in comparison with the numbers of rectangular coffins. The discussion of the development of these pieces is the focus of the next chapter, however, and so will not be dealt with at length here.

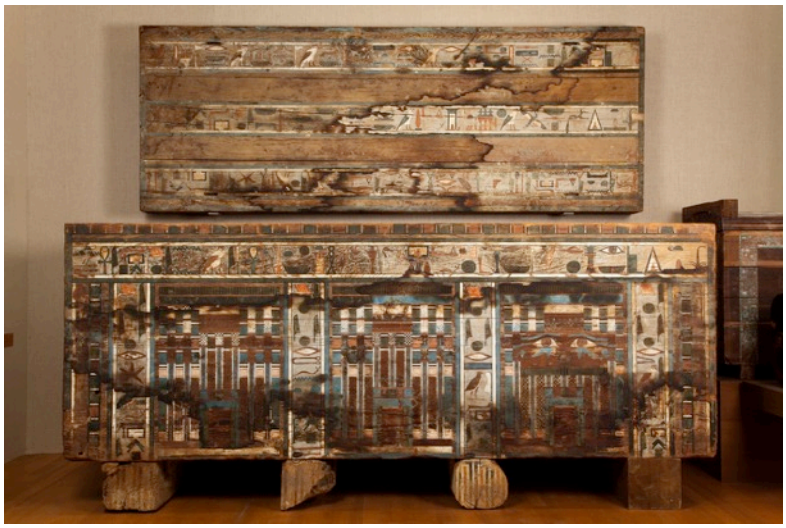


Figure 85: Outer coffin of Hapyanktifi. Metropolitan Museum of Art 12.183.11a. ©Metropolitan Museum of Art.

The coffins of Hapyankhtifi from Meir are similar to those of Senebtisi, and also likely date to the late 12th Dynasty (Willems 1988:99). This individual, a steward, also had outer and inner wooden rectangular coffins, and an inner anthropoid coffin. The outer coffin has the palace façade style of decoration, completely covering the high quality coniferous wood beneath (fig. 85; MMA 12.183.11a). At this time, inner decoration was still present, and consisted of the offering frieze and columns of text. The sides of the coffin are thick, edge joined together with tenons and dowels. The corners are mitre joints surmounted by long flat butt joints, held together

with dowels. Four large beams originally supported the case. Unfortunately, the base was not visible.[48] The lid of this coffin was flat, and decorated with texts.

Figure 86: Inner coffin of Hapyankhtifi. Metropolitan Museum of Art 12.183.11b. ©Metropolitan Museum of Art.

Hapyankhtifi's inner coffin was also made from a coniferous wood (fig. 86; MMA 12.183.11b),[49] but the lid was vaulted with two raised ends, similar to that of Senebtisi. It is unclear whether the coffin was coated with a very thin layer of dark paint, or if this is the natural darkening of the wood, in any case, the wood grain was clearly visible on most of the exterior of the coffin, with clear painted decoration only in the form of horizontal and vertical inscriptions, a pair of wadjet eyes, and a false door. The planks of wood are straight and very well finished. The sides are joined with tenons, and the corners with simple mitre joints, as seen with Senebtisi's coffin. The base was again not visible. The vaulted lid consisted of slightly curved long planks, which sat atop the two thick beams at either end. Finally, there was an inner anthropoid coffin with a gilded face, otherwise covered in a black resinous layer. This coffin will

[48] Museum records indicate that brass straps and iron pegs were used in the construction of this piece, though I was unable to locate these on the coffin without closer inspection. The iron pegs, in particular, are likely a modern addition, as this metal was rarely used before about 500BCE.

[49] The museum records list the wood as Yew (Taxus sp.), but Hayes publication states that the wood is cedar (Hayes 1990a:318).

be discussed in the following chapter, but the use of this black layer is significant, and is probably associated with the rise in popularity of Osiris.

Additional examples of the Court Type were found at Dashur, and though they were placed in chambers near the pyramid of Amenemhet II, are believed to date to the reign of Amenemhet III. These coffins, however, are only very generally described, and so can contribute little information to the development of coffin construction. De Morgan, the excavator, does note, however, that four princesses were found here, with an outer stone sarcophagus, and an inner rectangular wooden coffin, partially decorated with gilding. The interior of the coffins were decorated with texts. Remains of gilding and inlaid eyes were also found within these coffins, which may be the fragments of inner anthropoid coffins, though de Morgan failed to realize this at the time (Grajetzki 2014a:50). Also of note is that the anthropoid coffins were apparently covered with black layers that de Morgan describes as bitumen.

The court type burials were still used in the 13th Dynasty. Two coffin sets dating to this period were found in the pyramid complex of Amenemhet III at Dashur. Nubhetepti-khered was buried in an outer wooden coffin, with a vaulted lid. The remains of an anthropoid coffin may have also been found within. Again, unfortunately, only very basic drawings of this coffin have been published, and so the construction cannot be described. Close to this burial, the coffins of King Awibre-Hor of the 13th Dynasty were found. These can also only be described summarily, but are significant due to the fact that they consisted of two cedar rectangular coffins and a mummy mask, not an anthropoid coffin (Grajetzki 2016a:43). As will be discussed in the next chapter, this suggests that an anthropoid coffin was not yet considered necessary for elite burials, and had not yet been associated with kings.

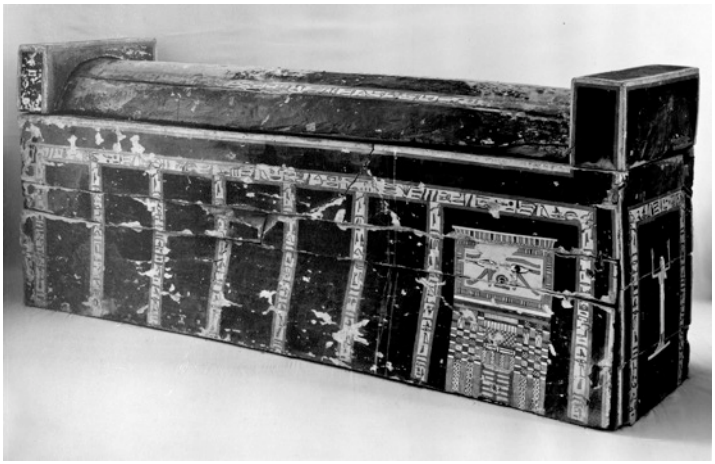


Figure 87: Coffin of Ikhet. Metropolitan Museum of Art 32.3.430a-b. ©Metropolitan Museum of Art.

During the 13th Dynasty, rectangular coffins were frequently decorated with four vertical columns, and as many as nine columns on the long sides have been found at Abydos and Thebes. Many of these follow elements of the "court style" coffins, with the old fashioned domed roof with straight raised blocks on the ends. The coffin of Ikhet from Thebes (fig. 87; MMA 32.3.430a-b) was built in this style with a black background. Ikhet's coffin is made of large planks of sycomore fig, which have been less carefully joined, leaving large gaps in the spaces between pieces. These have been covered over with a thick layer of plaster before being painted with a dark, resinous, black layer. On the front is a pair of wadjet eyes above a false door. On the short ends, images of Isis and Nephthys have been drawn. The corners continue to be joined with mitre joints surmounted by butt joints, and are held together with a combination of dowels and ties, housed in straight grooves. The floor abuts the sides. The pieces used for the dome of the roof are rounded, as if roughly carved from large branches or tree trunks. The overall quality of the construction and the decoration is relatively low, compared to many of the coffins discussed. The coffins of Nefnefret (MMA 32.3.429a-b), Entemaemsaf (32.3.428a-b), and an anonymous coffin (32.3.431a-b), are all very similarly decorated and constructed, complete with black background, and all also derive from Thebes (Hayes 1990a:347–9). A slightly higher quality

version belonging to an individual named Senebni (CG 28029) has also been found (Lacau 1903:77). It should also be noted, that while nearly every coffin so far described includes a *ḥtp-di-nsw* offering inscription, the horizontal text on these four coffins is replaced with a *ḏd-in* text, spoken by different gods, as seen with the coffin of Senebtisi. In addition, all of the "dangerous" hieroglyphs have been maimed so as not to be harmful to the deceased. This suggests that these owners used additional religious elements for the protection of their coffins and their burials, relying less on the power of their king. This further supports the suggestion that the added black layers may have been a reference to Osiris, who was associated with dark fertile soils of rebirth and regeneration.

TECHNICAL DESCRIPTION OF THE CONSTRUCTION OF UNINSCRIBED COFFINS

The coffins described in this section are uninscribed, and either undecorated, or very simply decorated, sometimes with a wash of plaster and paint, or, at most, with a pair of wadjet eyes on the exterior. These objects are very difficult to date precisely. Only the archaeological context can help scholars date these pieces, but the excavation records for a number of these finds have not been published. Although they are in general of a lesser quality than many of the coffins described, with rough tool marks visible, numerous patches, and large amounts of plaster, there are also examples that are fairly well-made. These coffins are very rarely discussed in Egyptological studies, as they cannot contribute to paleography or any precise, stylistic dating criteria. In addition, these types of objects were seldom brought back from the field, being seen as less valuable and of less academic significance. Their inclusion in this study helps to demonstrate the full range of construction choices, and helps to represent coffins of individuals who may have been from a lower socio-economic standing.

Figure 88: Uninscribed Assiut coffin. Museo Egizio, Turin S. 14403.

Coffin S.14403 from Assiut, now in the Museo Egizio in Turin, is a well-constructed sycomore fig coffin (fig. 88). The only decoration consists of patches of yellow paint or plaster, dotted along the sides and lid, and a pair of very hastily depicted wadjet eyes, faintly visible in black outline on what would usually be the foot end of the front side. It is possible that the patches of paint were added to imitate the regular knots of cedar wood, but this is uncertain. The interior is undecorated. The planks are sawn evenly, and though the tool marks are visible, the straight, regular saw marks suggest that a skilled carpenter was at work. The planks are made from curved, uneven pieces of wood, but they are large pieces, and have been carefully cut and edge joined together, leaving little space in the cracks. The planks are also quite even, being between 2.6 and 2.9cm in width. The mirror image of the shape of the planks used to create the sides suggests that once thicker pieces had been selected to make up the rectangular shape, they were cut in half, producing the pieces for both long sides, as seen in previous examples. The corners were connected with mitre joints surmounted by thin butt joints, fixed with dowels. The base abuts the sides. The rim of the coffin was painted red. The lid is also made of long curved, well-joined planks, and has the remains of a sawn-off boss. The hasty addition of the wadjet eyes in the wrong location, on an otherwise well-crafted coffin suggests that perhaps the owner died before the coffin was finished, and it was quickly drawn on by somebody who did not have full knowledge of their purpose. It is also possible, however, that the owner could simply not afford any additional decoration.

Another coffin from Assiut (S.14429) was constructed from planks of sycomore fig, with at least one dowel of acacia (personal analysis). It is covered over with plaster and a brown wash of paint. Museum records suggest that traces of wadjet eyes could once be seen, but they are no longer visible. The interior is undecorated. The gaps between joints are larger in this example, and substantial amounts of plaster have been used to fill in gaps. It is therefore of a lower construction quality; however, there does seem to have been some attempt to smooth away tool marks, as few can be seen. The corners are held together with mitre joints surmounted by butt joints, fixed in place with ties and dowels. The grooves for the ties are semi-circular. The lid is also made of long planks of wood. A coffin from Gebelein, now in Turin, (S.14338) is of similar construction.

Coffin Provv.545 from Turin also likely originated from Gebelein. It is constructed in a very similar manner to S.14429, though perhaps a step down in quality. Plaster has been used to fill cracks, and in some areas, a wash of brownish-red paint has been added. Traces of hastily drawn, large wadjet eyes are just visible, toward the head end of the front of the coffin. The planks of this sycomore fig coffin have been more roughly cut, with large gaps in joints, requiring substantial plaster fill. Tool marks are visible, largely saw marks, but some shaping of the rim was clearly done with an adze or chisel. The joints are mitre joints surmounted by butt joints held together with dowels, and the base abuts the sides.

Figure 89: Dug-out coffin from Gebelein. Museo Egizio, Turin S. 16742. © Museo Egizio, Torino

A coffin from Gebelein (fig. 89, Turin S.16742) was constructed in an entirely different manner. The coffin case, the only part that survives, was hollowed out of the trunk of a tamarisk tree.[50] Mortises and partial tenons around the rim indicate that it was once supplied with a lid, which no longer accompanies this piece. The coffin was very roughly shaped, and axe and chisel marks are visible. There are many faults in the wood, and bark was allowed to remain in many areas, suggesting that little effort was spent finishing this piece. Although dug-out coffins often indicate a great expenditure of wealth, as they allow much material to go unused and wasted, it is possible that little else could be created from this poor quality log. The only decoration that remains is a pair of faded, hastily finished wadjet eyes, placed at the feet, rather than the head of the coffin.

DISCUSSION

Coffins as Expressions of Divine Access

In the late 5th/early 6th Dynasty, decorated coffins began to appear frequently in non-royal burials, complete with spells allowing access to the afterlife as an Osiris. This marks a significant transition in the religious and social history of Egypt. For the first time, a much larger proportion of the population had access to the afterlife among the gods. A number of individuals stated clearly that after death they would become an Osiris, and borrow the powers and grace of the god to reach the eternal stars or the underworld. While continuing to be concerned about provisions and offerings, the populace could now hope for more. The Coffin Texts began as a development of the spells written in royal pyramids, but they soon were altered, expressing personal concerns. They demonstrate a clear difference between the desires of a king and the non-royal elites who could afford these objects. Having taken these spells for themselves, the Egyptian people now

[50] The museum records had previously stated that the coffin was sycomore fig, but after personal analysis, I have identified the wood as tamarisk.

had access to the realm of the divine; however, from the 6th Dynasty through to the end of the 12th, they still accepted that the king had a divine power and a superior place in the social hierachy, and that they required his favor in order to be supported in the afterlife. Every inscribed coffin in this chapter, until the late 12th Dynasty, was equipped with a *ḥtp-dỉ-nsw* inscription. Although there are a number of variations of this text, they invoke the king first, before any other gods, to ensure that they receive the required offerings. They may call themselves an Osiris, and proclaim Nut their mother, but only with the king's support – even if only in ideological terms. Although these texts become quite standardized, there is no coffin from this period that is decorated or inscribed in exactly the same way (Grajetzki 2006:123). At this time, coffins therefore afforded owners and carpenters with greater opportunity for individual display and innovation.

"Standard" Construction Techniques

Along with the standardized form of decoration, came a standard form of construction. There was clearly contact between Egyptian workshops in the late Old Kingdom and First Intermediate Period in order for such similar techniques to develop in multiple regions. It seems likely that the style began in the north, as with the decoration, and moved to regional workshops as nomarchs gained power and developed their own courts. Despite using a standard technique for construction, however, the measurements given in table 1 demonstrate that differences in lengths and widths continued to vary. These standardized techniques therefore did not extend as far as being modular in form – they were not standard to the point that parts of one coffin could be exchanged for another. This therefore demonstrates interactions, but not a "factory" style of manufacture. These interactions also continue to confirm our understanding that craftspeople were probably attached to specific institutions, in order to facilitate this movement of people and

ideas. Moreover, their elite patrons likely travelled back and forth to the capital as well, and so shared similar interests in regards to coffin fashions.

The elite in these multiple, connected regions clearly valued similar material aspects. Cedar was the preferred coffin timber in all areas of Egypt, and it was often left undecorated so that its use could be acknowledged. No poorly made cedar coffin can be found in this period. The wood of each example has been carefully and evenly sawn and then rubbed, likely with sandstone blocks, to remove the rough tool marks. The more complicated joints are also almost entirely associated with cedar coffins. The owners are always titled individuals, often with a connection to the royal family, or provincial nomarchs. It is therefore likely that cedar was only accessible to experienced carpenters who had obtained a higher status than the average woodworker. This agrees with the suggestions based on textual evidence, noted in chapter 3.II, that specialty craftspeople were brought in to finish cedar objects, a material made accessible through royal expeditions.

Coffins constructed from local timber are much more variable in quality. A number are relatively poorly made and decorated. Planks are often slightly rounded, and only partially prepared, in some cases with the bark still remaining. In these examples, numerous patches and large amounts of plaster were required to fill gaps and create a smooth surface; however, there are also very well-made local examples, with perfectly executed hieroglyphic inscriptions. It should therefore not be assumed that local wood coffins were low quality and made by inexperienced craftsmen. In fact, creating precise, smooth sides from joined curved pieces of timber would have been more challenging than working with straight planks of cedar. A number of the local wood coffins were therefore clearly made by experienced, talented carpenters. Indeed, in the coffin sets belonging to high officials and royal women, the outer coffin was

frequently made of local timber, while the inner coffin was cedar – continuing a trend seen in the Old Kingdom. The construction of the two coffins is often so similar that it is likely that the same person or at least workshop created both. It was nevertheless very rare to leave local wood examples undecorated. The value of the imported softwood is further expressed through these decoration methods. Often the local-wood coffin was painted a dark orange or red, which has been linked to the red color of cedar. Even more overt allusions are those coffins painted with what is likely an imitation cedar grain.

The exterior decoration of coffins remained relatively simple until the late 12th Dynasty. There are rarely coffins with added inlays or additional materials, other than the occasional line of gold leaf or inlaid eye. Even king Awibre Hor left his coffins largely undecorated. The value of the object laid in the perfection of its construction. The natural beauty of perfectly prepared cedar wood, expertly joined so that no additional patches or plaster were necessary, was clearly the goal of the carpenter in this age, and desired by the elite. As with literature and statuary produced in this period, the cedar box coffin therefore represents the classical form, where the techniques of construction were valued. Even the majority of the more elaborate joining methods were not visible, but used only to ensure that the object remained structurally sound. Values began to change, however, in the 12th Dynasty. It is possible that the new trend towards added, thick, painted decoration began in an effort by the elite to find new ways to compete with one another in a time when Egyptian society was stable, and individuals were able to garner significant personal wealth.

The Coffin and Osiris

The popularity of Osiris, seen in the coffin, stele, and personal texts, increased dramatically throughout this period, along side the increased access to the divine. While the Old Kingdom

kings had more commonly associated themselves with solar deities, Mentuhotep II included more Osiride aspects in his mortuary temple, which increased the visible importance of this god in state monuments. The increasing primacy of Abydos continued this trend. By the reign of Senusret I, individuals were regularly leaving private stele dedicated to the god, and building shrines at the site. In private tombs, the pilgrimage to Abydos became a common theme. It is within these developments that individuals started to add royal regalia into the object friezes depicted on the interior walls of their coffins. The earliest instances of this began as early as the First Intermediate Period, and became more common afterwards. Kees' original argument saw this as a further usurpation of royal power during a time of weakened royal control, the commoners taking first the Pyramid Texts, and then claiming royal regalia (Kees 1926:164–169); however, more recently, scholars have seen this in the context of the transformation into an Osiris. Individuals were not trying to claim kingship as a king, but the royal emblems also worn by Osiris, whom they would become in death. The later palace façade exterior decoration, and the switch back to the vaulted roof construction, might then also be viewed in the same vein – as the deceased claiming the royal elements associated with Osiris, not the king (Willems 1988:162, 228). The increased use of black bitumen to cover coffin interiors, placed on anthropoid coffins, and eventually used to paint coffin exteriors, is also likely an allusion to the rich, black, fertile soils that were connected with Osiris. While this connection to the god would, indeed, raise their personal status, the Egyptian people made no attempt to compete with their king through these elements.

Continuity in Traditions

There are many elements of the Middle Kingdom coffins that align directly with those made in the Old Kingdom. In addition to the construction techniques, the mitred joints, and the

rectangular shapes, the crafting and then removal of the wooden boss on the lid continued in the later period, and became particularly frequent. As noted in the previous chapter, I believe it likely that this action was associated with the ceremonial, final closing of the coffin. This is made more certain by the fact that it was found only on the outer coffins. As each coffin was carried separatly to the tomb, and lowered individually, if the bosses truly were meant to help with carrying, they would have been present on each coffin, to be removed as each one was set in place. The fact that they were only present on the lid of the outer coffin, suggests that this final closing action was particularly significant.

The other element that both continued and became more elaborate at this time was the protection of the inner coffin edges and rim. In numerous instances, red paint was found on these areas of the coffin, and in exceptional circumstances, protective hieroglyphs were added. By this time, the practice had been in use for hundreds of years, and, despite being largely invisible in complete coffins, had survived the First Intermediate Period. This attests to both a secretive knowledge passed down through the generations of craftspeople, and the significant concern with protecting the liminal spaces of the coffin. As we shall see, this tradition would continue far beyond this era.

Coffins at the end of the Middle Kingdom

Towards the end of the Middle Kingdom, while the importance of Osiris was increasing, the elite population also seems to have begun to lose faith in the power of their king. Elements of coffin decoration, such as the disabled dangerous hieroglyphs, demonstrate a certain level of unease, and the desire for added protection. Eventually the *ḥtp-dỉ-nsw* inscription is no longer seen as a fundamental element of coffin decoration, replaced by direct invocations of gods or their speeches, with no necessary intermediary. With the final division of power at the end of the 13th

Dynasty, trade routes are broken, and the Theban Egyptian rulers no longer have access to cedar, the material that had defined elite coffins for generations. Entering into the Second Intermediate Period, a new form of construction became popular, likely in light of this forced adaptation.

4.IV THE INNOVATION, ADOPTION, AND DIFFUSION OF ANTHROPOID COFFINS[51]

Towards the end of the Middle Kingdom in Egypt, anthropoid coffins make their first appearance in funerary assemblages. They are introduced as part of a coffin set by the lower elite, and are made from local Egyptian timber. They did not become popular, however, until the Second Intermediate Period, when the kings of the 17th Dynasty adopted anthropoid coffins. The decoration of these objects, and the religious importance of the change in shape has been the topic of discussion for decades (Vassalli 1867:137; Lythgoe, Lansing, and Davies 1917:16; Taylor 1989:28; Taylor 2001:223; Ikram and Dodson 1998:114; Lacovara 2007:37; Miniaci 2011:41–45); however, the social significance of new construction techniques in light of the political context in which these changes emerged has yet to be recognized. The *rishi* coffins produced during the transitional era of the Second Intermediate Period have been defined and analyzed solely on the basis of their decoration. This surface analysis has caused them to be seen as unremarkable transitional filler, bridging the gap between the late Middle Kingdom anthropoid coffins and those of the early Eighteenth Dynasty. A close examination of the construction of these objects, however, opens up new windows through which to view a renegotiation of artistic and material values. The political destabilization of Egypt at this time left the Theban Egyptians struggling to demonstrate status without the imported cedar that they treasured. In response, royalty and the elite adopted innovations implemented by private individuals, which quickly diffused throughout society. The compromises that were forced upon these communities during this time of scarcity and uncertainty would have a significant impact on art and technology for the remainder of pharaonic history. Without these remarkable objects,

[51] Aspects of this chapter will also be published in Arbuckle MacLeod:Forthcoming a.

it is unlikely that the famous and admired golden coffins of the New Kingdom would have been created.

EGYPT AND THE TRANSITION TO THE SECOND INTERMEDIATE PERIOD

As described in the previous chapter, the Egyptian Middle Kingdom was a very prosperous era in the history of Egypt. Private individuals had gained access to an afterlife overseen by the god Osiris, and those of at least somewhat substantial means were able to acquire a rectangular wooden coffin, sometimes two, while royalty and the highest members of the elite had the option of an outer stone sarcophagus. Trade with Nubia and the Near East flourished, and the wealthiest individuals could have carpenters carve rectangular wooden coffins out of thick slabs of Lebanese cedar. The elite owners of these cedar objects constantly reinforced their access to this material by leaving it exposed, while those who could not afford this timber painted their local wood coffins red, and in some cases even added a wood grain to imitate the presence of cedar. Towards the end of the 12th Dynasty, the long stable reign of the ruling family came to an end with a female ruler on the throne. Sobeknefru seems to have been, for all intents and purposes, an adept ruler, even if she only reigned for perhaps three to four years. There is no evidence for the breakdown of administration or civil unrest while she was in power; however, her presence in this position does indicate the absence of a more traditional male heir for Amenemhet IV, her predecessor, and most likely the brother of this final female king (Grajetzki 2006: 61-2). After the loss of the 12th Dynasty line of kings, the beginning of the following period is marked by a long series of short reigns.

During the 13th Dynasty, the usual mode of succession was not followed. The kings of this period came from a number of different families, and how the ruler was chosen is not currently known (Callender 2000:159). The Turin Canon, our best source for the kings ruling at

this time, shows that over a period of about 150 years, between 50 and 60 kings reigned (Grajetzki 2006:63). In addition, from throughout the Middle Kingdom there are references to individuals from the area around modern Palestine moving into Egypt. Towards the beginning of the 13th Dynasty, many began to settle peacefully in the Delta at a site called Avaris (Tell el-Dab'a; Grajetzki 2006:73; Bader 2011). It is likely that this site became a center of power during the 13th Dynasty, but this community and its leaders continued to live in relative peace with the Egyptian rulers whose capital was still located at Ititawy (Bietak 1994; Forstner-Müller 2010:134). While some administrative lines began to breakdown, in general business continued as usual, and the archaeological evidence suggests that people were still moving relatively freely throughout Egypt.

The material evidence in Egypt at this time also indicates relative stability and the ability of individuals and their objects to travel. A number of 13th Dynasty burials at Thebes included large vessels made from Marl C, which was found in the northern Fayum region (Seiler 2010: 40). In the north, at Dashur and Tell el-Dab'a, pottery dating to the late 12th and 13th Dynasties also shows the continued use of "Residence style" vessels, the same styles used in the Egyptian capital and surrounding areas (Aston 2004; Seiler 2010:42). It was only at the end of the 13th dynasty that the styles of pottery in the north and south began to diverge. Northern styles arose which never made their way to the south of Egypt, and southern styles developed with no apparent northern influence or movement (Seiler 2010:42–43). Most of the Egyptian kings of the 13th Dynasty also continued to have monuments in both southern and northern Egypt until the reign of Mereneferre Ay. After his reign, monuments of "Egyptian" kings were found only in the south (Grajetzki 2006:74).[52]

[52] By "Egyptian", I am referring to the kings who self-identified as Egyptian, and believed their rule to be connected to previous Egyptian kings. The Hyksos kings, however, may have been living in Egypt for generations, but their

It is also clear that for much of the 13th Dynasty, Egypt was still trading along the Levantine coast, and products from the Near East were reaching Thebes. A stele found in pylon fill at Karnak describes king Sobekhotep IV, a later ruler of the 13th Dynasty, causing that doors made of '*ꜥš nfr n ḫnt-š'*, 'good cedar of Lebanon', be created for the temple of Amun (Cairo JE51911, lines 10-12; Ryholt 1997:89, n. 287). Both the textual and archaeological evidence therefore suggest that relations between the Hyksos and the Egyptians were relatively peaceful until the end of the 13th Dynasty, at which point the Egyptians moved their capital down to Thebes, official trade between the north and south of Egypt ceased, and the Theban populations no longer had regular access to Levantine goods (Davies 1995:149; Ryholt 1997:162; Seiler 2010:48; Miniaci 2011:24–25). This marks a substantial divide between the powers of Egypt and the true beginning of the Second Intermediate Period.[53]

Many of the details of the Second Intermediate Period are highly debated. In particular, a lack of clear evidence makes it difficult to ascertain the position and makeup of the 14th and 16th Dynasties. These have traditionally been viewed as early Hyksos and Theban rulers, respectively, but this is far from certain, and it is likely that rule of Egypt was more fragmentary than we currently believe (Helck 1986; Ryholt 1997; von Beckerath 1999; Forstner-Müller 2010:135; Moeller et al. 2011). Thanks to textual inscriptions, we can be more certain that the 17th Dynasty was made up of Egyptian rulers based in Thebes, who were at war with the Hyksos 15th Dynasty, also making it clear that by this point relations were far from amenable. Most important for the purposes of this discussion, however, is that during the Second Intermediate

---

chosen titles indicate that they still saw themselves as descendants of Near Eastern peoples, rather than Egyptian (Candelora 2018).

[53] It should be noted that many scholars see the beginning of the Second Intermediate Period marked by the initial appearance of the Hyksos rulers at Avaris. The nature of their position in the Delta is also debated, and has traditionally be seen as a hostile attack on Egypt by invading foreigners (Helck 1986; Beckerath 1999; Ryholt 1997: 132); however, the evidence that is currently available suggests that the initial rise of Avaris and the Hyksos was relatively peaceful.

Period, after the 13th Dynasty, Thebes was no longer receiving regular imports of goods from the Near East. This means that Lebanese cedar was no longer available to produce the coffins of the Theban elite (Winlock 1947:101–102; Davies 1995:149; Ryholt 1997:162).

During the final phases of the battle between the Theban and Hyksos kings, beginning under the reign of Seqenenre-Tao, the Egyptians began to have some success, and started moving the border of their sphere of influence northwards (Bourriau 2000:198–199). Levantine products began to be seen once more in Thebes. A significant attack occured under the reign of Kamose, who stormed a number of Hyksos garrisons and the palace of Avaris. His victory was recorded on a stele, in which he also related the goods that he brought back to Thebes as his reward. As part of his successful boast he noted, "I have not spared a plank of the three hundred ships of new cedar (ꜥš) filled with gold, lapis lazuli, silver, turquoise, and copper axes without number... and all precious woods, and all fine products of Retenu" (Simpson et al. 2003:349). This is the first textual reference to cedar in Egypt since the short Karnak inscription of Sobekhotep IV. While the definitive battles occur under Kamose's successor, Ahmose, it is clear that Levantine goods, including cedar, were already available again in Thebes, though it is possible that these were largely goods taken from Avaris and Hyksos storehouses, rather than freshly traded materials. With Ahmose's victory over the Hyksos, however, rule of Egypt is once again centralized under a single king, trade with the Near East was renewed, and the era of the New Kingdom commenced.

THE FIRST ANTHROPOID COFFINS IN EGYPT

As noted briefly in the previous chapter, the earliest anthropoid coffins were made during the prosperous 12th Dynasty of the Middle Kingdom. The "overseer of the army" Sepi, who likely lived under the reign of Senusret II or III, has one of the earliest recovered examples. His inner

anthropoid coffin (Cairo JE 32668/CG 28084) was placed inside an outer rectangular coffin (Cairo JE 32868/CG 28083). The construction materials do not seem to have been analyzed, though images show the curved pieces of wood that are associated with construction from local timbers (Willems 1988:B1C, 75–7; Miniaci 2011:8). The anthropoid coffin was constructed using the dug-out method, with the lid and case each carved out of a separate log of wood (Lacau 1903:199–200), the significance of which will be discussed below. The rectangular coffin was made using the standard method. In the excavation reports for this coffin group, Daressy notes that the face and some decorative details of the anthropoid coffin were gilded with gold. He also states that the anthropoid coffin was found lying on its side, facing to the east, aligning with the location of the wadjet eyes that decorated the exterior of the outer rectangular coffin (Daressy 1900:39).

The recovered anthropoid coffins from the Middle Kingdom have been found in a similar context: they were always placed within an outer rectangular coffin (Grajetzki 2014b:103), and were usually found lying on their side, as if staring out of the eyes painted on the outer coffin's exterior. Mace and Winlock (1916), some of the earliest scholars to discuss the appearance of the anthropoid coffins, asserted that they were likely an elaboration on the popular concept of the cartonnage body wrappings and mummy mask, and should still be seen as a "realistic envelope for the body" (54). In other words, they were likely much closer ideologically to the mummy and its wrappings than the outer rectangular coffin, which seems to have functioned as a secondary tomb of the deceased, or the eternal dwelling (see further chapters 4.II and 4.III; Taylor 1989:8). Just like cartonnage and mummy masks, the early anthropoid coffins were decorated with faces, and usually with designs that resemble wrappings, which makes Mace and Winlock's

interpretation all the more convincing, and has gained general acceptance among Egyptologists (Garstang 1907:174; Taylor 1989:25; Grajetzki 2016b:43).

The wood that was chosen to construct the early anthropoid coffins is rarely identified, but the few analyzed examples are all made of local wood. For the assemblage of Senebtisi, Mace and Winlock found two rectangular coffins and an inner anthropoid coffin. As noted in chapter 4.III, one of the two rectangular coffins was made of local hardwood, while the other was constructed from cedar (MMA 08.200.45a-b; Mace and Winlock 1916:40; Grajetzki 2014:20–23). The inner anthropoid coffin was extremely fragmentary, but the excavators were able to reconstruct a coffin made from a number of long, joint planks of local wood "probably syc[o]more-fig", carved into the shape of the human body, and decorated with gilding (Mace and Winlock 1916:40). The excavators suggested that the coffin was completely covered with gold, but as it was entirely reconstructed, to the point where Mace and Winlock were originally unaware that the object was a coffin (Mace and Winlock 1916:17, 47), this interpretation must be questioned. It would be the only wooden coffin so far recovered from the Middle Kingdom to be entirely gilded. While this is of course possible, it is more likely that the inner anthropoid coffin was selectively gilded, as was frequently the case at this time (for example Cairo JE 32668/CG 28084, MMA 12.183.11c).

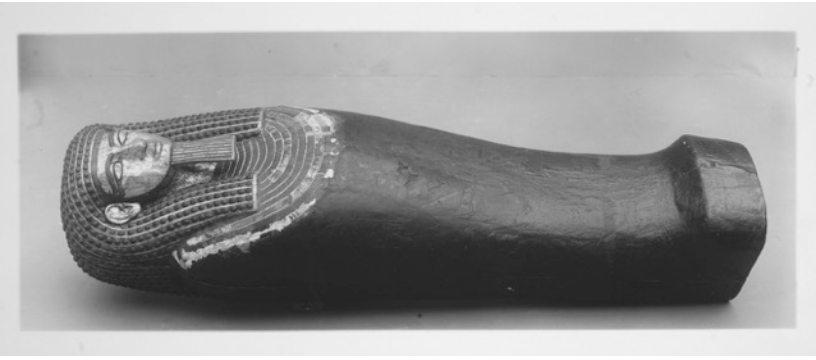


Figure 90: The anthropoid coffin of Hapiankhtifi. Metropolitan Museum of Art 12.183.11c. ©Metropolitan Museum of Art.

There is additional evidence in the late 12th and early 13th Dynasties, for examples of anthropoid coffins created with a lid and base each made from a single piece of wood. This is illustrated by the coffins of Hapiankhtifi, where the inner anthropoid coffin was hollowed out of sycomore fig logs (fig. 90; MMA 12.183.11c), placed in two outer rectangular coniferous wooden coffins, that were constructed in a relatively traditional manner (see chapter 4.III; MMA 12.183.11a, b; Mace and Winlock 1916:40, n.1). The face of the anthropoid coffin is gilded, and artists painted on a broad collar as well. The rest of this coffin is covered in black resin or bitumen.

Figure 91: Anthropoid coffin of Userhet. Fitzwilliam Museum, Cambridge E.88.1903. © The Fitzwilliam Museum, Cambridge.

A slightly more humble example of the hollowed-out anthropoid coffin belongs to Userhet, who may own one of the earliest examples of this construction type (Garstang 1907:174). This individual, whose titles indicate that he was a soldier or warrior "*ḥr.ty*", had an outer rectangular coffin made of joint planks of wood, which have not yet been identified (Garstang Museum E.516), and an inner anthropoid coffin (fig. 91; Fitzwilliam Museum E.88.1903) with a lid and base each made from a single piece of sycomore fig (Dawson and Strudwick 2016:162). Tool marks indicate that the carpenters hollowed out the interior with axes, adzes, and chisels. No attempt was made to smooth out or cover up these tool marks, and the interior was never painted. During the construction of the base, the carpenters cut in too deeply, causing the wood on the coffin's left side to split. They repaired the coffin by sewing up the crack with rawhide or sinew lashes, and applying a thin layer of linen and paste over top (Dawson and Strudwick 2016:162–165, fig. 90). The artists then painted the exterior of

the coffin white, likely to imitate the linen bandages applied to mummies. The face was painted black, with a blue wig and colourful collar, which resembled the mummy masks seen at this time, and were likely a reference to Osiris. Finally, the artists added a single band of inscription down the front of the lid with Userhat's name and titles. From the exterior, the coffin looks very well crafted and decorated, with no evidence of the mistakes visible on the interior. The errors made during this production may indicate that this piece should be seen as belonging to the experimental phase of the development of the anthropoid style. The detail and finishing stages indicate that the carpenters who constructed this object were skilled and knowledgeable about their craft, but may not have had experience creating this style of coffin. Other examples of hollowed-out anthropoid coffins made of local wood, and placed in outer coffins of local wood are known, including the 12th Dynasty coffins of the "two brothers", Nekhtankh and Khnumnakht from Deir Rifeh, now at the Manchester Museum.

Clearly, a number of anthropoid coffins are found in Egypt in the 12th and early 13th Dynasties, largely in Middle Egypt with a few additional examples seen at Meir and Thebes; however, rectangular coffins remain the norm at this time (see chapter 4.III). The few early anthropoid coffins that have been recovered are found in the burials of relatively high status, titled individuals, and are clearly valuable objects. Each example is expertly crafted, and although occasionally mistakes in construction are made, as seen in the coffin of Userhet, the final appearance of these objects is perfect, with the face and features appearing symmetrical and detailed. The move from cartonnage and a mummy mask to a full wooden anthropoid coffin was likely a symbol of status, demonstrating the ability to incorporate additional materials into the burial. In the case of the hollowed-out coffins, this statement is even stronger. These coffins indicate the ability to find a single piece of local wood that was large and flawless enough to

carve into a coffin lid or base, which would have been very difficult to accomplish. As noted in chapter 2.II, local Egyptian trees rarely grow straight, and tend to be full of twists and knots. In addition, wood was rarely wasted in Egypt, as it was seen to be relatively precious. The hollowed-out method demonstrates the ability of its owner to waste much of the discarded material removed during the construction process. These examples should therefore be seen as being particularly prestigious, and were certainly made by skilled craftspeople.

The nature of the hollowed-out coffins also suggests that input from carpenters would have been of particular importance at this time. Only an individual that had significant experience working with trees and timber would have been able to advise on which trees should be selected to be hollowed out – those that were least likely to be full of twisted, knotted wood. As demonstrated by the undecorated cedar coffins of the Middle Kingdom (chapter 4.III), construction materials were particularly valued at this time, and fine construction techniques were clearly appreciated. It is therefore also likely that carpenters had a significant impact on the introduction of the anthropoid style and hollowed-out construction method, as they would have been uniquely aware of the scarcity and value of such high quality local woods. This further suggests that the opinions and knowledge of craftspeople were respected, and may have been discussed among high status individuals. In addition, the fact that this style of construction was largely used for individuals buried in Middle Egypt may indicate that both the owners of these coffins and the craftspeople were in contact and competition with one another, and that this style may have begun as a provincial innovation.

Despite the frequent examples of an inner anthropoid coffin, they are still very rare relative to burials that did not include this style of object (see table 1), indicating that they did not become popularized during the Middle Kingdom. Throughout the 12th and 13th Dynasties,

there is no indication that this style was ever adopted by kings, as demonstrated by the existence of the rectangular cedar coffins and a mummy mask in the burial of later 13th Dynasty king Wahibre Hor (see chapter 4.III). In addition, although many quality examples belonged to high status individuals, anthropoid coffins have not yet been found in the burials of individuals who had stone sarcophagi – further suggesting that they were not adopted by the wealthiest individuals at this time. It is therefore possible that if the political, and accompanying social and material, instability of the Second Intermediate Period had not arisen, the anthropoid coffin trend could have died out without ever catching on, and Egypt would have never produced the famous and admired anthropoid coffins of the New Kingdom.

THE 17TH DYNASTY AND *RISHI* COFFINS: AN OVERVIEW

The name *rishi* is a modern term, borrowed from the Arabic word for 'feathered', and refers to the illustrated wings that decorate the surface of this style of coffin (Miniaci 2011:23). These coffins are associated with the Second Intermediate Period, and are not particularly admired in the field of Egyptology. They are frequently referred to as "ungainly", of "mediocre" quality and "crudely shaped and poorly detailed" (Stadelmann-Sourouzian 1984:267; Taylor 1989:28; Miniaci 2011:23). Perhaps due to these negative views, the coffins have received only limited interest in the past. The only volume that discusses these objects in detail is that by Gianluca Miniaci, published in 2011. It serves as a very useful discussion of the evolution of the decoration, and a catalogue of the majority of known examples and find sites; however, it falls short in its discussion of the materiality of the coffins, and in so doing, Miniaci fails to adequately understand the significance of their position in the development of Egyptian coffins and construction techniques. This oversight is largely due to the fact that coffins are classified as *rishi* due to the presence of the feathered decoration, and therefore, by definition, are not seen to

be related to coffins that are otherwise decorated, or are undecorated altogether. By focusing instead on their construction, *rishi* coffins align perfectly within the innovation and adoption of the anthropoid style, revealing the choices of artists, carpenters, elite patrons, and kings as they adapted to scarcity and social change.

Rishi coffins are anthropoid in shape, buried singularly, without an outer coffin, and were mostly constructed from local wood. The classic examples, from the beginning to late 17th Dynasty were created in Thebes during the period when Levantine goods were not reaching southern Egypt. This means that imported cedar wood was no longer available for the Egyptian elite to construct flawless, large, rectangular coffins. Left with local wood, the elite needed a new way to demonstrate access and prestige, and so they turned to a not uncommon, although not yet popular, method used by the high status individuals of the private sector in Middle Egypt: they began to carve anthropoid coffins from large logs of local wood. It is possible that both the carpenters and their patrons knew that even the biggest and best quality pieces of local wood could not be used to create rectangular coffins that could compete with the straight, geometric perfection afforded by previous cedar examples. The twisted, curved, local trees lend themselves better to anthropoid style coffins, and so may have been viewed as the only acceptable alternative style to demonstrate status; therefore, in the 17th Dynasty, for the first time, kings adopted and adapted the anthropoid shape and *rishi* decoration method for their coffins, and immediately, this became the popular method of construction for coffins among the Egyptian communities living in Thebes.

It is clear that this style of coffin emerged out of the high status burial practices of the Middle Kingdom, but it is likely that there were a number of iterations between the mid-13th Dynasty examples and those of the 17th Dynasty kings. Just how many, however, is uncertain.

There are very few examples of *rishi* coffins known before these royal pieces, but evidence of their existence does, or at least did, survive to the modern era. During the 13th Dynasty, the "accountant of the main enclosure" Neferhotep, was buried in Thebes in a coffin that was originally described by the excavator Mariette as, "l'espèce dite richi" – "the so-called rishi type" (Mariette-Bey 1872a:6). While the early date of the burial has been largely confirmed (Miniaci and Quirke 2008:24; Miniaci 2011:116–117), Mariette did not explain what he meant by this description, and he did not include an image in his publication or recover the coffin; we are therefore left to interpret this to mean that he found a fragmentary coffin with feathered decoration, which had been central to his previous definition of the term (Mariette-Bey 1872b:39–40; Miniaci and Quirke 2008:12–13). He also does not suggest whether or not the coffin was anthropoid.

Another early example uncovered by Winlock was found in a tomb belonging to an "overseer of the city" Iuy, which likely dates to the 13th Dynasty (Winlock 1923:31; Miniaci 2011:117). Winlock describes finding the coffin assemblage, but again provides no images and did not recover the fragments: "In the tomb there was a jumble of boards from Yuy's sarcophagi on which we could still read his name and rank, and fragments of a gilded wooden coffin covered with the feather pattern which became so fashionable shortly afterwards in the XVII dynasty" (1923:31). Judging from the vocabulary used in this passage, it is likely that Winlock recovered a transitional late Middle Kingdom example, where outer rectangular coffins were still part of the assemblage, while the feathered decoration had already become part of the local Theban variation of early anthropoid coffin styles. The extent of the gilding and feathered decoration is no longer possible to assess. The majority of 13th Dynasty coffins recovered from

Thebes continue to be the standard rectangular variety (as discussed in chapter 4.III), and so the anthropoid *rishi* does not seem to have caught on as the popular style at this point.

These early examples suggest that both the construction and the decoration of *rishi* coffins began prior to the Second Intermediate Period, but our understanding of their development is further complicated by the uncertainty as to the gap in time between the end of the 13th Dynasty and the beginning of the 17th. Originally, this was believed to have been a timespan of a full dynasty, the Theban 16th, suggested to have lasted almost 100 years; however, evidence is quickly accumulating to suggest otherwise. The kings described in the Turin Canon that have previously been identified as the the 16th Dynasty (Ryholt 1997), may actually refer to a number of local rulers from throughout Upper Egypt, and may have only separated the 13th from the 17th Dynasty by a few years, if at all. Finds at Edfu, for instance, may suggest that the Second Intermediate Period was much shorter than previously believed, and that a number of dynasties were contemporary, rather than ruling in succession (Moeller et al. 2011:109). While this is still highly debated, and additional evidence is necessary to clear up the chronological confusion, it would certainly explain the puzzling gap in the evidence for coffins between the 13th and 17th Dynasties in Thebes.

Figure 92: Coffin of Nubkheperre Antef. British Museum EA 6652. ©Trustees of the British Museum.

TECHNICAL DESCRIPTION OF THE CONSTRUCTION OF *RISHI* COFFINS

The coffin of Nubkheperre Antef was found in Dra Abu el-Naga in Thebes, and is now in the British Museum. It is the earliest known royal example of a *rishi* coffin (fig. 92; EA 6652; Davies

1995:147-8; Miniaci 2011:70, 213).[54] The lid of the coffin was made from a single piece of sycomore fig wood, with the addition of a uraeus, which is no longer in place (Quirke 1994:275). The base is also largely made of a single piece of wood, with the addition of a few pieces towards the feet, connected by means of a large wedge-joint (fig. 93). The carpenters or team of carpenters working on this object were clearly skilled and experienced, and the piece of sycomore wood used for the lid is of unusually high quality. There are no visible faults in the wood, suggesting careful selection by an individual with significant knowledge about the local trees of Egypt. The craftspeople skillfully carved precise facial features into the lid, and finished the entire object carefully, leaving no visible tool marks. After the wood was prepared, the surface of the coffin was covered with a very thin layer of paste, before being entirely gilded with a thin layer of gold. At this point, the detailed feathered decoration, and a single, central column of hieroglyphic inscription was incised into the decoration. The 'm' owl hieroglyph in this text has no legs, demonstrating the continued practice of disabling potential harmful characters. An image of Isis and Nephthys also appears on the foot of the coffin. As no decoration is visible on the exposed, underlying wood of the lid, these details were clearly accomplished only after the paste and gold were applied. Painters then added details in blue pigment. The layers of added decoration are so fine, that the lack of joints and faults in the wood would have been clear. Black and white stones were also carved into the shape of eyes and inlaid

Figure 93: Wedge joint on the case of the coffin of Nubkheperre Antef. British Museum EA 6652.

[54] It should be noted that while the inscriptions on the coffin designate the owner as *a* king Intef, that it is Nubkheperre Intef cannot be known for certain; however, it seems the most likely identification after comparisons with other objects and references to the king (Quirke 1994: 276; Miniaci 2011: 21).

in the face of the coffin. The base of the coffin was much more simply finished with a coating of paste and blue paint.

The exceptional work accomplished by craftspeople to produce this coffin is evident, and would no doubt have been admired in any period in the history of Egypt. This therefore serves as clear evidence that skilled craftspeople with significant experience were still in operation at this time. In addition, the added gilding, the inlaid stone, and the ability to create blue pigment suggest the continued existence of multiple technological workshops, whose members worked together to produce complete objects. I also believe it likely that a master craftsman who would have had a working knowledge of how to shape multiple materials oversaw this work. Finally, a very similar coffin was created for king Sekhemre Wepmaat Antef, perhaps the brother and successor of Nubkheperre Antef (Ikram and Dodson 1998:204; Miniaci 2011:119). This coffin (Louvre E. 3019) was also found at Dra Abu el-Naga, and the similarity in construction and decoration suggests that the same community of practice was at work. The features of the face and wig, shape of the body, and execution of the decoration are very similar. The individuals who made the second coffin would have had to be particularly familiar with the earlier version, and may serve as evidence of an attached group of royal craftspeople. The number of hours that would have gone into all the stages required to produce such a carefully crafted coffin certainly demonstrates that full-time, specialized carpenters served the king in the Second Intermediate Period.

This king, or perhaps his predecessors whose coffins have not yet been recovered, adopted both a style and construction method that was initiated by private individuals. They were clearly interested in acquiring an excellent piece of wood, which would have been difficult to find – even more so than in the Middle Kingdom, when the Egyptian elite had a larger selection

area from which to choose. It would also be more time consuming and difficult to sculpt an anthropoid shape and detailed face than it would have been to construct a rectangular coffin, again attesting to the high artistic ability evident in this royal example. These two features – rare, high quality materials and superior craftsmanship – allowed the kings and the elite who followed their example to compete with one another in the funerary sphere at a time when imported cedar was no longer available. In addition, the kings went one step further, and covered their coffins with gold, instead of highlighting specific areas such as the face, adding a clear statement of value and access.[55]

Figure 94: Coffin of the "Qurna Queen". National Museum of Scotland, Edinburgh A.1909.527.1. ©National Museum of Scotland.

With the adoption of the *rishi* anthropoid coffin by the Egyptian kings, this style immediately became popular, and was used by individuals from throughout the social hierarchy, initially alongside the continued use of rectangular coffins. A coffin now in the National Museum of Scotland (fig. 94; A.1909.527.1 A), was found in a tomb in Gurna at Thebes. Due to the value of the associated finds and its relative proximity to other royal burials, it has been suggested to belong to an unnamed queen, or at least a female member of the royal

[55] Where the gold was coming from at this point is not well known. As Thebes also did not have access to the Nubian gold mines during this period, there are only two options available: either the gold was reused, or it was mined locally. While reuse is certainly a possibility, it then raises the question why the cedar wood from coffins was not also reused – it seems likely that if they were willing to reuse the gold from the tombs, they would have reused the cedar as well, as seen in the Third Intermediate Period (see chapter 4.VI). Gold may instead be coming from the mines in Egypt's Eastern Desert. Rock inscriptions from the Wadi Hammamat contain the names of Sobekemsaf II, a Seventeenth Dynasty king, indicating that the Theban rulers continued to have access to this area (Ryholt 1997:174). This makes it likely that gold was coming form the Eastern desert.

family (Petrie 1909:6–7; Eremin et al. 2000:37).[56] The lid of the coffin is made of a single piece of tamarisk, while the base is sycomore fig with dowels of acacia and sidder (Eremin et al. 2000; Manley and Dodson 2010:23; Miniaci 2011:141). There are very few visible faults in the wood in general, but the presence of twists and knots are likely, judging from the awkward, asymmetrical execution of the headdress and face. The face seems to have been difficult to carve, and while the carpenters added in some contours, the cheeks, jaw and neck blend unnaturally into the body of the coffin. The lips are small while the nose is large, and the eyes are also slightly unbalanced. To make up for the lesser quality of the wood, the craftspeople covered the coffin with large amounts of gold and blue pigment, underscoring the great expense associated with the manufacture of the coffin. The owner of this coffin clearly felt that it was more important to include a single piece of wood in the construction of this object, than to add together multiple pieces to avoid the flawed appearance of the headdress. This therefore demonstrates the willingness to sacrifice precision and detail in order to have that single piece and enter into the means of competitive display popular at the time.

Figure 95: Anonymous *rishi* coffin. British Museum EA 6653. ©Trustees of the British Museum.

Two other anonymous *rishi* coffins in the British Museum are not gilded. The first (fig. 95; EA 6653) was mostly carved from two logs of sycomore fig, and was found in Thebes (Davies 1995:148). The lid of the coffin is entirely carved from a single log of sycomore, and is almost symmetrical, if leaning slightly to the left. The wig is rounded, and over large. The facial features are well

[56] Aidan Dodson has also noted that upon close inspection the faint title *Hm.t nsw* appears to be visible on the coffin lid (personal communication).

carved, though the face itself is rather wedge-shaped. The case is almost a single piece of wood, with three additional smaller pieces needed to fill out the base of the foot area. On the back of the case, the lines of the wig have been added. The exterior of the entire coffin has been smoothed, plastered, and painted with the *rishi* pattern. There is a line of inscription down the center of the lid, with the standard *ḥtp-dỉ-nsw* offering formula. Unfortunately, the text is indecipherable just where the name would begin. This area, as with much of the coffins has been discolored black. This does not seem to be intentional, but due to age or perhaps smoke in the tomb. On the foot end, two female deities kneel on *neb* signs. Much of the decoration of the case has not survived. The interior is largely undecorated, and rough axes or adze marks are still visible. In some areas, plaster or paste has been added, apparently to fill cracks. This coffin suggests that individuals who may not have been able to afford gilding still desired a single log of wood for their coffin lid and case.

Figure 96: Anonymous *rishi* coffin. British Museum EA 52951. ©Trustees of the British Museum.

The other anonymous individual's coffin in the British Museum (fig. 96; EA 52951) was found in Thebes, as part of an intrusive burial in Birabi (Taylor and Strudwick 2005:50). This example is made largely from a single piece of sycomore fig, but several pieces have also been joined together for part of the front and the sides. With the ability to combine multiple pieces of wood, the carpenters are able to form this piece more precisely. The body of the coffin is well shaped, and the wig and face are symmetrical. The face, however, does not include a significant amount of

detail. The *nms* headdress, *wsḫ* collar and feathers all have added features, though they are not very precise. On the foot of the coffin are two figures of Anubis in his jackal form, and a fragmentary image of possibly Isis and Nephthys. This example likely belonged to an individual of lower socio-economic status than the two just described. He or she was unable to include the additional layers of gold gilding. It is striking, however, that although this individual was unable to find or afford a single piece of local wood, they still opted to include the largest piece available, and build up the missing pieces, rather than return to traditional construction methods. Again, this suggests the practice of including as large a piece of wood as possible was central to demonstrating status at this time.

Undecorated *Rishi* Coffins?

A number of additional anthropoid coffins produced during the Second Intermediate Period are exactly the same shape and construction as the examples traditionally viewed as *rishi* coffins. They have not been included in previous discussions of these objects because, since they do not have feathered decoration, they are not, by definition, *rishi* coffins. These undecorated objects may have been intended for decoration but were unfinished at the time of their burial, or may have been produced by individuals of lower socio-economic means who could not afford the added expense of decorating their wooden coffins. The addition of these examples in this discussion helps to demonstrate the adoption of the anthropoid coffin by an even larger proportion of the population than previously recognized. Many of these pieces were found lying close to decorated *rishi* coffins, making their relationship to this time and style more certain. Unfortunately, however, extant examples of these coffins are rare. References appear in excavation reports, but, probably due to their lack of decoration, they often do not seem to have been recovered. It is also possible that, once removed from the site, they were disconnected from

their context, making it difficult to date and source, and so also very difficult to locate in museum records. Nevertheless, there are enough surviving examples to show that they were a relatively common feature of Second Intermediate Period burials.

Many of the *rishi* coffins known to us today were published in Carter and Carnarvon's *Five Years' Excavation at Thebes* (1912). These coffins, found in the Lower Asasif in Thebes, were discovered alongside rectangular coffins and what the authors refer to as "dug-out" and "plain anthropoid" coffins. In what was published as tomb 37, 64 coffins were found in total, ranging in date from the later 12th Dynasty through to the early 18th (Carnarvon and Carter 1912:8, 64). Two of these pieces (nos. 37 and 58) were "dug-out" coffins, "exceedingly rough, and cut out of tree trunks". Another four (nos. 5, 29, 38, and 47) were described as "plain anthropoid coffins". These coffins were all dated based on associated scarabs to the late Second Intermediate Period or early 18th Dynasty (Carnarvon and Carter 1912:65–68). Only four of the dug-out and plain anthropoid coffins were published with photographs, and it is unclear where they and the rest are currently located. This limited information, however, suggests that these six objects should be considered undecorated *rishi* coffins belonging to lower status individuals.

Two other coffins found in tomb 29 by Carter and Carnarvon, demonstrate their clear affinity to *rishi* coffins (1912:61, pl. LIII.4). These pieces have the same anthropoid shape, with angular headdress, and straight lapettes carved into the wood. A flat footboard seems to have been attached to the otherwise single piece of timber. Both have facial features carved into them, while the larger of the two also has slightly defined legs, as seen in the better quality examples of *rishi* coffins, including that of king Nubkheperre Antef. The carpenters seem to have finished this coffin particularly carefully, and the facial features are very well defined. Decoration is therefore the only difference between this coffin and those labeled as *rishi*.

A number of the plain anthropoid coffins belonging to children, found by Carter and Carnarvon, made their way to the Cairo Museum, including the anonymous piece TR 9.12.32.1 (Miniaci 2011:26, fig. 21). This example is much more roughly made, and probably represents an example created for a member of lower socio-economic status than the *rishi* and undecorated examples so far discussed. While carpenters clearly shaped the body carefully with adzes, less care and attention was used to carve the face. Here, as described by Paul Whelan, just as with the construction of the shabti at this time, craftsman removed a "wedge-shaped section of timber...creating an undercut which defined the chin-line of the face and, at the same time, accentuates the upper chest" (Whelan 2007:27; Miniaci 2011:24). Rough chisel marks used to carve the face are still visible in the wood. The carpenter at work on this piece cut too deeply near the chin as well as the feet. Holes formed here, either during construction or afterwards, when the thin layer of remaining wood fell away. Although of lesser quality, the individual depicted through this coffin is largely similar to those on decorated *rishi* coffins, except that the carpenter did not carve any additional lappettes into his or her headdress. It should be kept in mind that the family of this individual was still able to afford a large tree trunk for his or her coffin, and so still had some disposable wealth. A very similar coffin to this is also currently at the Egyptian Museum (TR 9.12.32.2), exhibited in the same display case. Another smaller example is also in the same case, but with facial features suggested through roughly carved triangles instead of more realistic features (TR 9.12.32.3).

Figure 97: Anonymous *rishi* coffin. UE 1006, object no. 2102. (Galán and Jiménez-Higueras 2015: 113, fig. 16)

Two undecorated coffins belonging to children were found more recently alongside a decorated *rishi* coffin in Dra Abu el-Naga (Galán and Jiménez-Higueras 2015). Both of these small coffins were made from sycomore fig, and the lid and case of both were made from a hollowed out log. One of these coffins (fig. 97; UE 1006; object no. 2102), described as belonging to an eleven-year-old boy, was partially broken at the feet, but the rest of the coffin is intact (Galán and Jiménez-Higueras 2015:113). The carpenters shaped this example using the "wedge" method just described (for TR 9.12.32.1). Again, a wig is only partially indicated, finished without lapets. In this example, only the basic shape of the face has been carved, without additional features. Axe and adze marks are still visible, indicating that the carpenters chose to leave the surface relatively rough, though well-shaped.

Figure 98: Anonymous undecorated *rishi* coffin. (Galán and Jiménez-Higueras 2015: 115, pl. XXI)

The foot end of the case of the second child's coffin necessitated the addition of a small piece of wood, but is otherwise a single piece of sycomore fig (fig. 98; Galán and Jiménez-Higueras 2015:115, pl. XXI).[57] The carpenters used the same method of construction as the previous example, but more features are indicated. This piece has a larger wig with lapettes, and the eyes, a nose, and a mouth are present, though roughly carved. Again, axe, adze and saw marks are visible, showing that the carpenters felt no need for finishing processes. In this example, a fine white wash covers the exterior of the coffin, but no additional layers of decoration were added. Carter and Carnarvon mentioned that they too found Second Intermediate Period anthropoid coffins belonging to children in the Asasif. The excavators do not describe these coffins in detail; however, they did note that none of the "numerous small coffins" were decorated (1912: 69), though some seem to have been white-washed like this Dra Abu el-Naga example. No. 40 from Asasif, for instance, is described as an "anthropoid dug-out child's coffin. Painted white and very roughly made" (1912: 79).

[57] No object number was given by the excavators for this second coffin.

Although these children's coffins appear to be of a lesser quality than decorated, gilded adult examples, the parents (or whomever paid for the burial) were still clearly able to afford a large single piece of wood. Additionally, the children found in Dra Abu el-Naga were wrapped in several layers of high-quality linen (Galán and Jiménez-Higueras 2015:114–115), while one of the Asasif children was buried with faience and gold beads (Carter and Carnarvon 1912:86, no 84). These additional valuable materials demonstrate that the owners had considerable disposable resources. It is likely that providing this material not only allowed parents to feel that their children were provided for in the afterlife, but also allowed them to display their status by commissioning these objects for their children. Again, these coffins are exactly like the *rishi* coffins in form and construction, and so should be seen as evidence of the further popularization and diffusion of the anthropoid coffin style at this time.[58]

The Return of Cedar and the New Kingdom Anthropoid Coffins

In the last few years of the 17th Dynasty, changes can be seen in the construction methods used to create anthropoid coffins. Under the reign of king Seqenenre, limited amounts of cedar are available, likely due to the beginning of this ruler's press to the north and raids against the Hyksos. Although this material does not seem to be widely accessible, the coffins of the king and his wife, Ahhotep, are made of *Cedrus libani* (Cairo Museum JE 26209/CG 61001; JE 28501; Daressy 1909:1; Miniaci 2011:224-225). These two coffins look remarkably similar, and their original construction is believed to be fundamentally identical, except for the treatment of the headdress and face (Winlock 1924:251, n.5), though Eaton-Kraus (1990:201) suggests that the coffin of Seqenenre may have been partially restored in antiquity. Ahhotep's coffin is therefore described here, as the more reliable of the two.

[58] The Dra Abu el-Naga excavators, Galan and Jeminez-Higueras, also suggest that these pieces should be understood as *rishi* coffins (Galan and Jeminez-Higueras 2015: 113).

The original excavator of Ahhotep's coffin (fig. 99), Mariette-Bey, commented on the similarity of its size, shape, and appearance to the coffins of the Antef kings, which were carved from a single piece of local wood (1859:34). On close examination, however, von Bissing was able to show that the lid of this later coffin was actually constructed from at least 12 pieces of joint cedar wood, including a particularly large, central panel (1900:22, pl. XII.5-7). The pieces were likely partially carved for the anthropoid shape before being joined, after which the carpenters smoothed down the edges to allow for a flawless finish – a method that became common practice. After the carpenters joined all the pieces together and finished the surface, the craftsmen applied a very thin layer of paste before gilding the entire piece. The detailed feather decoration and column of inscription were then incised, just as was seen on the coffin of Nubkheperre Antef. The eyes are stone, inlaid into golden frames (Miniaci 2011:30 n. 201). Finally, the interior of the coffin was finished with a black layer of what von Bissing refers to as bitumen. He also notes that the gilding and bitumen made it very difficult to make out any joints in the wood, and it was not until his careful analysis that Egyptologists realized that this coffin was constructed in an entirely differently manner from the earlier *rishi* examples (von Bissing 1900:22). Ahhotep also uses a new style of Hathoric wig for her coffin, very different from the usual *nemes* style. This became

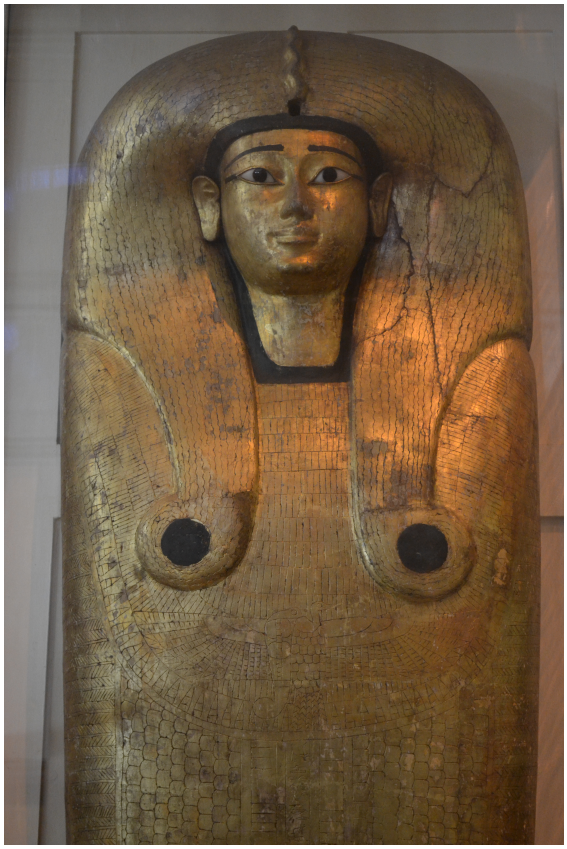


Figure 99: Coffin of Ahhotep. Egyptian Museum, Cairo JE 28501.

popular in late 17th Dynasty and early New Kingdom coffins (for example, MMA 12.181.300, MMA 23.3.461; see chapter 4.V).

With the return of cedar, royal coffins were once again crafted from this prestigious material; however, the Egyptians do not return to the use of rectangular coffins, demonstrating that the anthropoid style was now the most fashionable. With the use of cedar there is no longer a need to hollow out a tree trunk, as simply gaining access to this precious timber sent a clear message about the high status of its owner. Even with the return of cedar, however, Ahhotep's coffin is still completely gilded. This may seem counterintuitive, as one might expect that the Egyptians would want to celebrate their renewed access to this important material. It is likely, however, that since this had become such a central aspect of the high-ranking coffins, adding these highly visible aspects of decoration were now considered necessary. It is unlikely that cedar was seen as any less valuable than it was in the Middle Kingdom, in fact, after going so long without any access, cedar was likely seen as being particularly desirable at this time. Records from throughout the New Kingdom demonstrate the high value that continued to be associated with this material.[59] The Egyptians had no qualms about covering expensive materials with paint, as is frequently seen in the case of painted statues made of imported stone (Baines 2007b:272). It was simply important to have the best. *Rishi* decoration continued into the beginning of the 18th Dynasty for private coffins, and remained popular for royalty throughout the pharaonic period.

The drive to use the dug-out method of construction for private coffins also faded after it was abandoned by royalty and the highest ranking elite who now had access to cedar. While it was used throughout the New Kingdom, it was sporadic, generally reserved for coffins of those

[59] One of the most famous literary tales from the end of the New Kingdom, the tale of Wenamun, describes the efforts that this individual went to in order to bring cedar back to Egypt to build a royal ship for Amun, highlighting that this timber continued to be particularly prestigious at this late date.

belonging to the lower elite, and is not used in combination with gilding. Despite the change in construction materials and techniques, the anthropoid style had become dominant, and would remain so through to the end of Egyptian history.

DISCUSSION

The Diffusion of Innovation

Despite the fact that the anthropoid coffin emerged during the late Middle Kingdom, it does not seem to have become popular until the 17th Dynasty. The explanation for this slow adoption is perhaps best explained through the work of Everett Rogers, discussed in the introduction (1962; see also Shortland 2004:4–6; Miniaci 2011:149–153). As a reminder, Rogers suggests that innovations pass through five steps as they are adopted and begin to diffuse through society. He has named these steps, "(1) knowledge, (2) persuasion, (3) decision, (4) implementation, and (5) confirmation" (1962:20). In addition, there are five factors that affect the rate of adoption: relative advantage, compatibility, complexity, triability, and observability (1962:15-6).

The diffusion of innovation model helps to describe the rate of the adoption of the anthropoid coffin. In the late 12th Dynasty, when anthropoid coffins were first adopted, they would have been visible, and so knowledge would have been present. Coffins were carried in processions to the tomb, followed by an entourage of mourning family members, friends, and object bearers. At this early period, however, few potential adopters reached the decision, implementation, and confirmation stages. The rate of diffusion factors help to suggest why this was. Compatibility, complexity, and observability were probably not an issue. As an extension of the mummy mask and cartonnage body wrapping, the anthropoid coffin was perfectly in keeping with the religious actions and values that characterized Egyptian funerary beliefs of the late Middle Kingdom, and therefore compatible with the *habitus*. The anthropoid coffin was also not

particularly more complex, and, as already noted, coffins were regularly visible in this society. In this case, triability, being impossible for any style of coffin, is unlikely to have made a significant impact on the rate of adoption. This leaves only the perceived relative advantage, and this is the most likely factor to slow the adoption of the anthropoid coffin.

Only a specific segment of society may have seen the innovation of anthropoid coffin construction as advantageous in the late Middle Kingdom. The adopters would have had to be individuals who had enough resources to craft an additional, relatively unnecessary inner coffin from local wood, but who were also unable to afford more elaborate means of communicating status. Perhaps the wealthy Egyptian elites who could afford to commission the creation of stone sarcophagi and multiple rectangular cedar coffins did not see an inner anthropoid coffin of local wood as a significant potential feature of their funerary assemblage. In addition, as an outer rectangular coffin was a more important staple for the burial, those who could only afford a single coffin, chose to continue with this object. Finally, as the king did not see the innovation as an advantage, and so much of fashion and style seems to have been based on royal tastes, most of society did not feel the need to incorporate this object in their burials. It therefore remained in use for a select few individuals who competed amongst themselves to demonstrate status. This sentiment changed, however, as society destabilized.

In addition to the loss of cedar after the 13th Dynasty, wealthy individuals were also not able to afford stone sarcophagi. One of the few exceptions is seen in the tomb of Nubkheperre Antef, but even in this case the sarcophagus was hewn out of the living limestone in his tomb and may have been reused. The drop in the use of stone sarcophagi is likely due to a combination of a lack of disposable resources from trade and offerings from Nubia and the Near East, and the lower availability of the stone itself. In any case, without these additional options, the adoption

of anthropoid coffins, as well as construction from a single piece of local wood, became the most viable option for demonstrating access and prestige. As this style of construction is now advantageous, it is adopted by the highest ranking elite, including the king, the most powerful and influential member of society. With the added approval and confirmation visibly expressed by royal adoption, there is no longer any impediment for the diffusion of the hollowed-out anthropoid and *rishi* coffins, and they move through all the socio-economic divisions of society who had at least enough wealth for the creation of a single coffin. This lasts until the return of cedar, which nullifies the advantage of construction from a single piece of local wood, but does not affect the value of the anthropoid shape. As this had become customary, and there was no clear advantage to returning to a rectangular shape, the anthropoid style remained while the technology of its construction was once again transformed.

Tracking the diffusion of the anthropoid coffin clearly demonstrates that this construction method developed out of innovations begun by (or for) private, non-royal, individuals. It also demonstrates the effect of political change on technological choice and artistic values. Gianluca Miniaci also attempted to use the diffusion of innovation model to show how the *rishi* coffins were developed from private enterprise (2011:149–153); however, he based his discussion on the change in decoration, not construction, and so was ultimately unsuccessful. He suggested that some of the awkward aspects of his argument were due to the fact that the model "was designed to assess technological innovation, which is not the case with *rishi* coffins" (2011:150). Since he does not take the materiality of these objects into account, he is unable to see their place in the development of coffin construction. As he himself noted, there are a number of gaps in the history of the *rishi* decoration, and it is too difficult to see a progression. When the discussion of these objects is extended to anthropoid coffins more generally,

undecorated examples are included that reveal the extent of diffusion into additional levels of society, making the significance of these objects much clearer. Miniaci's instincts about the general origin of *rishi* coffins were correct, the private sector, but it is only visible when viewed as a technology.

The Indirect Impact of Early Anthropoid Coffins

In addition to the anthropoid style, and the now common practice of complete gilding, Second Intermediate Period anthropoid coffins had an impact on a number of aspects of ancient Egyptian life. In the early 18th Dynasty, the practice of private tomb painting was renewed, and once again became a central feature of Egyptian funerary expression. A motif that became popular at the very end of the Second Intermediate Period, and would be found on tomb walls, referenced in texts, and as a decoration of coffins until the end of Egypt's history, was the "Lady of the Sycomore", discussed in detail in chapter 3.I. This epithet frequently refers to the goddess Hathor, but later variations can also refer to Nut, Isis, or Mut. The title itself is not new to the New Kingdom. Cults dedicated to Hathor in her guise, "Lady of the Sycomore" existed at least as early as the Old Kingdom. Several women were buried in Dashur, Saqqara, and in Giza in the late Old Kingdom with the title of priestess in the temple of Hathor, Lady of the Southern Sycomore (Lesko 1999:84).

After the Second Intermediate Period, however, a new image of the goddess reaching out from her tree to provide for the dead became popular, especially at Thebes, where this goddess had not previously been particularly prominent. Although Hathor in this guise is still frequent, there was also now a preference to refer to Nut as the Lady of the sycomore, again, particularly in Thebes. It is possible that the timing of the increase in the popularity of Nut in this guise may be related to the search for excellent sycomore fig trees for coffins of the elite. Hathor and Nut

were seen as goddesses of protection and provision, associations closely related to the function of the coffin as well. Moreover, Nut had been associated with the coffin and tomb since the Old Kingdom (see chapter 3.I). Sycomore fig had become the most important material for the creation of coffins, and so it is possible that the elite began to appreciate Nut as a merged goddess of the coffin and lady of the sycomore.

Related to this rise in popularity, the presence of the Hyksos in the north may also have affected the diffusion of the sycomore goddess cult. Western Asiatic tree goddesses are quite well-known, perhaps in existence from as early as the Neolithic (Ziffer 2010:411). At the site of Tell ed-Dab'a, ancient Avaris, the Hyksos capital, a temple was found, in front of which was a large rectangular altar. Around this altar were tree pits that contained oak trees, and acorns were found on top of the altar. Bietak suggested that this area might therefore have been consecrated to the tree goddess Asherah, who is associated with the oak, and was apparently important enough for the Hyksos to import oak trees to the site (Bietak 1996:36–38; 2003:15–16; Na'aman and Lissovsky 2008:196). These trees would not grow naturally in Egypt, and would have required significant care. It is possible that while the Egyptians in the south were searching for high quality sycomore trees, the Hyksos in the north were popularizing the worship of tree goddesses. When Egypt was reunited, the worship of a tree goddess may therefore have been adapted to the already present cult of the lady of the southern sycomore. The southern Egyptian elite, already primed to laud the benefits of the sycomore in a funerary context may have welcomed the new popularity of the old goddess. While this must remain a suggestion at this time, additional evidence may help to further such a proposition in the future. Nevertheless, the sudden erruption in the popularity of Nut as the Lady of the Sycomore in Theban tombs in the early New Kingdom, immediately following an era when kings had focused on valuable

sycomore trunks for coffins, is unlikely to be a coincidence. This association makes it clear that these more technical aspects of construction, and the search for high quality construction timbers, were capable of having a significant impact on religion.

4.V The New Kingdom Anthropoid Coffin: Elaboration and Display

With the final defeat of the Hyksos and the beginning of the 18th Dynasty, Egypt entered into a period of unprecedented power and affluence. Successive Egyptian rulers pushed their borders further north and south, and established control of surrounding kingdoms. Goods were once again moving freely so that cedar was readily available for the construction of coffins. Throughout this period, the anthropoid style remained dominant, and the impact of 17th Dynasty decoration is evident through the New Kingdom and into the end of ancient Egyptian history. Egypt's new wealth also clearly had an impact on the construction and decoration choices surrounding coffins. The austere perfection seen in the finely crafted, sparsely decorated, rectangular cedar coffins of the Middle Kingdom is rarely seen in the 18th Dynasty. Coffins were, more than ever, a vehicle to display wealth and access. Gold was the decoration of choice, and over time the imagery that covered the coffin became more complicated. The decoration of coffins, similar to the development of tomb layout and painting, became more focused on the individual and their association with Osiris and later as his incarnation as Ra – moving away from the relationship of the king and his ability to stand in as an intermediary. Trends in coffin construction and decoration also no longer followed the royal example. The elaborate coffins of the New Kingdom demonstrate the individuality of people with new levels of wealth and the ability and desire to display personal piety. A greater range of construction choices also demonstrates a new flexibility of carpenters, working to finish the elaborate pieces of funerary art for their patrons.

EGYPT IN THE NEW KINGDOM

King Ahmose was the founder of the 18th dynasty, and what Egyptologists refer to as the New Kingdom. During his reign, the Hyksos were definitively defeated and forced beyond Egypt's borders, an occasion described in the inscriptions from the tomb of Ahmose son of Ibana (Sethe 1906:1–10). The prosperity that came with the renewed unification of Egypt was immediately mobilized to create monuments for the gods in both southern and northern Egypt, a feat that had not been accomplished in more than 100 years (Bryan 2000:209). The biography of the general Ahmose also describes the era that followed the unification, with military success in southern Palestine and into the kingdom of Kush in the south. The early 18th Dynasty coffins are unique, powerful statements of this regained dominance and access to imported materials. Throughout this dynasty, Egypt's wealth and dominance rose to unprecedented levels, and the wealthy elite, in particular, began to compete with one another on a scale that had not previously been possible, as is clearly demonstrated through the materiality of private coffins. King after king continued to meet with success, and it is in this period, in particular, that Egypt began to formally act as an overlord, controlling the movement of resources beyond its borders, and can be legitimately seen as a "rudimentary Empire" (Broodbank 2013:387).

As the empire became increasingly wealthy, so did its people. New positions were necessary to administer the vast resources that Egypt now controlled, and an exceptional number of individuals were now able to afford elaborate tombs and coffins in Thebes or Saqqara (Bryan 2000:261). While viziers and members of the royal family were especially lavish, even craftspeople and soldiers were able to rise as overseers and generals, and bury themselves with considerable wealth and texts that record their privilege. An individual named Kenamun, for example, served in the military under Amenhotep II. He was awarded the stewardship of a naval

dockyard called Peru-nefer. With his fortune, he was able to create a tomb (TT93) with an elaborate substructure, and the texts and images that decorate its walls speak to his wealth and elite lifestyle (Davies 1930). Sennedjem, a much more humble individual, was a craftsman in Deir el-Medina, the village constructed to house the individuals who built the royal tombs in the Valley of the Kings (see chapter 3.II). Although he had few titles other than "servant in the place of truth", he was still buried in the 19th Dynasty in a beautifully constructed and decorated tomb (TT1) and coffin, accompanied by his family and a number of burial goods (see below; Bruyére 1959). Alongside this new wealth, the display of personal devotion to gods continued to rise, and coffins, tombs and other funerary objects were able to act as demonstrations of personal success and piety, increasingly independent from the person of the king.

The changes that had occurred at the end of the Middle Kingdom, which saw the rise of the popularity of Osiris, and the increasing personal devotion to this god, continued through the New Kingdom. Although tomb decoration in the 18th Dynasty continued to be devoted to images of "daily life", the god Osiris is now, for the first time, depicted on the walls of these private tombs. In fact, there is a misconception that these images are far less abundant and focal in the early stages of the New Kingdom then they actually are. Nigel Strudwick (1994:326) states, for instance, that although Osiris does occur, he is "not very prominent", and that "his appearances are most frequently on stelae and lintels, in funeral processions, and in the occasional additional wall scene". In fact, images of Osiris survived on the walls of 83 tombs from the 18th Dynasty, 49 of which do not seem to be from lintels or stelae.[60] The image of Osiris is also found more commonly on important "focal" walls at the end of the 18th Dynasty, where they replace images of the king that had once been central (Hartwig 2004:116). This suggests that the king was less frequently seen as a necessary intermediary between the populace and their gods. It is possible

[60] This estimate is based on the descriptions of tombs by Porter and Moss (1960).

that the broad acceptance of the anthropoid, Osiride coffin during the Second Intermediate Period had caused a shift in the rules of decorum. As the overt Osiride features of the coffins increased, so did the numbers of his illustrations on walls. In addition, the priests that administered the temples of Amun, in control of many of the resources won on campaigns, and those produced by surrounding fertile lands, had also gained considerable economic and religious power by the end of the 18th Dynasty (Assmann 2003:214). As many of the tombs were owned by priests, their personal connection to the gods, and their increased power, may have inspired them to stretch the boundaries of decorum, slowly removing the king as an intermediary. Perhaps this shift away from focus on the king in both daily and funerary religion helped to inspire the drastic changes implemented by king Akhenaten.

By the reign of Amenhotep III, the focus of daily religion was on the solar gods and the king as their representative on earth. Even funerary religion became more solarized as Osiris and Re were seen as aspects of one another, part of a cycle of death and rebirth (van Dijk 2000:265). When Amenhotep IV came to power, he continued to focus on solar religion, until eventually he declared the Aten, the divine aspect of the sun as the solar disk, the true god of Egypt, and shut down the worship of competing deities. Amun, in particular, was erased, and his name and images were removed from temples, tombs, and objects. He changed his name to Akhenaten, and moved the capital of Egypt to the site of Amarna, which he named Akhetaten. Akhenaten also declared himself the only person able to communicate with the god and represent Aten's interest on earth. Individuals should instead worship the king, and pray that their ruler would intercede on their behalf. With the Amarna Period, Akhenaten therefore took religious access out of the hands of the people, and attempted to have the king be, once again, the ultimate intermediary (Hartwig 2004:129; Assmann 2003:218; Redford 1995:175–180). The coffins produced during

this period demonstrate the awkward negotiation of attempting to maintain traditions, while at the same time incorporating new religious and artistic styles.

The discomfort felt by Egyptian society with these changes is evident in the events that occurred after Akhenaten's death. Akhetaten was soon abandoned, and the capital was moved back to Thebes. The so-called Restoration Stele describes the efforts of Akhenaten's successor, Tutankhamun, to re-establish Egypt and bring it back from the brink of political, social, and economic ruin (Bennet 1939). The text likely exaggerates the disorder in Egypt, as the state continued to be powerful and rich; however, the new developments in tombs show that Akhenaten's attempt to return the central importance of the king to private religion utterly failed. Instead, private tombs became miniature temples, where the focus of decoration was on the deceased and their direct relationship to the gods (Dodson and Ikram 2008:218–221; Snape 2011:223). During the Ramesside Period, tomb walls and pillars were therefore covered with images of deities, particularly those associated with Osiris. Having been disillusioned with the role of the king in religion during the Amarna Period, private individuals clearly felt that they were now responsible for worshipping their gods and ensuring a good position for themselves in the afterlife. The shift in coffin styles was not immediate, but shortly after the Amarna period, multitudes of complicated, religious scenes also made their way into coffin decoration.

The Ramesside Period of the 19th and 20th Dynasties was ushered in by Ramesses I, an individual not born of royal blood. During the 19th Dynasty, Egyptian kings continued to win battles, build monuments, and dominate surrounding kingdoms. True unrest, however, began to be seen under the reign of Ramesses III, during the 20th Dynasty. This king fought, and won, battles against the Sea Peoples, a group that had plagued Egypt and the Near East for several generations. They had defeated some of the most powerful Levantine kingdoms, upsetting many

of the Egyptian trade routes and diplomatic relationships. These likely occurred along with environmental shifts, and records indicate that Egypt's grain stores began to wane. Local abuses of authority are suggested by discrepancies in ration lists, and legal texts record the strikes of craftspeople. Access to materials began to diminish as further trade routes were cut off, and Egypt lost its supremacy in the north and south. Along with, and most likely because of, this social unrest, the reuse of coffin materials seems to have increased, and may be the reason that so few coffins that can be definitively dated to the 20th Dynasty can be found. The decoration of coffins at this time also becomes even more elaborate, suggesting an unease, and need to include as many protective elements as possible.

After the reigns of Ramesses V and VI, copper and other mining expeditions to the Sinai and other areas ceased (Trigger et al. 1983:226–229). As the 20th Dynasty dragged on, Egypt continued to lose power, land, and wealth. Private individuals began robbing tombs with a frequency and boldness that was as of yet unprecedented. These audacious thieves were not even dissuaded by the impalement they faced if caught. The trials of a number of these individuals are recorded, demonstrating just how regular the practice had become (P. Leopold II, P. Abbott; Peet 1930; Capart, Gardiner, and van de Walle 1936). The final ruler of the 20th Dynasty was Ramesses XI. Civil war marked his reign, and though he nominally ruled all of Egypt, powerful families of the high priests of Amun were effectively in control of the south (Taylor 2010b:220). Eventually, this division of rule would be formalized, marking the beginning of the 21st Dynasty and the Third Intermediate Period.

COFFINS IN THE NEW KINGDOM: AN OVERVIEW

The development of coffin construction and decoration from the 18th through to the 20th Dynasties reflects the religious, political, and economic changes in Egyptian society. The

anthropoid coffins that had become popular during the 17th Dynasty were now by far the dominant style, as discussed in the previous chapter. Rectangular coffins were only rarely seen, usually of lower quality, and for children (Taylor 1989:30). For these anthropoid pieces, it was no longer fashionable to create exposed-wood coffins, experimenting with complex joinery. The gilded *rishi* coffins had inspired a trend of display, and more was now always better. This is not to say that quality craftsmanship was not valued. The best coffins were still carefully crafted and finished from high quality imported timbers, and wood carvers became skilled sculptors; however, royalty and private individuals now endeavored to add layers of value to coffins. Imported cedar was covered with gold and inlay, or expensive pigments and black or yellow varnishes. As time proceeded, and Egypt's wealth continued to grow, multiple nested coffins were used, sometimes placed in additional sarcophagi. It is not until the social unrest at the end of the 19th Dynasty that this display of excess materials begins to falter. As soon as trade relations and the economy suffers, however, so does the production of coffins.

The wooden cores of the coffins created in the New Kingdom follow three very general construction options: the joining of long planks of wood for a rectangular coffin, the joining of long planks of wood for an anthropoid coffin, and the hollowing out of a log for a dug-out anthropoid coffin. The dug-out method is much less common than in the 17th Dynasty, and in only one instance is this method used with imported wood. With the renewed access to cedar, and the fashion of incorporating added materials, it was no longer necessary or beneficial to demonstrate access to significant amounts of local wood – except for those who could not afford imported timbers and gold. Both imported and local wood species were used to create anthropoid coffins out of joined planks. Long boards were edge or butt joined with dowels and tenons to create the bulk of the lid and case of most of these coffins, with the boards cut in vertical lengths

in relation to the length of the body. Dovetail and finger joints are still seen frequently at the footboard, while the head was usually fashioned from either curved pieces of wood, or short pieces edge joined in a barrel style. After joining the pieces into the rough shape, the carpenters would then carve in the subtle modeling of the body. The lid was usually curved, and the outline included the head, shoulders, abdomen, and legs. Usually two flat footboards were connected to make a triangular indication of the presence of feet. A detailed face was sculpted from a separate piece of wood and attached. Arms and hands could be added, often also in separate pieces of wood, to cross over the body, but in the earlier periods, arms were usually not included. The case was shaped to follow the outline of the body formed by the lid. In earlier coffins, the back of the case included the carved edge of the wig, and the subtle rounding of the buttocks, while in later examples, the base was usually flat. To these basic forms, layers of additional materials were added, depending largely on the period and the status of the coffin owners.

Alongside these material changes, decoration styles shifted with the developments in funerary religion. As seen at the end of the Old Kingdom, the disruption of Egyptian society during the Second Intermediate Period seems to have left the population uncertain about their king's all-powerful, divine nature, and his ability to stand in as a religious intermediary (Redford 1995:157–159). In addition to requesting religious assistance from the king, private efforts to directly request divine favor emerge. Individuals began to depict themselves directly worshipping Osiris in their tombs in the early 18th Dynasty (Hofmann 2010:pl. 7b), an act that would have been seen as an incredible transgression of decorum in previous periods. This devotion to Osiris and the desire for a personal relationship to the god likely inspired the change in coffin decoration at the beginning of the New Kingdom. With Egypt reunited, the kings elaborated on avian themes through new styles of *rishi* decoration, connecting their coffins to

solar religious aspects and their personal relationship to these gods as their representatives on earth. Private individuals, however, did not follow this royal example, and abandoned the *rishi* style of decoration fairly early on. They instead turned to Osiris.

The new style that developed in the early 18th Dynasty had a white background, mimicking mummy wrappings, as they had with the early Middle Kingdom anthropoid coffins. These new versions, however, also included the bands of inscriptions that had covered rectangular coffins. These texts are largely a combination of the *ḥtp-di-nsw* offering formula, and utterances by gods. They call for the assistance of the king and the gods in assuring that the deceased is transformed into Osiris so that he or she can reach the afterlife. The significance of the coffin changes from a secondary mummy to a representation of the deceased in their transfigured form as Osiris. Over time, the Osiride features of the coffin increase, with arms crossed over the body in the style of the typical depiction of the god (Ikram and Dodson 1998:18). The increase in focus on the coffin as an Osiris, along with the associated representations of fertility and rebirth, likely inspired the next shift in style. In the later 18th Dynasty the coffin background was painted black, the fertile color associated with the underworld god. At the same time, the *ḥtp-dỉ-nsw* formula is now more commonly replaced by an invocation of Nut, the mother of Osiris, to perform the transformation (Barwik 1999:11). Finally, as Osiride and solar religion are combined into a cycle of rebirth, the background color of the coffin shifts to yellow, and the *ḥtp-dỉ-nsw* formula becomes a rare addition to the coffin (Cooney 2007:190). As these styles change, the text that invokes the king as an intermediary therefore also becomes increasingly rare. As individuals separated themselves from the royal decorative styles, they also expressed their independence as individuals capable of invoking the gods directly.

TECHNICAL DESCRIPTION OF THE CONSTRUCTION OF ROYAL NEW KINGDOM COFFINS

The 18th Dynasty

Following the 17th Dynasty *rishi* example, all the original, recovered royal wooden coffins from the New Kingdom are anthropoid in shape, although many were placed in additional stone or wood rectangular or lozenge-shaped sarcophagi. The vast majority of these coffins were constructed using the method of joining long planks into the general anthropoid shape with dowels and tenons, before smoothing and finishing the body into a detailed form with adzes, chisels, and drills. Unfortunately, only a handful of the coffins of kings and queens from this period have been found. In addition, a detailed description of construction techniques has not been completed for the majority of these coffins, and access is particularly limited; nevertheless, the data that is available helps to highlight a number of the trends present in construction choices for royal coffins at this time.

Figure 100: Coffin of Ahmose. Egyptian Museum, Cairo CG 61002. (Daressy 1909:pl. III)

Although all of the wooden coffins belonging to New Kingdom kings were decorated with a *rishi* pattern, it was quite different than what was seen in the 17th Dynasty. Instead of being decorated with two large wings, the feathers depicted on Ahmose's cedar coffin (fig. 100; CG 61002), completely cover the body. The feather pattern, and alternating stripes in the tripartite headdress and collar of this coffin were incised into the wood. The blue stripes of both the headdress and the collar were then inlaid with paste. A naos with the cartouches of the king is also incised into

the coffin below the collar. In his examination of the coffin, Daressy noted that the exterior and interior were covered with plaster and that it must have been gilded (Daressy 1909:3). He suggests that all elements of the gilding were removed and the coffin was repainted yellow. This is possible, as many royal coffins were reused in later periods, or stripped of their gold. As gilding at this time was usually in the form of thick sheets of gold nailed to the coffin (see below), the removal would leave little evidence. The body of the coffin was much more slender and defined than the previous *rishi* containers, and at this time, still had no arms. The somewhat small size of the piece (178 cm in length), and the possibility that it was never gilded, may suggest that this was not the original coffin of the king, or at least that it was an inner coffin.

Figure 101: Outer coffin of Merytamun. Egyptian Museum, Cairo CG 53140. (Winlock 1975: fig. 10)

Especially important for the interpretation of this object are the enormous and unique coffins of the contemporary queens of the early 18th Dynasty. Three of these immense containers were found in the royal cache, DB 320. Two of these, the outer coffin of queen Ahhotep (CG 61006), the mother of Ahmose, and of Ahmose-Nefertari (CG 61003), the wife of Ahmose, were made of wood and cartonnage (Daressy 1909:3–4, 8–9; Taylor 1989:29–30). The third, that of queen Merytamun (CG 53140), wife of Amenhotep I, was made of cedar wood, and was found with her inner coffin (Winlock 1975:9).[61] Arms crossed over the chest were represented on all three outer coffins. This is the first time this feature is seen on royal body containers, and would remain standard through to the Third Intermediate Period. The cartonnage coffins were decorated as queens with

[61] Winlock (1975:12) notes that there was likely a third, even larger coffin of Merytamun, based on the discovery of broken coffin fragments in the tomb at Deir el-Bahri.

feathered wigs and large plumed headdresses, which are not seen again on any later examples. All three were also shown with small round feathers carved on the arms, and longer feathers covering the torso and legs. This, too, is a pattern followed by subsequent royals.

The outer cedar coffin of Merytamun (fig. 101; CG 53140) was found by H.E Winlock in Deir el-Bahri (Winlock 1975). It is 313.5cm tall, and 87cm wide (El-Shahawy and al-Miṣrī 2005:157). It was made of long planks of cedar, edge-joined with tenons and dowels. Winlock noted that the planks were carved carefully so as to be the same width throughout (Winlock 1975:85). Sections of the foot end of both the base and the lid were connected with dovetail joints. A ledge was cut into the rim of the coffin to ensure that the lid fit securely onto the case. As noted, the wig and the arms of this coffin are decorated with the smaller, round or chevron shaped feathers, which were carved deeply and inlaid with paste and blue paint. Very fine, long feathers were then incised into the wood of the torso and the legs of the coffin. A single offering inscription with the name and titles of Merytamun was carved down the center of the coffin. The face was very finely finished and left unpainted, with eyebrows and eyes inlaid with glass to imitate precious lapis lazuli. The hands that cross over the chest, and the papyrus blossoms they hold, are separate pieces of wood that have also been very carefully finished and attached to the coffin with dowels. Winlock also noted that the coffin was covered with tiny holes, and realized that the entire piece must have been covered with thin sheets of gold, attached by tiny nails. These layers had been taken, and the coffin had been repaired as best as possible by Third Intermediate priests under the instruction of the High Priest of Amun, Masaharta, as is recorded on a docket, written directly on the mummy wrappings (Winlock 1975:87).

The inner coffin (fig. 102; CG 53141) was much smaller, 186 cm in length. It too, was made of joined planks of cedar wood, edge-joined with dowels and tenons.[62] Long pieces of the base of the coffin were curved, as if partially carved out of a trunk, but were joined with other long planks of wood as well. Dovetail joints were used at the feet of both the lid and case. At the back of the head, large, rounded pieces of wood had been joined, mostly with tenons and dowels. Several textile or rawhide ties may also have been used in these joints, though further analysis is required to confirm this. A ledge was cut into the rim of the coffin. On this coffin, the headdress was painted a solid blue colour, and ended in Hathoric curls, similar to those seen on the 17th Dynasty coffin of Ahhotep (JE 28501). A simple blue and yellow collar was painted on the chest, and the body was lightly incised with a feather pattern. Down the center of the body is a single column of text, also displaying an offering inscription and the name and titles of Merytamun. The face is finely carved, with inlaid eyes, and has been painted yellow. A yellow uraeus is also painted on the coffin's forehead. The rows of small holes that once held the nails attaching gold sheets are more obvious on this coffin, particularly close to the feet. This form, with the lightly incised feather pattern, slender body shape, and no arms, is the female equivalent of the coffin of Ahmose (CG 61002).[63] This makes the suggestion that CG 61002 was the inner coffin of Ahmose's assemblage more likely.

Figure 102: Inner coffin of Merytamun. Egyptian Museum, Cairo CG 53141. (Winlock 1975: fig. 12)

[62] This identification is noted in the museum records.

[63] What can be seen of the construction of Ahmose's coffin is very similar to that of Merytamun. Further analysis may therefore help clarify the extent of the connections between these two pieces – perhaps revealing a common royal workshop.

The immense coffins of these queens, and the possible parallels owned by kings, would have served as definitive statements of victory and access. The procession that would have led to the burials of these queens, with the gleaming, immense gilded coffins, would have been highly visible to an audience. As the production of the coffins would have required the work of many craftspeople, it was likely known that the coffins were made of cedar. Furthermore, some elements, such as the face of Merytamun's outer coffin, were also left undecorated, vividly demonstrating the presence of this valuable timber. While serving as elaborate works of art, the inclusion of such large amounts of cedar and gold also demonstrate Egypt's renewed supremacy over the north and the south, the areas from which these materials originated. The fact that these resources were physically combined into the reproduction of the body of Egypt's rulers sends a clear message regarding their dominance. At the beginning of the 18th Dynasty, when Egypt's unification was fresh, such a demonstration of power may have been necessary to ensure the confidence of the Egyptian people in their rulers. These are the largest wooden coffins ever recovered from ancient Egypt. The use of gold and cedar in subsequent royal coffins continues this message of dominance and access, though not in such an enormous, monumental fashion.

Unfortunately, the majority of the mummies of the kings that followed Ahmose were found in coffins that either are unlikely to have been created for them, or were definitely created for a different, usually non-royal, individual. As with the coffins just discussed, many of these examples were found in the Royal Cache, DB320. The coffin which held Thutmose III's mummy, however, is believed to be one of his original inner coffins (Taylor 1989:30). This piece follows the usual construction form of joined planks of cedar covered with a base of plaster and linen, and was entirely gilded (fig. 103; CG61014; Daressy 1909:19). The decoration of the coffin has been roughly stripped, but what remains demonstrates the continued anthropoid form

with slender body, and the *rishi* style of decoration. The arms are now added, crossed on the chest, and the *nemes* wig returns as the chosen headdress. Tool marks suggest that adzes were necessary to remove the gilding on this coffin, suggesting a different method of attachment and finishing than that used on the coffins of Merytamun.

Figure 103: Coffin of Thutmose III. Egyptian Museum, Cairo CG 61014. (Daressy 1909:pl. XIV)

A new element is the inclusion of inner decoration. The interior of the lid of the coffin was decorated with a pattern that resembled a woven mat, and showed an image of the goddess Nut, with arms outstretched, standing on an inscription. This inscription called to Nut as the mother of the deceased king. A parallel text was written on the interior of the case, under another image of this goddess. This second text, however, refers to Geb (cf. Daressy 1909:19). The dual inscriptions therefore make the interior of the coffin into the cosmos, and refer to the rebirth of the king as he travels through the body of Nut. Daressy also notes that the coffin was originally covered in a layer of black bitumen, which has fallen off in most places (Daressy 1909:20), another unusual feature.[64] Although the other coffins of this king no longer remain, John Taylor has suggested that the triple set of nested royal coffins was likely the norm by this time, judging from the size of stone sarcophagi (Taylor 1989:30).

[64] It is unclear whether Daressy had this material identified, or whether he simply assumed it was bitumen.

Figure 104: Coffin from KV55. Egyptian Museum, Cairo JE 39627. Photo by Heidi Konkanen.

The next preserved royal coffin seems to be that created for the royal queen Kiye, principal wife of Akhenaten before Nefertiti. Faint, recarved inscriptions preserve her name on the earliest layers of the coffin's decoration. It was subsequently transformed into a king's coffin, however, and may have held the body of Akhenaten himself, or perhaps his co-regent, Smenkhare. The tomb held objects with the cartouches of a number of kings and names of queens, including that of Tiye, Kiye, Akhenaten, and Smenkhare, making the correct identification of the coffin's owner difficult and complicated (Rose 2002). While this identification is important, no matter whom its occupant was, it provides an example of an Amarna Period royal coffin.

The manufacture of this coffin (JE 39627) is difficult to reconstruct (fig. 104). It is possible that aspects of the construction were altered when the decoration was updated for a male king. Certainly, the beard was a later addition. Thanks to water damage and falling rocks, the coffin was also rotting, broken, and partially crushed by the time of its discovery in 1907 (Davis et al. 1910:2). Georges Daressy described the original find with its "boards disjointed, the wood rotted, the stucco powdering off, and the inlays falling out of their sockets" (Daressy 1910:16). It has now been heavily reconstructed, and most of the degraded wood removed. The base of the

coffin now entirely consists of the shell of gilding and inlay that once decorated the wood. Some basic features, however, can still be assessed. Daressy noted that the coffin was made of cedar-wood, joined into an anthropoid form, with an added beard. The wig was made of separate pieces of ebony, which have been drilled and carved into tight curls and attached to the head of the coffin. Each inch of the coffin interior and exterior was then gilded and the exterior was heavily inlaid (Daressy 1910:18–19). The gilded face had been damaged in antiquity, perhaps as part of the *damnatio memoriae* following the Amarna Period (Rose 2002). The coffin follows the somewhat slender form of the body, with arms crossed over a collar at the chest, holding the royal crook and flail. The rest of the body also follows the standard 18th Dynasty form of *rishi* decoration: the smaller, round feathers covering the arms, and the longer feathers covering the torso and legs. In this instance, however, each feather is outlined with gold, and filled with inlaid colored pastes and glass.

Down the centre of the legs is a column of inscription, the cartouches of which have been scratched out, but which address the Aten. The Aten is also named in a longer inscription at the feet, and in two columns of inner inscription, one on the lid and another on the case (Daressy 1910:18-19). Even the names in the cartouches written on the interior of the coffin have been erased, showing the lengths to which the later rulers and their followers went to erase the names of Akhenaten and his successors. Images of Queen Tiye offering to the Aten, drawn in the elongated Amarna form with protruding belly, are also found on the catafalque-style cedar sarcophagus that once held the coffin (Daressy 1910:13–14). Despite the change in figures on the decoration of the sarcophagus, the bodily form of the coffin does not reflect these features. The body is long and slender, with no protruding belly or accentuated thighs. While the decoration has certainly changed and become more elaborate than in the earlier examples described above,

only the hairstyle in the shaping of the coffin is particularly relatable to the Amarna style of depiction. This may suggest that the construction of the coffin was begun early in the Amarna Period and finished later, or that a carpenter who was too familiar with the previous style of art worked on this piece.

Figure 105: Replica outer coffin of Tutankhamun. Egyptian Museum, Cairo. Image by Linda de Volder.

The final preserved royal coffins from the 18th Dynasty belonged to Tutankhamun. As the only (mostly) intact royal tomb from the entire history of ancient Egypt, these coffins, too, provide the only example of the complete triple nested set within a stone sarcophagus, believed to have become the royal standard by this time (Taylor 1989:30). Details of the construction are again not well published, though Leonard Alfred Boodle from the Kew Botanical Gardens identified wood from the outer coffin as Cyprus, an imported softwood.[65] As for the method of construction, it is likely that joint planks were used for the outer two coffins, but additional information requires close analysis with scanning equipment, due to the heavy layers of

[65] The identifications were not published before the death of both Carter and Boodle. The data remains accessible, however, through the archived correspondence of these two scholars, now housed in the Griffiths Institute at Oxford. The records that relate to these two identifications are numbered TAA i.3.2.39, TAA i.3.2.40, TAA i.3.2.62, and TAA i.3.2.72 *recto*. Summaries of aspects of this work have since been published by a number of different scholars (A. Lucas 1962; Germer 1989; Hepper 2009).

decoration that finished these pieces. All three coffins include the exterior modeling of the wig and buttocks in the base. The outermost coffin was gilded, and decorated with an incised *rishi* feather pattern (fig. 105). The face was beautifully carved and gilded, and the eyes, eyebrows and lids were inlaid in stone and glass. Gilded arms covered the chest, holding the crook and flail. Carter noted that the gilded face and hands were a different color, and so likely a different alloy of gold (Carter 1927:101–102). The coffin lid had been attached to the case with silver tenons, held in place with gold-headed silver nails. The tenons were inscribed with spells and the cartouches of the king. This outer coffin also had two pairs of silver handles that had been attached to its exterior (Carter 1927:128–129).

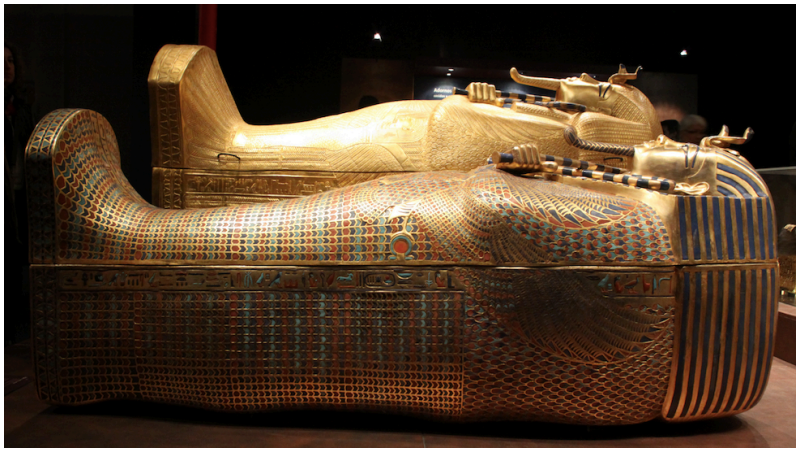


Figure 106: Replica middle coffin of Tutankhamun. Egyptian Museum, Cairo JE 60670. Photo by Javier Pérez Montes.

The middle coffin (fig. 106; JE 60670) was also gilded wood, but in this case had been decorated with multicolored inlaid glass feathers very similar to that seen in the coffin of Kiye/Smenkhare. Otherwise, it was similar to the outer coffin in appearance, with arms crossed over the chest, and inlaid facial features. There were no handles on this coffin, however, but gold tenons and gold-headed silver nails were used to lock the coffin lid in place (Carter 1927:136; Murray 2004:183).

Figure 107: Inner coffin of Tutankhamun. Egyptian Museum, Cairo JE 60671.

The innermost coffin is the most unique, being entirely hammered from gold, and again decorated with the *rishi* pattern (fig. 107; JE 60671; Ikram and Dodson 1998:214). The feathers of the vultures that decorate the shoulders and breast of the king were inlaid, in addition to the facial features and collar, but otherwise the details of decoration were left in gold. The tenons and nails of this coffin are also gold.[66] Originally, this coffin had been covered in black resin or bitumen, which has since been completely removed (Carter 1927:137–141).

Tutankhamun's assemblage demonstrates not only the immense wealth that had been acquired by kings at this time, but also the layering of value and ornamentation that had taken over as the focus of funerary art. If a full analysis of these objects is ever completed, it may help shed light on the true extent of the imported materials available to the kings in this period, and provide more information about the different functions of specific species for construction during the 18th Dynasty. As the only (mostly) intact royal tomb from the history of Egypt, it is particularly frustrating that such a significant study has not been completed, but gaining access to these objects has not yet been made possible. As the coffins are soon to be moved to the new Grand Egyptian Museum in Cairo, hopefully new studies will be possible.

[66] Carter notes that he and his team destroyed the gold nails in this instance in order to open the coffin (Carter 1927:141).

The Ramesside Kings

Very few of the original royal coffins dating to the Ramesside Period have been found. So far, only the inner wooden coffins of Ramesses I (reused for Ramesses II) and Ramesses III have survived to any great extent, while fragments from the coffins of Sethnakhte and Ramesses VI have also been recovered. After the reign of Seti I, outer royal coffins were usually made of stone, but these also are found largely as fragments. It is likely that the lid of wooden coffins continued to be decorated with the rishi pattern, while the case now had added figures of gods and genii. The royal stone coffins, on the other hand, were decorated with elements of the Books of the Underworld (Ikram and Dodson 1998:226).

Figure 108: Coffin of Ramesses II. Egyptian Museum, Cairo CG 61020. (Daressy 1909: Pl. XX)

The coffin of Ramesses II (fig. 108; CG 61020) seems to have originally belonged to a king of the earlier 19th Dynasty, likely Ramesses I (Daressy 1909:32; Desroches-Noblecourt 1985:17, fig. 9; Desroches-Noblecourt 1997:237, fig. 9). Daressy (1909:32) noted that the original decoration had been scraped off, and was replaced with yellow paint, which has now almost entirely fallen away to reveal the good quality cedar wood beneath; however, upon inspection there is no evidence of scraping, nor of gilded remnants, so it is more likely that the gilding was never added, and the coffin was placed in the tomb unfinished.[67] Analysis of the wood used for the construction of this coffin demonstrates that it is largely made out of cedar, but that a strip of

[67] Reeves argues in favor of the fact that the gilding was scraped off. This would be necessary to align with his argument that the coffin originally belonged to Horemheb (Reeves 2017:434). For this to be possible, the individuals who removed the gold would have had to refinish the coffin very carefully, erasing any evidence of these actions. While this is possible, it is unlikely, given the rather ragged appearance of the other royal coffins that had their gilding removed and were placed in DB 320 (see chapter 4.VI).

tamarisk was used on the case, and a number of dowels and tenons were also tamarisk or ash wood (Normand 1985:326). Desroches-Noblecourt notes that the crook and flail that are now held by the representation of the king are made of palm wood (1997:238). He suggests that originally these objects were probably intended to be made of gold, which is likely, given the very low quality of palm timber.

The construction of the coffin's lid is based around a large, central piece of cedar wood, to which additional sidepieces were edge joined. Other pieces were then added, including the face, beard, ears and headdress. After joining, the wood was very carefully shaped and finished, so that only very light tool marks from the final smoothing process remain visible. The detail in the face and the hands that cross over the chest is excellent, and follows the elongated, post-Amarna style, which had now come to affect coffin construction, confirming the early 19th Dynasty date for the original construction of this piece. On the body of the coffin, the titles of Ramses II have been added in black ink, along with hieratic dockets that document the use of this coffin for the king's reburial. These were written during the 21st Dynasty. As noted, the case was constructed from joint pieces of wood, one of which was found to be tamarisk (Normand 1985:326). It was decorated rather simply, painted yellow on the inside, and red on the outside (Daressy 1909:32). The shape of the coffin is very similar to that of Tutankhamun, though the *rishi* pattern has not been added. It is likely that this would have been impressed into the plaster added to the coffin before gilding.

Figure 109: Case of the coffin of Ramesses III. Egyptian Museum, Cairo CG 61040. (Daressy 1909: Pl. LXIII)

Only the case of the coffin of Ramesses III has survived (fig. 109; CG 61040; Daressy 1909:221-222, pl. LXIII). It was found in the tomb of Amenhotep II, contained the mummy of Amenhotep III, and was covered with a lid inscribed for Amenhotep III and Seti II (Loret 1898:111; Daressy 1909:217–18, 221). The lid, however, does not seem to have originally been created for any of these kings. The case of Ramesses III's coffin is of particular importance for this discussion, because it was dug-out from a cedar tree trunk. It is 205 cm in length, and the sides were very thin, 1.6 cm thick (Daressy 1909:221). Originally, this case was covered over with plaster, layers of linen, paint, gilding, and finally a resin. The gilded deities added to the sides, however, were scraped off in a later period, which has caused a great deal of damage to the case. This coffin demonstrates an incredible investment in resources. As discussed in chapter 4.IV, hollowing out a log for a coffin means wasting much of the inner material. To create a cedar coffin using this method was previously considered unnecessary. This speaks to the continued wealth of the pharaoh, even as the economy was beginning to turn. Perhaps the very thin edge of the coffin allowed the wood carvers to remove larger pieces of cedar from the interior, so that they could be reused.

A final brief discussion of the cartonnage coffin of Sethnakhte is necessary as it is so unique (CG 60139; Daressy 1909:219-221, pl. LXII). It was decorated fully with a royal *rishi*

pattern, and the cartouches of the king. It is therefore likely that it is the original inner coffin. An additional cedar coffin fragment was found in the tomb of Amenhotep II, and Daressy has suggested that this might have been from a secondary coffin of Sethnakhte (CG 60144; Daressy 1909:226). Perhaps this ruler had not created his full coffin set at the time of his death, as he likely reigned for a maximum of 4 years (Dodson 2010:122–123). It is surprising, however, that he was not placed in a reused or borrowed coffin, especially as his son, Ramesses III, was able to commission his dug-out cedar case.

TECHNICAL DESCRIPTION OF THE CONSTRUCTION OF PRIVATE NEW KINGDOM COFFINS

The trajectory of the private coffins in Egypt's early New Kingdom was much different then that of their royal counterparts. Only at the beginning of the 18th Dynasty was the *rishi* style of decoration still popular among non-royal individuals. By approximately the reign of Thutmose I, however, a new anthropoid style with a white background emerged, and this in turn was overshadowed by a black-background variation, popular by the reign of Thutmose III. It should also not be forgotten that alongside these much more popular anthropoid style coffins, rectangular styles continue to be sporadically used. As noted above, both dug-out and joined construction methods were used to create the anthropoid coffins of this period, with the details of construction varying considerably. The methods used to produce coffins continued to evolve and change. The aspects that make New Kingdom coffins stand out, however, are the amounts of added materials, especially by the upper elite. These wooden body containers, along with the increasing numbers of additional funerary objects, continued to be a significant canvas for the display of individuality, and increasingly pushed the bounds of tradition and accepted religious expression. In addition, towards the end of the 18th Dynasty, a number of private individuals

were able to commission stone coffins for their burials. Merymose, the viceroy of Nubia, had a full set of three stone nested coffins (Ikram and Dodson 1998:212), a particularly enormous display of wealth.

18th Dynasty *Rishi* Coffins

As seen with royal examples, the transition from the 17th to 18th Dynasty saw the continuation of private *rishi* coffins. In fact, it is largely impossible to differentiate those produced at the end of the Second Intermediate Period with those created at the beginning of the New Kingdom. Pieces that quite clearly date to the later period, however, demonstrate that at this time, both dug-out and joined construction options existed. A *rishi* coffin in the Metropolitan Museum of Art (fig. 110; MMA 12.181.300), belonging to the "royal ornament" Teti, for example, is decorated in a very similar manner to that of the 17th Dynasty queen Ahhotep. The central smaller feathers are present below the collar, and four tiers of longer feathers decorate the rest of the body. The large Hathor wig is present, ending in the round, disk-like curls. Although the wood has not been identified, the coffin lid was clearly carved mostly from a single piece of wood, though pieces were added to the sides and the base to fill out the anthropoid shape. In this example, the traditional method of *rishi* coffin construction is therefore followed.

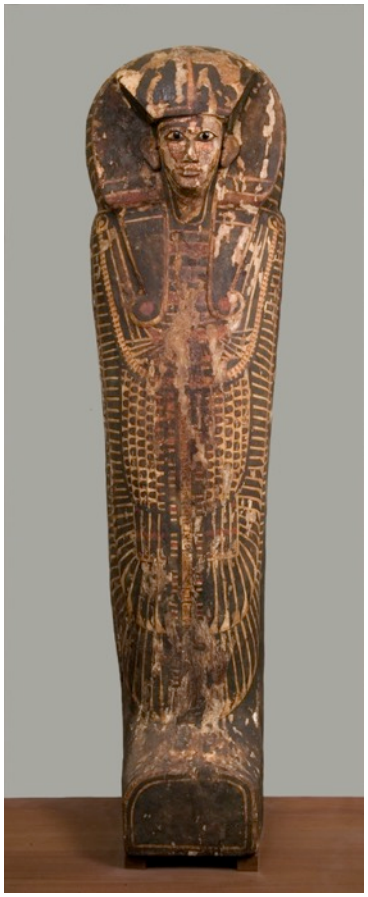


Figure 110: Coffin of Teti. Metropolitan Museum of Art 12.181.330. ©Metropolitan Museum of Art.

On the other hand, anonymous *rishi* coffin MMA 23.3.461, exhibits quite a different style of decoration and construction (fig. 111). This coffin lid was built for a child, and is 117 cm long. It is made of an imported softwood species suggested to be either pine or cedar (Miniaci 2011:265, rT09NY). The lid has been constructed from a number of long planks, edge joined together with dowels and tenons. The footboard is now lost, but was clearly a separate piece of wood. The face was also carved from an additional piece and doweled on to the lid. After joining, the final shape of the coffin was carved to include arms and a large Hathoric wig. The painted feathers on the torso and legs of the coffin begin below the crossed arms. This example still shows the smaller, rounded feathers towards the center of the coffin, and two tiers of longer feathers extended down the sides. This piece is one of the latest recovered private *rishi* coffins and likely dates to the reign of Thutmose I (Hayes 1990b:221). Its method of construction and decoration exhibits a mix of styles, with the feathered decoration similar to that from the 17th Dynasty, as oppose to the full body feather wrapping seen in contemporary royal examples. The addition of arms is a particular indicator of the later date of this coffin. Private *rishi* examples became increasingly rare during the early New Kingdom, with one of the latest examples likely to be the coffin of Rennefer from MMA tomb 729, dating to the reign of Hatshepsut (Dodson 1998:331). This is likely due to the desire to be more closely associated with Osiris.

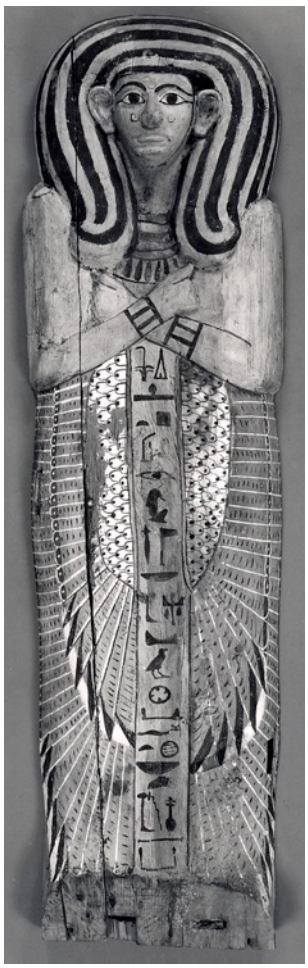


Figure 111: Anonymous *rishi* coffin. Metropolitan Museum of Art 23.3.461. ©Metropolitan Museum of Art.

White Anthropoid Coffins

From at least as early as the reign of Thutmose I, a new style of coffin decoration began to accompany and replace the *rishi* variety (Hayes 1990b:69–70, 221; Taylor 1989:32; Barwik 1999:8–9). This style of coffin is anthropoid, with or without arms, and the majority of the coffin is painted white. Fewer than 30 complete white coffins are known from excavations, but many of these were not recovered from the field after being recorded.[68] Inscribed bands decorate the surface of both the coffin lid and case, recalling both mummy bandages, and the bands that decorated the rectangular coffins of the Middle Kingdom. The central inscription is still usually the *ḥtp-dỉ-nsw* formula (Barwik 1999:11). The use of the *nemes* headdress is replaced with a tripartite wig, often either painted a solid blue, gilded, or with blue and yellow stripes (see Barwik 1999:22). As with the earlier coffins, the shape of the body is modeled into the lid and case, and the back of the wig and the buttocks is often carved into the case of the coffin. The case also tapers in width, widest at the edge where it meets the lid, and narrowest at the ground. The lid now becomes shallower, while the case tends to be rather deep (Hayes 1990b:70).

Figure 112: Anonymous white coffin. Metropolitan Museum of Art 36.3.184. ©Metropolitan Museum of Art.

The dug out construction method is still occasionally used to create white anthropoid coffins. For example, both the lid and the case of an anonymous coffin from the tomb of Senenmut (TT71) were hollowed out of sycomore logs (fig. 112; MMA 36.3.184). The coffin was very simply decorated with a white background, and painted, uninscribed yellow bands

[68] In 1999 Barwick stated that there were 22 known examples, with the addition of the coffins of Amenhotep I and Thutmosis II, which were highly modified in a later period. Of these 22, the location of 7 is currently unknown (Barwik 1999:12, n. 31, 31-33).

outlined in red. The tripartite wig was painted with yellow and blue stripes, and a multi-coloured collar with blue tassels was also depicted. The face of the coffin is rather small, and was painted yellow. The undecorated interior is still covered with the adze marks used in its original construction (Hayes 1990b:222). The coffin of Madja (Louvre E. 14593), provides a slightly higher quality example, where the lid and case were also carved out of sycomore fig logs (Dawson and Strudwick 2016:172–3). For this coffin, more painted details and inscriptions were added, but there are no other additional materials.

Several white coffins are also partially created using the dug-out method, but with the significant addition of added planks. This method was used for coffin of Ahmose, son of Nakht (fig. 113; MMA 14.10.2).[69] Both the lid and the case of this example were dug-out, with additional planks added. The rounded trunks can be seen in the foot end of the coffin, making this information easily accessible. Museum records indicate that this piece, too, is made of *Ficus sycomorus*. This coffin of Ahmose includes images of a funerary procession on its case, a motif that is not particularly rare at this time (Barwik 1999:14–15), but suggests that it dates to the early 18th Dynasty.

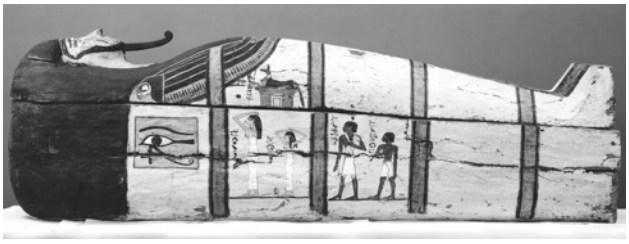


Figure 113: Coffin of Ahmose, son of Nakht. Metropolitan Museum of Art 14.10.2. ©Metropolitan Museum of Art.

[69] It should be noted that this coffin is used by Hayes as a typical example of white anthropoid coffins. He brings this piece up in volume 2 of the Scepter of Egypt, directly after stating that at this time coffins were no longer dug-out but joined from planks of wood (Hayes 1990b:70). It is unclear whether he considered this to be a joined piece because of the addition of planks, or if he neglected to realize that the majority of the coffin had been carved from logs. Part of the case of the coffin of Nubnen now in the National Museum of Warsaw (No. 138979), and also part of a case of a coffin from the Asasif tomb No. 37, now lost, (Carnarvon and Carter 1912:70, Pls. LIX.1, LXI.2), were dug out of a tree trunk, but are more substantially built up of additional planks than the coffin of Ahmose.

Figure 114: Coffin of Harmose. Metropolitan Museum of Art 36.3.172. ©Metropolitan Museum of Art.

The majority of white anthropoid coffins were made of long joined planks of wood.[70] The lid and case of the coffin of Harmose (fig. 114; MMA 36.3.172), for instance, were constructed from a total of 23 pieces of joined pine wood, not including the addition of hardwood tenons and dowels (Hayes 1990b:222).[71] It is decorated in a very similar style to the anonymous coffin MMA 36.3.184, except that in this case, the yellow bands are inscribed with spells and the names of the singer Harmose. Carved knees are added, and the large blue and yellow tripartite wig looks very similar. The face of this coffin is gilded, and finished with much more detail and finesse than that of the anonymous version. The collar in this instance, too, though similarly colored, is much more evenly spaced and carefully applied. The two coffins were found close together in the tomb of Senenmut (TT71), and the similarity of their decoration suggests that their coffin owners or creators were aware of one another (Lansing and Hayes 1937:8); however, the entirely different method of construction and quality of the finishing details seen in that of Harmose suggests that they were made by different workshops, or at least different individuals.

[70] Some additional examples include the coffin of Neheme(et) from the Náprstkovo Muzeum (P.627), The coffin of Mentuhotep from the Asasif, tomb No. 37 (location now unknown; Carnarvon and Carter 1912:85, 74, Pl. LXIII), and the coffin of Ahhotep Tanedjem (MMA 12.181.303).

[71] It should be noted that the "pine wood" identification comes from the museum's records.

Figure 115: Coffin of Puia. Museo Egizio, Turin Provv. 0178. © Museo Egizio, Torino

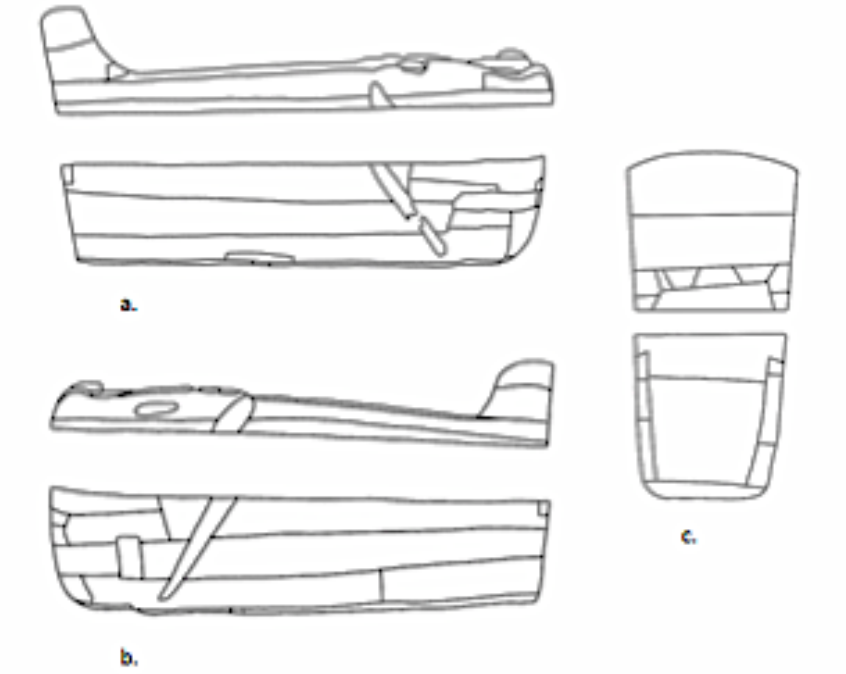


Figure 116: Construction diagram of the coffin of Puia. Museo Egizio, Turin Provv. 0178. a) coffin left side b) coffin right side c) coffin foot, top: lid, bottom: case. Image by author.

The white anthropoid coffin of Puia (figs. 115-116; Turin Provv. 0178), a second prophet of Amun and the father of a high priest during the reign of Hatshepsut, was found in Deir el-Bahri, and is now in the Museo Egizio di Torino. It was intricately constructed from a number of long planks of wood, tenons, and dowels. The lid was made from approximately 25 pieces, and included a pair of arms crossed at the chest, and a tripartite wig with blue and yellow stripes that extended down to the case as well. The case was made from approximately 32 pieces, not

including added tenons and dowels.[72] While most of the pieces were edge joined, the pieces at the head overlapped and abutted, and two pieces of wood were added to the interior of the case to emphasize the anthropoid construction internally, despite the fact that it would not be seen from the exterior of the coffin. The footboard on the lid was largely edge and butt-joined with larger pieces of wood, while the case included half-dovetail joints. Faults in some of the planks had been filled with wood patches, and small pieces were added to make up the topmost curve of the shoulders and the wig as well. After the wood had been joined, it was carefully carved and finished. In some areas, the wood carvers cut in slightly too far, leaving only a very thin amount of wood covering the top of tenons, which are now exposed. The carved arms continued on the case through the addition of thin pieces of wood, added after the initial sculpting. On the exterior base of the case, the lines of the wig and the curve of the buttocks were carved. I was permitted to take samples from several areas of the coffin, as well as a tenon, all of which were *Ziziphus spina-christi*.

A thin layer of white plaster was added over the joined wood, then a double layer of linen, and finally another layer of plaster before being painted. The background of the coffin was white, and four gilded bands originally crossed over the lid, extending down to the case, while an additional band of gilding stretched down the centre of the lid. The tripartite wig was painted blue and yellow, while the face and collar had been gilded. The hands were painted red. On the underside of the feet on the lid, the coffin painters added an image of Nephthys in a blue sheath dress, with arms raised, standing on a *neb* basket. On the case, in between the text bands figures of the four sons of Horus, Anubis and Osiris were depicted. Donadoni Roveri (1989:56) noticed that faint planning lines on a grid are visible beneath the final images, demonstrating the careful

[72] Parts of this coffin are now missing, which means that these numbers are lower than what was present originally. I should also note that this coffin has been heavily consolidated, making the joints difficult to see in many instances.

planning of this decoration. On each shoulder is the depiction of an altar with a wadjet eye and red solar disk displayed on top. The head of the case was decorated with the blue and yellow wig, as noted, along with a standing Isis in a white dress with her arms outstretched. The interior of both the lid and case were painted with black bitumen or resin. The rim of the case was also painted red, and a protective spell was written over it in black hieratic.

All of the gilding was axed or adzed off of the coffin in antiquity, leaving rough tool marks on the otherwise well treated exterior. The face has also been broken off and lost, perhaps during this removal of gilding. An inlaid glass eye, however, was found during the excavation of coffin, apparently having fallen off the face (Mond 1905:81). The damage to the coffin has revealed that in addition to the rim, the hidden joints between separate pieces of wood were painted red, and in some of these interior spaces, protective hieratic spells were written (fig. 117). These texts were also written on many of the tenons used to hold the coffin together. Much of the content is related to Nut, Shu, and Geb, and their relationship to Osiris. Nut is called to protect her son, the deceased in his form as Osiris, and to help him reach the afterlife (Donadoni Roveri 1989:54). Other white coffins, including that of Ahhotep Tanedjem (MMA 12.181.303) also had inscribed tenons (Hayes 1990b:71–2, fig. 38). As noted in previous chapters, this continues a protective trend that began in the Old Kingdom.While there is no indication that Puia owned additional coffins, a ladder-like sledge was placed in the coffin, on

Figure 117: Image of inscribed internal tenon from the coffin of Puia. Museo Egizio, Turin Provv. 0178.

which to lay the body. It is not noticeably decorated, but this might be disguised by its close association with the black layers and the mummy that once rested on top. This coffin is significant for our understanding of construction development. The crossed arms are fairly early, prefacing a new phase that connected the coffin closer to Osiris. The fact that this coffin was so expertly crafted and gilded speaks to the high status of its owners and the experience and skills of the carpenter. It is therefore important to emphasize that it was made from Christ's thorn, a local timber. The high quality and hardness of the wood may have allowed Puia or the carpenter to integrate this timber without the social consequence of seeming inferior or cheap. On the other hand, as a priest, Puia may have known about the special religious quality of the timber and its efficacy for carving religious objects. Whatever the motivation for its inclusion, this coffin illustrates that high status individuals could choose to craft coffins out of local wood at this time, and maintain a high standard of quality.

Black Anthropoid Coffins

In the reigns of Hatshepsut and Thutmose III, the "black" anthropoid coffin emerges in the private sector. At this time, too, *rishi* coffins cease to be found alongside the later style, and the "white" coffin is no longer popular. I believe this to illustrate the continued steps to align the coffin closer to Osiride religion. The earliest black example seems to be the coffin of Hatneferet (JE 66197), Senenmut's mother, who was buried just outside his tomb (TT71), and dates to the reign of Thutmose III (Dodson 1998:331; 2000:90).[73] These "black" coffins were painted with a lustrous black background, either with bitumen or resin, or with black paint covered with a

[73] As Dodson notes, the black coffin Hildesheim 6330, has an inscription that names Thutmose I, but the language suggests that the king was already deceased, and it is likely that the coffin was in fact buried during the reign of Thutmose III (Dodson 1998:332) .

yellow varnish.[74] As with the white coffins, yellow painted or gilded bands crossed over the body of the lid and continued down the case, along with added inscriptions and painted figures of gods. The central inscription was now commonly the invocation of Nut, rather than the *ḥtp-dỉ-nsw* inscription (Barwik 1999:11). The shape of the wig and buttocks continued to be carved into the coffin case. The addition of arms continues to be sporadic. These coffins could stand alone, or be placed within a secondary, outer coffin. Some of the more expensive versions, belonging to the royal family or the upper elite, might also be placed in large boxes or sarcophagi. In the case of one of the coffins of Yuya (CG 51003), the dark background was created by using silver-leaf instead of black paint or resin (Dodson 1998:332), another elaboration. The figures and elements of decoration could also be inlaid instead of carved or created from painted or gilded plaster. Finally, the most elaborate sets included an entirely gilded, inner coffin (Dodson 1998:334). The wooden construction of these containers follow in general those used for the white coffins. While the dug-out coffin method continues, long joined planks of wood are still more common.

[74] It has recently been acknowledged that scientific analysis is necessary to identity the black layers on coffins. These are most usually bitumen or pistacia tree resin (Serpico and White 2001; Vartavan 2001).

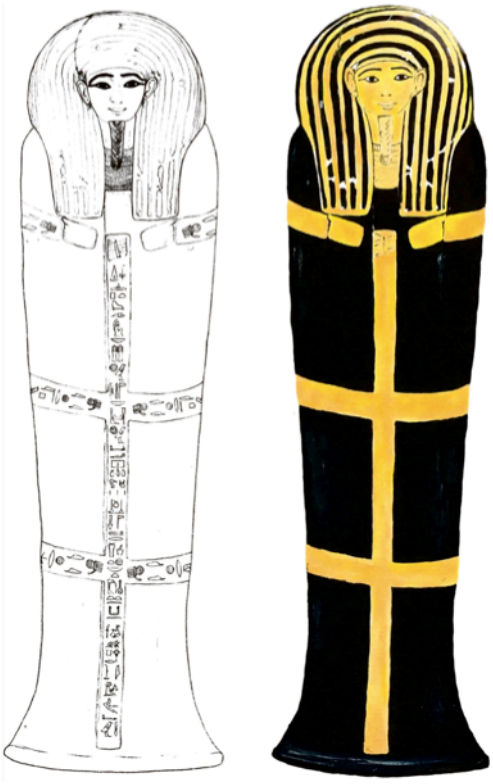


Figure 118: Outer coffin of Maihirpri. Egyptian Museum, Cairo CG 24002. Image by K.C. Lakomy.

The coffins of Mairhirpri were found together within KV36 in the Valley of the Kings. They consisted of an internal, gilded coffin (CG24004), an exterior black coffin (CG24002), and a catalfaque shaped outer wooden sarcophagus (CG24001). In addition to these pieces, a separate anthropoid example was found empty within the tomb (CG24003). The outer black anthropoid coffin (fig. 118; CG24002) was created from a number of long joined pieces of wood, which unfortunately have not yet been definitvely identified, though Lakomy suggests that they are likely to be made of cedar (2016:117). Much of the ground of the coffin was covered in thick black bitumen or resin. While the gilded, inscribed bands were added, along with the gold stripes on the tripartite headdress, this coffin does not have the traditional added gilded gods or figures. The face of the coffin, however, was also gilded, and given inlaid eyes of black and white jasper, set into bronze. According to Daressy, an acacia beard was added, along with gilded hands, crossed over the chest (Daressy 1902:4).

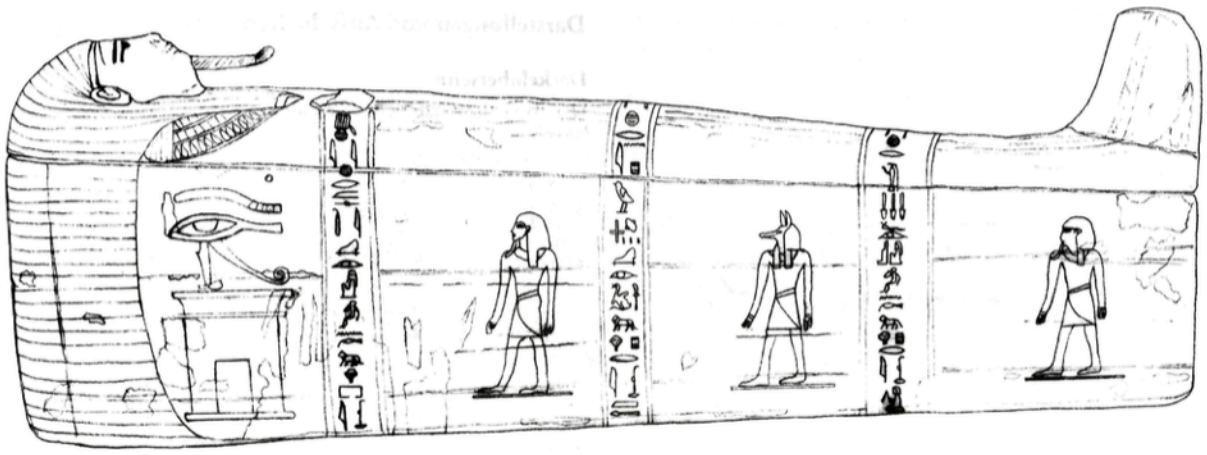


Figure 119: Inner coffin of Maihirpri. Egyptian Museum, Cairo CG 24004. Image by K.C. Lakomy.

The inner coffin (fig. 119; CG24004) was constructed from joined planks of wood, which have been tentatively identified as cedar (Lakomy 2016:135). Lakomy notes that this coffin is no longer in a particularly good state of preservation, and the wood joints were therefore easier to see. In total, his descriptions suggest that the lid was made of 17 pieces of wood, while the case was made of 15 (Lakomy 2016:137–138). These were covered over with a thin layer of plaster, engraved with ornaments and inscriptions before being completely gilded, inside and out. Bands of inscription were added to cross the body and run down the middle of the lid. On the case, the bands separate images of gods and genii, with a wadjet eye atop a monument on either shoulder. The eyes of the face are inlaid in black and white stone set in bronze, with blue glass eyebrows (Daressy 1902:7).

Figure 120: "Extra" coffin of Maihirpri. Egyptian Museum, Cairo CG 24003. Image by K.C. Lakomy.

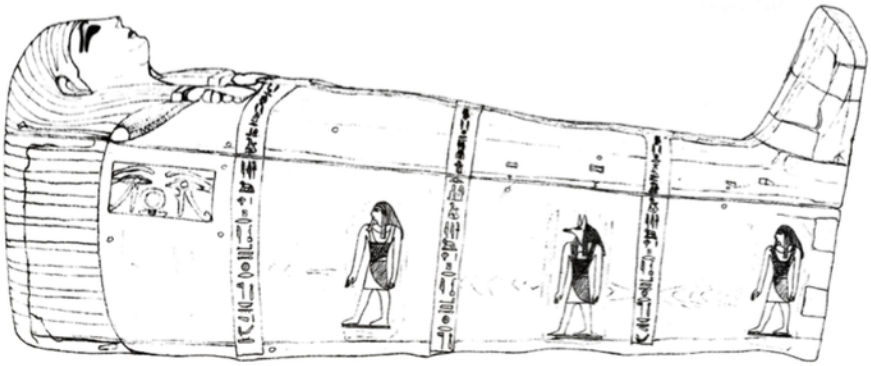


Figure 121: "Extra" coffin of Maihirpri drawing. Egyptian Museum, Cairo CG 24003. Image by K.C. Lakomy.

The final coffin (figs. 120-121; CG24003) seems to have been left incomplete in the tomb. Several very large planks of cedar were used to construct this piece – according to Lakomy, three make up the bulk of the lid, while one large piece makes up the right side of the coffin case, and two make up the majority of the left side of the case. The back of the head was largely made of four curved pieces of wood, with a thin piece added to the top. Additional pieces were added for the footboards of both the lid and case, attached with dovetail joints. These pieces were all joined together with tenons and dowels, before the final shaping and the careful work to create a smooth surface (Lakomy 2016:127–128). Based on a combination of Lakomy's notes, personal observations, and photographs, I suggest that the lid was made from approximately 12 pieces of wood, while the case was made from approximately 10, suggesting a total of around 21 pieces. Much of the wood was then left exposed. The face has been gilded, and added gilded

bands and gods are present, but there is no background fill of black bitumen or resin. The wig of this coffin is decorated with alternating blue and gilded stripes on the lid, and blue and yellow paint on the case. The eyes are inlaid in white and black jasper (Daressy 1902:5). Details of the gilding process can be seen on this coffin. After the wood was finished, a layer of linen was applied to the coffin with glue, where gilding was to be added. A fine layer of plaster was then painted on, into which the inscriptions and the gods were incised. The thin gold leaf was then applied to this surface (Dodson 1998:333; Lakomy 2016:127–135).

This final coffin has posed somewhat of a mystery. It seems unlikely that the coffin decorators intended to leave the wood exposed. The arrangement of the gods, standing to the right of their framed areas, suggests that text was going to be added in front of them, as was regularly done. It is therefore possible, as suggested by Aidan Dodson (1998:335), that the coffin was brought into the tomb, where it was to receive its final layers of resin or bitumen, after which other added details would be finished. The size of the coffin was too small to contain the inner gilded coffin (Reeves 1990:145), which may also only have been realized once the coffin was brought into the tomb, at which time it was abandoned as useless for Maihirpri's burial. Lakomy also notes that the style of the coffin is slightly earlier than the other two (2016:132–135), again suggesting that this coffin had been made first, and then abandoned for some reason.

Dodson notes that several of the other particularly high-ranking coffin sets largely follow this model, with the rectangular outer wooden sarcophagus, an intermediary black anthropoid coffin, and an inner, fully-gilded coffin that contained the mummy (including those of Kha, Turin S.8316, S.8313; Meryt, Turin S.8470, S.8469; Yuya, CG51002; CG51003, CG51004; and Tuya, CG51006, CG51007; Dodson 1998:334, n. 18). Several of these pieces would also have had to be constructed and covered with resin after they were taken into the tomb because they

were too large to fit into the tomb's entrance after they were assembled (such as with the sarcophagi of Yuya and Tjuiu, Dodson 1998:335, n. 23). The planks of Maihirpri's sarcophagus (CG 24001) had marks to show how they should be placed together. Perhaps this was done to help secondary individuals reconstruct the object once it arrived in the tomb, since the carpenter was unlikely to be present.[75]

Figure 122: Outer coffin case of Duat-Hathor Henuttawy. Egyptian Museum, Cairo CG 61026/JE 26204. (Daressy 1909: Pl. XXXV)

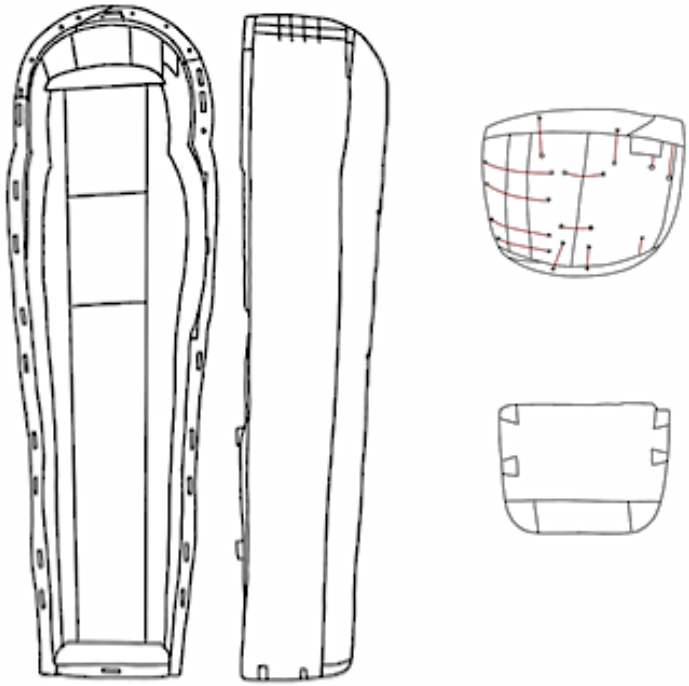


Figure 123: Outer coffin case of Duat-Hathor Henuttawy construction diagram. Image by author.

[75] Such marks were also found on the joints of the wooden shrines of Tutankhamun, perhaps for a similar reason (Carter 1927:96).

Although many of the coffin sets of the particularly wealthy were constructed and decorated in a similar fashion in this period, there are a number of exceptions. A coffin that was constructed in the 18th Dynasty (figs. 122-123; CG61026/JE26204), and reused for Duat-Hathor Henuttawy in the Third Intermediate Period (see chapter 4.VI), demonstrates a number of variations in the usual method for constructing anthropoid coffins. Only the outer case of this coffin remains, and it largely follows the usual joined plank construction form. It was made from approximately 16 or 17 planks of wood, identified in Daressy's publication as cedar (1909:63). These pieces largely been edge or butt joined with dowels and tenons, while the footboard was connected using dovetail joints. The back of the head of this case was constructed from a number of smaller pieces of wood that were joined by a combination of dowels and cords. These cords have not been definitively studied, but are likely to be made of rawhide.[76] The use of cordage to join wood is rather rare in this period, particularly for the back of the head, though it may have been used in the early coffin of Ahhotep (CG 53141), as noted above. The coffin was very finely finished, before being lightly plastered, covered with a layer of linen, and plastered again. On top of this, gilded bands and gods were added. At some point, probably during the 21st Dynasty, the bands of gold had been removed from the coffin, though the gods were left largely intact. Another unique element of this coffin is that it was not finished with black bitumen, but the ground was instead painted blue, and covered over with yellow varnish. This has since discoloured however, leaving the piece with the appearance of a traditional black coffin.

[76] Lucy Skinner has suggested that rawhide is the likely material for this cordage based on a preliminary examination of photographs.

Figure 124: Anonymous coffin from Gurna. British Museum EA 52980. ©Trustees of the British Museum.

Other black coffins that belong to a lower socio-economic class provide further examples of construction choices possible at this time. The lid of an anonymous coffin from Gurna, Thebes, now in the British Museum (fig. 124; EA 29580), is partially of dug-out construction. The lid was carved from a log of local hardwood, though the species has not yet been identified. The adze marks are still clearly visible on the interior of the coffin. The case, however, was constructed from six large, rough pieces of wood, that reveal the twisted nature of the local timber used for construction. The different sizes of these pieces required that the footboard be somewhat awkwardly attached by abutting at different points to the sides, so all the lengths would appear to be even. This coffin was painted black with yellow bands and figures, before being covered with a layer of yellow varnish that has been identified as pistacia resin (Serpico and White 2001:34).

The lid and case of the coffin of Tamyt (EA 6661) are also partially dugout, but the lid includes a number of complicated, though unsophisticated joining methods to give it a completed anthropoid form.[77] The black background of this coffin has been identified as a mix of *Pistacia* resin and bitumen (Vartavan 2001:74, n.37). The face and carved hands of the coffin are painted red, and it is important to note that the rim and interior joints of the coffin were painted red as well.

As with the elite black coffins, the majority seem to have been made from joint planks of wood. A number of coffins found at Deir el-Medina by Bruyére were constructed in this manner.

[77] As also noted by Strudwick and Dawson (2016:177).

These include those of Setau, Taat, and of another anonymous female (Bruyére 1937:102–106, pl. X). Fragments of black anthropoid coffins found at Amarna, along with dowels and tenons, also suggest that these pieces were made in this manner. The larger fragments of these coffins have been identified as *Ficus sycomorus*, with dowels mostly of *Tamarix sp.* (Kemp, Skinner, and Bettum 2015:29–31). It is also interesting to note that three of the seven black anthropoid coffins studied at Amarna had a slightly different style of decoration than the usual focus on the deceased as an Osiris. While they were still painted black with bands of texts and figures in yellow, the figures in these scenes had the oblong heads characteristic of the Amarna art style, and were engaged in ritual activities, similar to those depicted in Amarna tombs. Although very few remnants of coffins dating to this period have been found, these fragments suggest that there were changes to coffins during the Amarna Period, albeit surprisingly limited in form. Just as with the royal coffin of Kiya/Smenkare, the shape of the coffins do not seem to have changed, only the subject matter and style of the painted images.

Yellow Ramesside Coffins

The black coffins continued to be created until the reign of Ramesses II, as seen with the examples found in Gurob tomb 605, for instance (Brunton and Engelbach 1927:16–17; Dodson 2000:90, n.8); yellow coffins, however, appeared as early as the reign of Amenhotep III, and after the Amarna Period became the increasingly dominant coffin style.[78] Yellow coffins, like black and white, receive their name from their yellow background. This background could be created by yellow paint, or be achieved by covering a white or undecorated ground with a yellow varnish that became darker in color over time. Inscribed bands continued to be painted vertically on the lid, and horizontally across the body and continuing onto the coffin case. These texts are

[78] Aidan Dodson (2000), for instance, convincingly argues that a coffin in the Brooklyn Museum of Art (37.15E) should be seen as dating to this early period.

now usually an invocation of Nut, and only rarely take the form of the *ḥtp-dỉ-nsw* formula (Cooney 2007:190). The figures and deities that were painted on the coffin were polychrome, and similar in subject matter to those depicted on earlier coffins. The numbers of scenes and depicted deities increased, however, and became more varied and dense in the 20th Dynasty. Although the usual tripartite wigs and headdresses were still illustrated on yellow coffins, more elaborate versions also existed, differentiated between males and females. Crossed arms with elbows were now also usually attached to or carved into coffins. The hands of these coffins were often open and flat for women, and closed fists holding objects for men. Finally, Nut now figured prominently on the chest of coffin decoration, while previously vultures were painted in this position (Dodson 2000). The interior of the earlier yellow coffins of the 19th Dynasty continue to be largely undecorated, or painted white, or with a black resinous layer. In the 20th Dynasty, however, the interior of the coffins also begins to be decorated, becoming much more common in the 21st Dynasty.

The construction of yellow coffins followed on from previous examples, except that now multiple nested coffins were more frequently used, and included a mummy board; nevertheless, coffins continued to be largely made from long edge-joined planks of wood, with only rare examples created using the dug-out method. While the lid was usually curved and modeled, some examples are flat. The footboard on the lid was still angled and flat. The case continued to be formed in the anthropoid style, with the subtle modeling of the calves, thighs, and arms present in the overall shape to match the lid, in addition to the rounded head. The case continued to taper in width, widest at the edge where it met the lid, and narrowest at the ground. The back of the case, however, was less commonly modeled to include the back of the wig and the buttocks, now it was usually flat – perhaps to rest more comfortably in the nested set.

Only a few non-royal coffins belonging to elite, titled individuals have survived from the Ramesside Period. One of the best-studied sets belongs to Henutmehyt, a "lady of the house and chantress of Amun". The pieces found in the burial have lost their definitive context since their discovery, but the associated objects and texts suggest that it was very likely laid to rest in Thebes in the 19th Dynasty, probably in reign of Ramesses II (Taylor 1999:64, 67). The assemblage included an outer coffin, inner coffin, and mummy board.

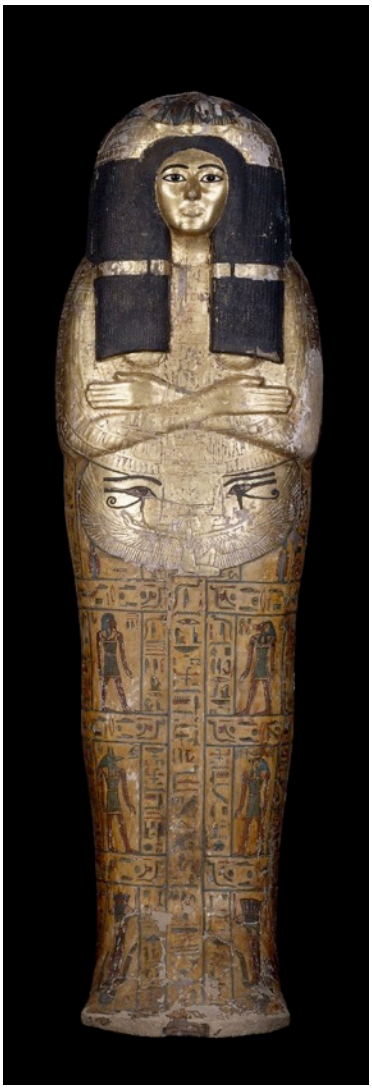


Figure 125: Outer coffin of Henutmehyt. British Museum EA 48001. ©Trustees of the British Museum.

The lid of the outer coffin of Henutmehyt's assemblage (fig. 125; EA 48001) was made mostly of long edge-joined planks of *Cedrus libani*, with the top of the head made of smaller, curved pieces of *Ficus sycomorus.* The sides of the case were also made of cedar, with the top again made from sycomore. The rest of the case is now restored with modern woods. The tenons and dowels were made from a combination of these different species and a single additional peg of acacia (Taylor 1999: 61). Cooney (2007: 399) suggests that at least 12 separate pieces of wood were used for the lid, and at least eight would have originally been used for the case. Upon personal inspection, I can give no better estimate. After the pieces were joined and shaped, the coffin was plastered and painted, and then varnish was applied. The contours of the face are well defined, with inlaid eyes and eyebrows painted black. The heavy wig, with waves cut into the plaster is also painted black with gilded bands holding together the hair that hangs down on either side. The top

of the head is covered with a gilded garland decorated with a lotus flower. Shaped breasts are partly covered by the lappets of the wig, and well-carved arms cross the chest with hands open. The lower part of the coffin is painted, while the top is both painted and gilded. Areas where the black paint has touched upon the gilding suggests that the painting took place after the gilding was applied, as seen in previous eras. Typical for this time period, a central image of the goddess Nut with spread wings decorates the front of the coffin, just below the crossed arms. Above Nut is a stylized collar. The bottom legs of the coffin are modeled and decorated with vertical and horizontal bands of text separating vignettes. Polychrome deities are painted within the vignettes, and in some places symbols such as Isis knots fill in spaces. At the toes, the footboard has been carved to include a groove, and was attached to the sides of the coffin with finger joints. As the back of the case is missing, it is not possible to state whether the back was modeled. The interior of the coffin is covered with a black coating. Finally, the rim of the coffin was painted red, again demonstrating the continuation of this tradition (see chapter 4.II).

Figure 126: Inner coffin of Henutmehyt. British Museum EA 48001. ©Trustees of the British Museum.

The inner coffin was almost entirely joined from pieces of tamarisk with a single dowel of *Ziziphus spina-christi* (fig. 126; EA 48001; Taylor 1999:61). Cooney (2007: 401) convincingly suggests that at least twelve pieces were used for the lid, and ten for the case. The body of the coffin was well executed, and the facial features are symmetrical, precise and detailed. As with the outer coffin, the arms were carved with flat hands and shaped breasts protrude beneath the

sculpted wig. The coffin was almost entirely gilded, except for the painted details of the wig, eyebrows and hair. The eyes were inlaid in stone. The representation of Nut is again present, as is the *wsḫ* collar. The bands of texts and vignettes have been simplified. All the details are in relief, and extend to the bottom half of the coffin as well, the gilding making painted details unnecessary. The added gilding makes it more difficult to view construction details, but it mostly appears to follow the choices made for the outer coffin. One feature that is different than the outer container, however, is a ledge added to the inner coffin rim to more securely hold the lid in place. The back of the coffin case is covered in thick black resin, that contains barley and wheat grains. The thick, central arrangement of the grains supports Taylor's suggestion that they were purposefully placed or tossed into the heavily coated outer coffin, into which this coffin was placed (1999:62). The interior of the inner coffin is also coated with black, which has spilt onto the rim, covering much of the red paint that was added here as well.

According to Taylor (1999: 62), a parallel for such quantities of added black bitumen or resin with embedded grain has not been found for other coffins, but is likely a reference to a "bed of sprouting barley, symbolizing the resurrection of Osiris". These "Osiris beds" are precursors of later "corn mummies", in which a piece of wood or box shaped into an image of Osiris was used as a type of planter for barley or wheat seeds in order to symbolize the rebirth of Osiris within the Osirian mysteries (Raven 1982:7, 30–31). These Osiris beds are well known from the 18th Dynasty, found, for instance, in the burials of Maihirpri, Yuya, Tuya, and Tutankhamun. In the case of Henutmehyt, it seems that the outer coffin supplies the "bed". The inner Osiride coffin may therefore have been seen either as an extension of this bed, or perhaps even the newly 'sprouted' or reborn Osiris. Although not as substantial as the layers found in Henutmehyt's assemblage, the outer and inner coffins of Tamutnefret also have internal black coating. In

addition, although they include less gilding, they are otherwise very similar to the coffins of Henutmehyt, down to the fact that the inner coffin rim has a ledge, while the outer does not.

Figure 127: Coffin of Sennedjem. Egyptian Museum, Cairo JE 27308. Photo by Kara Cooney.

Other yellow coffins from the 19th and early 20th Dynasties demonstrate a slightly more humble construction style. A number of these coffins come from the tomb of Sennedjem, TTI from Deir el-Medina. These include the coffin of Sennedjem himself (fig. 127; Cairo JE 27308), as well as the outer and inner coffins of Khonsu (MMA 86.1.1a-b, MMA 86.1.2a-b), and the coffin of Iyneferty (MMA 86.1.5b-c). Unfortunately, the wood of these coffins has not been identified. Close inspection, however, shows that they are all made of approximately 25-30 long planks of joined wood.[79] Both the lid and case of each has been modeled to include the subtle shape of the body. They are all painted and varnished, and do not include any areas of gilding. As with the coffins of Henutmehyt, the details of their decoration were modeled in plaster before being painted and covered with varnish. The coffins of Sennedjem and Iyneferty are also decorated with the Ramesside wig style, the former in the male overlapping wig, while the latter has the female form, similar to that of Henutmehyt. The outer coffin of Khonsu, however, has a striped headdress, while the inner has the detailed Ramesside wig. The coffin of Iyneferty is also

[79] Kara Cooney (2007) has provided approximate estimates for the number of planks in each instance: Coffin of Sennedjem: 31 (430); Outer coffin of Khonsu: 26 (445); Inner coffin of Khonsu: 30 (447); Coffin of Iyneferty: 25 (450).

unique, in that her coffin has interior decoration, which is unusual until the later 20th dynasty. The rim of her coffin is also painted red. Only the coffin of Katebet, which was likely reused, seems to display modeling in the back of the wig or the buttocks on the exterior of the case.

The coffin of Katebet (fig. 128; BM EA 6665) provides an example of a slightly different type of construction choice. It was created out of long pieces of wood, edge joined with dowels, and provides an example of a very early, transitional yellow coffin. The lid was made from at least 20 pieces of wood, while the case was made from at least seven. Damage at the top of the head and the footboard, and some ambiguity between joints and breaks, makes a more accurate estimation difficult. The construction of this piece is of a lower quality than those from the tomb of Sennedjem, with dowels and joints being more obvious. In addition, only a very light layer of yellow varnish has been applied, and no black bitumen or resin was used to paint the interior of the coffin. A ledge has been cut into the rim of the coffin, which has also been painted red. What makes this coffin unique, is that it was clearly built as a male coffin, and redecorated for a woman. As Kara Cooney (2007:404) points out, the wig was carved into the male style, but painted over as female. The hands are fists, and the breasts have been painted on to the coffin, instead of modeled. Additionally, remnants of modeled ears are visible, which do not occur on female coffins. The reuse of coffins and their materials increased into the Third Intermediate Period, but this was usually done generations after reburial.

Figure 128: Coffin of Katebet. British Museum EA 6665. ©Trustees of the British Museum.

Examples of dug-out coffins that definitively date to the Ramesside Period are difficult to identify. Two possible examples, however, occur in the reused coffins of the caches in tombs DB 320 and KV 35. Daressy suggests that the coffin in which the mummy of Siptah was placed should originally date to the 19th Dynasty (CG 61038; Daressy 1909:218-219). This sycomore coffin was largely made using the dug-out method with additional pieces added to the head and footboard. The arms are carved across the chest, and the coffin was painted yellow. A more dubious example is the coffin used for Thutmose IV (CG 61035). Daressy suggests that this sycomore coffin was originally created in the 20th Dynasty (Daressy 1909:217), but the lack of added arms and the erased decoration make this very difficult to ascertain. Only the case is dug-out.

White Linen Ramesside Coffins

In addition to the yellow coffins, there was also a type from the Ramesside Period, in which the individual was depicted in white linen dress. This has been interpreted as the depiction of the deceased in everyday life, or as an individual who has achieved the effective status as an "*akh*" spirit (Cooney 2017:282). Only a handful of these coffins are known, and seem to date only from the late 18th to early 19th Dynasties. They are largely constructed in the same manner as yellow coffins, except that the feet of the deceased are modeled, and the arms are positioned in a different way. For men, arms were placed straight down the sides of the body, while women were represented with an arm folded to the breast, often holding a lotus flower. A number of these coffins seem have been reused in the Third Intermediate Period, and in their reused form likely make up the majority of, if not all, the coffins in Niwinski's "Type IVc" (Niwiński 1988). Examples of these coffins include the coffin of Aset from the tomb of Sennedjem (JE 27309a), and that of a young girl, Tairsekheru from Thebes (RMS 1887.597; Ikram and Dodson

1998:225). Contemporary mummy boards are also sometimes decorated in this style, even if the owner has a traditional yellow coffin – as with the mummy boards of Iyneferty (MMA 86.1.5c) and Sennedjem (Cairo JE 27308).

Figure 129: Coffin of Taiefmutmut. Museo Egizio, Turin Cat. 2228. (Re et al. 2016:fig. 1).

Recent CT scans of the lid of the coffin of Taiefmutmut from the Museo Egizio di Torino (fig. 129; Cat. 2228), help shed light on the construction choices for this coffin, as well as its later reuse. The main area of the lid was created by edge joining three wide pieces of wood, with additional pieces added on the sides to make up the basic shape, and the wig and breasts were carved directly into these pieces. Additional blocks were attached with dowels for the face, arms, and feet, and then carved into shape. Smaller patches of wood and plaster were then used to add some of the sculpted details, such as the folds in the right sleeve (Re et al. 2016:939–940). The addition of pieces of wood over original paint and plaster layers, and plaster filled dowel holes, allowed the analysis team to see where patches were added in the Third Intermediate Period

when the coffin was reused (Re et al. 2016:941). Unfortunately, the wood for this coffin has not yet been identified. The scans reveal, however, that although the finished shape of the coffin is a new style, the construction methods seen here are largely similar to those of the yellow anthropoid coffin lids.

As noted, a few of these "coffins of daily life" have also been found in the north, and may demonstrate some different traditions of construction and decoration. One example, believed to have come from Thebes, is now in the Michael C. Carlos Museum in Atlanta (fig. 130; L2003.14.38). Only the lid of this pieces survives, representing the female as an *akh*. Most of the lid has been identified as imported Yew (Taxus baccata), while the face was made of tamarisk (Cooney 2007:480–482). The wig, collar, and jewelry were painted, the face was gilded, and the rest of the coffin wood was left exposed. The lid was made of approximately seven pieces of joined wood, according to Kara Cooney's estimates (2007:480). The contours of the body were very carefully carved into the coffin wood, and the whole piece has been left very smooth, with a fine finish. The wood was clearly left exposed to demonstrate the high quality of the wood. Another similarly bare example from Abusir (162/A/78; Verner et al. 2001:21, pl. 3, fig. 13; Cooney 2017:283), and a number of carved bare-wood mummy boards (Cooney 2017:282–286), suggest that this style was somewhat common in the north of Egypt during the Ramesside Period (see further, Cooney 2017).

Figure 130: Anonymous coffin. Michael C Carlos Museum, Atlanta L2003.14.38. (Cooney 2017: Pl. 2A).

Coffins in the Tomb of Iurudef

The tomb of Iurudef was constructed in the 19th Dynasty during the reign of Ramesses II (Raven 1991:2). Excavation of the tomb began in 1982, when it was discovered by an Anglo-Dutch expedition at Saqqara (Martin 1983). The team soon discovered that it had been reused as a secondary cache for burials during the 20th Dynasty and into the Third Intermediate Period. In total, the archaeologists recovered the burials of approximately 70 people in the tomb.

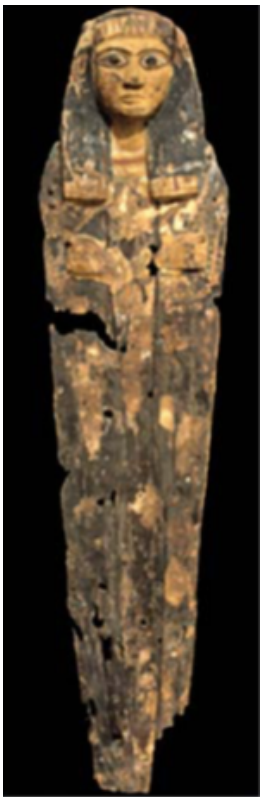


Figure 131: Coffin no. 35 from the tomb of Iurudef. (Cooney 2017: pl. 6.3).

Of the 70 burials, many were left in palm-rib mats or papyrus rind coffers, while others may have been left without formal wrapping at all, suggesting a low socio-economic standing for many of these individuals. In total, 27 anthropoid wooden coffins were discovered, along with 10 rectangular coffins. 26 of the anthropoid coffins belonged to adults, while all of the rectangular coffins were used for children (Raven, Aston, and Taylor 1991:10–11).

Figure 132: Coffin n. 40 from the tomb of Iurudef. (Cooney 2017:pl. 6.4).

The cache provides a very rare look at lower status burials from the north of Egypt, where few wooden coffins have survived. In addition, due to the relatively recent date of the discovery, and the excellent methods followed by the excavators, each object has been carefully analyzed and published, providing access to these objects, despite the fact that the majority are still sealed in a storehouse in Saqqara.

Figure 133: Coffin n. 49/58 from the tomb of Iurudef. (Cooney 2017:pl. 6.5).

Of the coffins found in the tomb, six have been assigned a date of the late Ramesside Period due to style and find context (figs. 131-134; Nos 35, 40, 49/58, 66, 67, 69; Raven, Aston, and Taylor 1991:23). Analysis of the coffins by J.M. Fundter has shown that they are all constructed largely from sycomore fig timber, with tamarisk dowels and tenons (Raven, Aston, and Taylor 1991:11, n. 10). They were created from joined planks, though they differ significantly from the elite coffins discussed thus far. The case of each of the coffins is made from flat boards. The sides are not modeled to the shape of the body, but simply flare out at the shoulders, tapering towards the feet and top of the head. The lid of each coffin is also flat, with added pieces of wood for the face, wig and hands, except for n.40, where the wig was carved into the lid. Coffins n.40, n.66, and n.69, have an added flat footboard, while n.49/58 has a footboard and additional modeled feet attached. N.40, n.66, and n.69 also have pieces added to create a rim for the back of the lid, so that the lid could be attached to the case with the usual mortise and tenon technique. The rest of the lids are simply pegged to the case. The bases of the coffin cases for n.35, n.40, n.66, and n.67 are constructed from numerous flat short boards running horizontally, rather than the usual use of just two or three long boards. In total, these coffins appear to be made from between 32-43 pieces of wood, with the addition of numerous small

Figure 134: Coffin n. 67 from the tomb of Iurudef. (Cooney 2017: Pl. 6.8).

wooden patches and plugs and significant amounts of plaster to fill gaps (see table 1 for specific numbers).[80] The wood for the lid of coffin 35 was also clearly reused, the back side covered with holes and recesses that had to be filled for this new context (Raven, Aston, and Taylor 1991:27). There are no sophisticated joints used for any of the coffins – all the pieces are simply edge or butt joined with pegs. In addition, while all the coffins have painted decoration, none of the coffins are detailed or symmetrical, and they are not varnished, gilded, or inlaid. N.35, n.40, and n.49/58 seem to follow the standard "yellow" coffin decoration scheme, while n.66 and n.67 have a black background, and n.69 has a pink background. There is little else in the decoration of these latter 3 three coffins, however, to suggest that they should not be dated to the Ramesside Period.

The combination of these features suggests that these coffins were cheaply made from low quality wood that could be patched together to create these final forms. The flat lids should not be seen simply as a northern feature. Such constructions are also found in the south, as in the coffin of Taysetmuttaweret from TT97, for example (Ikram and Dodson 1998:fig. 294). This is likely instead a cheaper and easier form of construction. The fact that the majority of the burials from this tomb were wrapped in matting and palm fibres, contributes to this picture of a lower status burial.

DISCUSSION

Timber and Coffin Construction in the New Kingdom

The coffins created during the New Kingdom highlight excessive wealth in a manner that had not yet been seen, and was not to be surpassed. The focus on construction was based on building up as many layers of valuable materials as the individual could afford. Including the wooden core, this might mean plaster, paint, gilding, inlay, varnish, and bitumen or resin. The pristine,

[80] These estimates are based on photographs and construction diagrams and do not include dowels and tenons.

bare beauty of a perfectly prepared and constructed cedar box was no longer fashionable. Despite this, the majority of coffins of royalty and the elite continued to be carefully and beautifully carved from imported timbers. The Egyptians still clearly valued the high quality of these woods to create straight and perfect forms that could be decorated. As noted, it is likely that in their long history of burying wooden coffins, they knew that this material would preserve better than most local species, and so were more effective for housing their remains for eternity; nevertheless, they also likely wished to include cedar for its religious significance, and because it had become established as the best and most valuable material for wooden coffins (see further the cedar discussion in chapter 3.I). The fact that the wood was not visible should not be seen as evidence that it was less valuable. The presence of red paint and protective spells on interior joints, and the use of the largely invisible golden tenons, demonstrates that the Egyptians did not believe that something had to be visible to be effective. The high structural quality, its religious significance, and its established status as the best, therefore ensured that imported timbers, particularly cedar, continued to be used for the coffins of the highest echelons of society.

Although imported varieties were clearly preferred, the fact that the wood was not seen did have a significant effect on construction. There are very few gilded coffins made entirely from local wood, but the number of coffins that combined local and imported species has likely been underestimated. In the few instances in which multiple samples have been taken from coffins, several results have emerged. The coffin of Ramesses II, while being made largely out of cedar, also included strips of tamarisk. This was less likely to occur on Middle Kingdom coffins, where the wood was visible, and the difference in species would be apparent to a trained eye. Henutmehyt was also able to use significant amounts of local wood in her assemblage, and

simply covered the pieces with plaster, paint, and gold. The coffin of Puia, as already noted, is made entirely from local wood, but the high quality of ziziphus likely made this more acceptable.

Since joints were covered over, there was also less focus on complicated mitre joints and other techniques to hide the methods of construction. In addition, it is possible that such joints would have complicated the secondary reshaping into a more subtle anthropoid form, which was of course unnecessary for rectangular coffins. The almost complete lack of mitre joints in the New Kingdom however, for any object, demonstrates a thorough break in carpentry traditions between the Middle and New Kingdom. Looking over the construction of boxes and furniture described by Geoffrey Killen (2017b; 2017a), for example, the mitre joint was hardly ever used in the New Kingdom even for boxes, while in the Middle Kingdom, the mitre surmounted by butt or dovetailed joint was used in this context (Killen 2017c:15). The few rectangular coffins from the New Kingdom are usually joined with finger or dovetail joints, or with simple butt joints (for example Fitzwilliam Museum E.283.1900 and MMA 12.181.302). Looking back to chapter 4.III, however, almost every single coffin was created with some form of mitre joint. This, in addition to the change in coffin styles, demonstrates the significant impact of the Second Intermediate Period on workshops and woodworking technology and traditions. Why the Egyptian carpenters almost entirely dropped the use of the mitre joint in the New Kingdom is, however, still not clear. It seems improbable that the shift to the anthropoid coffin could have changed the approach to constructing all Egyptian wooden furniture, and there are too few other preserved wooden objects from the Second Intermediate Period to investigate the shift fully.

The value of the dug-out construction method also changed in the New Kingdom. Only the high-ranking elite could afford fully dugout anthropoid coffins during the late Middle Kingdom and Second Intermediate Periods. In the 17th Dynasty, especially, those with dug-out

coffins were also often able to add a layer of gilding (see chapter 4.IV). In the New Kingdom, none of the private dug-out coffins, have any gilding. A number of these do, however, appear to be well made, relatively valuable objects. The anonymous white coffin from the tomb of Senenmut (MMA 36.3.184), and that of Madja (Louvre E. 14593) are very well formed, and fully decorated with large amounts of Egyptian blue. The black anonymous coffin from Gurna (EA 52980), and the coffin of Tamyt (EA 6661), are both also well-formed, painted, and their owners were able to afford varnish or resin as a finishing layer. None of the Ramesside coffins from the tomb of Iurudef, probably the coffins of the lowest value discussed in this chapter, were dug-out. This suggests that individuals were still able to elevate the value of local wood through dug-out construction methods, but this was no longer done by the especially wealthy. In addition, the high numbers of joined local wood coffins, also well constructed, painted, and covered with resins and varnishes, suggests that this method of incorporating value was simply an option that many did not select. The only dug-out coffin that was also gilded was the case of Ramesses III, and as it was made of cedar, would have combined both of these value indicators to create a truly impressive object. Usually, however, the elite and royalty preferred to use long planks of high quality wood, and emphasize their value through the addition of prestigious materials.

In summary, during the New Kingdom, imported woods continued to be the most desirable. Members of the elite, however, could get away with using local species since the wood was covered, in a way that had previously not been possible. Those who could afford gilding did not generally consider the use of the dugout construction method necessary to raise the value of local wood. This had become simply an option for those of some means, but who could not afford particularly prestigious added materials like gold. It was usually not an option, however, for those who were able to afford only the bare minimum of construction materials.

Coffins, Religion, and the Economy in the New Kingdom

In the New Kingdom, the shifts in styles and the decoration of coffins align with changes in religion and the economy. Private coffins diverge dramatically from those of kings. It is possible that this began out of a royal desire to differentiate themselves, and create elaborate coffins with which private individuals could not compete. Having emerged from the Second Intermediate Period, a time when royal coffins were not significantly different from non-royal examples, rulers may have felt it necessary to prove to the populace that they were exceptional and worth the worship and loyalty of their people. The creation of new underworld texts, solely for the use of royalty, is likely related to this choice as well. The move to white coffins may therefore be related to the acceptance by non-royal individuals that they could not compete with their rulers in these methods of display. It is also possible that this shift was actually driven by a desire to relate closer to Osiris and this conception of the underworld, rather than the solar avian deities with whom the king had a closer relationship. In all likelihood, a combination of these factors is responsible for this shift.

The white coffins, with their limited representation of gods, are still related to Middle Kingdom predecessors. They are the idealized form of the mummified deceased who has achieved transformation as an Osiris. This is particularly evident in the coffin of Puia, whose arms are crossed over the chest, as is the usual depiction of Osiris, and whose mummy was covered with layers of black bitumen, related to the rebirth from black fertile soils. These coffins are frequently decorated with the *ḥtp-dỉ-nsw* inscriptions, demonstrating a continued acknowledged dependence on the good will of the king to help the populace obtain the favor of

gods and transfigure into Osiris. At the same time, gods began to appear on private tomb walls, mostly limited to representations of the underworld god. Private wealth was developing rapidly, but most people continued to have a single coffin, decorated with only limited amounts of gilding.

The color of the black coffin connects more directly to fertile soils, rebirth, and Osiris. Changing the background color to black also allowed individuals to include layers of expensive resins and bitumen, adding to the value of the coffins. Demonstrating wealth seems to have become a central concern of coffin owners at this time. Private fortunes had sky rocketed with the success of Egypt's military and diplomacy. Individuals now desired to have multiple, nested coffins, and the highest-ranking individuals had entirely gilded examples. Some exceptional individuals had nested stone coffins, or intricately inlaid and gilded pieces. While most of these individuals were, in reality, dependent on the king for their position, there is a clear shift to more independent religious expression. Towards the end of the 18th Dynasty, the images of Osiris in private tombs moved to focal walls, the area where the king had once been commonly depicted (Hartwig 2004:116). On coffins, the *ḥtp-dỉ-nsw* formula was less frequent, replaced by an invocation of Nut to intercede directly. It is possible that as individual wealth and power increased, people began to see the need for a royal intermediary in the afterlife less necessary. As many of these wealthy individuals were related to the Amun priesthood, this ability to communicate directly with the god would have been particularly apparent.

The focus on solar aspects of religion at the end of the 18th Dynasty is almost certainly responsible for the shift to yellow coffins. This would also have given coffin owners an excuse to fully gild their coffins, and incorporate even greater amounts of wealth. Indeed, the painted yellow coffins may have originally begun as an alternative to gold for those who could not afford

such immense expense. The Osiride elements became more prominent at this time, and the mummified body with arms crossing the chest was now also the dominant anthropoid form for the coffin. Although this style begins to appear in rare instances before the Amarna Period, after the capital is returned to Thebes, the yellow coffins become frequent, and replace the black forms in the 19th Dynasty. The number of gods and protective symbols that decorate the coffin increase, at the same time as private tomb walls are covered with images of the deceased before their gods. The *ḥtp-dỉ-nsw* inscription is now rare on coffins, and illustrations of "personal piety" demonstrate that the king was no longer a necessary intermediary. The reaction of the populace to the extreme actions of Akhenaten, cutting off all personal interactions with gods, was to ensure that they would no longer depend on the king for their religious satisfaction. Unfortunately, a lack of preserved coffins from the end of the 19th Dynasty, and the early 20th Dynasty, makes it difficult to comment on the material progression of coffins at a time when Egypt's economy was failing. By the mid-Late 20th Dynasty, and early 21st, however, a pattern of reuse and uncertainty is clear, as individuals found it more difficult to obtain high quality timber, and were less certain of their tomb security. This feeling dominates the practice of coffin construction and decoration in the Third Intermediate Period.

The variety seen in coffin construction and decoration choices in the New Kingdom is much greater than in the earlier periods. Individuals at this time had the wealth to create multiple coffins decorated with precious materials. Whether it was their own choice, or that of their king, to diverge from royal coffin styles, the fact that they were no longer following royal models allowed private coffins to go through large scale changes in decorative methods in a relatively short period of time. The ability to compete with one another, without being restrained by the choices of their king, likely allowed the boundaries of decorum to be stretched farther and faster

than in other periods as well. Moving into the Third Intermediate Period, individuals continued to express their access to gods and funerary religion independent of the royal example.

4.VI: SCARCITY, REUSE, AND RENEWAL:

COFFINS IN THE THIRD INTERMEDIATE PERIOD

The coffins that were produced in the Third Intermediate Period (c. 1069-664 BCE) help to illustrate the complicated power struggles occurring in Egypt at this time. The hundreds of examples that date to the 21st and early 22nd dynasties do not follow a standard form of construction. At this time, timber resources seem to have been stretched particularly thin, and there is little emphasis placed on the creation of new objects from new materials. Instead, coffins were frequently reused, or materials were scavenged from other contexts. There are very few examples where the wood has clearly been cut for the intended project. The few coffins from this era that were constructed from new or repurposed materials seem to have been made as quickly as possible. These objects show the incredible ability of carpenters to improvise, and an emphasis on creating pieces whose beauty was entirely on the surface. The coffins produced at this time are clearly being made for short term, ritual purposes, rather than a limitless eternity. The rapid changes to coffin styles in the later 22nd Dynasty, through to the end of the 25th, correspond to shifts in political power, a resurgence of the economy, and the religious statements that each ruling family wished to present to their people. By the 22nd Dynasty, coffins of high construction quality, and more standardized techniques, are again visible in the archaeological record. Their somewhat sudden reappearance may suggest that such detail-oriented technology never left the north of Egypt, though the archaeological record in this region is too poor to be certain. A mix of traditions continues into the 25th Dynasty, when styles similar to those in the Old Kingdom also appear. When placed within their historic context, the coffins of the Third Intermediate Period can help elucidate the history of this era, and the impact of constant political shifts on the lives of Egypt's inhabitants in a manner that the textual evidence never could.

EGYPT IN THE THIRD INTERMEDIATE PERIOD

Towards the end of the New Kingdom the Egyptian political and economic power base destabilized, leading to what is referred to as the Third Intermediate Period (c.1069-664 BCE). It is likely that a combination of factors is responsible for this breakdown. Libyans from the west had been moving into Egypt for some time, becoming increasingly powerful, and starting to vie for control (Taylor 2000:332–345; Dodson 2012:6–9). To the north and east, multiple battles along the Levantine coast and the collapse of powerful trading partners brought both military pressures in the form of the so-called "Sea Peoples", as well as economic hardship.[81] Internally, gold mines and quarries were being depleted and started to close, the price of grain skyrocketed, and it became difficult to supply the workmen of Egypt with their promised rations (Cooney 2011:3). After the death of Ramesses XI (c. 1069 BCE), the united rule of Egypt effectively collapsed. Power was divided between the 21st Dynasty kings in the northern Delta, and by a family of military leaders, probably of Libyan ancestry, who took up the position of the high priest of Amun in the south, and eventually called themselves kings, as well (Taylor 2010b:220).

With the weakening and eventual collapse of trade networks, and the loss of the steady revenue stream that had once come from the Near East and Nubia, Egypt's economy was in dire straits. Thebes was suffering badly, and if any imported goods were reaching the Delta, they were not making their way south. Even before the final collapse, during the 20th Dynasty, people began to turn to a new source of wealth: the necropolis. The precious objects made of gold, buried in the Theban hills, were removed and sold, melted down, or reused. There is substantial evidence for these activities in the form of the *Tomb Robbery Papyri* (P. Leopold II, P. Abbott; Peet 1930; Capart, Gardiner, and van de Walle 1936). These legal cases and the condemnation of

[81] For a recent overview of the various factors in the transformation of the Mediterranean powers at this time, see Brookbank 2013:445-505.

individuals stealing from the tombs suggests that such activities were not officially supported by the ruling elite; nevertheless, a number of secretive letters have been found that suggest that even high ranking members of society and the *Medjay* policemen were profiting from tomb looting (P. Berlin 10487, P. Berlin 10488, P. Berlin 10489; Wente 1990; Cooney 2011:12).

In addition to the golden treasures, individuals also took wooden objects to be reused. Without the steady import of Lebanese cedars, the Egyptian people had to resort to using local wood for the vast majority of projects, but even this was no longer as easy to come by as it once was. It may be that environmental issues and deforestation were partly responsible, but Kara Cooney has also suggested that the local wood may have been required in higher amounts to build ships and as supplies to fight the constant battles that Egypt now faced (Cooney 2011:32). If this were the case, then the armies would have needed not only timber for construction, but also charcoal to create metal weapons. While some individuals clearly did have access to fresh timber, there simply was not enough to supply the entire population. To keep up with the continued demand for coffins, the Egyptians reused many for new owners. Kara Cooney (2007; 2011; 2014) has done extensive work on this subject, proving a suggestion originally made by Andrzej Niwinski (1988).

The Egyptian people reacted to these developments in multiple ways. Firstly, the practice of building large, elaborate, decorated tombs, and filling them with burial goods ceased. At the end of the 20th Dynasty, individuals began choosing group burials instead, in the form of family or community tombs that could be used for generations. The burial assemblage was also simplified down to the necessities, which might just be the mummy and a coffin. (Richards 2005:85; Taylor 2010a:234; Cooney 2011:16–18). The images and spells that decorated the tomb walls were condensed, simplified, and became part of the coffin decoration. These few objects

now had to fulfill all the functions of the tomb complex (Taylor 2010a:235; Cooney 2011:5), which included competitive display. Prestigious cedar was no longer available for the elite, nor could the Egyptians cover their coffins with gold, if they wanted them to remain intact. Instead, they turned to elaborate decorations, competing through intricate combinations of scenes to display their religious knowledge, and the use of large amounts of expensive blue and green pigments that could not be reused (Cooney 2011:28).

Around the year 946 BCE, there was a political and religious shift. A powerful family of Libyan descent took control in the Delta and began their rule as the 22nd Dynasty of Egypt. They appear to have taken over with relatively little opposition (Taylor 2000:329). As soon as they solidified their position in the north, they removed the powerful priestly families effectively ruling in the south. The first pharaoh of this line, Shoshenq I, chose to place his son Iuput in the position of High Priest of Amun. Future kings followed this example, choosing a son to serve in the south (Dodson 2012:85). As the power of the Theban priesthood was curtailed, the funerary culture also changed dramatically as religious knowledge was no longer permitted, or at least popular, as a means of competitive display. At the same time, a series of successful campaigns to the Levant seem to have been accomplished by these kings. Some of the most famous were led by Sheshonq I, the biblical Shisak, and are recorded on the so-called "Bubastite portal" in Karnak (Dodson 2012:92). With these excursions, cedar is again available for coffins, as demosntrated through the existence of several high quality examples.

The united rule of Egypt, with kings in the north and their loyal sons serving as High Priest in the south, did not last for very long. Powerful lineages continued to grow in different regions in the Delta as well as in the south, with several claiming the titles of kingship. Who exactly should be seen as the rulers of the 23rd and 24th Dynasties is a complicated issue (see

Dodson 2012:113–138), but they all seem to have been ruling concurrently to the last few kings of Dynasty 22. While Egypt was focused inwardly at this time, the Kushite rulers in Nubia to the south were also gaining power, and beginning to look north. Eventually, after a series of attacks and campaigns, a group of Nubian kings were able to take over Egypt and found the 25th Dynasty (Taylor 2000:347).

The Kushite rulers seem to have been met with little opposition in Egypt, and after taking power, they proclaimed their desire to bring back many of the traditions associated with Egypt's more prosperous eras. The Kushites were also devoted to the god Amun, and set about renewing the Amun priesthood in Thebes, as well as the temple building projects dedicated to this god throughout Egypt and into Nubia (Taylor 2000:360–361). Much of the funerary art created during the 25th Dynasty shows a return to traditional motifs that had been appropriate for non-royal individuals during the New Kingdom. These traditions remained popular into the 26th Dynasty and beyond, when the Assyrians took control of Egypt, ending the Third Intermediate Period.

COFFINS IN THE THIRD INTERMEDIATE PERIOD: AN OVERVIEW

At the beginning of the Third Intermediate Period, during the 21st and early 22nd Dynasties, the wealthiest individuals continued to have an outer and inner coffin, along with a mummy board, and a mummy. Frequently, however, individuals could only acquire a single coffin. Coffins and mummy-boards continued to be made in anthropoid, Osiride form, but the amount of carved relief changed over time. At the beginning of the 21st Dynasty, carpenters were carving the outline of the shoulders, arms and hands in relief. As time progressed, however, fewer elements of the body were indicated. Andrzej Niwinski has provided a stylistic analysis of the coffins from this period, showing their progression (1988:68–82). Initially, the full arms are carved, then the

elbows are only included in outline in the shape of the coffin and only additional hands are carved in detail. In the 22nd and 25th Dynasties, only the shoulders remain part of the overall coffin shape, with no other indication of the arms, with few exceptions.

The amount of reshaping, carving, and construction was dependent on the amount of reused pieces incorporated into the coffin. Kara Cooney has found that there are multiple ways that coffins could be reused in the 21st and early 22nd Dynasties. Sometimes just the name on the coffin has been changed, or the gender of the depicted owner is switched by exchanging female earrings, flat hands and wigs for male ears, fists, and beards. Other times the reuse is more extensive, scraping away the decoration to start with just the blank wood, or simply plastering over the painted object and adding another layer of decoration. The coffins or other wooden objects could also be broken down and the wood reshaped and recombined to create an entirely new coffin (cf. Cooney 2014:46–47). In some cases, then, very little carpentry was necessary.

Niwinski originally suggested that his type IV-c coffins from the 21st dynasty (yellow anthropoid coffins with decoration painted over carved linen garb) were instances of "archaization", modeled after earlier Ramesside coffins (1988:78–79). More recently however, Cooney has shown that these are the original 19th Dynasty coffins with a new layer of decoration (2011:34–35). This is demonstrated, for instance, in the coffin of Taiefmutmut (Museo Egizio cat. 2228), discussed in the previous chapter (4.V). Other replastered and painted coffins can be identified where the second layer has fallen away, revealing the original layers beneath (for example, Florence 8524, Florence 7450). Based on a sample of 188 21st Dynasty coffins, Kara Cooney has been able to identify reuse in 71.81%, and as she continues her analysis, this number continues to rise (personal communication). It is therefore safe to say that the majority of coffins from this period were not constructed from original materials.

Fearing that expensive materials would be removed from their coffins soon after placing them in the tomb, most individuals opted to incorporate large amounts of expensive, rare pigments into their decoration, which could not be reused once added to the coffin (Cooney 2011:28). The need to incorporate the protective emblems and spells that had once covered tomb walls, also gave the Egyptians the opportunity to cover their coffins in religious vignettes and symbols. Towards the end of the 21st Dynasty, the types of vignettes moved from the standard *Book of the Dead* selections that had been accessible to everybody from the New Kingdom on, to including vignettes from the underworld books such as the *Amduat*, which had once only been accessible to kings (de Araújo 2014; for example, London 22941, Mougins MMoCA489, Leiden AMM 18 h). Coffin decoration also began to incorporate red braces that crossed along the floral collar, giving this style the name "stola coffin" (van Walsem 1997:116–117). Those with sufficient religious knowledge, and with a high enough status to gain access to these images, could have competed with one another through not only the substantial use of expensive pigments, but also through their selection of scenes (Cooney 2014:45–47). Stola coffins seem to date from the end of the 21st Dynasty to the beginning of the 22nd.

During the 22nd Dynasty, the funerary assemblage changed dramatically, once again. Perhaps because they continued to try to find new methods for "defensive burials", the use of cartonnage wrapping replaced the inner wooden coffin and mummy board. Cartonnage is basically an envelope, open on one side, made from layers of linen and glue, in which the mummified body was placed. The opening was then sewn shut, and placed on a wooden board (Taylor 2003:104). Once the cartonnage was dried, it could not be removed from the mummy without significant damage, which would not have been nearly as attractive to thieves. This layer of the mummy wrapping was still decorated with figures and vignettes, but the decoration

becomes much more simplified. The vignettes are now limited to scenes from the *Book of the Dead*, particularly the weighing the heart and the presentation of the deceased to Osiris (Taylor 2003:105). The use of cartonnage continued after Egypt was reunited by the Libyan kings, and would remain a feature of burials through to the Greco-Roman period.

The new style of many of the 22nd Dynasty wooden coffins was much more simplified. Carpenters stopped carving the arms and hands on the coffin. This shape reflects the non-royal mummy, rather than the royal Osiride style of the 21st dynasty. In the south, while some coffins retain a simplified, register style of decoration, as had been common up to this point, many now consisted of the face and wig, floral collar, a winged goddess, and a column of inscription down the front of the coffin. The ground layer of the coffin was often left undecorated, or painted as a block of black, brown, red (Taylor 2003:108). In many instances, this was done to establish the use of high quality cedar. Styles in the north of Egypt were slightly different, as shall be discussed below. While the improvised and reused construction techniques are still visible in some instances, there is a clear effort to work more carefully, and include finishing methods. With the wood frequently exposed, the craftsmen could not simply use large amounts of plaster to hide cracks and mistakes. A focus on the quality of the carpentry therefore seems to come back into focus, along with the return of imported softwoods.

The reason for this shift is almost certainly related to the new rulers of Egypt, the kings of the 22nd Dynasty. It is possible that the ruling elite felt that the decoration of the coffins with elements taken from motifs once purely associated with the king and divinities was inappropriate. These rulers may have realized that it allowed the owners or their descendants, many connected to the Amun priesthood, to claim too many rights and powers. To this end, the new rulers seem to have promoted or forced the simplification of coffin decorations (van

Walsem 1997:361–362; Taylor 2003:203). These coffins therefore demonstrate the loss of religious knowledge as a source of competitive display, almost certainly related to the curtailing of the priesthood of Amun.

The bare wood style of the 22nd Dynasty coffins is similar to some of the rare, northern Ramesside coffins, as discussed in chapter 4.V. In both cases, the anthropoid forms are left undecorated so that the high quality wood is visible. It is possible that the value of woodworking and timber had not disappeared in the north. While the styles changed with the passage of time, this additional timber value did not. It may also be possible that, being so close to maritime trade routes, there was greater access to imported softwood timber in the north as well. Moreover, the sudden shift in coffin styles during the 22nd Dynasty, may also suggest that the style had already existed for some time in the north (Taylor 2003:103–4; 378). Unfortunately, as so few coffins and organic materials survive in the Delta, we may never know for certain.

Very few known coffins have been found that can be connected with certainty to the 23rd and 24th dynasties, but the few examples that we have are transitional. These coffins maintain the same simplified subject matter, but discrete pedestals and greater amounts of text are now seen, which become central elements of the coffins produced in the 25th Dynasty (Copenhagen Æ 298; Ikram and Dodson 1998:236)

As the Kushite rulers brought back traditions from earlier periods, two types of coffins became popular. The anthropoid style continued, and the use of the *qrsw* coffin emerged. Inner coffins became more sculpted, and a back pillar and pedestal created the sense of a representation of the divine being (Taylor 2003:112). The inner and outer anthropoid coffins were more simplistic, following closely to the shape of the 22nd Dynasty. The style with a column of inscription was also retained alongside pieces that have simple vignettes, but with

much more text than was seen previously. The higher quality of craftsmanship was maintained, and carpenters contined to craft high quality bare wood examples.

The rectangular style *qrsw* coffins, with posts at each corner and a vaulted lid, reflect the *pr-nw* shape of some of the coffins from the Old Kingdom (see chapter 4.II). From a religious point of view, the *qrsw* coffin lid was also representative of the sky, and the base, the realm of Osiris (Taylor 2003:112). At the same time, more complicated joining and slotting techniques were renewed. The revitalization of the *qrsw* coffin suggests a firm grasp on Egyptian cosmology and religion, and the accompanying traditions. It is possible that the Egyptians saw high quality craftsmanship to be an important element of the practices upheld by their ancestors. This would then suggest a case of returning to what were viewed as traditional practices, which is indicative of many of the religious changes seen during the 25th Dynasty, and carried on into Late Period coffins as well.

Due to the added layers of plaster, linen, paint, varnish and often resin or bitumen, it is particularly difficult to access construction details during the Third Intermediate Period. Only those coffins that have been damaged so that joints are visible, or those pieces that have been subjected to CT scans can be discussed in detail. Fortunately, coffin studies from this period are particularly popular, so there are enough accessible examples to discuss the progression of construction; nevertheless, as there is significant variation in the available pieces, we must assume that unexamined containers may be substantially different as well.

TECHNICAL DESCRIPTION OF COFFINS IN THE 21ST DYNASTY

As already noted in chapter 4.V, many of the 21st Dynasty coffins from Thebes were found in caches. Ostensibly, the Theban priests brought coffins from other tombs to these group tombs for their protection. Royal mummies, for instance, were sometimes rewrapped and provided with a

new coffin, as seems to have been done for Ramesses II, for instance (Daressy 1909:32; Desroches-Noblecourt 1985:17, fig. 9; 1997:237, fig. 9). The so-called *Royal Cache*, DB 320 in Thebes, was therefore the resting place of the High Priests and southern Kings of Egypt. One somewhat damaged coffin set, belonging to Pinudjem I, and that of his wife, Henttawy, permits a discussion of the construction.

The outer coffin of Pinedjem I (fig. 135; CG61025) was made of cedar, and had originally belonged to Thutmose I (Daressy 1909:50; Dodson 2012:50–52). It was stripped down and redecorated for use of this high priest king in the 21st Dynasty. The coffin was covered in layers of plaster and linen, before being painted, decorated with glass inlays, and significant amounts of gold (Daressy 1909:50). This gold, however, was later completely stripped away with adzes, the tool marks of which remain in the wood. The breaks in the decoration show that the lid of the piece was made of several edge-joined planks of wood. Thin strips of wood were added to the lid's edge, perhaps to build up a desired thickness or height, or in order to repair the damage done to the edge when the coffin had been pried open after its use for Thutmose. These breaks also show the original decoration beneath, showing that the 21st Dynasty coffin decoration was simply added to what came before. Additional pieces were added for the hands, face, and wig, attached with small dowels. Pieces were also added for the footboard, but these no longer remain. Within the hands were two carved emblems of the Djed pillar and Isis knot, which Daressy notes were carved from ebony (1909: 50). The facial features had once been very carefully carved and

Figure 135: Outer coffin of Pinedjem I. Egyptian Museum, Cairo CG 61025. (Daressy 1909:pl. XXVIII).

inlaid, but this too was scraped over to remove gilding. The coffin case was also quite damaged, but the modeled shape of the body, including the buttocks, is clear in the joined planks of wood. This betrays its 18th Dynasty origins. Strips of wood were added around the edge of the case, but these are thicker and are more likely to be part of the original construction.

Figure 136: Inner coffin / mummy board of Pinedjem I. Egyptian Museum, Cairo CG 61025. Daressy 1909: Pl. XXVIII.

What Daressy refers to as a badly damaged inner coffin lid, was made mostly of sycomore fig, but had a face carved out of cedar (fig. 136; Daressy 1909:59). There was no case found with this piece, and it is likely that it is actually a mummy board, as also suggested by Aidan Dodson (2012:50). There is no evidence of reuse on this piece, and so it seems that it was built in the 21st Dynasty for Pinedjem, specifically. It was similarly plastered with layers of linen and then painted, inlayed, and gilded. Once again, however, much of the decoration has been adzed away. The piece seems largely to have been carved from a single piece of wood, with the addition of the cedar face, of course. The crossed arms are carved, and hold the remains of a Djed pillar and Isis knot made of ebony (Daressy 1909:60). The combination of these pieces help to reinforce our understanding of timber access in Thebes in the 21st Dynasty. The reused coffin of Thutmose I was entirely made out of cedar, but the fresh mummy board had to be made of sycomore fig, with only the face being made of cedar. This coffin also demonstrates the fate of many highly decorated and gilded coffins at this time.

Figure 137: Inner coffin of Duat-Hathor Henuttawy. Egyptian Museum, Cairo CG 61026. (Daressy 1909: Pl. XXXV).

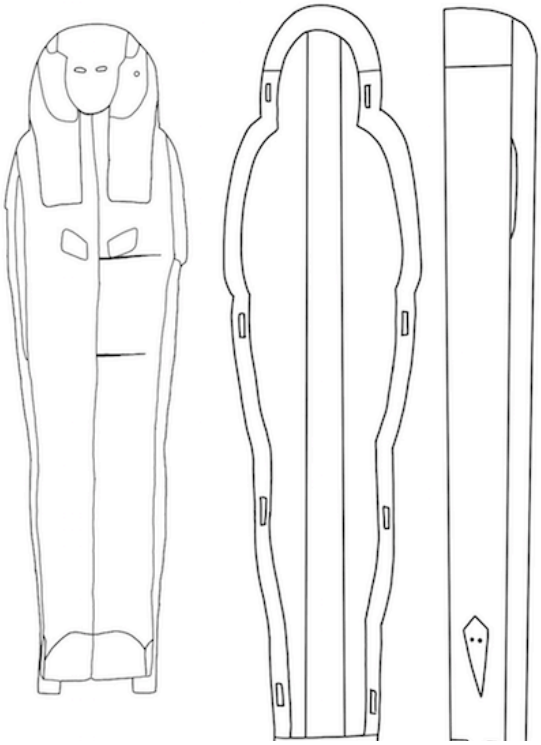


Figure 138: Inner coffin of Duat-Hathor Henuttawy construction diagram. Egyptian Museum Cairo CG 61026. Image by author.

Another coffin set that suffered similar damage belonged to the wife of Pinedjem I, Henuttawy. Her reused outer cedar coffin was already described in chapter 4.V, as, just with her husband, this piece was actually constructed in the 18th Dynasty. The inner coffin, however, may have been created in the 21st (figs. 137-138; CG61026). The decoration was added in several layers: a base pinkish layer, then white plaster, linen, more white plaster, gilding, paint, and varnish. Little of the decoration now remains. A blue wig is still visible, as are gilded falcon heads on the shoulder. Also still in place on the chest is part of a gilded scarab, and below the arms is a gilded, ram-headed scarab, flanked by winged goddesses.[82] The only other remnant of decoration is a central band of inscription. The interior and the rim of the lid were painted red, demonstrating that this tradition was still being recognized at this time.

[82] A similar scarab formation can be seen on coffin Cairo JE29667.

The construction of the lid is visible thanks to the removal of the majority of the decoration. Inspection with a Dino-Lite microscope at the head of the coffin revealed a diffuse porous hardwood. A more precise identification is not possible without sampling, though Daressy's publication suggests that sycomore fig was used for this coffin set (1909:63). The body of the coffin was made up of long planks of wood joined with dowels. The face, wig, and hair are constructed through the joining of numerous smaller pieces. Here, substantial amounts of plaster also help to build up the shape of the features. In total, the lid of this coffin was originally made from approximately 16 pieces, which includes the now missing hands. Where pieces of wood were attached, a glue or adhesive was used. This substance seems to have included hair-like fibers, which still cling to the coffin. I have only seen this type of fibrous glue on pieces from the 21st Dynasty and later, and so may help indicate the presence of 21st Dynasty construction on reused coffins, but more work on this concept is required before it is possible to be certain. It was not, however, present on the outer coffin, which was constructed earlier. The interior edges of the larger pieces of joint wood on Henuttawy's inner coffin also all appear to have been painted red before being joined, the same color as the rim and the interior. The exposed interior joints at the feet make this particularly evident. There are several elements in the construction that suggest either repair or reuse of the wood, before being integrated into this coffin. Unused dowel holes that have been filled with plaster are found in the pieces making up the face and wig. In addition, on one of the long planks of wood in the body, there are long straight gouges in the wood. These go across the grain, which suggests that they are not natural, and were filled with smaller pieces of wood and plaster (see figure 138). These might be saw marks, going against the grain, and used to help the carpenters as they worked with adzes to

shape the body of the coffin.[83] These cuts reach the long edge of the plank, but do not continue on the adjoining piece. This suggests that they may be from the shaping of a previous coffin, and then reused for this piece. The ledged rim of the coffin is also not the same width all the way around, which suggests that it was reshaped to fit the case.

The case of the inner coffin follows the same basic anthropoid shape of the lid, with the shoulders, elbows, hips, and calves carved into the construction. It was also heavily gilded once, but now largely covered with adze marks. Here, as with the lid, the lowest layer of the decoration was a pink plaster, followed by white plaster, linen, more white plaster, gilding and paint. In some areas, the fibrous, gluey substance may also have been laid down as a base layer, on top of the pink plaster. Very little of the exterior decoration can be identified on this coffin. Fragments of black or varnished blue paint and gilding can be seen, but little more can be described. The interior of the coffin is painted red, as with the lid, and decorated with a varnished, polychrome figure of Nut, standing on a *nebu* sign. In a vertical column on her skirt are painted the names and titles of Henuttawy. The coffin case was largely constructed from long planks of wood edge joined with dowels. The footboard was joined with dovetailed sections, and the curved top of the head was carved from a single piece of wood. This wood, too, seems to be made from a hardwood, though the anatomy was particularly difficult to see with the Dino-Lite. One of the planks on the coffin's left side seems to have been repaired – a large rhomboid-shaped patch was added. This may have been done to replace a large, loose knot in the wood, or as a repair from a previous use. In total, including the patch, the case was made from approximately 12 pieces of wood, not including dowels and tenons. A ledge has been carved into the edge of the coffin.

[83] I am grateful for this suggestion from Julie Dawson, who noted that such marks were also found on coffins in the Fitzwilliam Museum.

Since its initial completion, this ledge was reshaped, as is readily visible at the head. The width of the coffin sides and edge is not consistent, and so may demonstrate a reshaping to fit the lid.

The wood species for Henuttawy's sets are more difficult to discuss, and Daressy simply says the coffin set (inner and outer) is made of cedar and sycomore fig (1909:63). Judging from my brief analysis, however, I believe the outer coffin to be made of a softwood species, while the inner coffin seems to be made from hardwood. If this is the case, it would align with the practice seen with Pinedjem – the imported wood is largely reused from the New Kingdom, while only local woods were used to construct the 21st Dynasty coffin. Even these local woods, however, seem to have been reused. Kara Cooney is currently examining the coffins from DB 320, and, so far, from 31 pieces, she has identified reuse in 100%. The other cedar coffins from this context, those of Nedjmet (CG61024), Masaharta (CG61027), Maatkare (CG61028), Pinudjem II (CG61029), and more, are included in this count (personal communication).

Figure 139: Silver coffin of Pasebkhanut I. Egyptian Museum, Cairo JE 85912. Photo by Abo Rashad.

A number of the later kings of the 21st Dynasty were buried not at Thebes, but at Tanis in the north. The royal burials of these kings, and a number from the succeeding 22nd Dynasty, were found within the confines of the Great Temple of Amun at Tanis, built over what had once been Pi-Ramesses (Montet 1947:7). Pasebkhanut I, known more generally by the Greek version of the name, Psusennes I, a son of Pinudjem I, seems to have built the first enclosure wall of the temple (Dodson 2012:58), and his coffin assemblage remains somewhat intact. The coffin (fig. 139;

Cairo JE85912) was made of silver, with gold detailing, and looks, in shape, remarkably like that of Ramesses II (see chapter 4.V). It is decorated with the *rishi* feather style, the nemes headdress and false beard, and has arms crossed over the chest, holding the crook and flail. While this coffin seems to be of original construction, along with an accompanying golden mummy mask, it was placed in two reused stone sarcophagi that originally dated to the New Kingdom (Montet 1951:22; Dodson 2012:67). In addition to this piece, the gilding from the royal wooden coffin of Amenemope, as well as his golden mummy mask, also survive, though the wooden structure was completely deteriorated by the time of its discovery. These pieces were also placed in a reused stone sarcophagus from the Middle Kingdom (Montet 1951:160; Dodson 2012:69). Although these objects cannot reveal information about wooden construction, it demonstrates the continuation of the *rishi* style of coffin decoration, which may have once been present in the coffins of Pinedjem I, but has since been scraped off. While their presence shows that these kings could still acquire high-quality materials, again probably reused, and engage the work of talented craftsmen, the high instances of reused pieces for the burials continue to speak to the level of scarcity affecting Egypt at this time.

Other, less prestigious coffin sets demonstrate the patchwork effect of trying to construct coffins from reused pieces of local wood. The 21st Dynasty coffin assemblage of Nespawershefyt (Fitzwilliam Museum, E.1.1822) consists of an outer coffin, inner coffin, and mummy board. This set is particularly interesting, as the titles on this piece indicate that the owner was a supervisor of temple scribes, and a supervisor of craftsmen's workshops. As noted by Dawson and Strudwick, the coffin owner seems proud of his role, as it is repeated more than 40 times on the coffin (2016:182). We might therefore assume that this individual had access to some of the best craftspeople at the time.

The exterior of the outer coffin was elaborately decorated (fig. 140). The interior was not as extravagant, mostly painted red with the addition of an image of an Osiris Djed pillar on the base. This piece was plastered over with a calcite paste, before being painted and varnished with pistacia resin. Unlike the inner coffin, the yellow orpiment background color and the varnish are only applied to the text bands and figures, leaving much of the coffin white. The lid was made of larger planks of sycomore fig, with a footboard of tamarisk. The head and hands are again separate pieces of wood. The case is made from a number of pieces of sycomore fig. The base also has a large patch of tamarisk. All the edge joints of this coffin are connected with dowels, rather than tenons. At the head and shoulders, patches of thin pieces of wood have been attached to fill out the anthropoid shape. The head end of this case is carved from a single piece of wood, and a ledge was cut into the coffin to securely fit the lid (Dawson and Strudwick 2016:187–189).

Figure 140: Outer coffin of Nespawershefyt. Fitzwilliam Museum, Cambridge E.1.1822. © The Fitzwilliam Museum, Cambridge.

Figure 141: Inner coffin of Nespawershefyt. Fitzwilliam Museum, Cambrdige E.1.1822. ©The Fitzwilliam Museum, Cambridge.

The exterior of the inner coffin lid and case were completely decorated with a yellow background and busy polychrome decoration and texts (fig. 141). The interior was also fully decorated, with a large image of the goddess of the West on the base. For this piece, a coarse calcite plaster was applied to the wood, before a layer of linen, then a finer white plaster, the polychrome decoration, and a layer

of pistacia resin varnish. The lid was made from a large, central piece of christ's thorn, with additional pieces of christ's thorn and sycomore fig edge joined at the sides with dowels; however, additional patches had to be added to the central christ's thorn plank, perhaps due to faults in the wood. The main piece also split, and was repaired with a butterfly cramp. The footboard is largely one piece of sycomore fig, though smaller patches were also necessary to complete the shape. It was connected to the sides with dovetail joints. The hands and the face are separate pieces of carved wood. One hand is now missing. The long sides of the case are each made from planks of sycomore fig edge joined together with tenons. Cooper-joined slightly curved pieces are used to create the head end. These are sycomore fig and christ's thorn wood. The sides were attached to the base with angled dowels, while the footboard was attached with dovetail joints. A ledge was cut into the coffin to securely fit the lid. CT scans show that the coffin has clearly been reused. Previously used mortises are now empty or filled with plaster and bits of wood, while old dowel holes are visible as well. Dawson and Strudwick note that all three remaining hands from these coffins were made of different woods: ziziphus, tamarisk, and sycomore fig, while the dowels and tenons were a mix of acacia, ziziphus, sycomore fig, and even cedar (2016:184–189, fig. 96a). Finally, the mummy board is made largely from a single piece of sycomore fig, with the addition of a sycomore face. There is no evidence of reuse in this piece (Dawson and Strudwick 2016:184).

The composition of this coffin pales in comparison to the finely made examples from the New Kingdom (see chapter 4.V), but certain areas reflect the presence of care and an attention to detail. As noted, the mummy board was finely made, and a number of complicated joints were used in both the inner and outer coffins. In addition, tool marks at the back of the head show that at least here, the wood was smoothed over with a sanding block to prepare for layers of added

linen, plaster, and paint (Dawson, Marchant, and von Aderkas 2016:89, fig. 59). This extra attention to detail would have been time consuming, and shows that at least some of the carpenters working on this object were still attempting to create a well-made coffin using the reused and poor quality materials available to them. The final appearance of the coffin was of a high quality, despite its internal mix of woods, joints, and glues.

Figure 142: Coffin n. 27 from the tomb of Iurudef. (Raven 1991:pl. 17).

A final example of a 21st Dynasty coffin, comes from the tomb of Iurudef in Saqqara (Raven 1991). A number of the relatively lower quality coffins from this tomb seem to date to

the Third Intermediate Period. This suggests the constant use of the tomb as a lower socio-economic cache from the late Ramesside Period through to the 21st and perhaps early 22nd Dynasties (Taylor 1991:23). This coffin (fig. 142; coffin n. 27) is decorated in a fairly typical fashion for the 21st Dynasty, with complicated polychrome decoration on the outside, and white, only, on the interior. A long floral collar covers the chest, above a standing winged goddess with arms outstretched. This standing goddess is slightly irregular, and John Taylor notes that it may be a northern variation in decoration styles, but too few coffins have survived from this era in the north to be certain (Taylor 2009:377). Below are tiers of seated and standing figures of Osiris and other mummiform gods. The hieroglyphic inscriptions on this piece are all pseudohieroglyphs only.

The coffin was made from numerous planks of sycomore fig, with dowels of tamarisk (Raven 1991:11, n.10). The lid of the coffin was basically flat, but a rim had been added to the underside to allow mortises to be cut in order that the coffin lid and case could be secured with tenons. The lid was made from a long central plank, with five additional planks making up the rest of the cover. The hands, face, and wig, were built up from separate pieces. The ledge of the lid was made from seven additional sections of wood. The footboard was flat, made of two pieces, and was attached to the sides with dovetail joints. A subtle indication of elbows had been carved into the lid. The sides of the case were each largely made from two long planks of wood, while the rounded head was created from three joined pieces. The footboard was made from another two pieces, which seem to simply abut to the case. The base was made from at least 16 short planks placed horizontally. One area is missing where one or perhaps two planks had originally been attached.

The overall appearance of the coffin is rather high quality, despite being made from a patchwork assortment of sycomore planks. The face was carved to include modeled features, and the painted decoration is detailed and elaborate, if perhaps not as carefully or expertly applied as in the coffins described above. There is no added gilding or varnish however, and the lack of true hieroglyphs further suggests that this individual was unable to hire a scribe to work on their coffin. The slight differences in construction, such as the horizontal boards for the base, may be a northern construction variation, but it is more likely related to the lower status of the coffin owner.

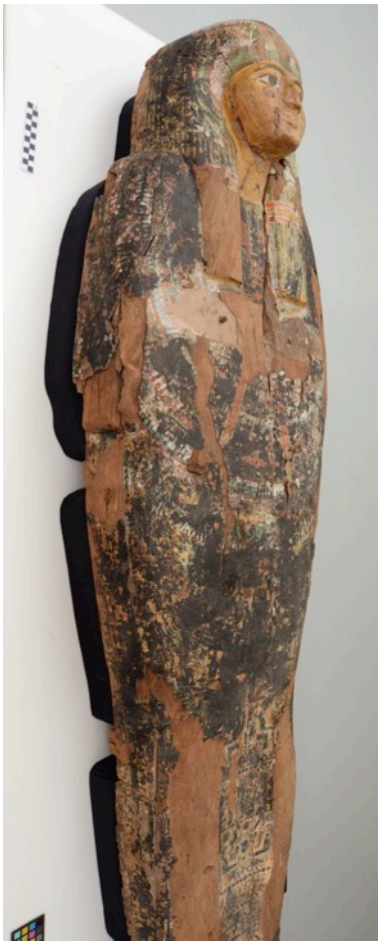


Figure 143: Anonymous 22nd Dynasty coffin. Denver Museum of Nature and Science EX1997-24.4.

TECHNICAL DESCRIPTION OF COFFINS IN THE 22ND DYNASTY

An anonymous coffin in the Denver Museum of Nature and Science (figs. 143-145; EX1997-24.4) provides an example of a stola coffin, which dates either to late 21st or early 22nd Dynasty.[84] Much of the decoration of the coffin has fallen off, or been obscured by the final added layers of black resin; however, what is still visible is the complicated decoration of coffins at this time, complete with floral collar, and the red straps crossing the chest, which mark this piece as a stola coffin. The anatomical analysis of samples taken from several areas of the lid revealed that the larger planks of the coffin were made of sycomore fig, while the tenons and dowels were made of acacia (personal analysis). There is no clear visual evidence of reuse in the decoration of coffin

[84] The thorough investigation of this coffin, including images, will also published in Arbuckle Macleod: Forthcoming b.

EX1997-24.4, but scientific analyses complicate the picture. The carbon 14 dates for the wood show that the sycomore fig from the lid likely dates to between 1050-925 BCE, while the acacia from the lid dates to between 910-820 BCE. At the very least, this means that the sycomore fig would have had to be cut and lie unused for 15 years before being made into a coffin with the acacia dowels in 910 BCE, if we are to believe that these materials had never been used before. If wood were as hard to come by as seems to be the case, then it is unlikely that it sat for very long at all before being made into an object. In addition, statistically, the true dates of the timbers are probably closer to the middle of their respective ranges, suggesting that the sycomore was actually cut closer to 100 years before the acacia, making a much stronger case for timber reuse.

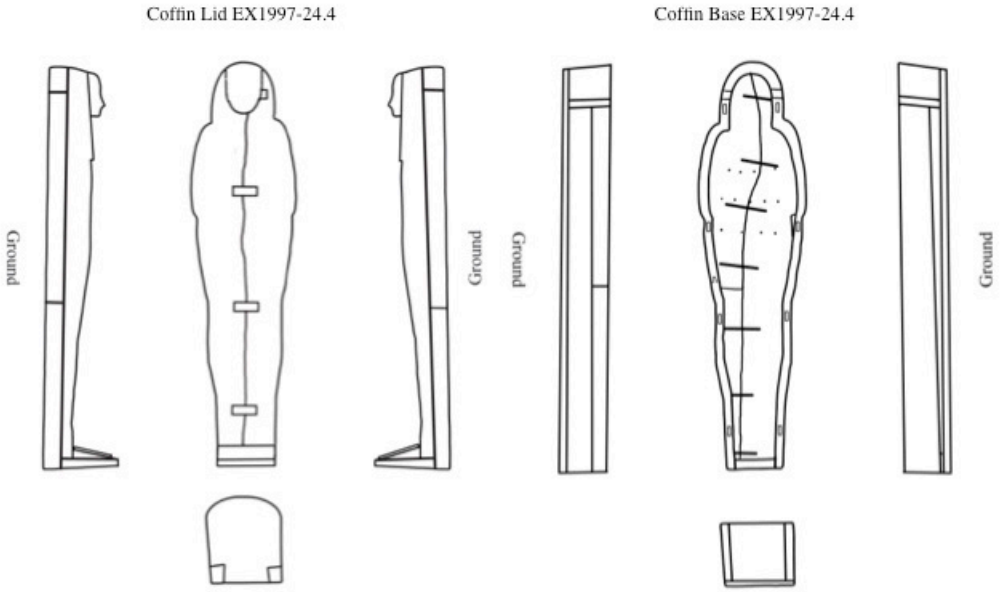


Figure 144: Anonymous 22nd Dyansty coffin construction diagram. Denver Museum of Nature and Science EX1997.24.4. Image by author.

CT scans were completed for this coffin, offering particularly detailed insight into its construction. The top of the lid was made from two planks of wood, edge joined with tenons, with two additional pieces at each of the sides. Wedge joints were used to connect the shorter planks on the sides to each other, which were then attached to the rest of the lid with edge joints,

secured with dowels. The face and top of the wig was carved from another piece, with a final addition at the top of the head. Flat hands had once appeared on the chest, but they no longer remain. The footboard was created from one flat, slanted piece, and another flat piece for the foot end. The foot end was attached to the sides with dovetail joints. The sidepieces of wood were only shaped where they would be visible on the exterior. CT scans show that elsewhere, not even the bark had been removed (fig. 145). Rough tools marks are visible in some areas such as the shoulder, while even, regular scooped adze marks are visible along the body (fig. 146). These show that care was taken to suggest the subtle modeling of the elbows and legs; however, there was no attempt to remove the tool marks anywhere except the face. Here, the facial features were well defined, and subtle lines of stone rubber show that it was carefully finished. Additional wood patches and significant amounts of plaster filler were used to give this coffin a finished appearance. The decoration was built up first with a rough mud plaster, then a finer white plaster, coloured pigment, and, in some places a yellow varnish, particularly on the face.

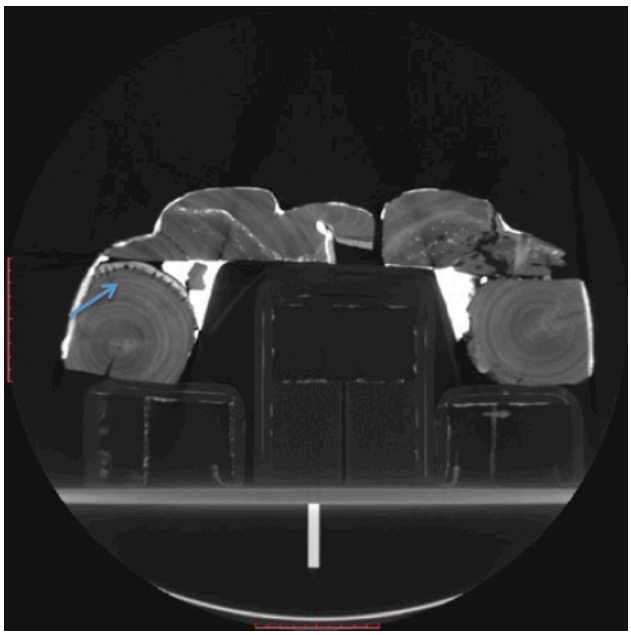


Figure 145: CT scan of anonymous 22nd Dynasty coffin, showing remaining wood bark on logs. Denver Museum of Nature and Science EX1997-24.4.

Figure 146: Adze tool marks outlined on anonymous 22nd Dynasty coffin. Denver Museum of Nature and Science EX 1997-24.4.

Finally, a thick black varnish was applied to the whole coffin, except for the face. These pigments have been identified and include red and yellow ochres, Egyptian blue, and yellow orpiment (Muros et al. forthcoming).

The case was likewise made from edge-joined planks of sycomore fig. The base was made mostly from three larger planks. The sides were built up from two planks on the coffin's left, and three on the coffin's right. On the right side, to join two of these pieces, a stub mortise and tenon joint was used. The top of the head was largely carved from a single piece of wood, with two shorter pieces at either side, connecting to the shoulders. The footboard was made from a single piece of wood, which abutted the sides and base of the coffin. The overall shape of the case followed the modeling of the lid, and the complementary size suggests that they were made to fit one another. A final detail of note is the presence of three rows of four holes drilled into the base of the coffin. These go through both planks of the base, suggesting that they were added after the coffin was constructed, and are not simply from reused wood. The significance of this feature is discussed below. The coffin was then decorated in a similar manner to the lid, complete with both yellow and black varnish. The interior was also decorated, and a red background with deities can be seen. The mummy was still present in the coffin however, so the decoration of the base was not visible.

The construction of the coffin demonstrates that experienced woodworkers with the body knowledge required to create even adze marks built the coffin; however, they clearly worked quickly, and cut as many corners as possible, as indicated by the remaining bark and tool marks, and the substantial amounts of plaster fill. Nevertheless, the decoration was elaborate and detailed, and expensive orpiment, Egyptian blue, varnishes and resins were incorporated to

create this object. The final container would therefore have looked quite fine, despite the fact that the construction was rather poor.

The plain wooden coffins from the 22nd Dynasty demonstrate a significant contrast in construction quality and decoration technique. They appear rather abruptly in Thebes during the reigns of Shoshenq I and Osorkon I (Taylor 2009:378). One of these pieces belonged to a "milk-bearer of the house of Amun" named Padihorpakhered. It was found in Thebes, and is now in the British Museum (fig. 147; EA29578). This piece has a polychrome collar and a painted wig and face, as well as a central winged sun-disk and offering inscription. Otherwise, the wood is left bare (Taylor 2001:73, pl. 53). The wood has not been identified, but it is a high quality, and appears to be a species of softwood. The front of the lid is largely made from two long planks of wood, with two additional pieces at the sides. It is possible that the two central pieces had once been one, and that they have since split, though additional analysis is necessary to be certain. Additional pieces were added at the head, the face, and the wig. At least three additional pieces were added for the slanting footboard, and another flat piece for the foot end. Unfortunately, the joints connecting the foot end are not visible. The outlined shape of the legs has been modeled in the coffin lid and case. There is no indication of arms or hands. The base of the case was also made from two large planks of wood. The sides are made from two longer planks, two short pieces at the shoulder, and one rounded piece at the top of the head. The footboard was attached with a finger joint. The interior of the case was decorated with an image of Nut. At the end of the

Figure 147: Coffin of Padihorpakhered. British Museum EA 29578. ©Trustees of the British Museum.

case, a fibrous glue is also visible, perhaps to assist with sealing the coffin. Finally, black resin seems to have been poured over the face of the coffin. This was clearly done after the coffin was closed and lying on its back, as drips continue down the sides of the coffin case.

A particularly beautiful example of a plain-wood 22nd Dynasty coffin from Thebes is now in the Egyptian Museum in Florence (n. 2176). Only the lid of this piece remains, with the name of its owner, a musician of Amun, called Tentamonnesuttaui (Betro 2015:113). The majority of the wood used for construction is clearly a species of imported softwood, but it has not been definitively identified. The front of the lid is a large piece of high quality wood, with additional pieces added to the sides. The footboard is made of several smaller pieces edge joined together in a rounded shape, bordering on a coopered joint. The face and the top of the wig are also separate pieces of wood. The sides of the wig, and the indentation of the neck are carved into the central plank of wood. The face is a darker color, and seems to be a different species from the rest of the coffin. The outline of the legs and the face have been expertly sculpted and finished, with crisp defining lines along the lips and eyes. There is no indication of arms or hands. The single band of inscription down the front, as well as the few deities and winged vulture at the chest have been incised into the wood. The wood was otherwise undecorated, without any additional layers of plaster or paint. These pieces demonstrate the return of valued construction techniques and high quality wood, which perhaps had always remained in the north, and are simply less visible in the archaeological record. When the Libyan kings took over, and the priesthood of Amun was reorganized, it is possible that the craftsmen from the north also moved south, and brought their talents with them, along with fine quality, imported woods; however, the few examples of coffins that have been uncovered are all of a lower quality, which makes such a suggestion somewhat problematic.

Groups of rather poorly published and preserved northern coffins that date to the 22nd - 25th Dynasty are known. While they cannot be dated more precisely, they have many features in common with the southern 22nd Dynasty coffins (Taylor 2009), and so I have chosen to place them in this section; however, it is important to remember that they may actually belong to a slightly later phase of history. Indeed, it seems that this style was popular in the north from the 22nd to 25th Dynasty. John Taylor has noted that these pieces tend to have smaller faces than their southern counterparts, are rather flat, include the depiction of hands, and are generally of poor construction. One of the main differences in the decoration of these northern examples, is the illustration of a recumbent jackal above the central inscription. This inscription also may include the phrase, "may he give water to your ba, offerings to your corpse, clothing to your mummy", which is not seen in the south; moreover, the inscriptions are often corrupted, include mistakes, or are simply pseudohieroglyphs (Taylor 2009:386–389, 392).

Figure 148: 22nd Dynasty coffin from Lahun. Bolton Museum and Art Gallery 1892.7.2. ©Bolton Museum and Art Gallery

A coffin from Lahun, now in the Bolton Museum and Art Gallery (fig. 148; 1892.7.2) follows this northern style (Taylor 2009:382; pl. II.1; Serpico 2016:79, fig. 39). The coffin has a small, carved and decorated face, surrounded by an overly large, elaborately polychrome headdress. Two decorated hands were attached to the chest, closed in fists. A polychrome collar is visible only between the lapets of the wig. The hands are painted with a bead net pattern that does not continue on the fingers. There is no inscription, and the rest of the coffin has been left undecorated. The wood has not been identified, but the coffin was clearly constructed from long

planks of high quality timber. Most of the lid is made from three of these long planks, edge joined with dowels. The lid is flat, and the sides have been left straight, rounded only at the shoulders, and the top of the head. There is no footboard. The wood seems to have been finished. Other details of construction are not visible. The case is only partially visible, but has the same, straight sides, only rounded at the shoulders and the top of the head. Carved into the sides are four mortises, which helped to seal the coffin.

Figure 149: 22nd Dynasty coffin from Lahun. Manchester Museum 2277. ©Manchester Museum. (Taylor 2009: Pl. III).

Another coffin lid from Lahun, now in the Machester Museum (fig. 149; 2277) is very similar in form to that just described (Taylor 2009:382; pl. III). This flat lid has a painted face, elaborate polychrome wig, and decorated added hands. This coffin, however, has been covered in plaster and yellow paint. There is also a central, partially corrupted inscription (Taylor 2009:391, n. 116), topped by a recumbent jackal. The planks used for this coffin are not as regular as on the previous example. They were also edge joined. Other construction details are not visible. The poor publication of these pieces is particularly frustrating, as they may provide additional information regarding regional differences in construction during the Third Intermediate Period; however, what is visible shows that construction in the north was somewhat simplified. They are flatter than the other two coffins described above, and there is no subtle modeling of the body or feet. The piece in the Bolton Museum (1892.7.2) is, however, a high quality piece, suggesting that these differences may have been a regional choice in style, rather than evidence of lower quality workshops. No

evidence of definitely elite coffins have been found in the north, with the exception of the coffins from Tanis.

Figure 150: Silver coffin of Shoshenq II. Egyptian Museum, Cairo JE 72154. Photo by Setken.

One of the most remarkable surviving coffin sets belonged to Sheshonq II, and was found in the royal tombs at Tanis (fig. 150; Cairo JE72154). The silver coffin of this king was unlike any found previously. Although the body was mummiform, the head was shaped in the form of a falcon (Montet 1951:37–38). The anthropoid body held the crook and flail, but the decoration was otherwise dissimilar to other *rishi* coffins, being more in-line with contemporary cartonnage pieces (Broekman 2009:69). The mummy was also covered in a falcon-headed cartonnage, which was decorated in a similar style to the coffin. A human-headed gilded mummy mask was also found. In his examination of the coffins, Brunton suggested that there may have been a second, wooden coffin inside the silver, but if so, it had completely deteriorated, and Montet makes no mention of it (Brunton 1939:544; Broekman 2009:70). Other than these pieces, there are remnants of a few other falcon-headed burial containers. The stone sarcophagus of Harsiese from Thebes has a falcon head, for instance, and the remains of bronze beak and eye inlays found at Tell el-Balamun, may suggest that some private individuals had falcon-headed coffins (Spencer 2003:20–30; Broekman 2009:71–72). Such a style, is, however, relatively rare. Why Sheshonq II decided to decorate his coffin in this style is difficult to ascertain. It may be related

to northern coffin styles, as its appearance at Tell el-Balamun may suggest, or it may be related to Sheshonq's Libyan ancestry. Whatever the case, it is a unique moment of construction in Egyptian history.

TECHNICAL DESCRIPTION OF COFFIN CONSTRUCTION IN THE 25TH DYNASTY

Figure 151: Outer coffin of Nesmutaatneru. Museum of Fine Arts, Boston 95.1407d. ©Museum of Fine Arts, Boston.

In the 25th Dynasty, there were both anthropoid inner and middle coffins, as well as outer *ḳrsw* coffins, which may or may not be seen as sarcophagi. There are several methods for constructing *ḳrsw* coffins, but each one is based on a frame system similar to the palace or house coffins from the Old Kingdom (see chapter 4.II). A reconstruction of part of this type of coffin was recently undertaken by the Fitzwilliam Museum in Cambridge for their *Death on the Nile* exhibit, to interpret the remains of a coffin (Fitzwilliam Museum E.14.1926). This reconstruction is partially published in the accompanying catalogue (Dawson and Strudwick 2016: 222, fig.

102).[85] In the version illustrated in the construction diagram, several frames were used to produce the coffin. For the base, four long beams of wood were end joined with mortise and tenon joints to create the frame. Planks were then inserted into the sides of this frame to make up the base. At the four corners of this frame, large mortises were cut to house the thick attached tenons of four large posts. Four thick beams of wood were then joined to these corner posts with mortise and tenon joints, and, though not depicted in the diagram, were likely housed in a trench cut into the base frame. This secondary frame provided the base for the long and short sides. Long, but thinner planks were than edge joined to each other, and to the secondary frame. A final, top frame of thick beams was attached to the side planks, and joined to the corner beams with mortise and tenon joints.

Alternatively, long thick planks could have been joined to create a solid base that acted as the bottom frame into which the mortise and grooves were cut to house the corner posts and side planks. Sometimes a secondary frame is used with this method, in other cases it is not. The outer coffin of Nesmutaatneru (fig. 151, MFA 95.1307d) is made with the long planks and secondary frame method. The coffin of Djeddjehutefankh from the Ashmolean Museum in Oxford (E.14.1926), was instead made from the long plank base without the secondary frame. The vaulted lid of these coffins was created through cooper-joined long planks of wood. Short boards were added to the short ends, carved to fit into this half-moon shape. At each corner of the lid, a square of wood was removed that would allow the four corner posts to extend up and through the lid.

[85] Somewhat confusingly, however, their reconstruction is based on a slightly different version of construction than suggested by their accompanying diagram (Dawson and Strudwick 2016: 222).

Two additional inner anthropoid coffins were frequently placed inside these *ḳrsw* coffins. Sometimes, the middle coffin was left bare, while in other burials, it was highly decorated. The middle coffin of Nesmutaatneru (fig. 152, MFA 95.1407c), from the late 25th Dynasty, or perhaps the early 26th, demonstrates the bare wood variety. This piece was beautifully constructed from long, thick planks of an unidentified timber, which is almost certainly a species of imported softwood. The central portion of the lid is one long, wide plank of timber, with additional pieces added to the side. Only the face, wig, collar, and the central band of inscription decorate the front of the lid. Two additional pieces were added for the footboard. The case was also made from thick pieces of this high quality wood. The rounded area of the head seems to be made of three larger pieces, edge joined with a double shoulder joint, with a final small rounded patch added to the top of the head. Unfortunately, it is not possible to describe additional details. This middle coffin contrasts starkly with the highly decorated, polychrome inner coffin, with an added pedestal. This coffin was covered with plaster and linen before being painted, and construction details are no longer visible. This triple set is very similar to that of Tabekhonsu in the Metropolitan Museum (96.4.1, 96.4.2, 96.4.3), which also includes the outer *ḳrsw*, a bare wood middle coffin, and a polychrome inner coffin.

Figure 152: Middle coffin of Nesmutaatneru. Museum of Fine Arts, Boston 95.1407c). ©Museum of Fine Arts, Boston.

The inner and intermediate coffins of Pakepu, a "water pourer on the west of Thebes", are now in the Fitzwilliam Museum in Cambridge (fig. 153; E.2.1869), and provide an example of the fully decorated pair of anthropoid coffins (Dawson and Strudwick 2016: 216-221). The outer coffin is decorated with a central image of the mummy lying on a bier, attended by Anubis. Additional horizontal bands of decoration, including figures of deities and columns of texts have been painted down the front of the coffin lid. A short polychrome floral collar has also been added. The wig of the coffin was painted with stripes of yellow, red, and blue, which decorate other areas of the coffin as well. The red coffin face was finished with a short false beard. The case was decorated more simply with a white background, and concentric bands of red and yellow, with a central, horizontal inscription. There are no arms on this coffin. Both the lid and the case were made from numerous pieces of sycomore fig. The central panel of the lid is made from four pieces, edge joined together with a "variant of a scarf joint" (Dawson and Strudwick 2016:216-220). The feet of the lid are made from frive pieces of wood butt-joined together, with triangular sidepieces. The footboard was made from another three sections of wood. The wig, face, ears and beard, are all separate additions. The case is even more patchwork joining of oddly-shaped pieces of sycomore fig (as illustrated in Dawson et al. 2016:86-87, fig. 86). Radiographs demonstrate that the piece was made out of poor quality wood that had already been ravaged by insects before it was used for the coffin. Thick layers of pink paste were used to smooth over these areas, and fill the large gaps and faults in construction (Dawson and Strudwick 2016: 220).

Figure 153: Intermediate coffin of Pakepu. Fitzwilliam Museum, Cambridge E.2.1869. ©The Fitzwilliam Museum, Cambridge.

The inner coffin was fully modeled in the shape of a body in the round, and given a pedestal (fig. 154). It too was decorated with the mummy on the bier with Anubis, and horizontal bands of vignettes, texts, and red, white, yellow and blue bands of color. It was different from the outer coffin in several areas, however. The chest of this container was decorated with a mummy-bead net pattern on a red background, with a central winged figure. The beard of this coffin was also the long, divine type. The rounded base was decorated with polychrome texts on a white ground layer. The construction of the inner coffin is difficult to ascertain due to multiple, thick preparation layers. Dawson and Strudwick note, however, that radiographs show that it is of superior construction to the intermediate coffin (2016:221). It seems that it was made of long planks of wood, before being covered with glue, textile, pastes and paint. The whole coffin was decorated after the lid and case were joined. This coffin therefore acted very much like a cartonnage, despite being built around a wooden core.

Figure 154: Inner coffin of Pakepu. Fitzwilliam Museum, Cambridge E.2.1869. ©The Fitzwilliam Museum, Cambridge.

The coffin of a female "servant of Amun", Peti-Imen-Menu, again from Thebes, is now in the Gustav-Lübcke-Museum in Hamm, Germany (Inv.-Nr. 5500). The lid is decorated with horizontal bands of deities and inscriptions, along with a central panel showing the mummy on a bier, attended by Anubis. The chest is partially decorated with a mummy-bead net pattern, a winged figure of Nut, and a short, polychrome floral collar. The wig is painted with stripes of yellow and blue. The face is painted red, with no beard. There are no arms or hands on the coffin. The interior of the coffin is decorated with an image of Nut and the Osiris Djed pillar. The coffin was made from a number

of long pieces of sycomore fig (Graefe 2001:23). Construction details are partly visible thanks to diagrams and restoration photographs (Graefe 2001:23, fig. 8; pls. 5-13). The lid was made from approximately 12 pieces of wood. The long planks were edge joined and carved into the subtle modeling of the body. A single piece of carved wood was used for the feet, while a number of shorter pieces of wood were butt joined to make up the pedestal. The top of the head was a single piece of slightly curved wood. The case was similarly constructed from multiple joined sections, but is not published in as much detail as the lid.

There is much less evidence of reuse in the 25th Dynasty, suggesting that the Egyptians again had regular access to new materials. Although precise measurements are rarely taken for these objects, the wood used for many examples is considerably thicker than in earlier periods, as well, perhaps in order to demonstrate access to a good supply of wood. The construction techniques are again frequently complicated, and the slotted framework model, seen in the Old Kingdom, is used in a new form in the qrsw coffins. As noted previously, this may be related to the frequent Kushite tradition of "archaization", but demonstrates the renewed interest in this frame-based construction method. It is interesting, however, that the carpenters created a new form that mimicked the earlier coffins, rather than simply copying the earlier techniques. Such a style demonstrates that the carpenters were permitted to recreate these archaic forms in the manner they found most appropriate. This may be a form of archaiziation, but is still an original technique.

DISCUSSION

Prioritizing Materials and the Ritual Function of Coffins in the 21st Dynasty

The coffins from the 21st and early 22nd Dynasties demonstrate a period when the Egyptian woodworkers had to adapt to very limited resources. In some instances, they would have had

little involvement in the reused coffins, especially those that were simply repainted. When they were constructing new coffins, however, they prioritized certain tasks and areas. The body of the coffin was often constructed as quickly as possible from whatever materials could be found. While the coffins of Nespawershefyt were well made, the construction was rather haphazard, showing the work of skilled carpenters improvising with what was available. While the anonymous coffin from Denver (EX1997-24.4) was made by skilled workmen, as is suggested by the regular adze marks, this piece was not carefully constructed or finished. This is indicated by the fact that some of the logs and branches wtill retain bark; however, the face of the coffin was carefully carved and finished, and during the adding of black varnish, it was avoided. In the inner coffin or mummy board of Pinedjem I, the face was the only element made out of cedar, perhaps reused. With the high instances of reuse, coffin makers and owners probably realized that these objects were unlikely to remain the eternal dwelling of the mummy that they placed inside. They may therefore have been less concerned with the overall quality of the coffin, but concentrated instead on the areas that were of particular concern for the short-term ceremonies and rituals surrounding the coffins, such as the face.

As the focus of the Opening of the Mouth ceremony, the face was probably seen as the most important element of the coffin at this time. The face, whether a true likeness of the deceased or not, would become ritually enlivened, and ensure that the coffin owner could breathe and live in the afterlife. The depictions of individuals coming before coffins in burial scenes show them orienting their mourning or offerings towards the face of the individual. This is of course to be expected, as the living would want the deceased to hear and see them, and so would interact with the eyes and ears of the human likeness. Knowing that the rituals would be carried out on the face may have encouraged individuals to ensure that this part of the coffin was

constructed as flawlessly as possible. As more of the wood used to construct different parts of coffins is identified in future studies, we may see just how wide spread this practice was; however, a simple look at the majority of coffins from the Third Intermediate Period will show that the face is usually much more carefully constructed than the rest of the coffin. The increased importance of the face is also suggested by the fact that it was occasionally either avoided during the application of the layers of black varnish, or, as seen on the 22nd Dynasty coffin of Padihorpakhered, was the only area to receive it.

One of the last acts associated with several coffins that leaves clear, physical evidence, is the application of layers of black varnish.[86] In earlier periods, this black layer was occasionally poured in the outer coffin, and the inner coffin was placed inside. In his analysis of the coffins of Henutmehyt from the 19th Dynasty, John Taylor also found pieces of grain stuck into the black, viscous material. He therefore suggested that the added black layers might have been associated with "Osiris beds" (see chapter 4.V; Taylor 1999:62). It is possible that this is what we are seeing on some of these coffins, too. As noted in the previous two chapters, the black acts as a representation of the fertile soils of the Delta, from which life arose, and from which the deceased as an Osiris would be reborn. The pouring of the black layer is likely to have occurred at the very end of the burial rites, just before the coffin was placed in the tomb. From the direction and movements of the black drips on coffin EX1997-24.4 and that of Padihorpakhered, it was clearly poured while the coffin was closed and lying on its base. If the Opening of the Mouth rituals occurred first, this would allow those involved in the burial to see the decoration and perform the necessary ceremonies while the coffin was still standing upright, and then the black layers could be applied after it was laid back down. This final action may have signified

[86] The identification of these black layers is a point of contention. While it is frequently identified as bitumen, recently chemical analysis has shown that many examples are actually coated with blackened pistacia resin (Serpico 2000:459–460). The reference to "bitumen" in older publications should therefore be questioned.

the moment that the deceased was ready to connect to the fertile black soils of the Nile and be reborn as an Osiris in the afterlife. As a ceremonial closing of the coffin, it may have replaced the removal of the bosses, associated with rectangular coffins (see chapters 4.II and 4.III). In addition, the covering of the yellow coffin with the black bitumen or resin has parallels in the main theme of funeral religion at this time, the uniting of the solar and Osiride elements, as seen in the figural decoration of the coffins (Niwiński 1989). Covering the yellow with the black was likely a symbolic action showing the movement from the sun-lit land of the living, to the dark, Osirian afterlife.

The holes in the floor of coffin EX1997-24.4 may also be related to this religious system. These holes are found in several other coffins from this period, and always seem to take the form of straight rows that are added after the construction and decoration is finished. They can be seen, for example, on a stola coffin from the Burke Museum of Natural History and Culture (catalog 367), and on another stola coffin currently in the Penn Museum (L-55-16A). These holes have so far only appeared on stola coffins. It is unlikely that these were present for drainage of the bodily fluids, as mummification was very advanced at this stage in Egypt's history, and so little or no fluid would be left in the body. It is possible that oils and unguents were poured over the body after it was placed in the coffin in the form of a purification or anointing ritual in amounts that would necessitate drainage; however, we might then also expect the decoration on the floor of the coffin to be erased, but it remains at least largely intact on those coffins that have both floor decoration and holes. Perhaps the carpenters thought that drilling holes might help preserve the coffin, by allowing air to circulate in areas where the body would usually be pressed against the floor. The most likely interpretation, however, is that the holes had an ideological purpose.

In some branches of Jewish faith, lines of holes are also frequently drilled into the base of coffins. It is believed that the holes will allow soil to pass into the coffin and help the body reconnect to the earth. The goal is to decompose the body and the coffin as quickly as possible, to allow the soul to be free (Eisenberg 2004:82). In this case, then, there are both functional and religious reasons for the holes. The Egyptians did not bury their coffins in damp soil, so the holes would not have helped the coffins to degrade, but the idea that holes may have allowed the spirit of the deceased to connect to the earth, and be reborn more quickly is conceivable. Indeed, this would reconnect the coffins once again to the concept of the Osiris bed. Osiris beds, which are, in essence, planters, did have rows of holes drilled into the base to allow the water to move through and the planted wheat to grow (see the example found in the tomb of Tutankhamun; Carter 1927:Pl. XXXIII). The holes in the coffin, then, might be a connection to the layers of black varnish, and act as an attempt to match the coffins more closely to the form of the Osiris beds to share in their religious link to Osiris and the conception of rebirth, even if they do not share the same practical function. It is necessary though, to search for these holes more actively, as some museums are under the impression that these holes are unique to their coffins or were drilled in the modern era for some unknown reason (Roundhill 2004:96). Perhaps after more examples are found, we can be more certain about the correct interpretation. It is likely, however, that these holes were yet another attempt to display religious knowledge as a means of competitive display.

The North-South Divide and Coffin Construction

During the Third Intermediate Period, there are several clear differences between the coffins found in the south and those in the north. As seen with the northern Ramesside coffins, there seems to be a continued tradition to leave wood at least partially undecorated. It is therefore

possible that in the north, individuals continued to place a high value on timber. As an area closer to the Levant, it is possible that the traders in these areas were particularly aware of the prestigious nature of imported woods. The lack of coffins from this area in the 21st Dynasty may suggest that the north of Egypt was particularly decimated by the internal struggles, as has been recently suggested for Saqqara by Maarten Raven (2017). When Egypt was reunited, and they again had imported woods, they may have immediately returned to their tradition of displaying the woods, and brought the practice to the south when the country experienced a greater degree of peace. Unfortunately, however, there are just too few preserved coffins in the north to be able to confidently make this argument; moreover, the rare surviving coffins are largely unpublished, and the woods are not identified. The coffins that have been found are often of a lower quality, which gives the impression that workshops were not as sophisticated in the north. As I have noted, however, the simplicity in the form may be a stylistic choice, rather than evidence of less competent workers. The sudden appearance of the coffin style in the 22nd Dynasty in Thebes, after Egypt was reunited, and the fact that it is similar to the bare-wood coffins of the northern late 20th Dynasty, nevertheless suggests that this is evidence of a continued tradition. The very Egyptian quality of the decoration, as John Taylor (2009) has noted, also makes it unlikely that these changes are related to the Libyan ancestry of the 22nd Dynasty rulers. The coffins from this period deserve much more careful study and analysis, and have the potential to reveal significant information about the different regional practices of craftsmen, while the significant similarities between the two areas also show the continued transfer of knowledge between Upper and Lower Egypt.

5: CONCLUSIONS

The patterns visible in the long history of coffin construction reflect a parallel chronicle of Egypt, as told from the point of view of craft technology and wood. The earliest remnants of coffins emerge alongside the beginning of agriculture, sedentary life, and a true elite class of Egyptians. In this early period of their development, coffins served as physical boundaries, a solid separation between those who could afford elaborate burials, and those who could not. Arising alongside patronage, Egyptian craftsmen quickly became a necessity, a key feature of Egyptian society. They were able to craft objects in order to reflect the desired identities of their patrons, and helped to establish a ruling elite. The existence of full time, supported woodworkers is reflected in the complicated joinery present from the earliest extant examples of coffins. At this time, before the development of straight-backed copper saws, woodworkers were nevertheless able to work hard woods such as acacia, despite the visible struggle to do so. They joined with half-lap and mitre joints, working towards the complicated, mutli-dimensional palace façade coffin. This more elaborate burial container reflected the early symbolism of royal, or at least elite, architecture. It became a clear indication that at this time the coffin was seen as the dwelling of the deceased. In this everlasting home the dead would receive offerings, and obtain a good position in the afterlife, though not in a manner that might compete with their king.

The monumental tombs of the king at this time, the pyramids, demonstrate the overarching power of the ruler. This individual, likely in reality as well as ideologically, controlled access to funerary materials, particularly the imported, prestige goods. Refined cedar coffins therefore are much more common in the tombs of Saqqara and Giza than elsewhere in Egypt during the Old Kingdom. This includes one of the most impressive and unique, though fragmentary, coffins from all of Egyptian history: a gilded plywood coffin, made of layers of

valuable imported timbers, found within the pyramid of king Djoser. These pieces reflect the desire of the elite to be buried near their king, as also established through private tomb biographies and stelae. As the power of the ruler began to wane, however, the existence of monumental tombs outside of the northern royal cemeteries began to appear, as seen, for example in Gebelein. This helps to support the opinion that during the 5th and 6th Dynasties, the power of the provincial nomarchs increased, and it became socially acceptable to be buried in cemeteries closer to a local power base rather than the capital. While construction styles and techniques demonstrate at least the flow of knowledge between the north and south of Egypt, if not the physical movement of carpenters, clear regional styles were also apparent during this early period.

The techniques used to create the Early Dynastic and early Old Kingdom coffins also demonstrate the beginning of a number of construction traditions. Aspects such as the use of the boss and its removal only last until the end of the Middle Kingdom, as does the dominant focus on the mitre joint; however, painting interior joints red is a tradition that continues to be visible in Egypt for at least 2000 years.[87] This element would have had to be applied during the construction phase, as it is largely invisible in the finished object. If the craftspeople were not completing a ritual to protect the thresholds of the coffin themselves, they would have had to at least be familiar with it, and so would have appreciated that the significance of their objects was multifaceted. As noted, the higher ranking craftspeople probably also had religious titles, and there may have been, and likely were, a number of additional rituals perfomed on the coffin throughout its construction, and not just during the decoration. That this practice carries throughout Egyptian history, suggests that it was particularly important, and would have been passed on through communities of practice. This also speaks to a significant trust relationship

[87] I have yet to search for this feature in the following Late Period or Greco-Roman coffins.

between the patron and the carpenter, in which the latter would ensure the creation of a piece that was not only physcially but ritually sound.

The preference for cedar wood for coffins was also first seen at this time, though this is unsurprising given the superior quality of the timber. Nevertheless, it is consistently used to create the coffins of the highest elite, and is always perfectly crafted and finished. It was almost certainly a material reserved for the topmost ranking craftspeople who were probably attached to a central, royal workshop, and travelled to complete elite projects. This is supported by the textual reference to outside woodworkers being requested to complete the royal cedar coffin in the Valley of the Kings. That cedar was also frequently reserved for the inner coffin, while the outer coffin was often local wood, attests to the fact that the inner piece was more valuable and more significant. This trend would also last through to the end of Egyptian history.

At the end of the Old Kingdom, alongside the rise in the number of elite cemeteries, the numbers of coffins increased dramatically, as more individuals began to establish less elaborate burials. The movement of the royal Pyramid Texts on to coffins seems to have been established at Giza, but swiftly moved through to the south of Egypt as well. With the power of the king called into question, the Egyptian people took it upon themselves to ensure that they reached an afterlife where they too might become an Osiris. Nevertheless, they maintained many of their religious concepts, and continued to position the king as their intermediary to the divine world through the incorporation of the *ḥtp-dỉ-nsw* inscription. This text continued through the First Intermediate Period, at a time when Egypt had more than one ruler, demonstrating the unwillingness of the Egyptians to give up all of their religious traditions.

With the democratization of the coffin, construction techniques also began to be somewhat standardized, at least in terms of the general technique of production. The startling

consistency of Middle Kingdom coffins, almost always constructed with the standard mitre joint surmounted by butt joint, suggests, once again, that the workshops creating these objects must have been in contact with each other. The few exceptions to this standard pattern seem to be the slightly more elaborate construction techniques associated with the large cedar coffins of the elite produced at this time. These pieces reflect a true appreciation for perfectly crafted objects. Their stark appearance highlights the value of the imported timbers incorporated into their construction. Even the complicated joints are internal, affecting only the structural integrity of the object, and are not visible from the exterior. The fact that these coffins belong to titled, elite individuals, and again, are largely associated with the capital, may further suggest the existence of royal, attached workshops. The admiration for these cedar coffins is reflected in the attempts to imitate the red, bare cedar wood through paint, and even a painted cedar wood grain, applied to local wood coffins.

The astounding numbers of preserved coffins from this period, further helps to show the regional variation in coffin texts and decorations. Assiut in particular developed a unique style in the south, which only slowly moved north after almost a century; nevertheless, the standard construction techniques continued. Eventually, however, the bare wood coffins fell out of fashion, to be replaced with an elaborated form of the false door motif. This style of decoration reflected back on the palace façade style, demonstrating the continued acknowledgement of the elite status of these early coffins.

As the power of the kings again began to diminish towards the end of the Middle Kingdom, the apprehensions of the Egyptians became visible in decoration choices. Mutilated hieroglyphs and the less frequent appearance of the *ḥtp-dỉ-nsw* inscription, suggest that individuals at this time were less confident in the power and protection of their king. This was

somewhat reasonable, however, as the kingdom was about to separate once again, and a new style of construction would revolutionize the Egyptian coffin for the rest of its history.

The Second Intermediate Period *rishi* coffins demonstrate a shift in construction that began in the later Middle Kingdom. The anthropoid wooden coffin had been an elite object in the 12th and 13th Dynasty, but at this time was a secondary, non-essential aspect of the burial. Always made from local woods, the owner of this coffin could choose to have the piece carved out of a tree trunk as a means of displaying significant access to high quality, though local, materials. As trade relations collapsed at the end of the 13th Dynasty and the kings who were traditionally viewed as Egyptian moved to Thebes, the elite no longer had access to their all important cedar timber, from which to craft their perfect, rectangular coffins. Turning to the dug-out model developed out of non-royal practice, the hollowed out, *rishi,* anthropoid coffin became the best available option for kings.

It is unlikely that the innovation of the dug-out anthropoid coffin could have developed without significant influence from woodworkers. Only these craftspeople could have appreciated the value of such enormous, rare, straight timbers grown locally in Egypt. Their knowledge of trees and timber would certainly have been desirable for the selection of these trees as well. No doubt at this time, finding large and straight specimens was difficult, as the Thebans would have also had a limited selection area to search.

When cedar returned as a construction material for coffins, the Egyptians immediately returned to this tradition; however, the sycomore fig tree, as the most viable option for dug-out coffins seems to have acquired a new significance during its short duration as a royal construction material. The timing of the sudden association of Nut as the traditional coffin goddess with the lady of the sycomore during the 18th Dynasty aligns too closely to this practice

for the development to be completely unrelated. Although the use of different timbers for the construction of various objects had a direct impact on the religious significance of timbers at different times in Egypt's history (as demonstrated in chapter 3.I), at no moment is it as clear or diffuse than at the beginning of the New Kingdom.

The construction and decoration choices of the Second Intermediate Period seem to have had a particularly significant impact on the coffin tradition. Despite the return of cedar, the anthropoid coffin remained the style of choice through to the Greco-Roman Period and beyond. At this time, however, royal and non-royal coffins diverged. The very few examples of royal coffins from earlier periods suggests that this was the first time such a significant divergence occurred, though it is not possible to be certain without far more examples. The New Kingdom kings maintained a variation of the feathered, *rishi*, decoration style, which would remain standard. The non-royal sphere, however, perhaps due to the fact that they were no longer expected, or perhaps, permitted, to follow the example of their kings, developed a relatively rapid series of decoration choices. In the New Kingdom private coffins therefore went through a number of developments, from the White to Black, to Yellow coffins, with the *akh*/daily dress style making a brief appearance as well. These developments not only helped the elite attach themselves closer to Osiride religion, becoming ever more independent for their religious rebirth, but also provided additional opportunities to layer their coffins with expensive materials and demonstrate their excessive wealth at the height of the Egyptian empire.

Despite the fact that very few northern coffin examples have survived from the New Kingdom, the presence of regional variation is still apparent. In the Ramesside Period in particular, there seems to be a continued desire to maintain bare-wood lids, which is in significant contrast to the comparable, highly decorated examples in Thebes. This might

demonstrate a different level of access to materials in the north and south during the 20th Dynasty, and may highlight a more extreme reaction to the rise in power of the Amun priesthood than is currently considered.

The construction options used during this period also demonstrate a meaningful break with tradition. Although the occasional rectangular coffin is still found in the New Kingdom, the joining methods are entirely different than those seen in the Middle Kingdom. The mitre joint, used so persistently for coffins in each region from the 6th to 13th Dynasties, virtually disappears by the 18th. This is true not only for coffins, but for boxes and furniture as well, now becoming a rare construction choice. For the wooden core of New Kingdom coffins, edge joints, butt joints, and half or full dovetail joints replace the more traditional methods of construction. The quality of the core also varies considerably. While there are still finely crafted coffins, the extensive use of decoration now allows for more piecemeal construction from multiple smaller planks and the use of patches. Nevertheless, the dug-out construction option persists, but is now almost always found in coffins of the lesser elite, with the exception of the remarkable cedar example belonging to Ramesses III. Cedar continues as the most prestigious construction material, but as more coffins are identified, it is becoming clear that many elements of the elite coffins incorporated other species of local woods as well, as demonstrated by the coffins of Henutmehyt, for example. This suggests a slight downward slide in the overall quality of construction techniques, as, for instance, the integration of cedar and tamarisk into a single object would have been problematic (as these two species of wood swell and shift at different rates). Unfortunately, as multiple samples are rarely taken from coffins, the extent of this practice is not yet understood. The heavy reliance on plaster, paint, and added materials seems to have lessened the importance of flawless construction.

Towards the end of the Ramesside Period, Egyptian political dominance failed once again. As the Egyptians lost their powerful northern trading partners, they also lost access to imported timbers. In addition, fighting constant battles with neighbors in every direction may have severely impacted their local timber resources. Whatever the cause, by the 21st Dynasty and the beginning of the Third Intermediate Period, the Egyptians do not seem to have been able to build significant numbers of new coffins. Instead, they turned to the rich resource of the Theban hills, and began to reuse the materials from the tombs of their ancestors. In this period, many pieces are made with a combination of reused woods, decorated with scenes and spells from the Book of the Dead in unprecedented numbers.

With the focus on decoration, and the knowledge that coffins were being reused, the craftspeople seem to have spent much less effort on quality construction, and more on decoration. Even the coffins of high priests and the elite at this time, while appearing to be high quality, were made from fragments of wood with plaster filled holes and patches. The coffins that do seem to be newly made for this period are very roughly shaped, with bark remaining on the wood, and copious amounts of plaster added to fill up spaces and gaps. This practice ends, however, in the 22nd Dynasty.

With the reunification of Egypt by the Libyan Kings of the 22nd Dynasty, and the renewed access to cedar, the quality of construction rises once again. A renewed respect for cedar is visible in the bare-wood coffins from Thebes and Lahun. This style may also be a continuation of northern preferences for the exposed wood anthropoid coffins seen already in the Ramesside Period as well. The few coffins found in the north at this time, though still largely reflecting the bare-wood style, appear to be made less carefully; however, we should not

discount the idea that these may be stylistic choices that do not agree with our own definition of quality, rather than evidence of incompentent craftspeople.

This style continues into the 25th Dynasty, along with the development of a new decorated mummified form shown standing on a pedestal. Along with these anthropoid coffins, the *ḳrsw*, a style particularly reminiscent of Old Kingdom coffins, returns, though through a new production technique. This renewal of traditions may have been an attempt by the Kushite kings to help Egypt return to what they promoted as more respectable roots. To end this long history of coffins, we have therefore come full circle, returning to some of the earliest styles used in Egyptian history.

Through this overview, it is apparent that the major shifts in coffin construction align with significant changes in Egyptian politics, economics, and society. Just before the collapse of the Egyptian centralized administration, in the Old, Middle, and New Kingdoms, the Egyptian people begin to lose confidence in their rulers. As the control of the state weakened, however, non-royal individuals began to innovate. At each instance, the changes they introduce align with significant aspects of the belief system. In this manner, the changes that we see in the development of coffins reflect the structures present in the *habitus*. They are adopted only if they are seen as beneficial and do not conflict too substantially with the accepted styles and religious concepts held so firmly by the Egyptian people. Even the anthropoid coffin, which is a significant change, developed out of the long tradition of the mummy mask, which itself developed out of mummification. The Intermediate Periods should therefore also not be seen as times of destitution, but opportunities for experimentation, and moments when the most significant developments in funerary art are possible. These constant flows of power, recession, and regeneration are aptly demonstrated through coffins. As noted in the introduction, by

following the *chaîne opératoire* of these objects over this long history, and examining the construction choices selected by carpenters, much more is revealed regarding Egypt's social history.

Although it cannot be proven definitively, many of these changes seem to be inspired by woodworkers, specifically. Especially in periods when elite timbers were not available, the carpenters had to adapt their techniques and construct prestigious objects using the materials available to them. As was demonstrated in chapter 3.I, the religious significance of timber may also have adapted during these periods of technological development. In addition to the importance of sycomore during the Second Intermediate Period, the unavoidable integration of multiple timber species in the Third Intermediate Period coffins may have encouraged the proliferation of amuletic associations to all timbers at this time as well. That the religious significance of wood had an affect on construction choices, and vice versa, is therefore particularly likely.

In every period of Egyptian history, there is also a united approach to coffin construction. This is seen both in the overall style of decoration as well as the specific choices for joints. It is therefore likely that craftspeople were moving through Egypt, and sharing their expertise. This may be related to attached workshops, with individuals sent out on specific projects, for which we do have textual evidence (see chapter 3.III). It may also be an attempt to emulate the practices of a particularly admired workshop, which, in most periods, was likely attached to the palace or a temple. On the other hand, in every period, there is also signficant evidence for regional differences, if not in construction than at least in decoration. The combination of these two aspects of creation attests to a unified Egyptian artistic identity, expressed through a basic approach to the production of objects; however, it also clearly demonstrates both the existence of

and desire for elements of artistic and religious expression unique to specific nomes or regions of Egypt.

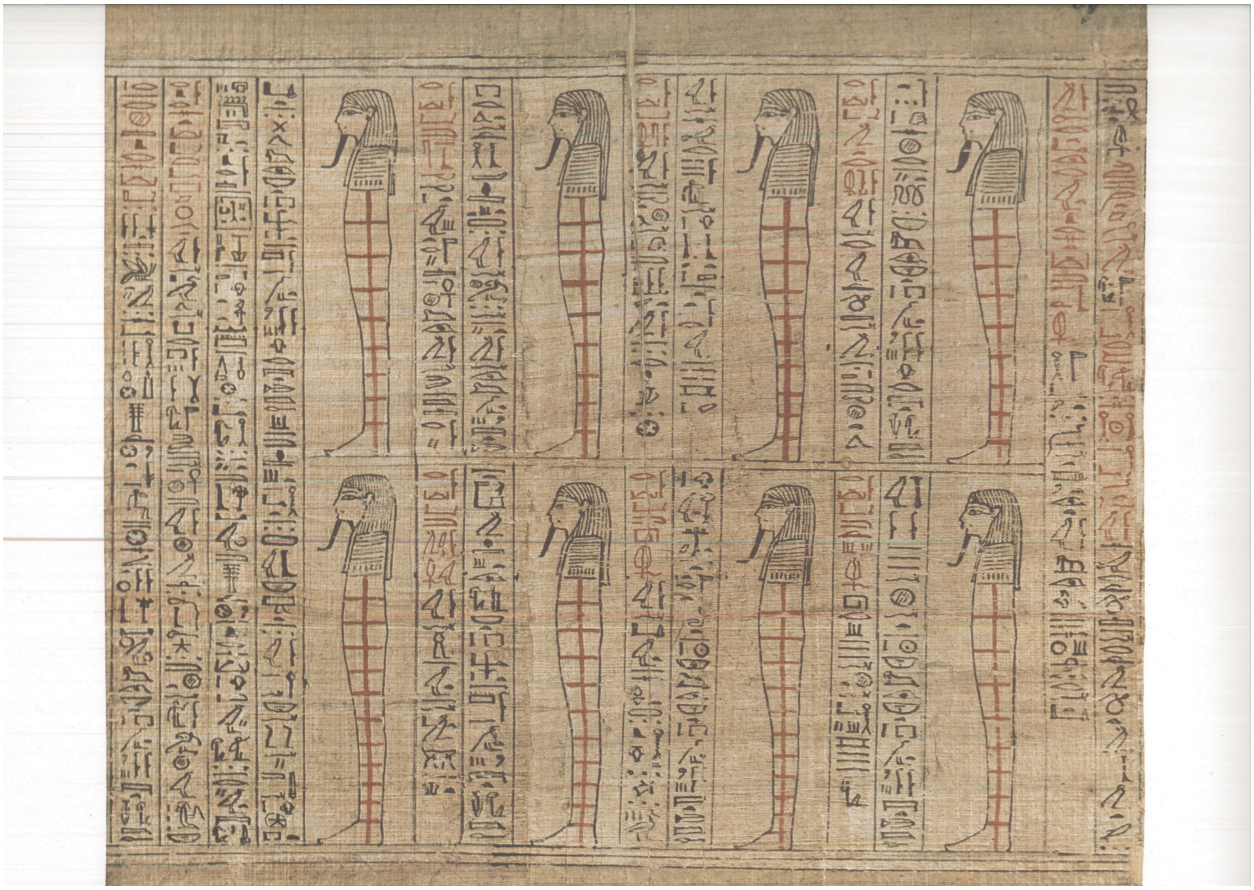
In the New Kingdom and later, too few of these northern coffins have been studied to permit a detailed analysis of the differences, particularly as regards construction and the use of timber. If more samples are taken from more coffins, it may be possible to better understand how mutliple species were integrated into a single coffin, gain a more precise grasp of when Egypt had access to imported timbers, and reconsider how best to interpret terms for trees and materials as well. As one of the few areas of the world where wooden materials exist in such a perfectly preserved state, Egyptologists have the ability to shed light on a craft history that is completely lost in most areas of the world. Such an undertaking reveals not only information about coffins and woodworking, but how such seemingly isolated technologies are connected into the wider social system as well.

Through this coffin based analysis, it is clear that the position of "carpenter" is much more complicated that has previously been understood. These men, as they were clearly almost entirely male, were usually attached in some manner to the state, working in communities of practice with a long history. They had knowledge about different crafts, traditions, and religious rituals. While some were relatively low ranking tomb builders producing coffins as side-projects (albeit particularly lucrative side-projects), others would have been high-ranking elite, entrusted to create perfect eternal containers for wealthy and royal patrons from restricted, imported materials. Many would have been sculptors, draughtsmen, and priests, capable of working with mulitiple media. These were creative, adaptive innovators, who worked within the bounds of Egyptian beliefs and decorum to create these central elements of the burial. They changed as society changed, meeting the demands of their competitive clientele. Dynasties fell, wars were

waged, and the Egyptian economy collapsed, time and time again, but the carpenters continued to adapt and transform their craft, until, perhaps, today. After millennia of an adapting craft tradition, it is only in the current global economy and society that a dominant Egyptian approach to carpentry is at risk of ending.

Cycles of traditions, innovations and adaptations to social, political, and religious change are unavoidable. The systemic nature of technology, in both modern and ancient communities, demands renegotiations in response to changes in any element of society. This does not make the most recent collapse of the Egyptian economy, and the related impending disintegration of a woodworking tradition any less tragic. On the contrary, witnessing this rapid transformation in the lives and practices of individuals causes the past to come alive, and brings a new appreciation to the hard decisions and adaptations that the ancient carpenters were in turn forced to make. It is somewhat startling to consider, however, that even though the ancient woodworking traditions had to adapt and shift, this might be the first time, since the predynastic period, more than 5000 years ago, that traditional woodworking may die out in Egypt altogether, to be replaced with a more plastic, factory based design and practice. The study of these craft traditions provides insight into numerous elements of ancient societies, but also highlights the significance of technologies within our own. Every object we create is subject to a much greater series of choices, beliefs, and actions. The loss of an entire branch of production therefore speaks to the significant breakdown in other elements of that society, and illustrates the dire position in which modern Egypt finds itself.

APPENDIX 1: BOOK OF THE DEAD SPELL 193[88]



<u>r n rḫ ḳrsw</u> nswtw-bỉtyw	<u>Spell for knowing (about) the coffins</u>[89] of the kings of Upper
sᶜḥw ỉwnw ḏdw nn-nswt sɜyt	and Lower Egypt,
ɜbḏ{n}w	the noble ones of Heliopolis, Busiris, Herakleopolis, Sais,
wsỉr nbt pr tɜ(y)w-ḥryt mɜᶜ<t>-ḫrw	and Abydos,
	the Osiris, the mistress of the house, Tauheryt, the justified.
<u>ỉr ḳrst m ᶜš</u>	<u>As for a coffin of cedar,</u>
ỉw=f ᶜḳ=f kɜrw mỉ nṯr	he[90] enters shrines like a god,
wnn=f ᶜnḫ(.w) m ỉ.ḫmw-sk	he is alive among those-who-do-not-perish (= circumpolar
m ḫft	stars), accordingly.

[88] This is an original transliteration and translation of the spell that Heerma van Voss refers to as Spell 193. My thanks to Jacco Dieleman for reading through drafts and suggesting corrections and improvements. The plate is from van Voss 1971b:pl. 20.

[89] Underlined text is red in the original, marking a rubric.

[90] There are several male pronouns and demonstratives in this text referring to Tauheryt. This is likely due to the fact that it was copied from an original intended for a man, and the scribe failed to correct the gender when writing this version.

i ꜣḫw nbw sbꜣw sbḫwt štꜣw iḳrw *n ḥwt-kꜣ-ptḥ* *smꜣ-tꜣ ḥr imntt mn-nfr* *sᶜḥw nty(w) m ꜣbḏw m ḏdw* *n ḳrs ḥr-gswy rmṯw n rwty ḏꜣḏꜣt* *dỉ=tn swꜣ wsỉr nbt-pr šmᶜyt n imn* *tꜣ(y)w-ḥryt mꜣᶜ-ḫrw pn m ḥtp* *ḥnᶜ=tn {ỉw} (=r) bw-nb šm=tn* *ỉw wḏ n=f nb=f rdwy=fy mdw=f ḥr* *dwꜣt*	O effective spirits, lords of the hidden gates and portals, excellent ones of Hut-ka-ptah (Memphis), who unite the land (=who are buried) to the West of Memphis, the noble ones who are in Abydos and in Busiris, for the burial of those who are next to the door of the funerary priest[91], so that you may cause this Osiris, mistress of the house, chantress of Amun, Tauheryt, the justified to proceed in peace with you anywhere you go. His lord assigned to him his feet and his staff (=walking stick) upon (entering?) the Duat.
ỉr ḳrs m nbs ḫt-pw nṯry ᶜnḫ wsỉr *ỉm=f wn-mꜣᶜ ỉry* *prt=f dbḥt-htpwt ỉw=f ꜣḫw=f nty* *ỉm=f wsỉr tꜣ(y)w-ḥryt mꜣᶜ-ḫrw*	As for a coffin of sidder, it is the divine timber on which Osiris lives truly. He comes out (with) food and offerings. It transfigures who is in it, (i.e.) Osiris Tauheryt, the justified.
ỉr ḳrs m ỉmꜣw ỉw=f ỉn.tw n=f mḫnt *nt ḫrt-nṯr m ḥtp* *wsỉr nbt-pr šmᶜyt n imn tꜣ(y)w-* *ḥryt mꜣᶜ-ḫrw*	As for a coffin of *ỉmꜣ*-wood, the ferryman of the necropolis is brought to him in peace; Osiris, mistress of the house, the chantress of Amun, Tauheryt, justified.
ỉr ḳrs (m) ỉsr ỉw=f (n) ḫt=f tp m *sḫt ỉꜣrw* *ỉw=f swrỉ=f ḥr bbt nt ỉtrw*	As for a coffin of tamarisk, he travels to the field of reeds. He drinks at the eddy of the river.
ỉr ḳrs m <n>ht ỉw=f dỉ.tw n=s t *ḥnḳt kꜣw ꜣpdw ḥr ḫꜣwt nt nṯrt-tn* *rᶜ nb* *wsỉr nbt pr tꜣ(y)w-ḥryt mꜣᶜ-ḫrw*	As for a coffin of sycomore, it causes that it is given to her bread, beer, ox and fowl, upon the offering table of this goddess, every day; Osiris, mistress of the house, Tauheryt, justified.
ỉr ḳrs m trỉ ỉw=f rwd=f m tꜣ m-ḫt *rnpt tp=s ḫr (r)nty nb(t) [kꜣw]* *wsỉr nbt pr tꜣ(y)w-ḥryt mꜣᶜ-ḫrw*	As for a coffin of tr wood, he remains firm upon the earth after years upon it, thanks to Renenutet[92], mistress [of food], Osiris, mistress of the house, Tauheryt, justified.
ỉr ḳrs m dpp hrp=f ḫft ḥᶜpy wꜣḏy=f *ḫft n rᶜ-nb* *wsỉr nbt pr tꜣ(y)w-ḥryt mꜣᶜ-ḫrw*	As for a coffin of dpp-wood, he submerges at the time of the inundation; so that he may flourish accordingly every day; Osiris, mistress of the house, Tauheryt, justified.

[91] Also possible that a variant spelling of the god Ruty is meant, which would read, "those who are next to Ruty".

[92] It is possible that Renenutet is meant here, though the lack of a divine determinative is problematic.

<u>ỉm.k rdt ỉr.tw ḳrst m bnr.t</u>[93] *ḥᶜt <u>nṯr ḏ</u>s=f tm.tw ỉrt*	You should not allow a coffin of palm wood to be made, the divine body itself, which is not made!
ỉw wsỉr psg=s pɜt ỉr=f dỉt	Osiris spat it (in the) primeval time (when) he created what is given (?).[94]
(*ỉr ḳrs*) *m šndt <u>wnn ḫɜt=f m nṯr ḥnᶜ rmṯw=s nḥḥ ḥnᶜ ḏt</u>* *ỉw=s rwd n=f rwd tm bwt*	(As for a coffin) of acacia, his corpse is that of a god together with her people forever and ever.[95] She strengthens for him who is strong, who is not abominated.

[93] The scribe here wrote "bnd" for palm, probably a mistake of the 'd' hand for the r. I have given the standard "bnr.t" transliteration.

[94] This line is also problematic. Van Voss does not attempt a translation, but suggests that it might have something to do with the healing power of Osiris' spit. The line probably concerns the creation myth in which the world was born out of the spit of the god. If this line is connected to the palm wood, it would suggest that a coffin of palm wood is taboo because it is the body of the god, which only Osiris himself can create.

[95] There is a blank section at the end of the proceeding column that probably was meant to contain the end of the preceding clause, as well as the '*ỉr ḳrs*' that undoubtedly was supposed to come at the beginning of this column. The use of red and black ink also no longer follows the previous pattern of the preceding verses. It is possible that the use of red is meant to highlight the particular potency of acacia, however it would be odd, in comparison what is stated in chapter four, for acacia to be highlighted in this manner.

APPENDIX 2: ꜥš AND *mrw*

The terms ꜥš and *mrw*, often translated as either pine or cedar, are problematic; however, I believe that both could be able to refer to cedar wood. The first person to argue that ꜥš should be translated as pine was Loret (1916), who noted that the term may also refer to fir trees. The evidence that Loret uses to suggest that ꜥš could mean pine, however, actually argues in favour of its identification as cedar. He states that ꜥš must refer to coniferous wood imported from the region of Syria, and that the tree must also produce resin (Loret 1916:43). Loret even then goes on to say that this would seem at first to be a reference to cedar. He then argues, however, that ꜥš is usually shown to be yellow in 18th Dynasty wall paintings, and cedar is clearly more red-brown. In addition, since the word mrw was already in use for cedar, a second term would be unnecessary. Finally Loret (1916:44-5) argues that ꜥš-wood comes from a tall, straight tree with ordered branches, often used to create flagstaffs, which does not describe the cedars of Lebanon.

Loret's point about the yellow colour of the ꜥš trees is weak. The identification of trees should not be made from depictions, as they cannot be understood as reliable copies of their originals. Some red pigments also fade to yellow over time, and so may have originally been red in any case (Green 2001:46). Secondly, as Meiggs (1982:406, pl.2) points out in his refutation of this identification, Loret based a large part of his conclusion on the relief of Seti I from Karnak. This image displays the felling of trees in Lebanon, in which the ꜥš trees are shown as long and straight with only a few leaves on each. The image is likely a representation of trees in general, as the depiction does not resemble any tees realistically. Finally, Loret is simply incorrect in his suggestion that the cedars of Lebanon do not grow to be very tall and straight (Mikesell 1969:13–14; Gale and Cutler 2000:377).

Combing the textual and material record suggests that cedar is the correct identification of *ꜥš* and *mrw*. Many ships are referred to as being created from *ꜥš* wood. One of the earliest sources from which the word *ꜥš* derives is the Palermo stone, in which is described, for the reign of Snofru, "bringing forty ships filled with *ꜥš* wood" and "construction of one ship of *ꜥš*, "adoring the Two Lands" of 100 cubits and two ships of 100 cubits of *mrw* wood" (Strudwick 2005:66; Urk. I.236). From the very end of the Twentieth Dynasty, the *Tale of Wenamun* shows that *ꜥš* wood was still desired for building ships (Lichtheim 2006:224). These large, sea-faring vessels were usually made from cedar. The imported timber from the royal barque of the Khufu, buried next to his pyramid, has been identified as this wood (Ward 2000:49). From the working port of Wadi Gawasis, where sea-faring vessels were made, cedar was also by far the most common imported timber among the beams and planks used in the construction of the ships (Fattovich et al. 2011:87).

Another reference to *ꜥš*, a particularly crucial example for the present discussion, is a phrase from the Admonitions of Ipuwer. In this text, a long list of chaotic events are described, suggesting that the opposite represents order and the ideal state of the world. One line reads, "Indeed, there are none who sail North to Byblos today. What will we do for cedar (*ꜥš*) for our mummies? Priests are buried with their products, and the great ones are embalmed with their oil as far as Crete" (Pap. Leiden 344, recto, lines 3,6-3,8; Gardiner 1969). This statement makes it clear that the ideal wood with which to construct a coffin was *ꜥš*. As demonstrated throughout this project, the highest ranking individuals chose cedar for the construction of their coffins whenever possible.

The difficulty for most scholars in accepting that both *ꜥš* and *mrw* can refer to cedar seems to be due to the fact that they often appear side by side. For instance, a stele in the Louvre

(239) describes a coffin made from *mrw ꜥš* (*Wb.* II.108.18). Intriguingly, in this example *mrw* is written with a tree determinative while *ꜥš* is written with the cut wood determinative. It is therefore possible that the words technically refer to the tree and the timber of the cedar respectively, although they came to be used interchangeably for both. A passage from a stele in Cairo can thus be read: *ꜥšw mryw n tp n ḫt*, a possible translation may therefore be 'processed cedar and unprocessed cedar from the top of the mountain' (*Wb.* II.108.14). In addition, it is possible that *ꜥš* refers to processed coniferous wood more generally.

Glanville (1932: 9) incorrectly argued that *ꜥš* may refer to pine, but goes on to say that it is more likely to simply refer to planks of processed coniferous wood, which may have included pine. He notes that it was often written with the determinative recorded as M41 by Gardiner, described as a "log of wood stripped of its branches" (Glanville 1932:9). Glanville suggests that the term may have evolved from the Egyptian word *šꜥd*, 'to cut'. This secondary argument is not particularly persuasive, but the suggestion that *ꜥš* means "cut wood" still stands. This is also made more convincing as Glanville is discussing terms found within the records of a royal dockyard. Within the records, the words *ꜥš* and *mrw* occur repeatedly, suggesting that a cedar ship is being built (1932: 7-31). It is possible that in some cases *ꜥš* may refer to a type of processed coniferous wood that may not be distinguishable as cedar, but the vast majority of textual examples seem to explicitly refer to this timber. This may also be the reason for the occasional reference to *ꜥš mɜꜥ,* true *ꜥš*-wood, which also occurs quite frequently in the texts (Mikesell 1969:13-14). In this way, the Egyptians were able to stress that it is indeed cedar to which they were referring.

There can be little doubt that *ꜥš* and *mrw* both can be used to refer to cedar wood. Although looking over texts proves to be inconclusive, when aligned with the archaeological

record, no alternative is possible. Meiggs (1982:63) notes that these two terms, *ꜥš* and *mrw*, are by far the most commonly recorded imported timbers. There are too few occurrences of any other identified imported material in the pharaonic period to make a different suggestion possible. In his analysis of coffins from the British Museum, Davies (1995:149) also notes that *ꜥš*, along with *mrw*, should be translated as cedar based on the association with the material record. Pine, in particular, is very rarely found in objects from ancient Egypt, and so the frequently used word *ꜥš* could not refer to this timber alone (Ward 2000:24), but if it means "cut coniferous wood", it could include the rare instances in which pine was found.[96] It should be remembered that modern wood anatomists have a hard time differentiating softwoods even with the use of high-powered microscopes. A word that could refer to all processed coniferous timbers would therefore be useful, while *mrw* could refer specifically to the cedar. Over time, however, these words clearly became interchangeable.

[96] Lucas notes that there were only three identified examples of pine objects at the time of his publication (1962: 438). In an overview of analysed wooden objects gathered by Davies, which does not include the examples to which Lucas refers, of 180 wooden items, only 1 item from Pharaonic times is pine, while 55 are cedar (1995: 150, table 1).

APPENDIX 3: SAMPLE COFFIN ANALYSIS TEMPLATE

Modern Location:

Accession Number:

Owner name:

Provenance:

Date:

Coffin type:

Coffin Elements:

Bibliography:

Extra Notes from Records:

Construction Materials visible:

Coffin Image

Basketry	Paint ✓
Wood	Varnish
Cordage/Rope	Gilding
Plaster/Paste	Inlay
Other	

Wood ID:

Construction Details:

Tool marks:

Saw	Chisel
Adze	Axe
Sanding/Finishing	Drill

Other	

Types of Joints visible:

Evidence of bosses:

General Construction Description:

Number of Pieces:

Front:
Back:
Short 1:
Short 2:
Base:

Lid:

Measurements:

Case:
Exterior length:
Exterior width:
Exterior height to ground:
Exterior height of just case:
Interior length:
Interior width:
Interior height:
Width of front piece thickness:
Width of short 1 thickness:

Lid:
L:
W:
H:

BIBLIOGRAPHY

Abrol, Dharam P.

2010 Pollination Biology: Biodiversity Conservation and Agricultural Production. Life Sciences. Dordrecht ; New York: Springer.

Allen, James P.

2005 The Ancient Egyptian Pyramid Texts. Atlanta: Society of Biblical Literature.

2006a Some Aspects of the Non-Royal Afterlife in the Old Kingdom. *In* The Old Kingdom Art and Archaeology: Proceedings of the Conference Held in Prague, May 31-June 4, 2004. 1. vyd. Miroslav Bárta, ed. Pp. 9–17. Prague: Czech Institute of Egyptology, Faculty of Arts, Charles University in Prague : Publishing House of the Academy of Sciences of the Czech Republic.

2006b The Egyptian Coffin Texts. *In* Middle Kingdom Copies of Pyramid Texts. Chicago: Oriental Institute.

Allen, Thomas George

1974 The Book of the Dead or Going Forth by Day. Chicago: Chicago University Press.

Amorós, Victoria Asensi, and Colette Vozenin-Serra

1998 New Evidence for the Use of Cedar Sawdust for Embalming by Ancient Egyptians. Journal of Egyptian Archaeology 84: 228–231.

Andrén, Anders

1998 Between Artifacts and Texts: Historical Archaeology in Global Perspective. Contributions to Global Historical Archaeology. New York: Plenum Press.

Ansah, Hassan

2010 Life, Death, and Community in Cairo's City of the Dead. New York: iUniverse, Inc.

de Araújo, Duarte

2014 Crossing the Landscapes of Eternity: Parallels between Amduat and Funeral Precession Scenes on the 21st Dynasty Coffins. *In* Body, Cosmos and Eternity: New Trends of Research on Iconography and Symbolism of Ancient Egyptian Coffins. Rogerio Sousa, ed. Pp. 81–90. Oxford: Archaeopress Archaeology.

Arbuckle MacLeod, Caroline

Forthcoming a Transformations in the Materiality of Death: *Rishi* Coffins and the Second Intermediate Period. In Proceedings of the Second Vatican Coffins Conference, June 6-9, 2017, Rome, Italy, Alessia Amentia and Mario Capozzo, eds. Vatican City: Edizioni Musei Vaticani

Forthcoming b The Creation of a Third Intermediate Period Coffin: Coffin EX 1997-24.4 in the Denver Museum of Nature and Science. *In* Third Intermediate Period Coffins in the Denver Museum of Nature and Science. Caroline Arbuckle MacLeod and Michele Koons, eds. Denver: University of Colorado Press.

Arbuckle MacLeod, Caroline, Christopher H. Baisan, and Pearce Paul Creasman

Forthcoming Coffin Timbers and Dendrochronology: The Significance of Wood in Coffins from the Denver Museum of Nature and Science. *In* Third Intermediate Period Coffins in the Denver Museum of Nature and Science. Caroline Arbuckle MacLeod and Michele Koons, eds. Denver: University of Colorado Press.

Ascher, Robert

1961 Analogy in Archaeological Interpretation. Southwest Journal of Anthropology 17(4): 317–325.

Assmann, Jan

2003 The Mind of Egypt: History and Meaning in the Time of the Pharaohs. Andrew Jenkins, tran. Cambridge, Mass.: Harvard University Press.

2011 Der Garten Als Brücke Zum Jenseits. *In* Ägyptische Gärten: Ausstellung Im Römisch-Germanischen Museum Der Stadt Köln. 27. Mai Bis 6. November 2011. Christian Tietze, ed. Pp. 102–117. Weimar: Arcus-Werlag.

Aston, David A.

2004 Tell El Dab'a 12: A Corpus of Late Middle Kingdom and Second Intermediate Period Pottery. Untersuchungen Der Zweigstelle Kario Des Österreichischen Archäologischen Institutes 19. DÖAW 22. Vienna: Österreichische Akademie der Wissenschaften.

Atzler, M.

1974 Einige Erwägungen Zum Srx. Oriens 23–4: 406–434.

Ayali-Darshan, Noga

2017 The Background of the Cedar Forest Tradition in the Egyptian Tale of the Two Brothers in the Light of West-Asian Literature. Ägypten und Levante 27: 183–194.

Ayrton, Edward Russell, and W. L. S. (William Leonard Stevenson) Loat

1911 Pre-Dynastic Cemetery at El Mahasna. London ; Boston, Mass.

Badawy, Alexander

1961 The Stele of Irtysen. Chronique D'Égypte 36(72): 269–276.

Bader, B

2011 Contacts between Egypt and Syria-Palestine as Seen in a Grown Settlement of the Late Middle Kingdom at Tell El-Dab'a/Egypt. *In* Egypt and the Near East - the Crossroads: Proceedings of an International Conference on the Relations of Egypt and the Near East in the Bronze Age, Prague, September 1-3, 2010. Jana Mynářová, ed. Pp. 41–72. Prague: Czech University, Czech Institute of Egyptology.

Baines, John

1995 Origins of Egyptian Kingship. *In* Ancient Egyptian Kingship. David Bourke O'Connor and David P. Silverman, eds. Pp. 95–156. New York, Leiden: E.J. Brill.

2007a Stone and Other Materials: Usages and Values. *In* Visual and Written Culture in Ancient Egypt Pp. 263–280. New York: Oxford University Press.

2007b Stone and Other Materials: Usages and Values. *In* Visual and Written Culture in Ancient Egypt Pp. 263–80. New York: Oxford University Press.

Bamforth, Douglas B.

1986 Technological Efficiency and Tool Curation. American Antiquity 51(1): 38–50.

Bard, Katherine

2004 The Emergence of the Egyptian State (c.3200-2686 BC). *In* The Oxford History of Ancient Egypt. New Ed edition. Ian Shaw, ed. Pp. 61–88. Oxford ; New York: Oxford University Press.

Bargali, Kiran, and Surendra S. Bargali

2009 Acacia Nilotica: A Multipurpose Leguminous Plant. Nature and Science 7(4): 11–19.

Barguet, Paul

1986 Les Textes des sarcophages égyptiens du Moyen Empire. Paris: Éditions du Cerf.

Barwik, Mirosław

1999 Typology and Dating of the "White"-Type Anthropoid Coffin of the Early XVIIIth Dynasty. Études et Travaux XVIII: 8–33.

Bar-Yosef, Ofer, and Anna Belfer-Cohen

1989 The Origins of Sedentism and Farming Communities in the Levant. Journal of World Prehistory 3(4): 447–498.

Bass, George F., Cemal Pulak, Dominique Collon, and James Weinstein

1989 The Bronze Age Shipwreck at Ulu Burun: 1986 Campaign. American Journal of Archaeology 93(1): 1–29.

Baud, Marcelle, and Étienne Drioton

1932 Tombes Thébaines. Nécropole de Dira Abu'N-Naga. Le Tombeau de Panehsy (Tombeau N. 16). Mémoires de L'Institut Français d'Archéologie Orientale Du Caire 57(2): 1–52.

Baum, Nathalie

1989 Arbres et arbustes de l'Egypte ancienne. Louvain: Peeters.

BBC

2011 Thousands Rally for Egypt Reforms. BBC News, July 8. http://www.bbc.com/news/world-middle-east-14075493, accessed March 12, 2018.

von Beckerath, Jürgen

1999 Handbuch der ägyptischen Königsnamen. Mainz: P. von Zabern.

Bennet, John

1939 The Restoration Inscription of Tut'ankhamun. Journal of Egyptian Archaeology 25: 8–15.

Berlev, Svetlana I., and Hodjash-Oleg D. Berlev

1980 A Market-Scene in the Mastaba of DADA-m-Anx (Tp-m-Anx). Altorientalische Forschungen 7: 31–50.

Berman, Lawrence M.

2009 The Coffins and Canopic Chests of Tomb 10A. *In* The Secrets of Tomb 10A: Egypt 2000 BC. 1st ed. Rita E. Freed, ed. Pp. 105–135. Boston : New York, N.Y: MFA Publications ; Available through D.A.P./Distributed Art Publishers.

Betro, Marilina

2015 Il Sarcofago e Il Cartonnage Di Tentamonnesuttaui, Firenze n. Inv. 2176 e 2173. Egitto e Vicino Oriente 38: 113–124.

Bettinger, Robert L., Robert Boyd, and Peter J. Richerson

2003 Style, Function and Cultural Evolutionary Processes. *In* Style, Function, Transmission: Evolutionary Archaeological Perspectives. Michael J. O'Brien and R. Lee Lyman, eds. Salt Lake City: University of Utah Press.

Beyer, Barry K.

1991 The World Around Us. New York: Macmillan/McGraw-Hill School Publishing Co.

Bietak, Manfred

1994 Die Wandmalerein Aus Tell El-Dab'a/'Exbet Helmi: Erste Eindrücke. Ägypten Und Levante 4: 44–58.

1996 Avaris: The Capital of the Hyksos - Recent Excavations at Tell El-Dab'a. London.

2003 Two Ancient Near Eastern Temples with Bent Axis in the Eastern Nile Delta. Egypt and the Levant 13: 13–38.

Billing, Nils

2002 Nut: The Goddess of Life, in Text and Iconography. Uppsala: Department of Archaeology and Ancient History, Uppsala University.

Binford, Lewis R.

1967 Smudge Pits and Hide Smoking: The Use of Analogy in Archaeological Reasoning. American Antiquity 32(1): 1–12.

1973 Interassemblage Variability - the Mousterian and the "Functional" Argument. *In* The Explanation of Cultural Change. Colin Renfrew, ed. Pp. 227–254. London: Duckworth Press.

von Bissing, Friedrich

1900 Ein Thebanischer Grabfund Aus Dem Anfang Des Neuen Reichs. Berlin: Alexander Duncker.

Blackman, Aylward M.

1914 The Rock Tombs of Meir, vol.I. London: Egyptian Exploration Fund.

Blanchette, Robert A.

2000 A Review of Microbial Deterioration Found in Archaeological Wood from Different Environments. International Biodeterioration and Biodegradation 46: 189–204.

Blanchette, Robert A., John E. Haight, Robert J. Koestler, Pamela B. Hatchfield, and Dorthea

Arnold

1994 Assessment of Deterioration in Archaeological Wood from Ancient Egypt. Journal of the American Institute for Conservation 33(1): 55–70.

Bonnet, Charles, and Dominique Valbelle

1975 Le Village de Deir El-Medineh. Reprise d'étude Archeologique. Bulletin de L'Institut Français D'Archéologie Orientale 75: 429–446.

Borchardt, Ludwig

1913 Ausgrabungen in Tell el-Amarna 1912/13: vorläufiger Bericht. Mitteilungen der Deutschen Orient-Gesellschaft zu Berlin 52: 1–55.

Borchardt, Ludwig, and Herbert Riche

1980 Die Wohnhäuser in Tell El-Amarna. Berlin: Mann.

Borgin, Karl, Narayan Parameswaran, and Walter Liese

1975 The Effect of Aging on the Ultrastructure of Wood. Wood Science and Technology 9: 87–98.

Bourdieu, Pierre

1977 Outline of a Theory of Practice. Richard Nice, tran. 1st English Ed edition. Cambridge: Cambridge University Press.

Bourriau, Janine

2000 The Second Intermediate Period (c.1650-1550 BC). *In* The Oxford History of Ancient Egypt. Ian Shaw, ed. Pp. 172–206. Oxford ; New York: Oxford University Press.

Breasted, Henry James

1927 Ancient Records of Egypt. Chicago: The University of Chicago Press.

Březinovà, D., and B. Hurda

1976 Xylotomic Examination of Timber from Ancient Egyptian Coffins. Zeitschrift Für Ägyptische Sprache Und Altertumskunde 103: 139–142.

Broekman, Gerard P. F.

2009 Falcon-Headed Coffins and Cartonnages. Journal of Egyptian Archaeology 95: 67–81.

Broodbank, Cyprian

2013 The Making of the Middle Sea: A History of the Mediterranean from the Beginning to the Emergence of the Classical World. 1 edition. Oxford ; New York: Oxford University Press.

Brovarski, Edward

1977 The Doors of Heaven. Orientalia 46: 107–115.

Brunton, Guy

1927 Qau and Badari I. London: British School of Archaeology in Egypt.

1939 Some Notes on the Burial of Shashanq Heqa-Kheper-Re. Annales Du Service Des Antiquités de l'Égypte 39: 541–547.

Brunton, Guy, and Gertrude Caton-Thompson

1928 The Badarian Civilisation and Predynastic Remains Near Badari. London: British School of Archaeology in Egypt.

Brunton, Guy, and Reginald Engelbach

1927 Gurob. British School of Archaeology in Egypt 41.

Bruyére, Bernard

1937 Rapport Sur Les Fouilles de Deir El Médineh, 1933-1934. Part 1: La Nécropole de l'Ouest. Cairo: Insitut français d'archéologie orientale.

1959 La Tombe N° 1 de Sen-Nedjem à Deir El Médineh. MIFAO, 88. Cairo.

Bryan, Betsy M.

2000 The 18th Dynasty before the Amarna Period (c.1550-1352 BC). *In* The Oxford History of Ancient Egypt. Ian Shaw, ed. Pp. 207–264. Oxford ; New York: Oxford University Press.

Budge, E.A. Wallis

1912 The Greenfield Papyrus in the British Museum. London: British Museum Press.

Buhl, Marie-Louise

1947 The Goddesses of the Egyptian Tree Cult. Journal of Near Eastern Studies 6(2): 80–97.

Callender, Gae

2000 The Middle Kingdom Renaissance (c. 2055-1655 BC). *In* The Oxford History of Ancient Egypt. New Ed edition. Ian Shaw, ed. Pp. 148–183. Oxford ; New York: Oxford University Press.

Capart, J., A. H. Gardiner, and B. van de Walle

1936 New Light on the Ramesside Tomb-Robberies. The Journal of Egyptian Archaeology 22(2): 169–193.

Carnarvon, George Edward Stanhope Molyneux Herbert, and Howard Carter

1912 Five Years' Explorations at Thebes : A Record of Work Done 1907-1911. London : Frowde.

Carrier, Claude

2004 Textes Des Sarcophages Du Moyen Empire Egyptien. Monaco: Editions du Rocher.

Carter, Howard

1927 The Tomb of Tut-Ankh-Amen, vol.2. New York: George H. Doran Company.

Cartwright, Caroline

2001 Cedrus Libani under the Microscope; the Anatomy of Modern and Ancient Cedar of Lebanon Wood. Archaeology and History in Lebanon 14: 107–113.

2015 The Principles, Procedures and Pitfalls in Identifying Archaeological and Historical Wood Samples. Annals of Botany 116(1): 1–13.

Case, Humphrey, and Joan Crowfoot Payne

1962 Tomb 100: The Decorated Tomb at Hierakonpolis. The Journal of Egyptian Archaeology 48(1): 5–18.

Castillos, Juan José

1982 A Reappraisal of the Published Evidence on Egyptian Predynastic and Early Dynastic Cemeteries. Benben Publications.

Cauville, S.

1997 Le Temple de Dendera: Les Chapelles Osiriennes. Cairo: Insitut français d'archéologie orientale.

Cauvin, Jacque

2000 The Birth of the Gods and the Origins of Agriculture. Cambridge: Cambridge University Press.

Centrone, Maria

2006 Corn-Mummies, Amulets of Life. *In* Through a Glass Darkly: Magic, Dreams and Prophecy in Ancient Egypt. Kasia Szpakowska, ed. Pp. 33–45. Swansea: The Classical Press of Wales.

Černý, Jaroslav

1973 A Community of Workmen at Thebes in the Ramesside Period. Cairo: Insitut français d'archéologie orientale.

Chassinat, Émile, and Françoit Daumas

1978 Le Temple de Dendara VIII: Texte et Planches, vol.8. Cairo: Insitut français d'archéologie orientale.

Chassinat, Émile, and Maxence Rochemonteix

1896 Le Temple d'Edfou. Cairo: Institut Français d'Archéologie Orientale.

Cichowski, Krzysztof

2008 The Brewery Complex from Tell El-Farkha. Archaeological Aspects of the Discovery. *In* Egypt at Its Origins 2: Proceedings of the International Conference "Origin of the State. Predynastic and Early Dynastic Egypt", Toulouse (France), 5th-8th September 2005. Béatrix Midant-Reynes and Y Tristant, eds. Pp. 33–40. Orientalia Lovaniensia Analecta, 172. Leuven: Peeters.

Cooney, Kathlyn M.

2007 The Cost of Death: The Social and Economic Value of Ancient Egyptian Funerary Art in the Ramesside Period. Egyptologische Uitgaven, 22. Leiden: Nederlands Inst. voor het Nabije Oosten.

2010 Gender Transformation in Death: A Case Study of Coffins from Ramesside Period Egypt. Near Eastern Archaeology 73(4): 224–237.

2011 Changing Burial Practices at the End of the New Kingdom: Defensive Adaptations in Tomb Commissions, Coffin Commissions, Coffin Decoration, and Mummification. Journal of the American Research Center in Egypt 47: 3–44.

2014 Ancient Egyptian Funerary Arts as Social Documents: Social Place, Reuse, and Working towards a New Typology of 21st Dynasty Coffins. *In* Body, Cosmos and Eternity: New Research Trends in the Iconography and Symbolism of Ancient Egyptian Coffins. Rogério Sousa, ed. Pp. 45–66.

2015 Coffins, Cartonnage, and Sarcophagi. *In* A Companion to Ancient Egyptian Art. Melinda K. Hartwig, ed. Pp. 269–292. Chichester, West Sussex, UK: Wiley Blackwell.

2017 Ramesside Body Containers of Wood and Cartonnage from Memphite Necropolises. *In* Imaging and Imagining the Memphite Necropolis: Liber Amicorum René van Walsem. Vincent Verschoor, Arnold Jan Stuart, and Cocky Demarée, eds. Pp. 279–298. Leuven: Peeters.

Costin, Cathy Lynne

1991 Craft Specialization: Issues in Defining, Documenting, and Explaining the Organization of Production. *In* Archaeological Method and Theory. Michael B. Schiffer, ed. Pp. 1–56. Tucson: University of Arizona Press.

2001 Craft Production Systems. *In* Archaeology at the Millennium: A Sourcebook. G.M. Feinman and T.D. Price, eds. Pp. 273–327. New York: Kluwer Academic/Plenum Publishers.

Cowell, Michael R.

1987 Scientific Appendix I. Chemical Analysis. *In* Catalogue of Egyptian Antiquities in the British Museum. W. Vivian Davies, ed. Pp. 96–118. London: The British Museum.

Crivellaro, Alan, and Fritz H. Schweingruber

2013 Atlas of Wood, Bark and Pith Anatomy of Eastern Mediterranean Trees and Shrubs. Berlin: Springer.

Daressy, George

1900 Fouilles de Deir El Bircheh (Novembre – Décembre). Annales Du Service Des Antiquités de l'Égypte 1: 17–43.

1910 Catalogue of the Objects Found in the Tomb. *In* The Tomb of Queen Tîyi. The Discovery of the Tomb. Theodore M. Davis, ed. Pp. 13–40. London, Constable and co., ltd.

Daressy, Georges

1902 Catalogue général des antiquités égyptiennes du Musée du Caire N° 24001-24990 Fouilles de la Vallée des Rois (1898-1899) Fasc. 1. Le Caire Impr. de l'Institut français d'archéologie orientale.

1909 Cercueils Des Cachettes Royales. Catalogue Géréral Des Antiquités Égyptiennes Du Musée Du Caire, Nos. 61001-61044. Le Caire: Insitut français d'archéologie orientale.

Darwish, Sawsan S., Nesrin M. N. el Hadidi, and Maisa Mansour

2013 The Effect of Fungal Decay on Ficus Sycomorus Wood. International Journal of Conservation Science 4(3): 271–282.

David, Nicholas, and Carol Kramer

2001 Ethnoarchaeology in Action. Cambridge: Cambridge University Press.

Davies, Benedict G.

1999 Who's Who at Deir el-Medîna. Leiden: Nederlands Inst. voor het Nabije Oosten.

Davies, Nina M., and Alan Henderson Gardiner

1915 The Tomb of Amenemht (No. 82). London: Egyptian Exploration Fund.

Davies, Norman de Garis

1930 The Tomb of Ḳen-Amūn at Thebes. New York: Metropolitan Museum of Art.

1943 The Tomb of Rekh-Mi-Re' at Thebes. New York: Metropolitan Museum of Art.

Davies, W. Vivian

1995 Ancient Egyptian Timber Imports: An Analysis of Wooden Coffins in the British Museum. *In* Egypt the Aegean and the Levant: Interconnections in the Second Millennium BC. W. Vivian Davies and Louise Schofield, eds. Pp. 146–56. London: British Museum Press.

Davis, Theodore M., G. (Gaston) Maspero, Grafton Elliot Smith, Edward Russell Ayrton, and George Daressy

1910 The Tomb of Queen Tîyi. The Discovery of the Tomb. London, Constable and co., ltd.

Dawson, Julie, and Helen M Strudwick

2016 Death on the Nile: Uncovering the Afterlife of Ancient Egypt. Cambridge (GB): The Fitzwilliam Museum.

Debono, Fernand

1950 Désert Oriental: Mission Archéologique Royale. Chronique D'Égypte 25: 237–240.

Deglin, Flavie, Heba Abd el Gawad, Nathalie Andrews, et al.

2012 Wood Exploitation in Ancient Egypt: Where, Who and How? *In* Current Research in Egyptology 2011: Proceedings of the Twelfth Annual Symposium Which Took Place at Durham University, United Kingdom, March 2011 Pp. 85–96. Oxford: Oxbow Books.

Derchain, Philippe

1965 Le Papyrus Salt 825 (B.M. 10051), Ritual Pour La Conservation de La Vie En Égypte. Brussels: Palaix des Académies.

1990 L'Atelier Des Orfèvres à Dendara et Les Origines de l'Alchimie. Chronique D'Égypte 65: 219–242.

Desroches-Noblecourt, Christiane

1985 Le Destin Du Pharaoh. *In* La Momie de Ramsès II: Contribution Scientifique à l'égyptologie. Lionel Balout, Colette Roubet, and Christiane Desroches-Noblecourt, eds. Pp. 14–27. Paris: Editions Recherche sur les Civilisations.

1997 Ramsès II. La Véritable Histoire. Pygmalion. Paris: Pygmalion Editions.

van Dijk, Jacobus

2000 The Amarna Period and the Later New Kingdom (c. 1352-1069 BC). *In* The Oxford History of Ancient Egypt. New Ed edition. Ian Shaw, ed. Pp. 265–307. Oxford ; New York: Oxford University Press.

Dobres, Marcia-Anne

1991 Technology and Social Agency: Outlining a Practice Framework for Archaeology. 1 edition. Oxford, UK ; Malden, Mass: Wiley-Blackwell.

Dodson, Aidan

1998 On the Burial of Maihirpri and Certain Coffins of the Eighteenth Dynasty. *In* Proceedings of the Seventh International Congress of Egyptologists, Cambridge, 3-9 September 1995. Christopher Eyre, ed. Pp. 331–338. Orientalia Lovaniensia Analecta, 82. Leuven: Peeters.

2000 The Late Eighteenth Dynasty Necropolis at Deir el-Medina and the Earliest "Yellow" Coffin of the New Kingdom. *In* Deir el-Medina in the third millennium AD: a tribute to Jac. J. Janssen. Robert Johannes Demarée and Jack J. Janssen, eds. Pp. 89–100, pls. XII–XIX. Egyptologische uitgaven, 14. Leiden.

2010 Poisoned Legacy: The Fall of the Nineteenth Egyptian Dynasty. Oxford University Press.

2012 Afterglow of Empire: Egypt from the Fall of the New Kingdom to the Saite Renaissance. American University in Cairo Press.

Dodson, Aidan, and Salima Ikram

2008 The Tomb in Ancient Egypt: Royal and Private Sepulchres from the Early Dynastic Period to the Romans. London ; New York: Thames & Hudson.

Donadoni Roveri, Anna Maria

1969 I Sarcofagi Egizi Dalle Origini Alla Fine Dell'Antico Regno.

1989 Dal Museo Al Museo: Passato e Futuro Del Museo Egizio Di Torino. Turin: Umberto Allemandi & C.

1990 Gebelein. *In* Beyond the Pyramids: Egyptian Regional Art from the Museo Egizio, Turin. Gay Robins, ed. Pp. 23–29. Atlanta: Emory University Museum of Art and Archaeology.

Drenkhahn, Rosemarie

1976 Die Handwerker Und Ihre Tätigkeiten Im Alten Ägypten. Ägyptologische Abhandlungen, 31. Wiesbaden: O. Harrassowitz.

Dreyer, Günter

1998 Umm El-Qaab, Bd.1, Das prädynastische Königsgrab U-j und seine frühen Schriftzeugnisse. Mainz: Zabern.

Dunnell, Robert C.

1978 Style and Function: A Fundamental Dichotomy. American Antiquity 43(2): 192–202.

DuQuesne, Terence

1996 Black and Gold God: Colour Symbolism of the God Anubis with Observations on the Phenomenology of Colour in Egyptian and Comparative Religion. London: Darengo.

Eaton, Katherine

2015 Ptah's Role as Patron of Craftsmen and the Epithet "South-of-His-Wall." Mitteilungen Des Deutschen Archäologischen Instituts, Abteilung Kairo 69: 73–78.

Eaton-Krauss, Marianne

1990 The Coffins of Queen Ahhotep, Consort of Seqeni-En-Re and Mother of Ahmose. Chronique D'Égypte 65: 190–205.

Einwanger, Josef

1982 Die Neolithische Siedlung von Merimde-Benisalame. Mitteilungen Des Deutschen Archäologischen Instituts, Abteilung Kairo 38: 67–82.

Eisenberg, Ronald L.

2004 Jewish Traditions: A JPS Guide. Philadelphia: The Jewish Publication Society.

El-Shahawy, Abeer, and Maṯḥaf al-Miṣrī

2005 The Egyptian Museum in Cairo. American Univ in Cairo Press.

Emery, Walter B.

1949 Excavations at Saqqara: Great Tombs of the First Dynasty, vol.1. Cairo: Service des Antiquités de l'Egypte, Government Press.

Eremin, Katherine, Elizabeth Goring, Bill Manley, and Caroline Cartwright

2000 A 17th Dynasty Egyptian Queen in Edinburgh? KMT, a Modern Journal of Ancient Egypt 11(3): 32–41.

Erman, Adolf, and Herman Grapow, eds.

1963 Wörterbuch Der Ägyptischen Sprache Im Auftrage Des Deutschen Akademien. Berlin: Akademie-Verl.

Eyre, Christopher

1987a Work and the Organisation of Work in the Old Kingdom. *In* Labor in the Ancient Near East. Marvin A. Powell, ed. Pp. 5–47. American Oriental Series. New Haven: American Oriental Society.

1987b Work and the Organisation of Work in the New Kingdom. *In* Labor in the Ancient Near East. Marvin A. Powell, ed. Pp. 167–221. American Oriental Series. New Haven: American Oriental Society.

Fahn, Abraham, Ella Werker, and Pieter Baas

1986 Wood Anatomy and Identifications of Trees and Shrubs from Israel and Adjacent Regions. Jerusalem: Israel Academy of Sciences.

von Falck, Martin, and Wolfgang Waitkus

2011 Heilige Bäume. *In* Ägyptische Gärten: Ausstellung Im Römisch-Germanischen Museum Der Stadt Köln. 27. Mai Bis 6. November 2011. Christian Tietze, ed. Pp. 66–77. Weimar: Arcus-Werlag.

Fattovich, Rodolfo, Kathryn Bard, and Cheryl Ward

2011 Mersa/Wadi Gawasis 2010-2011: A Preliminary Report. Newsletter Di Archeologia CISA 2: 73–101.

Faulkner, R.O.

1969 The Ancient Egyptian Pyramid Texts. Oxford: Clarendon Press.

1973 The Ancient Egyptian Coffin Texts. Chippenham: Aris & Phillips.

Fiore Marochetti, Elisa, Alessandra Curti, Sara Demichelis, et al.

2003 "Le Paquet" : Sépulture Anonyme de La IVe Dynastie Provenant de Gébélein. Bulletin de L'Institut Français D'Archéologie Orientale 103: 235–256.

Fischer, H. G.

1959 A Scribe of the Army in a Saqqara Mastaba of the Early Fifth Dynasty. Journal of Near Eastern Studies 18: 233–272.

1966 An Old Kingdom Monogram. Zeitschrift Für Ägyptische Sprache Und Altertumskunde 93: 56–69.

Forstner-Müller, Irene

2010 Tombs and Burial Customs at Tell El-Dab'a During the Late Middle Kingdom and the Second Intermediate Period. *In* The Second Intermediate Period (Thirteenth-Seventeenth Dynasties): Current Research, Future Prospects. Marcel Marée, ed. Pp. 127–38. Orientalia Lovaniensia Analecta, 192. Leuven ; Walpole, MA: Peeters.

Frankfort, Henri

1941 The Origin of Monumental Architecture in Egypt. American Journal of Semitic Languages and Literatures 58: 329–358.

2011 Ancient Egyptian Religion: An Interpretation. Courier Corporation.

Franklin, Ursula M.

1992 The Real World of Technology. Ottawa: Anansi Press.

Friedman, Renée F.

1994 Predynastic Settlement Ceramics of Upper Egypt: A Comparative Study of the Ceramics of Hemamieh, Nagada, and Hierakonpolis. University of California, Berkeley.

1996 The Ceremonial Centre at Hierakonpolis Localisty HK29A. *In* Aspects of Early Egypt. Jeffrey Spencer, ed. London: British Museum Press.

1998 More Mummies: The 1998 Season at HK43. Nekhen News 10: 4–6.

Friedman, Renee, and J.J. Hobbs

2002 A "Tasian" Tomb in Egypt's Eastern Desert. *In* Egypt and Nubia: Gifts of the Desert Pp. 178–191. London: British Museum Press.

Frood, Elizabeth, and John Baines

2011 Piety, Change and Display in the New Kingdom. *In* Ramesside Studies in Honour of K. A. Kitchen. Mark Collier and Steven Snape, eds. Pp. 1–18. Bolton, UK: Rutherford Press Limited.

Galán, José M., and Ángeles Jiménez-Higueras

2015 Three Burials of the Seventeenth Dynasty in Dra Abu El-Naga. *In* The World of Middle Kingdom Egypt (2000-1550 BC) I Pp. 101–119. London: Golden House Publications.

Gale, Rowena, and David Frederick Cutler

2000 Plants in Archaeology: Identification Manual of Vegetative Plant Materials Used in Europe and the Southern Mediterranean to c. 1500. Otley: Westbury and Royal Botanic Gardens, Kew.

Gale, Rowena, Peter Gasson, F. Nigel Hepper, and Geoffrey Killen

2000 Wood. *In* Ancient Egyptian Materials and Technology. Paul T. Nicholson and Ian Shaw, eds. Pp. 334–371. Cambridge: Cambridge University Press.

Galil, J

1967 Sycomore Wasps from Ancient Egyptian Tombs. Israel Journal of Entomology 2: 1–9.

1968 An Ancient Technique for Ripening Sycomore Fruit in East-Mediterranean Countries. Economic Botany 22(2): 178–190.

Galil, J, and D. Eisikowitch

1974 Further Studies on Pollination Ecology in Ficus Sycomorus. The New Phytologist 73(3): 515–528.

Gamble, Clive

1986 The Palaeolithic Settlement of Europe. Cambridge: Cambridge University Press.

Gardiner, Allen H.

1969 The Admonitions of an Egyptian Sage. Hildesheim: Georg Olms Verlag.

Garstang, John

1907 The Burial Customs of Ancient Egypt as Illustrated by Tombs of the Middle Kingdom: Being a Report of Excavations Made in the Necropolis of Beni Hassan During 1902-3-4. London: Archibald Constable & Co. Ltd.

Gautier, Jéquier

1902 Mémoire Sur Les Fouilles de Licht. Cairo: Insitut français d'archéologie orientale.

Geller, Jeremy Roger

1984 The Predynastic Ceramics Industry at Hierakonpolis, Egypt. MA Thesis. St Louis, MI: Washington Univeristy Microfilms International.

George, Andrew

2003 The Babylonian Gilgamesh Epic: Introduction, Critical Edition and Cuneiform Texts 2 Volumes. Oxford ; New York: Oxford University Press.

Germer, Renate

1989 Die Pflanzenmaterialien aus dem Grab des Tutanchamun. Gerstenberg.

Glanville, S.R.K.

1932 Records of a Royal Dockyard of the Time of Tuthmosis III: Papyrus British Museum 10056. Zeitschrift Für Ägyptische Sprache Und Altertumskunde 68: 7–41.

Gosselain, Olivier P.

2016 To Hell with Ethnoarchaeology! Archaeological Dialogues 23(2): 215–228.

Gould, Richard A., and Patty Jo Watson

1982 A Dialogue on the Meaning and Use of Analogy in Ethnoarchaeological Reasoning. Journal of Anthropological Archaeology 1: 355–381.

Goyon, Jean-Claude

1972 Rituels Funéraires de l'ancienne Égypte. Paris: Éditions du Cerf.

Graeber, David

2001 Toward an Anthropological Theory of Value: The False Coin of Our Own Dreams. New York: Palgrave.

Graefe, Erhart

2001 Sat-Sobek Und Peti-Imen-Menu: Zwei Ägyptische Särge Aus Assiut Und Theben. Hamm: Gustav-Lübcke-Museum.

Grajetzki, Wolfram

2006 The Middle Kingdom of Ancient Egypt: History, Archaeology and Society. Duckworth Egyptology. London: Duckworth.

2007 Box Coffins in the Late Middle Kingdom and Second Intermediate Period. Egitto e Vicino Oriente 30: 41–54.

2014a Tomb Treasures of the Late Middle Kingdom: The Archaeology of Female Burials. Philadelphia: University of Pennsylvania Press.

2014b The Tomb of Khnumhotep at Rifeh. *In* A Good Scribe and an Exceedingly Wise Man: Studies in Honour of W.J. Tait. Aidan Dodson, J.J. Johnston, and W. Monkhouse, eds. Pp. 99–111. GHP Egyptology, 21. London: Golden House Publications.

2016a Coffins of the Middle Kingdom: Their Origins and Development. *In* Death on the Nile: Uncovering the Afterlife of Ancient Egypt. Julie Dawson and Helen M Strudwick, eds. Pp. 29–47. Cambridge (GB): The Fitzwilliam Museum.

2016b Places of Coffin Production in the Early and Late Middle Kingdom. EVO XXXIX: 25–44.

Graves-Brown, Carolyn

2015 Introduction: Building Bridges. Experiential and Experimental. *In* Egyptology in the Present: Experiential and Experimental Methods in Archaeology. Wendy Goodridge and Carolyn Graves-Brown, eds. Pp. ix–xxxviii. Swansea: Classical Press of Wales.

Graves-Brown, Carolyn, and Wendy Goodridge, eds.

2015 Egyptology in the Present: Experiential and Experimental Methods in Archaeology. Swansea: Classical Press of Wales.

Green, Lorna

2001 Colour Transformations of Ancient Egyptian Pigments. *In* Colour and Painting in Ancient Egypt. W. Vivian Davies, ed. Pp. 43–48. London: British Museum Press.

Hadidi, M. Nabil

1982 The Predynastic Flora of the Hierakonpolis Region. *In* The Predynastic of Hierakonpolis: An Interim Report. Michael Allen Hoffman, ed. Pp. 102–115. Cairo: Cairo University Herbarium, Faculty of Science.

Hannig, Rainer

2006 Zur Paläographie Der Särge Aus Assiut. Hildesheimer Ägyptologische Beiträge, 47. Hildesheim: Gerstenberg.

Hartwig, Melinda K.

2004 Tomb Painting and Identity in Ancient Thebes, 1419-1372 BCE. Monumenta Aegyptiaca ; Série Imago, 10. no 2. [Brussels] : Turnhout, Belgium: Fondation égyptologique reine Elisabeth ; Brepols.

Haslauer, Elfriede

2009 Die Konstruktion von Kastensärgen Aus Holz in Der Ägyptischen Sammlung Des Kunsthistorischen Museums, Wien. Teil I. Särge Des Alten Und Des Mittleren Reiches. Technologische Studien. Kunsthistorisches Museum 6: 143–176.

Hassan, Fekri A.

1988 The Predynastic of Egypt. Journal of World Prehistory 2: 136–185.

Hassan, Selim

1943 Excavations at Giza IV: 1932-1933. Cairo: Fouad I University Press.

Hayes, William Christopher

1990a The Scepter of Egypt: A Background for the Study of the Egyptian Antiquities in the Metropolitan Museum of Art. Volume 1: From the Earliest Times to the End of the Middle Kingdom, vol.1. New York: Metropolitan Museum of Art.

1990b The Scepter of Egypt: A Background for the Study of the Egyptian Antiquities in the Metropolitan Museum of Art. Volume 2: The Hyksos Period and the New Kingdom (1675-1080 B.C.), vol.2. New York: Metropolitan Museum of Art.

Helck, Wolfgang

1954 Untersuchungen Zu Den Beamtentiteln Des Ägyptischen Alten Reiches. Hamburg and New York: Glückstadt.

1970 Die Lehre Des Dw3-Ḫtjj. Wiesbaden: O. Harrassowitz.

1986 Der Aufstand Des Tetian. Studien Zur Altägyptischen Kultur 13: 125–133.

Hendrickx, Stan, Midant-Reynes, Béatrix, and W. van Neer

2001 Mahgar Dendera 2 (Haute Egypte): Un Site d'occupation Badarian. Leuven: Leuven University Press.

Hepper, F. Nigel

2009 Pharaoh's Flowers: The Botanical Treasures of Tutankhamun. Second Edition, Second edition edition. Chicago, Ill.: KWS Publishers.

Hoch, James

1991 The Teaching of Dua-Kheti: A New Look at the Satire of the Trades. Society for the Study of Egyptian Antiquities Journal 21/22: 88–100.

Hodder, Ian

2013 The Present Past: An Introduction to Anthropology for Archaeologists. 2nd Revised edition edition. Barnsley: Pen and Sword.

Hoffman, Michael Allen

1980 A Rectangular Amratian House from Hierakonpolis and Its Significance for Predynastic Research. Journal of Near Eastern Studies 39: 119–137.

ed.

1982 The Predynastic of Hierakonpolis: An Interim Report. Cairo: Cairo University Herbarium, Faculty of Science.

Hofmann, Eva

2010 Zwischen Den Zeiten: Das Thebanische Grab Des “Königssohns” Tetiki (TT15)". Imago Aegypti 3: 42–55.

Holdaway, Simon, Rebecca Phillipps, Joshua Emmitt, and Willeke Wendrich

2016 The Fayum Revisited: Reconsidering the Role of the Neolithic Package, Fayum North Shore, Egypt. Quaternary International 410(A): 173–180.

Holmes, D., and Renee Friedman

1994 Survey and Test Excavations in the Badari Region, Egypt. Proceedings of the Prehistoric Society 60: 105–142.

IAWA Committee

1989 IAWA List of Microscopic Features for Hardwood Identification. IAWA Journal 10: 219–332.

2004 IAWA List of Microscopic Features for Softwood Identification. IAWA Journal 25: 1–70.

Ibrahim, Mohiy E. A.

1975 The Chapel of the Throne of Re of Edfu. Bibliotheca Aegyptiaca ; 16. Brussels: Fondation égyptologique Reine Elisabeth.

Ikram, Salima, and Aidan Dodson

1998 The Mummy in Ancient Egypt: Equipping the Dead for Eternity. New York: Thames & Hudson.

InsideWood

N.d. Inside Wood - Search the Inside Wood Database. http://insidewood.lib.ncsu.edu/search?0, accessed March 16, 2018.

Jacobs, Harrison

2014 Meet The Egyptian Families Who Live Among The Tombs In Cairo's Massive Cemetery. Business Insider. http://www.businessinsider.com/massive-cairo-cemetery-slum-2014-11, accessed March 6, 2018.

Jacquet-Gordon, Helen

1962 Les Noms Des Domaines Funéraires Sous l'Ancien Empire Égyptien. Cairo: Institut Français d'Archéologie Orientale.

Jansen-Winkeln, Karl

1993 The Career of the Egyptian High Priest Bakenkhons. Journal of Near Eastern Studies 52(3): 221–225.

Janssen, Jac J.

1975 Commodity Prices From the Ramesside Period: An Economic Study of the Village of the Necropolis Workmen at Thebes. Leiden: E.J. Brill.

Junker, Hermann

1932 Vorläufiger Bericht Über Die Grabung Der Akademie Der Wissenschaften in Wien Auf Der Neolithischen Siedelung von Merimde-Benisalame 1931/32. Anzeiger Der Akademie Der Wissenchaften in Wien, Philosophisch-Historische Klasse 69: 36–82.

1934 Giza II: Die Mastabas Der Beginnenden V.Dynastie Auf Dem Westfriedhof. Vienna and Leipzig: Hölder-Pichler-Tempsky.

1940 Giza IV: Die Mastaba Des Kai-Em-Anch. Vienna and Leipzig: Hölder-Pichler-Tempsky.

1943 Giza VI. Die Mastabas Des Nfr (Nefer), Kdfjj (Kedfi), Kahjf (Kahjef) Und Die Westlich Anschleßenden Grabanlagen. Vienna and Leipzig: Hölder-Pichler-Tempsky.

1944 Giza VII. Der Ostabschnitt Des Westfriedhofs. Erster Teil. Vienna and Leipzig: Hölder-Pichler-Tempsky.

1947 Giza VIII. Der Ostabschnitt Des Westfriedhofs. Zweiter Teil. Vienna: Rudolf M. Rohrer.

1959 Die Gesellschaftliche Stellung Der Ägyptischen Künstler Im Alten Reich. Österreichische Akademie Der Wissenschaften. Philosophisch-Historische Klasse. Sitzungsberichte, 233. Bd., 1. Abh. Wien: In Kommission bei R. M. Rohrer.

Kaiser, Werner

1957 Zur Innern Chronologie Der Naqadakultur. Archaeologica Geographica 6: 69–77.

Kees, Herman

1926 Totenglauben Und Jenseits-Vorstellungen Der Alten Ägypter. Leipzig: J.C. Hinrich'sche Buchhandlung.

Keimer, L.

1929 Sur Un Bas-Relief En Calcaire Représentant La Déesse Dans Le Sycomore et La Déesse Dans Le Dattier. Annales Du Service Des Antiquités de l'Égypte 29: 81–88.

Kelly, Robert L., and Lawrence C. Todd

1988 Coming into the Country: Early Paleoindian Hunting and Mobility. American Antiquity 53(2): 231–244.

Kemp, Barry J.

1968 Merimde and the Theory of House Burial in Prehistoric Egypt. Chronique D'Égypte 43: 22–33.

Kemp, Barry J.

1981 The Character of the South Suburb at Tell El-Amarna. Mitteilungen Der Deutschen Orient-Gesellschaft Zu Berlin 113: 81–97.

2006 Ancient Egypt: Anatomy of a Civilization. 2nd ed. London ; New York: Routledge.

Kemp, Barry J, Lucy Skinner, and Anders Bettum

2015 Tell El-Amarna 2014-15. The Journal of Egyptian Archaeology 101: 1–35.

Killen, Geoffrey

1994 Egyptian Woodworking and Furniture. 1. ed. Shire Egyptology, 21. Princes Risborough: Shire Publ.

2000 Wood: Technology. *In* Ancient Egyptian Materials and Technology. Paul T. Nicholson and Ian Shaw, eds. Pp. 353–368. Cambridge: Cambridge University Press.

2015 Woodworking. *In* Egyptology in the Present: Experiential and Experimental Methods in Archaeology. Carolyn Graves-Brown and Wendy Goodridge, eds. Pp. 91–111. Swansea: Classical Press of Wales.

2017a Ancient Egyptian Furniture Volume III: Ramesside Furniture, vol.3. 1st edition. Oxbow Books.

2017b Ancient Egyptian Furniture Volume I: 4000 - 1300 BC, vol.1. 2nd edition. Oxford: Oxbow Books.

2017c Ancient Egyptian Furniture Volume II: Boxes, Chests, and Footstools, vol.2. 2nd edition. Oxford: Oxbow Books.

Kitchen, Kenneth A.

1969 Ramesside Inscriptions, Historical and Biographical. Oxford: Blackwell Publishers.

Kitchen, Kenneth E.

2003 Ramesside Inscriptions : Translated & Annotated. Oxford: Blackwell Publishers.

Koemoth, Pierre

1994 Osiris et Les Arbres: Contribution à l'étude Des Arbres Sacrés de l'Égypte Ancienne. Liège: C.I.P.L.

Koller, J., U. Baumer, Y. Kaup, and U. Weser

2005 Herodotus' and Pliny's Embalming Materials Identified on Ancient Egyptian Mummies. Archaeometry 47(3): 609–628.

Kyalangalilwa, Bruce, James S. Boatwright, Barnabas H. Daru, Olivier Maurin, and Michelle van der Bank

2013 Phylogenetic Position and Revised Classification of Acacia s.l. (Fabaceae: Mimosoideae) in Africa, Including New Combinations in Vachellia and Senegalia. Botanical Journal of the Linnean Society 172(4): 500–523.

Laboury, Dimitri

2005 Dans L'Atelier Du Sculpteur Thoutmose. *In* La Langue Dans Tous Ses États. Christian Cannuyer, ed. Pp. 189–300. Acta Orientalia Belgica. Liège: Belgian Society of Oriental Studies.

Lacau, Pierre

1903 Sarcophages Antérieurs Au Nouvel Empire: Catalogue Général Des Antiquités Egyptiennes Du Musée Du Caire Nos 28001-28086, vol.1. Cairo: Insitut français d'archéologie orientale.

Lacovara, Peter

2007 A Rishi Coffin from Giza and the Development of This Type of Mummy Case. *In* The Archaeology and Art of Ancient Egypt. Essays in Honor of David B. O'Connor. Zahi A. Hawass and Janet Richards, eds. Pp. 33–8. CASAE, 36. Cairo.

Lakomy, Konstantin C.

2016 Der Löwe Auf Dem Schlachtfeld: Das Grab KV 36 Und Die Bestattung Des Maiherperi Im Tal Der Könige. Wiesbaden: Reichert Verlag.

Landström, Björn

1970 Ships of the Pharaohs: 4000 Years of Egyptian Shipbuilding. London: Allen and Unwin.

Lansing, Ambrose, and William C. Hayes

1937 The Museum's Excavations at Thebes. The Metropolitan Museum of Art Bulletin 32 (No. 1, Part 2: The Egyptian Expedition 1935-1936): 4–39.

Lapp, Günther

1993 Typologie Der Särge Und Sargkammern von Der 6. Bis 13. Dynastie. Studien Zur Archäologie Und Geschichte Altägyptens, 7. Heidelberg: Heidelberger Orientverlag.

Lauer, M. Jean-Philippe

1933 Fouilles Du Service Des Antiquités à Saqqarah (Secteur Nord) (Novembre 1932 - Mai 1933). Annales Du Service Des Antiquités de l'Égypte 33: 155–166.

Lave, Jean, and Etienne Wenger

1991 Situated Learning: Legitimate Peripheral Participation. Cambridge: Cambridge University Press.

Lemonnier, Pierre

1992 Elements for an Anthropology of Technology. Anthropological Papers / Museum of Anthropology, University of Michigan, no. 88. Ann Arbor, Mich: Museum of Anthropology, University of Michigan.

Leroi-Gourhan, André

1945 Milieu et techniques. Paris: Albin Michel.

Lesko, Barbara S.

1999 The Great Goddesses of Egypt. University of Oklahoma Press.

Lesko, Leonard H., ed.

1994 Pharaoh's Workers: The Villagers of Deir El Medina. 1 edition. Ithaca: Cornell University Press.

Levi-Strauss, Claude

1976 Structural Anthropology, vol.2. Chicago: University of Chicago Press.

Lichtheim, Miriam

2006 Ancient Egyptian Literature: Volume II: The New Kingom. 2006 ed. Berkeley, CA: University of California Press.

von Lieven, Alexandra

2004 Das Göttliche in der Natur erkennen. Tiere, Pflanzen und Phänomene der unbelebten Natur als Manifestationen des Göttlichen. Zeitschrift für Ägyptische Sprache und Altertumskunde 131(2): 156–172.

2007 Im Schatten Des Goldhauses. Berufsgeheimnis Und Handwerkerinitiation Im Alten Ägypten Studien zur Altägyptischen Kultur(36): 147–155.

Litynska, M.

1994 Remains of Plants. *In* Predynastic Settlement Near Armant. Bolesław Ginter and Janusz Krzysztof Kozłowski, eds. Pp. 103–107. Heidelberger Verlag.

Loret, Victor

1898 Le Tombeau d'Aménophis II et La Cachette Royale de Biban-El-Molouk. Bulletin de L'Institut Egyptien 3.9: 98–112.

1916 Quelques Notes Sur l'arbre Ach. Annales Du Service Des Antiquités de l'Égypte 16: 33–51.

Lowle, Donald A.

1976 A Remarkable Family of Draughtsmen-Painters from Early Nineteenth-Dynasty Thebes. Oriens Antiquus 15: 91–106.

Lucas, A.

1962 Ancient Egyptian Materials and Industries. E. Arnold.

Lucas, Alfred

1936 The Wood of the Third Dynasty Ply-Wood Coffin from Saqqara. Annales Du Service Des Antiquités de l'Égypte 1936: 1–4.

1962 Ancient Egyptian Materials and Industries. London: Histories and Mysteries of Man Ltd.

Lythgoe, A.M.

1965 The Predynastic Cemetery N7000. Naga Ed-Der, vol.IV. D. Dunham, ed. Berkeley, CA: University of California Press.

Lythgoe, A.M., A. Lansing, and N. de Garis Davies

1917 The Egyptian Expedition 1915-16. Bulletin of the Metropolitan Museum of Art 12(5): 3–31.

Mace, Arthur C., and Herbert E. Winlock

1916 The Tomb of Senebtisi at Lisht. New York: Publications of the Metropolitan Museum of Art.

Malek, Jaromir

2000 The Old Kingdom (c.2686-2160). *In* The Oxford History of Ancient Egypt. New Ed edition. Ian Shaw, ed. Pp. 83–107. Oxford ; New York: Oxford University Press.

Manley, Bill, and Aidan Dodson

2010 Life Everlasting: National Museums Scotland Collection of Ancient Egyptian Coffins. Edinburgh: National Museums Scotland.

Manning, Sturt W., Michael W. Dee, Eva M. Wild, et al.

2014 High-Precision Dendro-14C Dating of Two Cedar Wood Sequences from First Intermediate Period and Middle Kingdom Egypt and a Small Regional Climate-Related 14C Divergence. Journal of Archaeological Science 46: 401–416.

Mariette-Bey, Auguste

1859 Séance Du 3 Juin 1859. Bulletin de L'Institut Egyptien 1: 29–36.

1872a Album Du Musée de Boulaq Comprenant Quarante Planches Photographiées Par M.M. Delié et Beéchard Avec Un Texte Explicatif Rédigé Par Auguste Mariette. Cairo: Moures & CIE, Imprimeurs-Éditeurs.

1872b Les papyrus Egyptiens du Musée de Boulaq, vol.2. Paris: Librairie A. Franck.

1873 Denderah: Description Générale Du Grand Temple de Cette Ville. Paris: A. Franck.

Martin, Geoffrey T.

1983 The Tomb of Tia and Tia: Preliminary Report on the Saqqara Excavations, 1982. The Journal of Egyptian Archaeology 69: 25–29.

Mauss, Marcel

1968 [1934] Sociologie et Anthropologie. 4th edition. Paris: Les Presses Universitaires de France.

McDowell, Andrea

1999 Village Life in Ancient Egypt: Laundry Lists and Love Songs. Oxford: Oxford University Press.

Megally, Mounir

1974 À Propos de l'organisation Administrative Des Ouvriers a La XVIIIe Dynastie. Studia Aegyptiaca I: 297–311.

Meiggs, Russell

1982 Trees and Timber in the Ancient Mediterranean World. Oxford: Oxford University Press.

Merrill, Robert S.

1968 The Study of Technology. *In* International Encyclopedia of the Social Sciences. David L. Sills, ed. New York: Macmillan and Free Press.

Meskell, Lynn

1999 Archaeologies of Social Life: Age, Sex, Class et Cetera in Ancient Egypt. Social Archaeology. Malden, MA : Oxford, UK: Blackwell.

2005 Private Life in New Kingdom Egypt. Princeton: Princeton University Press.

Midant-Reynes, Béatrix

2000 The Prehistory of Egypt: From the First Egyptians to the First Pharaohs. Ian Shaw, tran. Oxford, UK ; Malden, MA: Blackwell Publishers.

Mikesell, Marvin W.

1969 The Deforestation of Mount Lebanon. Geographical Review 59(1): 1–28.

Miller, Heather Margaret-Louise

2009 Archaeological Approaches to Technology. 1 edition. Walnut Creek: Routledge.

Miniaci, Gianluca

2011 Rishi Coffins and the Funerary Culture of Second Intermediate Period Egypt. GHP Egyptology, 17. London: Golden House Publications.

Miniaci, Gianluca, Juan Carlos Moreno García, Stephen Quirke, and Andréas Stauder, eds.

2018 The Arts of Making in Ancient Egypt. Voices, Images, and Objects of Material Producers 2000–1550 BC. Leiden: Sidestone Press.

Miniaci, Gianluca, and Stephen Quirke

2008 Mariette at Dra Abu El-Naga and the Tomb of Neferhotep: A Mid 13th Dynasty Rishi Coffin (?). Egitto e Vicino Oriente 31: 5–25.

Moeller, Nadine, Gregory Marouard, and Natasha Ayers

2011 Discussion of Late Middle Kingdom and Early Second Intermediate Period History and Chronology in Relation to the Khayan Sealings from Tell Edfu. Ägypten Und Levante 21: 87–121.

Mogensen, Maria

1930 La Glyptothèque Ny Carlsberg: La Collection Égyptienne. Copenhagen: Lewin & Munksgaard.

Möller, Georg, and Alexander Scharff

1969 Die archaeologischen Ergebnisse des vorgeschichtlichen Gräberfeldes von Abusir el-Meleq. Nach den Aufzeichnungen Georg Möllers bearb. von Alexander Scharff. Osnabrück: O. Zeller.

Mond, Robert

1905 Report of Work in the Necropolis of Thebes during the Winter of 1903-1904. Annales Du Service Des Antiquités de l'Égypte 6: 65–96.

Montet, Pierre

1947 La Nécropole Royale de Tanis: Les Constructions et Le Tombeau de Psousennes II a Tanis, vol.1. Paris.

1951 La Nécropole Royale de Tanis: Les Constructions et Le Tombeau de Psousennes II a Tanis, vol.2. Paris.

Moussa, Ahmed, and Hartwig Altenmüller

1971 The Tomb of Nefer and Ka-Hay. Mainz am Rhein: von Zabern.

Munn, Nancy D.

1992 The Fame of Gawa: A Symbolic Study of Value Transformation in a Massim Society. Revised. Durham: Duke University Press Books.

Murray, Margaret Alice

2004 The Splendor That Was Egypt. Mineola (NY): Dover Publications.

Na'aman, Nadav, and Nurit Lissovsky

2008 Kuntillet 'Ajrud, Sacrd Trees and the Asherah. Journal of the Institute of Archaeology of Tel Aviv University 35(2): 186–208.

Naville, Édouard

1886 Das Ägyptische Totenbuch Der XVIII. Bis XX. Dynastie Aux Verschieden Urkunden, I: Text Und Vignetten. Berlin: Verlag von A. Asher & Co.

Nederhof, Mark-Jan

2006 Stela of Ikhernofret. https://mjn.host.cs.st-andrews.ac.uk/egyptian/texts/corpus/pdf/IkhernofretStela.pdf.

Nedoroscik, Jeffrey A.

1997 The City of the Dead: A History of Cairo's Cemetery Communities. Greenwood Publishing Group.

Nelson, Margaret C.

1991 The Study of Technological Organization. Achaeological Method and Theory 3: 57–100.

Neumann, Katharina, Werner Schoch, Pierre Détienne, and Fritz H. Schweingruber

2001 Woods of the Sahara and the Sahel. An Anatomical Atlas. Bern: Verlag Paul Haupt.

Newberry, Percy E.

1893 Beni Hasan I. London: Kegan Paul, Trench and Trübner.

1912 The Tree of the Herakleopolite Nome. Zeitschrift Für Ägyptische Sprache Und Altertumskunde 50: 78–79.

Nicholson, Paul T., and Ian Shaw, eds.

2000 Ancient Egyptian Materials and Technology. Cambridge: Cambridge University Press.

Nilsson, Thomas, and Geoffrey Daniel

1989 Structure and the Aging Process of Dry Archaeological Wood. *In* Archaeological Wood: Properties, Chemistry, and Preservation. Roger M. Rowell and R. James Barbour, eds. Pp. 67–86. Washington (DC): American Chemical Society.

Niwiński, Andrzej

1988 21st Dynasty Coffins from Thebes: Chronological and Typological Studies. Mainz am Rhein: P. von Zabern.

Normand, D

1985 Etude Du Sarcophagi. *In* La Momie de Ramsès II: Contribution Scientifique à l'égyptologie. Lionel Balout, Colette Roubet, and Christiane Desroches-Noblecourt, eds. Pp. 326–329. Paris: Editions Recherche sur les Civilisations.

Odler, Martin

2017 Old Kingdom Copper Tools and Model Tools. Oxford: Archaeopress Archaeology.

Ogden, Jack

2000 Metals. *In* Ancient Egyptian Materials and Technology. Paul T. Nicholson and Ian Shaw, eds. Pp. 148–176. Cambridge: Cambridge University Press.

Oren, Eliezer D.

1989 Early Bronze Age Settlement in North Sinai: A Model for Egypto-Canaanite Interconnections. *In* L'urbanisation de La Palestine à l'âGe Du Bronze Ancien: Bilan et Perspectives Des Recherches Actuelles. Pierre de Miroschedji, ed. Pp. 389–405. Oxford: BAR International Series.

Ovadia, E.

1992 The Domestication of the Ass and Pack Animals: A Case of Technological Change. *In* Pastoralism in the Levant: Archaeological Materials in Anthropological Perspectives. Ofer Bar-Yosef and Anatoly Khazanov, eds. Pp. 19–28. Madison: Prehistory Press.

Panagiotakopulu, Eva

2001 New Records for Ancient Pests: Archaeoentomology in Egypt. Journal of Archaeological Science 28(11): 1235–1246.

Papadopoulos, John K., and Gary Urton, eds.

2012 The Construction of Value in the Ancient World. Los Angeles: The Cotsen Institute of Archaeology Press.

Parkinson, Richard

2008 Painted Tomb Chapel of Nebamun. First Edition edition. London: British Museum Press.

Peet, T. Eric

1914 The Cemeteries of Abydos. Part II: 1911-1912. London: Egyptian Exploration Fund.

1930 The Great Tomb-Robberies of the Twentieth Egyptian Dynasty; Being a Critical Study, with Translations and Commentaries, of the Papyri in Which These Are Recorded,. Oxford: Pub. in conjunction with the provost & fellows of Worcester college at the Clarendon Press.

Petrie, William M. F.

1898 Deshasheh 1897. London: Egyptian Exploration Fund.

1909 Qurneh. British School of Archaeology in Egypt, 16. London: Hazel, Waton and Viney.

1913 Tarkhan I and Memphis V. London: British School of Archaeology in Egypt.

1914 Tarkhan II. London: British School of Archaeology in Egypt.

Petrie, William M. F., and Ernest Mackay

1915 Heliopolis, Kafr, Ammar & Shurah. London: British School of Archaeology in Egypt.

Pinch, Geraldine

2001 Red Things: The Symbolism of Colour in Magic. *In* Colour and Painting in Ancient Egypt. W. Vivian Davies, ed. London: British Museum Press.

Plu, Albert

1985 Bois et Graines. *In* La Momie de Ramsès II: Contribution Scientifique à l'égyptologie. Lionel Balout, Colette Roubet, and Christiane Desroches-Noblecourt, eds. Pp. 166–177. Paris: Editions Recherche sur les Civilisations.

Porter, Bertha, and Rosalind L. B. Moss

1960 Topographical Bibliography of Ancient Egyptian Hieroglyphic Texts, Statues, Reliefs and Painting Volume I: The Theban Necropolis, Part 1 - Private Tombs. Oxford: Clarendon Press.

Quibell, James Edward, Pierre Lacau, Herbert Thompson, and Wilhelm Spiegelberg

1907 Excavations at Saqqara (1905-1914). Cairo: Le Caire : Impr. de l'Institut français d'archéologie orientale.

Quirke, Stephen

1994 Kat. Nr. 383: Rishisarg Eines Konigs Intef. *In* Pharaonen Und Fremde : Dynastien Im Dunkel. 194. Sonderausstellung Des Historischen Museums Der Stadt Wien in Zusammenarbeit Mit Dem Ägyptologischen Institut Der Universität Wien Und Dem Österreichischen Archäologischen Institut Kairo, Rathaus Wien, Volkshalle 8. Sept. – 23. Okt 1994. M Bietak and I Hein, eds. Pp. 275–6. Wien: Eigenverlag der Museen der Stadt Wien.

Raven, Maarten J.

1982 Corn-Mummies. Oudheidkundige Mededelingen Uit Het Rijksmuseum van Oudheden Te Leiden 63: 7–38.

1988 Magic and Symbolic Aspects of Certain Materials in Ancient Egypt. Varia Aegyptiaca 4(3): 237–242.

1991 The Tomb of Iurudef: A Memphite Official in the Reign of Ramesses II. Excavation Memoir, 57. Leiden: National Museum of Antiquities [u.a.].

2017 Third Intermediate Period Burials in Saqqara. *In* Proceedings: The First Vatican Coffin Conference. Aleissa Amenta and Helene Guichard, eds. Pp. 419–424. Città del Vaticano: Edizioni Musei Vaticani.

Raven, Maarten J., David A. Aston, and John H. Taylor

1991 Coffins and Related Objects. *In* The Tomb of Iurudef: A Memphite Official in the Reign of Ramesses II. Maarten J. Raven, ed. Pp. 8–31. Excavation Memoir, 57. Leiden: National Museum of Antiquities.

Re, Alessandro, Alessandro Lo Giudice, Marco Nervo, et al.

2016 The Importance of Tomography Studying Wooden Artefacts: A Comparison with Radiography in the Case of a Coffin Lid from Ancient Egypt. International Journal of Conservation Science 7(2): 935–944.

Redford, Donald B.

1995 The Concept of Kingship during the Eighteenth Dynasty. *In* Ancient Egyptian Kingship. David Bourke O'Connor and David P. Silverman, eds. Pp. 157–184. Leiden: E.J. Brill.

Reeves, Nicholas

1990 Valley of the Kings: The Decline of a Royal Necropolis. London and New York: Kegan Paul International.

2017 The Coffin of Ramesses II. *In* Proceedings First Vatican Coffin Conference: 19-22 June 2013. Alessia Amenta and Hélène Guichard, eds. Pp. 425–438.

Reisner, George

1935 Report on the Egyptian Expedition during 1934-1935. Bulletin of the Museum of Fine Arts 33(199): 69–77.

Richards, Janet

2005 Society and Death in Ancient Egypt: Mortuary Landscapes of the Middle Kingdom. Cambridge University Press.

Rogers, Everett M

1962 Diffusion of Innovations. New York: Free Press of Glencoe.

Rose, Mark

2002 Who's in Tomb 55? Archaeology 55(2): 22–27.

Rosellini, Ippolito

1834 I monumenti dell'Egitto e della Nubia. Pise: Presso Niccolò Capurro e C.

Roundhill, Lisa S.

2004 Conservation Treatment Considerations for an Egyptian Polychrome Wood Coffin. AIC Objects Specialty Group Postprints 11: 89–102.

Rowlands, Michael, and Susan Frankenstein

1998 The Internal Structure and Regional Context of Early Iron Age Society in South-West Germany. *In* Social Transformations in Archaeology: Global and Local Perspectives. 1 edition. Kristian Kristiansen and Michael Rowlands, eds. Pp. 334–374. London ; New York: Routledge.

Ruffinatto, Flavio, Nicola Macchioni, Guido Boetto, Pieter Baas, and Roberto Zanuttini

2010 Reflected Light Microscopy as a Non-Invasive Identification Tool for Wooden Artefacts. IAWA Journal 31(3): 317–331.

Ryholt, Kim S.B.

1997 The Political Situation in Egypt during the Second Intermediate Period, c. 1800-1550 B.C. Copenhagen: K.S.B. Ryholt and Museum Tusculanum Press.

Sassaman, Kenneth E.

1993 Early Pottery in the Southeast: Tradition and Innovation in Cooking Technology. Tuscaloosa: University Alabama Press.

Scamuzzi, Ernesto

1965 Egyptian Art in the Egyptian Museum of Turin. New York: Harry N. Abrams.

Schäfer, Heinrich

1986 Principles of Egyptian Art. Emma Brunner-Traut, ed. John Baines, tran. 4th edition. Oxford : Atlantic Highlands, N.J: Griffith Institute.

Schiffer, Michael B.

1992 Technological Perspectives of Behavioral Change. Tucson: University of Arizona Press.

Schiffer, Michael B., James M. Skibo, Janet L. Griffitts, Kacy L. Hollenback, and William A. Longacre

2001 Behavioral Archaeology and the Study of Technology. American Antiquity 66(4): 729–737.

Schott, Siegfried

1965 Nut Spricht Als Mutter Und Sarg. Revue d'Égyptologie 17: 81–87.

Schweingruber, Fritz H.

1978 Mikroskopische Holzanatomie. Microscopic Wood Anatomy. Biermensdorf, Switzerland: Eidgenössische Anstalt für das forstliche Versuchswesen.

1990 Anatomy of European Woods. Bern: Verlag Paul Haupt.

2007 Wood Structure and Environment. New York: Springer.

Seidlmayer, Stephan

2000 The First Intermediate Period (c.2160-2055 BC). *In* The Oxford History of Ancient Egypt. New Ed edition. Ian Shaw, ed. Pp. 108–136. Oxford ; New York: Oxford University Press.

Seidlmayer, Stephan Johannes

1990 Gräberfelder aus dem Übergang vom Alten zum Mittleren Reich: Studien zur Archäologie der Ersten Zwischenzeit. Heidelberger Orientverlag.

Seiler, Anne

2010 The Second Intermediate Period in Thebes: Regionalism in Pottery Development and Its Cultural Implications. *In* The Second Intermediate Period (Thirteenth-Seventeenth Dynasties): Current Research, Future Prospects. Marcel Marée, ed. Pp. 39–54. Orientalia Lovaniensia Analecta, 192. Leuven ; Walpole, MA: Peeters.

Serpico, M., and R. White

2001 The Use and Identification of Varnish on New Kingdom Funerary Equipment. *In* Pp. 33–42.

Serpico, Margaret

2000 Resins, Amber and Bitumen. *In* Ancient Egyptian Materials and Technology. Paul T. Nicholson and Ian Shaw, eds. Pp. 430–474. Cambridge: Cambridge University Press.

ed.

2016 Beyond Beauty: Transforming the Body in Ancient Egypt. London: Two Temple Place.

Sethe, Kurt

1906 Urkunden Der 18. Dynastie. Leipzig: J.C. Hinrich'sche Buchhandlung.

1911 Osiris Und Die Zeder von Byblos. Zeitschrift Für Ägyptische Sprache Und Altertumskunde 47(1): 71–73.

Shaw, Ian, ed.

2013 Ancient Egyptian Technology and Innovation: Transformations in Pharaonic Material Culture. Repr. Bloomsbury Egyptology. London: Bloomsbury.

Shennan, Stephen

2012 Genes, Memes and Human History: Darwinan Archaeology and Cultural Evolution. London: Bristol Classical Press.

Sherratt, Andrew

1997 Economy and Society in Prehistoric Europe. Princeton, N.J: Princeton University Press.

2002 Diet and Cuisine: Farming and Its Transformations as Refelected in Pottery. Documenta Praehistorica 29: 61–71.

Shortland, Andrew J., ed.

2001 The Social Context of Technological Change: Egypt and the Near East, 1650-1550 BC. Proceedings of a Conference Held at St. Edmund Hall, Oxford 12-14 September 2000. Oxford: Oxbow Books.

2004 Hopeful Monsters? Invention and Innovation in the Archaeological Record. *In* Invention and Innovation. The Social Context of Technological Change 2: Egypt, the Aegean and the Near East, 1650-1150 BC, Proceedings of a Conference Held at the McDonald Institute for Archaeological Research, Cambridge, 4-6 September 2002,. Janine Bourriau and J. Phillips, eds. Pp. 1–11. Oxford.

Simpson, William K., Robert K. Ritner, Vincent A. Tobin, and Edward F. Wente

2003 The Literature of Ancient Egypt. New Haven: Yale University Press.

Skibo, James M.

1992 Ethnoarchaeology, Experimental Archaeology and Inference Building in Ceramic Research. Archaeologia Polona 30: 27–38.

Skibo, James M., and William H. Walker

2002 Ball Courts and Ritual Performance. *In* The Joyce Well Site: On the Frontier of the Casas Grandes World. Eugene B. McCluney, James M. Skibo, and William H. Walker, eds. Salt Lake City: University of Utah Press.

Sliwa, Joachim

1975 Studies in Ancient Egyptian Handicraft: Woodworking. Krakow: Krakow University.

Snape, Steven R.

2011 Ancient Egyptian Tombs: The Culture of Life and Death. Blackwell Ancient Religions. Malden, Mass.: Wiley-Blackwell.

Snodgrass, Antony

1980 Iron and Early Metallurgy in the Mediterranean. *In* The Coming of the Age of Iron. Theodore A. Wertime and James D. Muhly, eds. Pp. 335–374. New Haven: Yale University Press.

Sollas, William Johnson

1924 Ancient Hunters and Their Modern Representatives. 3rd edition. London: Macmillan.

Sørensen, Jørgen Podemann

1989 Divine Access: The So-Called Democratization of Egyptian Funerary Literature as a Socio-Cultural Process. *In* The Religion of the Ancient Egyptians. Cognitive Structures and Popular Expressions. Gertie Englund, ed. Upsala Studies in Ancient Mediterranean and Near Eastern Civilizations, 20. Stockholm: Tryckeri Balder AB.

Spencer, A. Jeffrey

2003 Excavations at Tell El-Balamun, 1999/2001. London: British Museum Press.

Stadelmann-Sourouzian, Hourig

1984 Rischi-Sarg. *In* . Wolfgang Helck, Eberhard Otto, and Wolfhart Westendorf, eds. Pp. 267–9. Lexicon Der Ägyptologie, 5. Wiesbaden: Otto Harrassowitz.

Steinmann, Frank

1978 Gab Es Im Alten Ägypten Sklavenarbeit in Der Sphäre Der Handwerklich-Künstlerischen Produktion ? Altorientalische Forschungen 5: 25–32.

Stevenson, Alice

2009 Predynastic Burials. Willeke Wendrich, ed. UCLA Encyclopedia of Egyptology: 12.

Stocks, Denys A.

2003 Experiments in Egyptian Archaeology: Stoneworking Technology in Ancient Egypt. London ; New York: Routledge.

2015 Some Experiments in Ancient Egyptian Stone Technology. *In* Egyptology in the Present: Experiential and Experimental Methods in Archaeology. Carolyn Graves-Brown and Wendy Goodridge, eds. Pp. 173–199. Swansea: Classical Press of Wales.

2016 Scientific Evaluation of Experiments in Egyptian Archaeology. *In* Mummies, Magic and Medicine in Ancient Egypt: Multidisciplinary Essays for Rosalie David. Price Campbell, Roger Forshaw, Andrew Chamberlain, and Paul T. Nicholson, eds. Pp. 446–460. Manchester: Manchester University Press.

Strudwick, Nigel

1988 Oil Tablet. *In* Mummies and Magic: The Funerary Arts of Ancient Egypt. Sue D'Auria, Peter Lacovara, and Catharine H. Roehig, eds. Boston: The Museum of Fine Arts, Boston.

1994 Change and Continuity at Thebes: The Private Tomb after Akhenaten. *In* The Unbroken Reed: Studies in the Culture and Heritage of Ancient Egypt, in Honour of A.F. Shore. Christopher Eyre, Anthony Leahy, and Lisa Montagno Leahy, eds. Pp. 321–336. London: The Egypt Exploration Society.

Tangri, Daniel

1992 Foraging and Farming in Egypt: The Transitions from Hunging and Gathering to Horticulture in the Nile Valley. Proceedings of the Prehistoric Society 58: 111–125.

Taylor, John H.

1989 Egyptian Coffins. Shire Egyptology, 11. Aylesbury: Shire Publications.

1991 Date. *In* The Tomb of Iurudef: A Memphite Official in the Reign of Ramesses II. Maarten J. Raven, ed. Pp. 17–23. Excavation Memoir, 57. Leiden: National Museum of Antiquities.

1999 The Burial Assemblage of Henutmehyt: Inventory, Date, and Provenance. *In* Studies in Egyptian Antiquities: A Tribute to T.G.H. James. W. Vivian Davies, ed. Pp. 59–72. British Museum Occasional Paper, 123. London: Trustees of the British Museum.

2000 The Third Intermediate Period. *In* The Oxford History of Ancient Egypt. Ian Shaw, ed. Pp. 330–68. Oxford ; New York: Oxford University Press.

2001 Death and the Afterlife in Ancient Egypt. University of Chicago Press.

2003 Theban Coffins from the Twenty-Second to the Twenty-Sixth Dynasty: Dating and Synthesis of Development. *In* The Theban Necropolis: Past, Present and Future. Nigel Strudwick and John H. Taylor, eds. Pp. 95–121. London: British Museum Press.

2009 Coffins as Evidence for a "North-South Divide" in the 22nd-25th Dynasties. *In* The Libyan Period in Egypt: Historical and Cultural Studies into the 21st-24th Dynasties: Proceedings of a Conference at Leiden University, 25-27 October 2007. Gerard P. F. Broekman, Robert J. Demarée, and O. E. Kaper, eds. Pp. 375–415. Leiden: Peeters.

2010a Egyptian Mummies. Austin: University of Texas Press.

2010b Changes in the Afterlife. *In* Egyptian Archaeology. 1 edition. Willeke Wendrich, ed. Pp. 220–40. Chichester, U.K. ; Malden, MA: Wiley-Blackwell.

Taylor, John H., and Nigel C. Strudwick

2005 Mummies: Death and the Afterlife in Ancient Egypt: Treasures from the British Museum. London: The Bowers Museum of Cultural Art.

Tietze, Christian, ed.

2011 Ägyptische Gärten: Ausstellung Im Römisch-Germanischen Museum Der Stadt Köln. 27. Mai Bis 6. November 2011. Weimar: Arcus-Werlag.

Trigger, B. G., B. J. Kemp, D. O'Connor, and A. B. Lloyd

1983 Ancient Egypt: A Social History. Reprint edition. Cambridge: Cambridge University Press.

Trigger, Bruce G.

2009 A History of Archaeological Thought. 2. ed., repr. Cambridge: Cambridge Univ. Press.

Van de Mieroop, Marc

1992 Society and Enterprise in Old Babylonian Ur. Berlin: Dietrich Reimer Verlag.

Vartavan, Christian Tutundjian de

2001 Pistacia Species in Relation to Their Use as Varnish and "Incense" (Sntr) in Pharaonic Egypt. Bulletin of Parthian and Mixed Oriental Studies 2: 63–92.

Vassalli, Luigi

1867 I Monumenti Istorici Egizi Il Museo E Gli Scavi D'Antichità. Milan: Tipografia Guglielmini.

Verner, Miroslav, Peter Jánosi, and Paule Posener-Kriéger.

2001 Abusir III : The Pyramid Complex of Khentkaus. Praha : Czech Institute of Egyptology.

Vinson, Stephen Michael

1987 Boats of Egypt Before the Old Kingdom. MA, Texas A&M University.

van Voss, Heerma

1971a De Spreuk Om de Kisten Te Kennen: Dodenboek 193. Leiden: Brill.

1971b Zwischen Grab Und Paradies. 30 Faksimilereproduktionen Nach Dem Totenbuchpapyrus T 3 Aus Leiden. Basel: Firma Moriff & Co.

1997 Ein Spruch Aus Dem Papyrus Greenfield. *In* Essays on Ancient Egypt: In Honour of Herman Te Velde. J. Vandijk, ed. Pp. 183–186. BRILL.

Wallaert, Hélène

2012 Apprenticeship and the Confirmation of Social Boundaries. *In* Archaeology and Apprenticeship: Body Knowledge, Identity, and Communities of Practice. Willeke Wendrich, ed. Pp. 20–42. Tucson: University of Arizona Press.

van Walsem, René

1997 The Coffin of Djedmonthuiufankh in the National Museum of Antiquities at Leiden/1: Technical and Iconographical, Iconological Aspects. Leiden: Nederlands Inst. voor het Nabije Oosten.

2014 From Skin Wrappings to Architecture: The Evolution of Prehistoric, Anthropoid Wrappings to Historic Architectonic Coffins/Sarcophagi; Separate Contrasts Optimally Fused in Single Theban "stola" Coffins (+/-975-920 BC). *In* Body, Cosmos and Eternity: New Trends of Research on Iconography and Symbolism of Ancient Egyptian Coffins. Rogerio Sousa, ed. Oxford: Archaeopress Archaeology.

Ward, Cheryl

2000 Sacred and Secular: Ancient Egyptian Ships and Boats. Archaeological Institute of America Monographs, 5. Philadelphia: University of Pennsylvania Museum.

2006 Boat-Building and Its Social Context in Early Egypt: Interpretations from the First Dynasty Boat-Grave Cemetery at Abydos. Antiquity 80(1): 118–129.

2012 Building Pharaoh's Ships: Cedar, Incense and Sailing the Great Green. British Museum Studies in Ancient Egypt and Sudan 18: 217–32.

Ward, Cheryl, Patrick Couser, Tom Vosmer, Maik-Jens Springmann, and Horst Wernicke

2007 Building Hatshepsut's Punt Ship: Science and Ship Reconstruction. *In* Historical Boat and Ship Replicas: Conference-Proceedings on the Scientific Perspectives and the Limits of Boat and Ship Replicas. Torgelow: Philips Verlag.

Wendrich, Willeke

1999 The World According to Basketry. Los Angeles: Cotsen Institute of Archaeology Press. ed.

2012 Archaeology and Apprenticeship: Body Knowledge, Identity, and Communities of Practice. Tucson: University of Arizona Press.

2013 Ethnoarchaeology Today: The Relevance of the Discipline from the Egyptian Perspective. *In* Contesting Ethnoarchaeologies: Traditions, Theories, Prospects. Arkadiusz Marciniak and Nurcan Yalman, eds. Pp. 191–209. One World Archaeology, 7.

Wenger, Etienne

2008 Communities of Practice: Learning, Meaning, and Identity. 16th pr. Learning in Doing : Social, Cognitive, and Computational Perspectives. Cambridge: Cambridge Univ. Press.

Wengrow, David

2006 The Archaeology of Early Egypt: Social Transformations in North-East Africa, 10,000 to 2,650 BC. Cambridge World Archaeology. Cambridge, UK ; New York: Cambridge University Press.

Wente, Edward F.

1990 Letters from Ancient Egypt. Society of Biblical Literature Writing from the Ancient World Series Volume 1. Atlanta, Ga: Scholars Press.

Wetterstrom, Wilma

1993 Foraging and Farming in Egypt: The Transitions from Hunging and Gathering to Horticulture in the Nile Valley. *In* The Archaeology of Africa: Food, Metals and Towns. Bassey Andah, Alex Okpoko, Thurstan Shaw, and Paul Sinclair, eds. Pp. 165–226. New York: Routledge.

Whelan, Paul

2007 Mere Scraps of Rough Wood? 17th-18th Dynasty Stick Shabtis in the Petrie Museum and Other Collections. London: Golden House Publications.

Whitau, Rose, India Ella Dilkes-Hall, Emilie Dotte-Sarout, et al.

2016 X-Ray Computed Microtomography and the Identification of Wood Taxa Selected for Archaeological Artefact Manufacture: Rare Examples from Australian Contexts. Journal of Archaeological Science: Reports 6: 536–546.

Wilkinson, Alix

1994 Symbolism and Design in Ancient Egyptian Gardens. Garden History 22(1): 1–17.

Willems, Harco

1988 Chests of Life. A Study of the Typology and Conceptual Development of Middle Kingdom Standard Class Coffins. Leiden: Ex Oriente Lux.

1996 The Coffin of Heqata: (Cairo JdE 36418) : A Case Study of Egyptian Funerary Culture of the Early Middle Kingdom. Leuven: Peeters Publishers.

Winlock, Herbert E.

1923 The Egyptian Expedition 1922-1923. The Museum's Excavations at Thebes. Bulletin of the Metropolitan Museum of Art 18(12): 11–39.

1924 The Tombs of the Kings of the Seventeenth Dynasty at Thebes. Journal of Egyptian Archaeology 10: 217–76.

1947 The Rise and Fall of the Middle Kingdom in Thebes. New York: Macmillan.

1975 The Tomb of Queen Meryetamun: I The Discovery. The Metropolitan Museum of Art Bulletin 33(2): 77–89.

1992 Excavations at Thebes. The Metropolitan Museum of Art Bulletin 17(12): 19–49.

Wylie, Alison

1985 The Reaction Against Analogy. Advances in Archaeological Method and Theory 8: 63–111.

Younis, Sobhy A.

2009 A Stela of the Chief of the Workshops of Amun Pashed. Journal of the Faculty of Archaeology at Cairo University 14: 1–10.

Yurco, Frank J.

1995 Narmer: First King of Upper and Lower Egypt. A Reconsideration of His Palette and Macehead. Journal of the Society for the Study of Egyptian Antiquities 25: 89–95.

Zidan, Y, T Handoussa, H Hosni, and N. M. N. el Hadidi

2006 The Conservation of a Wooden Graeco-Roman Coffin Box. E-Preservation Science 3: 27–33.

Ziffer, Irit

2010 Western Asiatic Tree-Goddesses. Egypt and the Levant 20: 411–430.

Zitman, Marcel

2010a The Necropolis of Assiut: A Case Study of Local Egyptian Funerary Culture from the Old Kingdom to the End of the Middle Kingdom, vol.1. Leuven: Peeters : Departement Oosterse Studies.

2010b The Necropolis of Assiut: A Case Study of Local Egyptian Funerary Culture from the Old Kingdom to the End of the Middle Kingdom, vol.2. Leuven: Peeters : Departement Oosterse Studies.