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Commemorating Disability in Early Dilmun: Ancient and Contemporary Tales from the Peter B. Cornwall Collection

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REMEMBERING THE DEAD IN
THE ANCIENT NEAR EAST

RECENT CONTRIBUTIONS FROM BIOARCHAEOLOGY
AND MORTUARY ARCHAEOLOGY

EDITED BY

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ABSTRACT

In late 1940 and early 1941, Peter B. Cornwall, then a graduate student at Harvard University, conducted an expedition to Bahrain and Saudi Arabia's Eastern Province. During his travels, he surveyed several sites and, in some instances, excavated burials containing human remains and associated artifacts. In addition to the challenges that most doctoral students face when pursuing a degree, Cornwall had to contend with deafness, which had left him able to speak, but not hear, from a young age. Impressively, the portions of his data that he published aided in relocating ancient Dilmun, a polity that ran along the western shore of the Arabian Gulf during the Bronze and Iron Ages. In 1945, Cornwall deposited his collection in the Phoebe A. Hearst Museum of Anthropology at the University of California, Berkeley. However, systematic study of the collection's human remains, artifacts, and excavation notes has been limited. The Dilmun Bioarchaeology Project was formed in 2008 by the authors and their collaborators the University of California, Berkeley, and Sonoma State University to study the collection. One of the most exceptional skeletons belongs to a young woman, who lived and died during the Early Dilmun period (ca. 2050–1800 BCE). A malformed upper right arm, “knock-knees,” and unusually short stature would have differentiated her visibly from the surrounding population and somewhat modified her mobility. Yet she was buried with more numerous and elaborate grave goods than her contemporaries, raising the possibility that her loss was especially profound. The authors investigate the sociocultural meanings of disability, tacking between the experiences of

a twentieth-century archaeologist and the ancient woman whose remains he brought to light.

INTRODUCTION

In 1941, Peter B. Cornwall, a young, deaf Harvard graduate student and early explorer of the Arabian Gulf, excavated the skeleton of a young woman,¹ Hearst museum catalog number 12-10146, who lived during the Early Dilmun period (ca. 2050–1800 BCE) on what is today the island nation of Bahrain. This young woman's right arm was unusual in appearance and function, and her walking had been irregular during life. Despite her unusual bodily form, her tomb was marked by a large number of objects, an indication that she was a highly valued person in Dilmun society. In this chapter, we place these two persons with disabilities alongside one another to consider how they managed their corporeal conditions during life and how their societies commemorated them in death.²

Interdisciplinary research on disability provides several insights with which archaeologists can consider this classificatory phenomenon in past contexts (Barnes and Mercer 2010; Davis 1997; Johnstone 2001; Siebers 2008). Perhaps the most important lesson is the critique of modern medical definitions of disabilities: these are made in contrast to an ideal normative body that functions with full ambulatory, cognitive, and sensorial capacities within a built environment that is recursively designed to accommodate such ideal bodies. Cross-cultural and historical studies of disability alternatively reveal that what constitutes “disabled” in any one setting consists of arbitrarily assigned stigmas that are embedded in cultural ideologies (Edwards 1997; Goffman 1963; Stiker 2000). This recognition of disability's contingent nature requires archaeologists to identify its constitution within particular historical settings using whatever material evidence and written sources are available (Hubert 2000). Because bioarchaeology and mortuary archaeology place the human body at the center of inquiry, they create opportunities for collaboration between the fields to reconstruct alternative notions of disability.

Despite this natural marriage, archaeological research on disability has seen limited attention, with a theme issue of *Archaeological Review from Cambridge* (Finlay 1999) representing a notable exception. It is significant that four of its five research articles either make use of or are founded upon the contextual analysis of human skeletal remains. Here and elsewhere, Charlotte Roberts's scholarship (e.g., Roberts 1999, 2000, 2011) on disability in past populations is seminal. Her comprehensive investigations of leprosy and tuberculosis, among

other pathological conditions, are mindful of the interpretive limitations inherent to the skeletal record, from the restriction of many diseases to the body's soft tissues, to the representativeness of cemetery populations. For these reasons, she emphasizes the necessity of pairing secondary evidence (clinical, historical, ethnographic, etc.) with osteological data to reconstruct social perceptions, identities, and experiences of disability in the past. Nevertheless, extreme caution is required when making such interpretations: every suggestion of functional restrictions, discomfort and pain, care and dependence "may have been an accurate picture but, equally, may not have been" (Roberts 2000:53). A promising model for a bioarchaeology of care has been proposed recently (Tilley and Oxenham 2011), in spite of earlier warnings that such interpretations are potentially ethnocentric and stretch the boundaries of archaeological inference too far (Dettwyler 1991; cf. Roberts 2000).

Past societies lacked medical technologies that ameliorated challenging conditions for those persons possessing nonnormative bodies. One can conjecture, therefore, that the spectrum of human bodily forms and capacities potentially varied more across a population than they do currently. People who experienced and survived traumatic injuries, or were born with congenital defects, could have been more frequent and visible as they lived their lives in the fullest capacities possible given their particular corporeal circumstances. Tony Waldron (2007) points out that evidence for disability from human skeletal remains is far scarcer than historical, iconographic, and clinical data would lead us to expect. Based on the little evidence that does exist, scholars have used the survival of persons with disabilities through and beyond childhood as a proxy for levels of empathy, compassion, and care in a given family (Hawkey 1998), community (Molleson 1999; Stirland 1997), and/or species (Trinkaus and Zimmerman 1982).

The acknowledgment that past societies thought about ability and the human bodily form in distinct ways also presents an opportunity to reflect on disability in contemporary archaeological practice. Much like the investigation of gender in past societies raised archaeologists' awareness of the structural hurdles women face in the discipline (Moser 2007; Nelson, Nelson, and Wylie 1994), so too might awareness increase of the barriers that persons with disabilities face in archaeological practice. Reified stereotypes of field and laboratory research present archaeology as a craft that requires the body's full capacity, especially mobility and use of the five senses to document and interpret evidence. Archaeologists "walk" the landscape, "dig" ancient buildings, and describe their evidence using vision and touch. Such capacities are embedded in undergraduate archaeological field schools and graduate school pedagogy. This disciplinary insistence on the able-bodied archaeologist is reinforced in

popular representations of archaeological practice, whether it is field shots for cable television documentaries or the more sensational narratives of Indiana Jones and Lara Croft. Likewise, biographies (Trigger 1980 on Childe), memoirs (Woolley 1953) and disciplinary histories (Moorey 1991; Trigger 1989; Willey and Sabloff 1993) commemorate archaeologists as hero-scientists who combine physical and intellectual qualities to explore landscapes and make new scientific discoveries about the past.

This thinking about disability inspires us to perform an anachronistic exercise exploring the lives of two persons with disabilities who lived four millennia apart, drawing on evidence from the Dilmun Bioarchaeology Project (DBP) (for additional information, see Boutin et al. 2012; Porter and Boutin 2012). Cornwall's contributions to this understanding of Early Dilmun society are still being realized through the authors' work on the DBP. Contextual analyses of the Cornwall collection suggest that the human remains derive from twenty-four burial features in Bahrain dating from the third millennium BCE to the first millennium CE. Many burial features contained objects such as vessels, jewelry, weapons, and occasionally faunal remains. In almost all instances, photographs and drawings of the context for these materials are absent, making it impossible to reconstruct tomb architecture, body position, and the arrangement of mortuary offerings.

Cornwall (1944:111) reported recovering ten adult skeletons, all but one of whom he speculated were male, as well as a complete absence of remains belonging to "young children." Based on this understanding of the skeletal population, Cornwall (1944:121) inferred that "only adult warriors of the tribe" and "the sons and wives of the king or his chief men" were buried in mounds. In several instances, the DBP's findings have revised his assumptions about the assemblage's paleodemographic profile, not to mention prehistoric social organization and gender relations. Osteological analysis of the human remains has determined that the collection consists of a minimum of thirty-four individuals.³ Twenty-four adults, as well as one adolescent, were sufficiently well preserved to permit sex estimation. Of these 25 individuals, 19 (76 percent) are males or probable males, while six are females or probable females (24 percent). Therefore, males outnumber females by 3 to 1 in the collection. Of the individuals for whom an age category was estimated, the vast majority (76.5 percent) are adults; middle adults (35–50 years) are the best represented. However, adolescents, children, infants, and one fetus are also present in smaller numbers. Research on the Cornwall collection continues with plans for the publication of a final report in the near future synthesizing the results of analysis and interpretation.

A DEAF MAN IN ARABIA: THE PETER B. CORNWALL EXPEDITION

Cornwall (b. 1913, d. 1972), at the time a graduate student in Harvard's Anthropology Department, was fascinated by the archaeology and history of Bahrain and eastern Saudi Arabia. Both areas had seen only limited investigation in previous decades (e.g., Mackay 1929) and called out for more scholarly attention. After seeking funds from various research institutions, Cornwall left for the Gulf in late 1940, where he spent several months first excavating tumulus fields in Bahrain and later surveying archaeological sites in eastern Saudi Arabia (Cornwall 1944, 1946a, 1946b; also see Porter and Boutin 2012:fig. 3 for a map of Cornwall's itinerary and table 1 for a list of surveyed sites). This was remarkable work for the time, since the concurrent world war frustrated most archaeological expeditions to the Middle East.

Cornwall's Gulf expedition was also notable because he was deaf. Sources report that Cornwall lost his ability to hear when he was a young man.⁴ Cornwall did have the capacity to speak, and he could respond orally to handwritten questions, many of which were archived in the Hearst Museum's accession file. Despite his hearing loss, Cornwall's educational record demonstrates that he grew into a young scholar unafraid to meet life's challenges and deeply passionate about archaeology and the ancient world. His resume describes how he attended the exclusive Phillips Academy, graduating in 1932, began his undergraduate degree at Stanford, and later completed it at the University of Toronto. He then earned his master's degree in Christ Church College at Oxford University, and later his PhD in anthropology from Harvard. Private correspondence between his professors and grading assessments from his Oxford tutors describe Cornwall as a hardworking, inquisitive student, although they often note their inability to communicate with him in meetings. Cornwall's familial wealth no doubt permitted him to mitigate those aspects of his education in which hearing was needed. His father was a prominent real estate salesman and developer in the San Francisco Bay area. According to one letter, Cornwall paid students to write down lecture notes for him so he could study course materials in private.

Cornwall's wealth, however, did not completely lift barriers to an education in archaeology. He faced institutional discrimination in graduate school as he attempted to design his dissertation research around his interests in the Gulf. Several letters discuss Cornwall's deafness and question whether or not he held the ability to carry out his research. In a 1940 letter, Carleton Coon, an anthropologist and Cornwall's advisor at Harvard, wrote to Theodore McCown, a physical anthropologist and the Hearst Museum director at the time, notifying him that Cornwall would soon contact him seeking UC

Berkeley's financial support. The Cornwall family already had deep ties to the University of California, with Cornwall's grandfather serving as a trustee and his father having attended school there. Toward the beginning of the letter, Coon writes,

Cornwall is 100% deaf, and we have to communicate with him by writing things on a pad. His own voice is normal . . . Living in a world of his own, with books instead of friends, he has developed a mania—that of an archaeological survey of the parts of Saudi Arabia controlled by the Standard Oil Company of California. As it stands, he has the permit, but insufficient funds.

Later in the letter, Coon reassures McCown that Cornwall is capable of carrying out his research:

His deafness is a great disability. On the other hand, he has been deaf for the last 13 years, and has worked in Egypt and Greece, etc. and gone thru Oxford, without it hindering him. Here, he works all the time, gets A's despite the fact that he can't hear a word in lectures. Personally he is a very fine fellow; everyone is impressed by his personality and character, and his great courage. On the personal score, I should list him A#1. Scholastically, he is first rate as well, except that he lacks the connective tissue and viewpoints that can be acquired only through conversation, and not thru books. How he is as an archaeologist, I don't know.

Toward the end of the letter, Coon reveals that his department colleagues have decided not to back Cornwall's expedition.

Naturally, the idea of sending a deaf man to Arabia did not meet instant approval here, even if the money aspect has not arisen. However, he is confident, and he will be with the oil people most of the time. Being turned down here was a considerable blow to him. He naturally wants to take the trip, and stated that he would rather let the University of California have it (*any recovered archaeological materials*) than any other institution [italics added].

Altogether, Coon's letter presented Cornwall and his project in a sympathetic light, anticipating the concerns that a nonintimate might raise upon learning of Cornwall's deafness. Nevertheless, McCown responded in a short note reporting that no matter how much he would like to support Cornwall, the museum's financial resources were limited. McCown did eventually change his mind, and the Hearst partly supported Cornwall's project.

Despite these initial setbacks in fund-raising, correspondence indicates that Cornwall raised the needed amounts from his father's associates and

left for the Gulf in fall 1940. Cornwall's field notes, photographs, and travel correspondence reveal little about how he managed his deafness during fieldwork. His letters to the Hearst Museum convey a sense of excitement and optimism over his discoveries, as well as a bit of urgent secrecy that his news be kept quiet until he can return home to complete the analysis of his materials. In one field photograph (Figure 4.1), a man believed to be Cornwall poses with workmen in front of an excavated tumulus. One letter from Cornwall to McCown suggests that Cornwall may have recruited Robert MacDonald, who was said to have competency in Arabic, to join him on the expedition. While Cornwall's travel correspondence never mentions MacDonald by name, one can assume that MacDonald's participation would have eased many of Cornwall's difficult encounters. There is also reason to suspect that Cornwall worked and traveled with employees of Standard Oil, which was actively exploring eastern Arabia at this time for petroleum sources and had agreed in 1939 to provide Cornwall with logistical support. Based on all available evidence, then, it appears that Cornwall was successful in his fieldwork and travels despite initial speculation that his deafness would impede his research.

In spring 1941, Cornwall shipped the excavated materials back to the United States. The Hearst Museum eventually reached an agreement with Cornwall that it would pay for the cost of shipping in exchange for him depositing the materials in the museum after completing his analysis and publications. Cornwall studied these materials in a small laboratory he set up in his family's home in Ross, just north of San Francisco. The results of his work were published in his Harvard dissertation (Cornwall 1944) and a handful of journal articles that presented his excavations in Bahrain (Cornwall 1943), his conclusions about Dilmun's location and history (Cornwall 1946b), and his survey of sites on the Arabian mainland (Cornwall 1946a). By 1945, Cornwall had finished his research and later gave the human skeletal remains and objects to the Hearst Museum. It is clear from internal Hearst Museum communications, as well as from letters between museum staff and Cornwall, that the staff had some difficulties communicating with him from this point forward. Cornwall had promised to come to Berkeley to help unpack and catalog the materials, but despite repeated requests, he failed to carry out this obligation. The museum staff was also concerned about the lack of field documentation describing the location and condition of excavated evidence. A fact-finding visit to Cornwall's Ross home in 1945 presented an opportunity for the staff to ask him these questions directly. The handwritten questions on scraps of paper that were used to communicate with Cornwall remain in the museum's



FIGURE 4.1. *Peter Cornwall and his hired laborers posing for a photograph in front of an unspecified tumulus in Bahrain (Photo courtesy of the Phoebe A. Hearst Museum of Anthropology).*

accession file; however, Cornwall's responses were delivered orally, leaving no way of knowing his replies.

Cornwall last communicated with the Hearst Museum in 1952, informing them in a letter that he was moving to Rome, and leaving an address in the Monteverde neighborhood where he would reside. Although sources shed little light on the remaining years of his life, it seems clear that Cornwall did not pursue a career in archaeology much beyond his dissertation research. Persons who knew Cornwall in Rome during these later decades of his life (and wish to remain anonymous) report that he traveled extensively and collected antiquities and paintings. His death certificate indicates, and sources concur, that his final years were characterized by alcoholism. Cornwall died

in 1972 at fifty-nine while in a coma due to complications from cirrhosis of the liver. Records show that his body was cremated in Italy and his ashes were repatriated to the United States soon afterward. They were eventually interred alongside the rest of his family at Cypress Cemetery in Colma, California.

Cornwall's experiences provide rare insight into how a young scholar with a perceived disability came of age in the discipline of archaeology during the first half of the twentieth century. At first glance, Cornwall stands in contrast to the able-bodied representations of hero-scientists that are common in contemporary popular culture and are implicitly replicated in the professional discipline. Yet Cornwall also held the qualities that marked so many archaeologists of his age—a genuine interest in the past, a tolerance for risk, a love for travel, and, not least, access to private funding sources to finance his research. These attributes must be remembered when representing Cornwall's life through the prism of his deafness.

LIVING AND DYING IN EARLY DILMUN

Cornwall's field research was an early step in the investigation of ancient Dilmun, a polity that extended along the western central Gulf coast, including what is today, from north to south, Kuwait, the al-Hasa Eastern Province of Saudi Arabia, Bahrain, and Qatar (Figure 4.2). Written sources originating from Dilmun are limited to a select corpus of texts that reveals little about its society and history (Potts 1990:217–31, 305–34). Complementing this scant record are Mesopotamian written sources, particularly economic documents and word lists that describe the key products, like dates, pearls, and textiles, for which Dilmun was known. Ultimately, archaeological research is the primary means by which Dilmun's history has been reconstructed (e.g., Bibby 1970; more recently, Højlund 2007:123–27; Laursen 2008; Potts 1990), with some areas being more available to excavation and survey (e.g., Bahrain and Kuwait) than others (e.g., Saudi Arabia) in the recent past. Qala'at al-Bahrain on the north edge of Bahrain Island is the best excavated and published site from which Dilmun's development can be observed (Højlund and Hellmuth Andersen 1994). Excavations here and elsewhere (e.g., Barbar, Failaka, Saar) have determined that Dilmun witnessed uneven levels of social complexity between the third and first millennia BCE, with three episodes of marked development during the Early (Qala'at al-Bahrain stratum IIa–IIb, ca. 2050–1800 BCE), Middle (Qala'at al-Bahrain stratum IIIa–IIIb, ca. 1500–1200 BCE), and Late (Qala'at al-Bahrain stratum IV, mid-first millennium BCE) Dilmun periods.

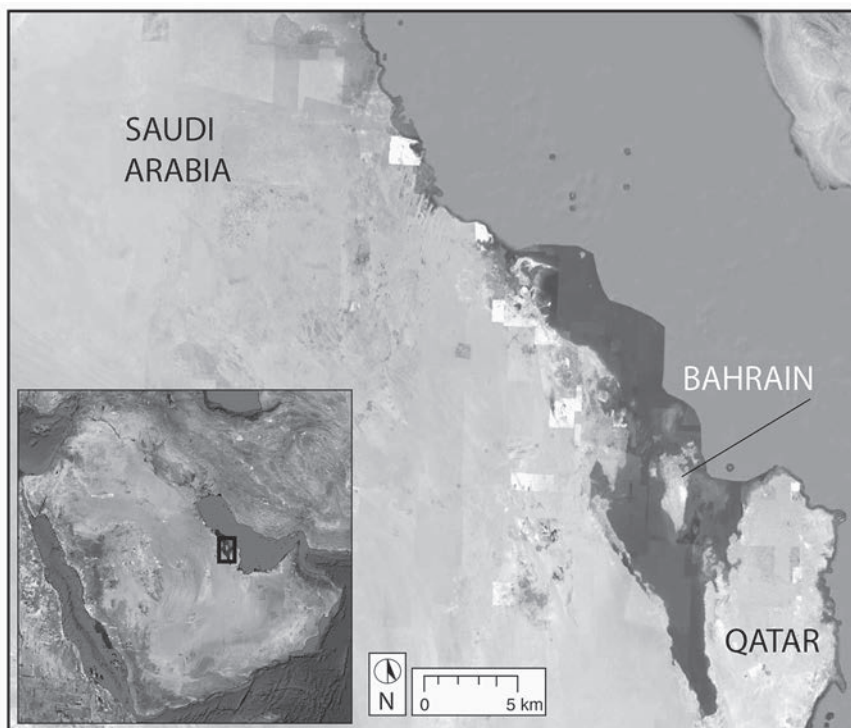


FIGURE 4.2. *A map of the central Gulf region, highlighting eastern Saudi Arabia, Bahrain, and Qatar (Image modified from Google Earth 2011; Image: US Geological Survey, 2011 GeoEye, 2011 Digital Globe; Data: SIO, NOAA, US Navy, NGA, GEBCO).*

Dilmun's first episode of development most concerns us here. The Early Dilmun period is characterized by the polity's increased commercial contacts with Mesopotamia, western Iran, the Oman Peninsula, and the Harappan societies of the Indus River valley. In Qala'at al-Bahrain's period IIA, these connections are manifest in the presence of local objects associated with foreign seals, weights, and ceramic vessels, particularly from Mesopotamia and the Indus River valley (see Potts 1990:192–231 for a description). In a later phase of Early Dilmun's development, public architecture increased in size at Barbar (Temple II) and Qala'at al-Bahrain (Period IIb–c). Starting in approximately 1800 BCE, Early Dilmun witnessed a steady, although not complete, abatement in settlement activity.

A key archive for reconstructing Early Dilmun society has been the extensive mortuary landscape of mounded tumuli, fields of which are still visible along the

Saudi Arabian coast, and on the western and northern sides of Bahrain Island. Excavations by Cornwall and several others following him over the decades (e.g., During Caspars 1980; Højlund 2007; Ibrahim 1982; Mughal 1983) have provided a rich understanding of Early Dilmun's mortuary practices as well as an osteological database from which the island's society can be studied. Most burial mounds consisted of a stone-lined chamber in which the deceased person was laid on his/her side with legs flexed and hands curled under the head in a sleeping position (e.g., Højlund 2007:fig. 258). Often included in the stone chamber with the body were one or two ceramic vessels that likely contained organic materials, and occasionally a sheep or goat, all materials designated for the deceased to bring into the afterlife (Højlund 2007; Kveiborg 2007). Encircling the chamber was a ring wall constructed several courses high. Dirt, sand, and gravel were then used to fill in this circular area, encasing the stone chamber. In most cases, the ring wall eventually collapsed and the dirt fill was allowed to erode, creating the cone shape that most tumuli currently exhibit. While most were modest in size, some tumuli can be characterized as monumental, possessing a more elaborate chamber design and a larger amount of materials constructed over the chamber. The amount of effort and resources needed to construct these so-called "royal" mounds suggest that Early Dilmun society possessed some degree of social differentiation (Højlund 2007:129–36).

Osteological analysis of persons interred in these tumuli has provided another window into Early Dilmun society. Unfortunately, the sizes of skeletal samples for this era—many of which derive from the salvage excavation of a small number of sites—are dwarfed by those from later periods. Accordingly, scholarship on health and demography during the Tylos period (ca. 350 BCE–250 CE) has been nuanced and extensive (e.g., Littleton 1998a, 2003, 2011), while research on Early Dilmun skeletal samples has either highlighted case studies in paleopathology (e.g., Frohlich, Ortner, and al-Khalifa 1989; Rashidi et al. 2001) or analyzed them in a comparative manner to show changes in subsistence and health over space and time (e.g., Littleton 2007; Littleton and Frohlich 1989, 1993).

One of the earliest synthetic analyses of Early Dilmun skeletal data was conducted by Bruno Frohlich (1986). This assemblage numbered over three hundred individuals, the majority of whom apparently derived from the tumulus field at Hamad Town (south of Aali), with the rest having been collected by various Danish expeditions to Bahrain. Among the demographic trends he noted were an unexpectedly low representation of subadults, which he attributed to poor preservation, and a sex ratio biased in favor of males. These trends were later verified by Judith Littleton (2007) in her more focused analysis of

fifty-seven individuals from the Hamad Town assemblage. She also argued (Littleton 2007:187) for a “prosperous” economy based on comparatively low frequencies of nutritional deficiency and infectious disease.

The dentitions of these Early Dilmun people provide additional information about their diet, health, and behavior. Karen Højgaard (1980, 1986) studied the teeth recovered from twenty-two Early Dilmun tumuli near Aali, noting frequent caries and concomitant antemortem tooth loss (AMTL) beginning at a fairly early age. She also speculated (Højgaard 1986:66) that some AMTL may be attributed to therapeutic extraction. Littleton and Frohlich (1989, 1993) provided additional data to substantiate these observations and further speculate about their cause, based on the teeth of seventy-five skeletons from Saar and the Hamad Town assemblage. They characterized the frequency of caries as high, with lesions on 13.3 percent of all teeth (Littleton and Frohlich 1993:435), although John Lukacs (1995:154–55) points out that if better account had been taken of teeth lost antemortem, the true caries rate would have been 40–50 percent higher. The ubiquity of caries is almost certainly to blame for rampant AMTL, which began in adolescence, eventually affecting 84.6 percent of adults over thirty-five (Littleton and Frohlich 1989:67). The high caries and AMTL rates combine with several other factors—the early onset and locations of caries, mild attrition (especially of the molars), and slight calculus deposits—to suggest a nonfibrous, relatively nonabrasive diet high in fermentable carbohydrates and low in proteins and fats. Drawing on archaeological and textual evidence, Littleton and Frohlich (1989, 1993) envision a mixed economy for the Early Dilmun period: irrigation agriculture emphasizing date palm cultivation, with intercropping of vegetables and other fruits, would have been a primary food source; herding (of sheep and goats) and fishing would have provided a secondary food source; and grains, which may have been imported, would have played a minor dietary role.

EMBODYING NONNORMATIVITY: 12-10146

We now turn to one rather exceptional person, whose skeleton and grave goods Cornwall recovered from Tumulus B-5, part of a tumulus field several kilometers southeast of Qala’at al-Bahrain. This skeleton, 12-10146, is stored in the Hearst Museum’s Paleopathology collection. Its cranial skeleton is mostly complete (at least three-quarters of the bones are present), while one-quarter to one-half of all postcranial bones are extant.

The skeleton is that of a probable female, based on pelvic and cranial morphology (Ascádi and Nemeskéri 1970; Buikstra and Ubelaker 1994; White,

Black, and Folkens 2012). Discriminant function analysis of the humerus and femur also suggests that the skeleton is female (France 1998). Analysis of ossification and fusion of the epiphyses (Scheuer and Black 2004) produces an age estimate of 18 to 23 years. This estimate is consistent with dental development (Liversidge and Molleson 2004), pubic symphysis morphology (Brooks and Suchey 1990; Suchey and Katz 1998), and cranial suture closure (Meindl and Lovejoy 1985). However, it should be noted that 18 to 23 years represents her physiological age, based on skeletal and dental maturation. According to bioarchaeological aging standards, this would identify her as a late adolescent or very young adult. A more nuanced and contextualized interpretation of social age (Perry 2005), however, would place her firmly in young adulthood, as in ancient Mesopotamia it was common for women to marry in their middle to late teens (Roth 1987).

PATHOLOGICAL CONDITIONS

The most obvious and striking indicator of pathology is seen in I2-10146's right humerus, which is unusually short (maximum length 19.2 cm). It exhibits a varus deformity, such that the proximal epiphysis (i.e., the head of the humerus) is rotated posteromedially and inclined inferiorly relative to the bone's longitudinal axis (Figure 4.3). Because of the displacement of the head and absence of the anatomical neck, the tip of the greater tuberosity is the bone's most proximal point. The articular surface of the humeral head is irregularly shaped, with rounded contours that meet at a deep cavity in the center. No other abnormal pitting, porosity, or sclerotic bone is present.

The abnormal angulation and shortening of the humerus resulted in biomechanical alterations to the shoulder region (Figure 4.4), including a prominent curvature where the deltoid muscle inserts on the humeral shaft. The right glenoid fossa of the scapula (i.e., the complementary portion of the shoulder joint) has an area of erosion and sclerotic bone formation in the superior one-third of the articular surface. This abnormal bone growth probably resulted from the impingement of the humerus's greater and lesser tuberosities during abduction of the upper arm. The left humerus is unfortunately not extant, but the left glenoid fossa is completely normal in appearance, suggesting that the pathological condition was unilateral.

Humerus varus deformity (HVD) is caused by damage to the bone's epiphyseal growth plates. The development of the medial portion of the epiphyseal plate is retarded or arrested, while the undamaged lateral portion continues to grow normally. Consequently, the biomechanical influence of the rotator

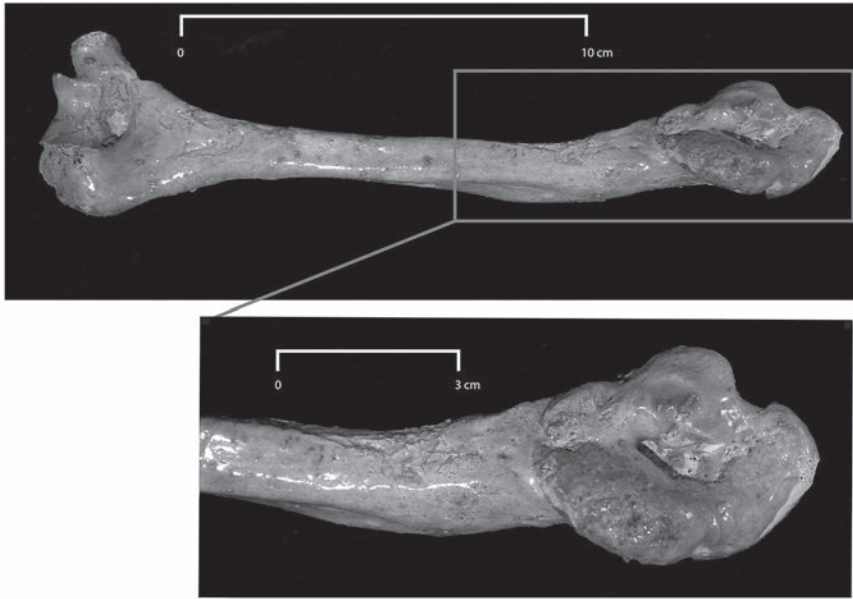


FIGURE 4.3. *Medial view of proximal end of 12-1046's right humerus (Photo: C. Morgan).*

cuff tendons causes a progressive varus rotation of the humeral head, while the premature and irregular fusion of the bone's proximal end (which is responsible for 80 percent of longitudinal growth) causes significant shortening (Ellefsen et al. 1994; Ogden, Weil, and Hempton 1976). However, this young woman's unusually short upper right arm was not the only nonnormative aspect of her body.

The femurs of 12-10146 exhibit femoral anteversion, known in modern vernacular as “knock-knees.” This condition is related to bilateral coxa valga, in which the angle between the femur's neck and shaft is greatly increased (more than 135 degrees), so that the neck's orientation is nearly vertical (Castriota-Scanderbeg and Dallapiccola 2005; Haverkamp and Marti 2007). Indeed, the neck shaft angle of 12-10146's right femur (determined radiographically) is 141 degrees (Figure 4.5), which would have affected how she walked. Femoral anteversion forces people to “internally rotate their femurs and adduct their feet. This may cause compensatory torsion of the tibias resulting in foot eversion and valgus deformity with medially displaced patellae” (Johnson and Davies 2006: 97). Although no morphological abnormalities were present on 12-10146's tibias (to indicate twisting) or tarsals (to suggest that they were

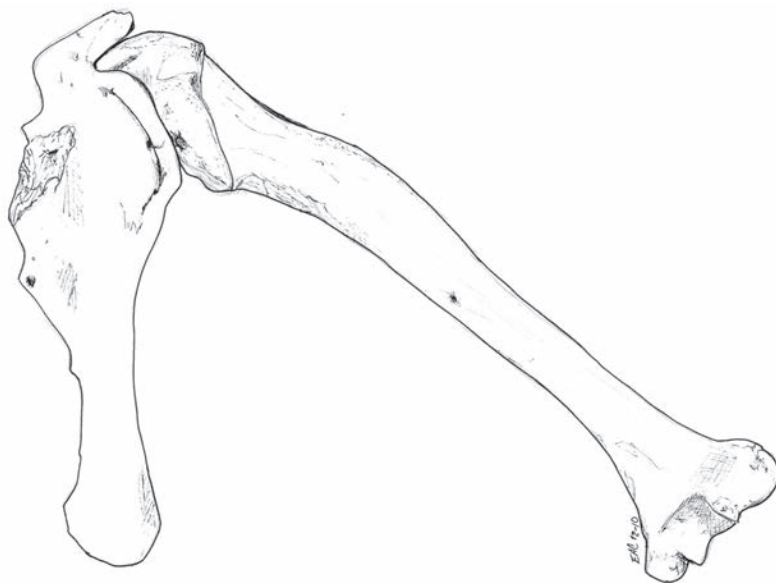


FIGURE 4.4. *Posterior view of articulation of right humerus with scapula at shoulder joint (Drawing: E. Carleton).*



FIGURE 4.5. *Anterior photograph (top) and anterior-posterior radiograph (bottom) of 12-10146's right femur (Photo: C. Morgan; radiograph courtesy of E. Gaensler).*

rotated outward), a smooth-edged, crescent-shaped concavity on the medial condyle of her left femur could have been caused by displacement of the patella.

Indices of 12-10146's stature and robusticity were compared to a metric database compiled from archaeological sites in Anatolia, Syria, Mesopotamia, and Iran, which date between the fourth and first millennia BCE (Boutin 2008:117-18 ff.). The maximum length of her femur (36.55 cm) is three standard deviations below the mean for ancient Near Eastern females. The ulna (broken postmortem, but with no gross pathologies) was at least 21.3 cm long, which would locate it roughly two standard deviations below the female mean for maximum length. The femur's length produced stature estimates ranging from 137.6 cm (4 ft. 6.2 in.)⁵ to 144.5 cm (4 ft. 8.9 in.). This stature range is substantially lower than both the mean female stature from the ancient Near East (156.6 cm; 5 ft. 1.7 in.) and the average stature of a small sample (N = 15) of Early Dilmun females (158.6 cm; 5 ft. 2.4 in.) (Littleton 2007:182). Long bone circumference also can be used as a proxy for overall body size (Safont, Malgosa, and Subirà 2000). The midshaft circumference of 12-10146's femur (6.7 cm) is approximately 1.5 standard deviations below the mean for ancient Near Eastern females. Therefore, it seems that 12-10146 would have been noticeably shorter, as well as slightly built, compared to her female peers.

Compared to her Early Dilmun peers, 12-10146's dental health was quite good. The four anterior teeth that are present and complete are not carious and exhibit light attrition. Of the twelve posterior teeth that are present and mostly complete, attrition is only slightly heavier. One tooth (left M₁) has an extensive interproximal carious lesion that has destroyed much of the mesial crown. There is no evidence of abscessing or bone loss, and no teeth were lost antemortem. No linear enamel hypoplasias were observed on the anterior teeth, but three of the third molars and one second molar each exhibit one hypoplastic lesion. The lesion on the second molar was occasioned by some sort of systemic physiological stressor between six and seven years of age (after Goodman and Rose 1991). Fewer guidelines are available for estimating age-at-defect formation for third molars, but based on crown development patterns these hypoplastic events probably occurred in early adolescence and thus were distinct from those that affected the second molar.

DIFFERENTIAL DIAGNOSIS

Clinical research has recorded the joint occurrence of HVD and coxa valga in skeletal dysplasias, metabolic diseases, and other neuromuscular and genetic

disorders (Ellefsen et al. 1994; Ogden, Weil, and Hempton 1976). Premature and irregular fusion of the epiphyses, which commonly manifests in the proximal humerus and distal femur, is one symptom of thalassemia (Currarino and Erlandson 1964). Indeed, this is the etiology that I. Hershkovitz et al. (1991) propose for a case of HVD from Prepottery Neolithic Israel/Palestine. The coxa valga and premature fusion of the medial humeral head of 12-10146 appear consistent with this diagnosis. However, other expected indicators of thalassemia, namely cranial and postcranial manifestations of marrow hyperplasia (Weatherall and Clegg 2001), are absent.

Vitamin D deficiency in childhood—otherwise known as rickets—can cause bowing and bending of long bones, and angulation and fractures at the growth plates (Brickley and Ives 2008). Rickets has been documented in Late Dilmun and Tylos period Bahrain (Littleton 1998b). However, the bone softening symptomatic of rickets would cause a reduced angle between the femoral neck and shaft (coxa vara), not the increased angle that 12-10146 exhibits (coxa valga).

Achondroplasia (classic dwarfism) presents shortened long bones, as well as angulation at the growth plates. However, 12-10146 does not exhibit other characteristic signs of achondroplasia, such as bulging of the skull vault, a constricted basicranium, flaring of the epiphyseal plates, and vertebral abnormalities (Resnick 1995). Her estimated stature (138–144.5 cm) also is taller than expected for either true achondroplasia or pseudoachondroplasia, in which a height of no more than 130 cm is expected (Ortner 2003:482). Certain of the spondyloepiphyseal dysplasias do feature HVD, coxa valga, and reduced stature (e.g., Strudwick type; Hall 2005:1). However, the characteristic changes to the vertebral bodies, short (or absent) femoral necks, and systemic ossification failures are not manifested by 12-10146.

Donald Ortner's (2003:491) initial diagnosis for bilateral HVD in an adolescent/young adult from Early Dynastic Egypt was achondroplasia, based on the abnormally short length of the humeri. However, upon further consideration of the humeral head morphology, which is uniquely associated with HVD, he concluded that one of the mucopolysaccharidoses is more likely. Specifically, he favored types II or IV, given the individual's survival beyond childhood. Luigi Capasso (1989) also cites type IV mucopolysaccharidosis ("Morquio syndrome") as the cause of a young adult's HVD from Bronze Age Italy. Certain characteristics of Morquio syndrome, particularly the intermediate (IVB) or mild (IVC) types, are consistent with 12-10146's suite of pathological conditions (Alman and Goldberg 2006:288–91). These include HVD, coxa valga, and short stature. However, this young woman does not exhibit

other diagnostic changes, including small or absent femoral heads and flattened vertebral bodies. The second cervical vertebra is not extant, which prevents an identification of another indicator of Morquio's syndrome (i.e., the reduction or absence of the odontoid process). Although Morquio's syndrome presents the closest diagnostic "fit" for I2-10146's condition, the number of inconsistencies makes this etiology doubtful. Septic arthritis and osteomyelitis also are clinically documented causes of HVD (Ogden, Weil, and Hempton 1976; Peterson 2012). Accordingly, M. Özbek (2005) points to traumatic injury with subsequent infection as a cause of unilateral HVD in an ancient Thracian skeleton. But, as mentioned above, I2-10146 presents no macroscopic evidence of chronic infection.

Unable to diagnose I2-10146's condition based on gross examination alone, we obtained radiographs of her right humerus and femur.⁶ Consultation with musculoskeletal radiologists yielded a consensus that genetic or congenital diseases were not to blame for their deformities and short length (R. Boutin, personal communication). More likely, the HVD was acquired, although infection or trauma has left no trace radiologically. The conditions of both bones are best described as idiopathic (i.e., of uncertain or unknown origin). Idiopathic HVD usually manifests unilaterally, as an isolated indicator of skeletal pathology; this is consistent with its occurrence in the wake of postnatal or early childhood trauma, infection, or tumor (Vanderbeck et al. 2009:126). Coxa valga can result from a variety of acquired disorders, which often involve "muscle power imbalance or a decrease in weight-bearing" due to a lack of upright posture (Cagriota-Scanderbeg and Dallapiccola 2005:260).

Several case studies in the bioarchaeological literature have cited traumatic injury as the most likely etiology of HVD. T. Anderson (1997), J. E. Molto (2000), and S. P. Kacki et al. (2013) favor traction injuries incurred at the time of birth or during the early postnatal period. Traction injuries often occur during the final stages of vaginal delivery, when the neonate's passage through the pubic arch is hampered and the birth attendant must apply a pulling force. Merbs and Vestergaard (1985:95) and Ortner and Frohlich (2008:67) attribute HVD, respectively, to trauma suffered early in childhood without specifying a birth injury.

In sum, all of I2-10146's pathological conditions are best explained as idiopathic, with an uncertain relationship to one another. The significant shortening of I2-10146's humerus (which is more than five standard deviations below the mean for ancient Near Eastern females) suggests that the premature fusion of the proximal epiphysis occurred during childhood, if not earlier. The lack of visible evidence for infection or trauma in I2-10146 could be attributed to extensive

bone remodeling since childhood. Prolonged bed rest could have contributed to the development of coxa valga. The multiple episodes of nutritional, infectious, or metabolic stress that caused hypoplastic lesions on the second and third molars seem to have occurred later in childhood and early adolescence, and therefore may have been only indirectly related to the skeletal anomalies; however, they certainly could have contributed to the young woman's short stature.

IMPLICATIONS ACROSS THE LIFE COURSE

Humerus varus deformity has both cosmetic and functional implications that manifest progressively across the life course. Upper arm length discrepancies associated with HVD average 8 cm, although they can range from 2 to 11 cm (Ellefsen et al. 1994; Ogden, Weil, and Hampton 1976). The length discrepancy between 12-10146's right and left upper arms, although apparently initiated by damage to the proximal growth plate early in childhood, would not have been fully expressed until adolescence; only when she underwent her pubertal growth spurt would its comparatively short length have become outwardly obvious. Her right arm's orientation was also unusual. In a nonpathological humerus, the olecranon fossa is posterior. So, when the arm is flexed at the elbow, the forearm would be raised anteriorly. However, in the case of 12-10146, the posteromedial rotation of the humeral head caused the young woman's olecranon fossa to be medial; when her arm was flexed at the elbow, her forearm would be raised laterally, or abducted from the body's midline.

Given the major impacts that HVD had on the form of this young woman's arm, we would expect that its function also was affected. Because of the way that the malformed humeral head articulates with the glenoid fossa, the acromion process impinges on the range of motion at the shoulder; this is consistent with limited abduction at the glenohumeral joint in clinical cases of HVD (Lucas and Gill 1947). However, restricted abduction is "usually compensated for by increased scapulothoracic motion," and pain is reportedly uncommon (Ellefsen et al. 1994:485). Therefore, loss of function at 12-10146's shoulder probably would have been minimal. Indeed, clinical evidence suggests that patient complaints are primarily cosmetic, based on the discrepancy in arm length, which can induce body image concerns and require special tailoring of clothes (Peterson 2012:103-4).

Evidence from areas of muscle attachment on the young woman's distal humerus suggests that functional limitations at the elbow were minimal. If the function of the young woman's arm had been impacted significantly by her condition, then the biepicondylar width of her humerus (where many flexor

and extensor muscles of the forearm attach) should also be unusually small; yet at 5.25 cm, this is not the case. Although smaller than average, it is within one standard deviation of the mean for females from the ancient Near East. Given the dramatically short length of her humerus, its reasonably average biepicondylar width is even more impressive. This suggests that she may have been able to engage in a fairly normal activity load with her right arm despite its shortened length and unusual range of motion.

As described above, the increased neck shaft angle of 12-10146's femurs resulted in moderate femoral anteversion. Although it is not uncommon for children to exhibit mild developmental femoral anteversion, it usually reduces significantly by age eight and disappears by adolescence. Therefore, 12-10146's retention of this condition into young adulthood would have set her apart. The decreased range of motion in her hips would have caused her thighs to rotate inward, her knees to be close together and point toward one another, and in-toeing of her feet. Although her ability to walk was probably not impaired, she almost certainly had a "clumsy" gait (Jacoby and Youngson 2005:1593–94).

COMMEMORATING THE LIFE OF 12-10146

The physical conditions of 12-10146 modified her mobility and differentiated her visibly from the surrounding population. But the exceptionally large number of objects interred in her burial suggests that she was commemorated positively in local society upon her death. While most Early Dilmun burials contained one or two objects and occasionally a sheep or goat, 12-10146 received at least twelve ceramic vessels of various shapes and sizes. The real objects of value were likely not these vessels but, rather, their contents, which could have ranged from grains to dates to liquids such as wine and olive oil. The value of at least one vessel's contents was high (no. 9-4700), as its interior was sealed with bitumen, a tarlike substance used to make ceramic less permeable. Provenience studies of bitumen samples from Bahrain demonstrate that such materials were imported from Hit, a still-occupied settlement in northwestern Iraq, in al-Anbar Province on the Euphrates River (Connan and Van de Velde 2010:12–15).⁷ In addition, a small alabaster juglet (no. 9-4682), the only calcite alabaster object in the Cornwall collection, accompanied 12-10146 (Figure 4.6). Such vessels were imported into Bahrain, and its rarity in other interments suggests that it was highly valued. Cornwall did not collect any animal remains from this particular mound. Their absence is not too surprising, as animal and objects were not always paired in Dilmun's mortuary commemoration practices. Unfortunately, Cornwall did not describe the size and

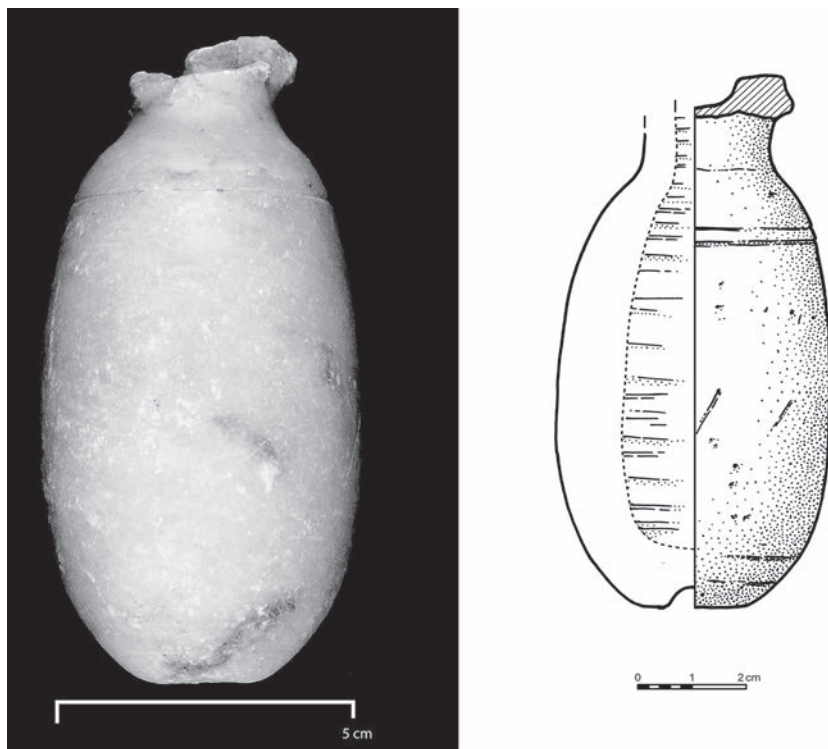


FIGURE 4.6. *A small alabaster juglet (no. 9-4682), the only object of such material in the Cornwall collection, accompanied 12-10146 (Photo: C. Morgan; Drawing: K. Killackey).*

design of the tumulus's architecture nor the body's interred position. If available, this information would have permitted additional insight into 12-10146's commemoration.

One vessel provides evidence for 12-10146's date of interment, an 18 cm high cylindrical jar (9-4680) with a round base, straight body, and a sharp shoulder leading to a vertical neck, the upper part of which is incised with horizontal lines and thickened at the rim (Figure 4.7). The diameter of the vessel's opening is 9.5 cm. The surface appears to have been smoothed, the fabric color is light red (2.5YR7/8), and the clay is well levigated. This is a common vessel type in Bahrain, and previous studies have classified this form as B73A in the Barbar tradition (e.g., Højlund 1987:32–33, fig. 68, type 17; Højlund and Hellmuth Andersen 1994:96, fig. 217, type B73; Højlund 2007:13, fig. 4, type B73A). Although found in limited amounts in settlements, these



FIGURE 4.7. *A cylindrical wheel-thrown ceramic jar (9-4680) associated with individual 12-10146. The surface is untreated, and the fabric color is light red (2.5YR7/8) (Photo: C. Morgan; Drawing: K. Leu).*

vessels were commonly used in mortuary practices, as their repeated discovery in tombs indicates (e.g., During Caspars 1980:pls. 14–15; Højlund 2007:figs. 136, 173, 197, 199, 238; Ibrahim 1982:31, fig. 35, pls. 41–43; Mughal 1983:62, fig. 18, pl. 41). Højlund observes this form in datable stratified contexts at Qala’at al-Bahrain I Ib-c and Barbar Temple I Ib, although it first appears in Qala’at al-Bahrain I Ia in limited amounts (Højlund 2007: 13). Based on this link with a dated stratified context, a likely relative date can be assigned to the Tumulus B-5 interment episode at some point between 2000 and 1800 BCE, during the second phase of Early Dilmun’s second social formation (Højlund 2007: 125–126).

PLACING DISABILITY IN ITS CULTURAL CONTEXTS

Now more than ever, archaeologists seek to understand alternative forms of personhood in past societies, subjects who were radically different than contemporary Western notions of the autonomous individual (Fowler 2004; Joyce

2008; Meskell and Joyce 2003; Smith 2004). Such a quest has led to new visions of personhoods and the ways that age, gender, class, and so forth shape how persons understood themselves, their places in the social worlds they inhabited, and how others understood them (Clark and Wilkie 2006; Meskell 1999). Surprisingly underemphasized among these vectors of personhood has been the notion of disability, that is, how past societies perceived and classified their members according to their physical and mental capacities (but see Cross 1999 for a rare exception). Because bioarchaeologists study the actual bodies of those persons whose lives they seek to reconstruct, a “bioarchaeology of personhood” (Boutin 2011) offers a unique window into disability in the past.

Social perceptions of people with disabilities are enormously diverse from antiquity to the nineteenth century CE, as revealed by Herbert Covey’s (1998) survey of Judeo-Christian and European written traditions. Whether these perceptions were negative (being subhuman or evil) or positive (having unusual spiritual attributes or being entertaining), or connoted helplessness (being poor, intellectual/social “children,” or worthy of pity), all of them serve to “Other” people with disabilities from normative identities (Covey 1998:6–25). The dramatic commemoration of 12-10146 similarly set her apart from her peers, albeit in a way that seems to have been positive.

Contextual evidence from the ancient Near East suggests the potential for care and even reverence for persons with disabilities, which would have been expressed in regionally and temporally specific ways. The richest evidence comes from Egypt, where medical papyri, iconographic portrayals, and human remains all speak to experiences of disability (Nunn 1996). Evidence for care may be seen in three individuals from Predynastic Naga-ed-Deir (Podzorski 1990). Poorly healed traumatic fractures of the femur would have jeopardized, if not eliminated, their mobility; yet they survived these injuries, in some cases for decades. David Jeffreys and John Tait characterize Egyptian attitudes toward disability as ambivalent (Jeffreys and Tait 2000). Incurable conditions that were congenital or acquired early—such as club feet and blindness—were tolerated and even associated with noble rank and activities. On the other hand, later-onset diseases like tuberculosis and leprosy were regarded as socially undesirable and decidedly nonelite. People with dwarfism were perceived as liminal in pharaonic Egypt, as full humans with “auspicious and protective” qualities, but also “lifelong children” (Dasen 1993:156, 246). Apparently with little regard for whether the condition was hereditary, congenital, or developmental in origin, people with unusually short stature were well integrated into Egyptian society, based on the regularity of their iconographic representation.

Ancient Near Eastern sources outside Egypt also defy historical and contemporary expectations of reduced tolerance for persons with disabilities. The remains of an elderly Natufian woman have been interpreted as those of a shaman, who may have been imbued with unusual spiritual qualities despite, or even because of, the impaired mobility caused by her deformed pelvis and lumbar vertebrae (Grosman, Munro, and Belfer-Cohen 2008). Another comparandum for 12-10146 may be found in a ca. twenty-eight-year-old female with a leg deformity requiring use of a crutch, who was buried at Jericho in the mid-second millennium BCE with numerous elaborate grave goods (Tubb 2000). Special treatment in death also appears to have been given to a female 18–20 year old with an acquired neuromuscular disease at Tell Abraç (United Arab Emirates) in the late third millennium BCE: unlike the more than 300 other persons buried in the collective tomb, her remains were placed in a container and accompanied by exotic grave goods (Martin and Potts 2012).

Unfortunately, Early Dilmun lacks the abundant written corpora that would place 12-10146's commemoration into a cultural context from which ideologies concerning life, death, and disability could be discerned. Nor do we know much about perceptions of disability, or even dwarfism, in Dilmun's neighbor and trading partner Mesopotamia, despite extensive textual evidence describing disease causation and medical treatment (Scurlock and Andersen 2005). However, in the Sumerian myth of Enki and Ninmah, as Neal Walls (2007) observed, nonnormative bodies were created separately from normative bodies during a drunken contest between the two gods. While disabled individuals were still considered "human" and capable of contributing to society through work, bodily deformities were also interpreted as the result of curses or divine punishments. Still, families and public institutions were obligated to care and provide for such individuals. Birth omens—the best known of which is the Neo-Assyrian series *šumma izbu*—described various physical anomalies of newborns and the consequences of such births for the child, the family, or even the state. Although such connotations were often negative, occasionally positive descriptions of disability also occurred, suggesting that disability was "a meaningful conceptual category regarding physical difference" in the ancient Near East (Schipper 2006:73).

CONCLUSION

Heeding the caveats of Roberts (1999, 2000, 2011) and others (Cross 1999; Dettwyler 1991), we acknowledge that our understanding of how disability was

experienced four millennia ago in Dilmun is only one of many possible interpretations. Extracting identities from the archaeological debris of prehistory is always challenging and provocative; perhaps nowhere more so than Bahrain, where even describing its geographic location is fraught with sociopolitical controversy (Insoll 2007). We imagine the bodies of past persons according to contemporary normative aesthetics of the able-bodied. But an approach like the one taken in this chapter helps us to appreciate the past and present diversities of the human body as well as alternative attempts to understand that difference. Although 12-10146's physical anomalies would have modified her mobility and her participation in daily activities, there is no indication that these functions were significantly impaired. Most likely, the repercussions were cosmetic, and were influenced by contemporary social perceptions of disability.

This young woman's experience of her own body during life cannot be reconstructed, but we can state unequivocally that after her death, she was buried with an unusually rich quantity and quality of objects. Yet the reasons for this abundant commemoration remain elusive. This chapter has focused on 12-10146's disability (if one can describe her condition as such) as an example of how archaeologists can engage with bodily and cognitive nonnormativity in the past. However, it would be irresponsible and counterproductive to assume that this aspect of her personhood determined her mortuary treatment. Any number of other factors—specialized knowledge or occupation, inherited status—may have set 12-10146 apart from her peers.

Similarly, we have prioritized Cornwall's deafness over other aspects of his identity solely for the purposes of this anachronistic exercise. Yet his relationship to his own deafness is scarcely more knowable despite its occurrence less than one hundred years ago. The only surviving evidence for its effects on his life is secondary; to our knowledge, Cornwall did not write about his deafness. We do not know whether he engaged with the Deaf clubs, schools, or workplaces that flourished by the 1940s in the United States (Padden 2008). Even labeling his condition a disability might be deemed inappropriate by members of the Deaf community, who refer to themselves as a distinct culture (Lane, Hoffmeister, and Bahan 1996; Senghas and Monaghan 2002). However, we argue that the acquired nature of Cornwall's deafness and the lack of evidence for his identification with Deaf culture (Munoz-Baell and Ruiz 2000), coupled with the documented opinions of his academic peers, makes our interpretation of his deafness as a disability a valid one, although, indeed, not the only one. Cornwall's deafness impeded his doctoral research, apparently complicated his relationship with the Hearst Museum, and may

have factored into his self-imposed exile to Italy. Yet he was able to overcome the skepticism of his academic superiors and make a significant contribution to Gulf archaeology.

Despite the fact that Cornwall and the young woman known as I2-10146 lived nearly four thousand years and eight thousand miles apart from one another, he came into contact with her remains for a brief period of time during the early 1940s. In this chapter, we have explored in parallel their experiences during life and their commemoration in death. This endeavor is challenged significantly by the lack of written sources from Early Dilmun, an absence of Cornwall's self-reflection on his deafness, and no record of Cornwall's interpretation of the abnormalities readily evident in I2-10146's skeleton. Nevertheless, we hope to have shown in this case study from the Cornwall collection how careful archival, archaeological, and osteological research can draw out the varying ways that physical differences and abilities can be embodied personally and perceived socially, both in the past and in the present.

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NOTES

1. See below for a more nuanced discussion of this age- and gender-based description.
2. Person-first language, which is normative in Disability Studies, emphasizes the person rather than his/her disability (Folkins 1992).
3. These numbers update and supersede Porter and Boutin 2012:tables 2–4.
4. Documents pertaining to Cornwall's life and research are being collected in the DBP's archive. These sources consist of documents and photographs in the Hearst Museum's accession file, student records at Oxford University, and publically available records (e.g., death certificate). Readers with additional information about Cornwall are invited to contact the authors.
5. Stature was calculated with regression equations from Trotter and Gleser (1952), which reflect less secular change than modern forensic databanks. Equations for African Americans were used, based on precedent from other analyses of ancient Near Eastern skeletal remains (Boutin 2008:124).
6. Digital radiography services were generously contributed by Erik Gaensler, M.D. (Alta Bates Summit Medical Center), and film radiography services by Sheila Doney (Tang Center at UC Berkeley). Robert Boutin, M.D. (UC Davis) kindly facilitated diagnostic consultation with musculoskeletal radiologists.
7. Van de Velde and Connan examined a sample of bitumen from 9-4700 in 2012 (Van de Velde, personal communication). Gas chromatography–mass spectrometry determined that the material is possibly from the well known bitumen source of Hit, although its chemical composition was altered enough that it could be a mixture of materials from two or more sources. The materials could also come from a yet-to-be-identified source.

REFERENCES

- Alman, Benjamin A., and Michael J. Goldberg. 2006. "Syndromes of Orthopaedic Importance." In *Lovell and Winter's Pediatric Orthopaedics*, 6th ed., vol. 1, edited by R. T. Morrissy and S. L. Weinstein, 251–314. Philadelphia: Lippincott Williams & Wilkins.
- Anderson, T. 1997. "A Medieval Case of Bilateral Humerus Varus." *Journal of Paleopathology* 9 (3): 143–46.
- Ascádi, Gy., and J. Nemeskéri. 1970. *History of Human Life Span and Mortality*. Budapest: Akadémiai Kiadó.
- Barnes, Colin, and Geof Mercer. 2010. *Exploring Disability*. 2nd ed. Cambridge: Polity Press.

- Bibby, Geoffrey. 1970. *Looking for Dilmun*. London: Collins.
- Boutin, Alexis T. 2008. *Embodying Life and Death: Osteobiographical Narratives from Alalakh*. Unpublished PhD diss., Department of Anthropology, University of Pennsylvania.
- Boutin, Alexis T. 2011. "Crafting a Bioarchaeology of Personhood: Osteobiographical Narratives from Alalakh." In *Breathing New Life into the Evidence of Death: Contemporary Approaches to Bioarchaeology*, edited by A. Baadsgaard, A. T. Boutin, and J. E. Buikstra, 109–33. Santa Fe: School for Advanced Research Press.
- Boutin, Alexis T., Gloria L. Nusse, Sabrina B. Sholts, and Benjamin W. Porter. 2012. "Face to Face with the Past: Reconstructing a Teenage Boy from Early Dilmun." *Near Eastern Archaeology* 75 (2): 68–79.
- Brickley, Megan, and Rachel Ives. 2008. *The Bioarchaeology of Metabolic Bone Disease*. San Diego: Academic Press.
- Brooks, S., and J. M. Suchey. 1990. "Skeletal Age Determination Based on the Os Pubis: A Comparison of the Ascádi-Nemeskéri and Suchey-Brooks Methods." *Human Evolution* 5 (3): 227–38. <http://dx.doi.org/10.1007/BF02437238>.
- Buikstra, Jane E., and Douglas H. Ubelaker. 1994. *Standards for Data Collection from Human Skeletal Remains*. Fayetteville: Arkansas Archaeological Survey.
- Capasso, Luigi. 1989. "Paleopathology of the Bronze Age Population from the Grotta dello Scoglietto (Tuscany, Italy)." In *Advances in Paleopathology: Proceedings of the VII European Meeting of the Paleopathology Association, Lyon, September 1988*, edited by L. Capasso, 21–26. Chieti, Italy: Paleopathology Association.
- Castriota-Scanderbeg, A., and B. Dallapiccola. 2005. *Abnormal Skeletal Phenotypes: From Simple Signs to Complex Diagnoses*. Berlin: Springer.
- Clark, Bonnie J., and Laurie A. Wilkie. 2006. "The Prism of Self: Gender and Personhood." In *Handbook of Gender Archaeology*, edited by S. M. Nelson, 333–64. Lanham, MD: AltaMira Press.
- Connan, Jacques, and Thomas Van de Velde. 2010. "An Overview of Bitumen Trade in the Near East from the Neolithic (c.8000 BC) to the Early Islamic Period." *Arabian Archaeology and Epigraphy* 21 (1): 1–19. <http://dx.doi.org/10.1111/j.1600-0471.2009.00321.x>.
- Cornwall, Peter B. 1943. "The Tumuli of Bahrain." *Asia and the Americas* 42:230–34.
- Cornwall, Peter B. 1944. *Dilmun: The History of Babrein Island before Cyrus*. Unpublished PhD diss., Department of History, Harvard University.
- Cornwall, Peter B. 1946a. "Ancient Arabia: Explorations in Hasa, 1940–41." *Geographical Journal* 107 (1/2): 28–50. <http://dx.doi.org/10.2307/1789083>.
- Cornwall, Peter B. 1946b. "On the Location of Dilmun." *Bulletin of the American Schools of Oriental Research* 103: 3–11. <http://dx.doi.org/10.2307/1354777>.

- Covey, Herbert C. 1998. *Social Perceptions of People with Disabilities in History*. Springfield, IL: Charles C. Thomas.
- Cross, Morag. 1999. "Accessing the Inaccessible: Disability and Archaeology." *Archaeological Review from Cambridge* 15 (2): 7–30.
- Currarino, Guide, and Marion E. Erlandson. 1964. "Premature Fusion of Epiphyses in Cooley's Anemia." *Radiology* 83:656–65.
- Dasen, Véronique. 1993. *Dwarfs in Ancient Egypt and Greece*. Oxford: Clarendon Press.
- Davis, Lennard J., ed. 1997. *The Disability Studies Reader*. New York: Routledge.
- Dettwyler, K. A. 1991. "Can Paleopathology Provide Evidence for 'Compassion'?" *American Journal of Physical Anthropology* 84 (4): 375–84. <http://dx.doi.org/10.1002/ajpa.1330840402>.
- During Caspars, Elisabeth C. L. 1980. *The Bahrain Tumuli: An Illustrated Catalogue of Two Important Collections*. Leiden: Nederlands Historisch-Archaeologisch Instituut te Istanbul.
- Edwards, Steven D. 1997. "Dismantling the Disability/Handicap Distinction." *Journal of Medicine and Philosophy* 22 (6): 589–606. <http://dx.doi.org/10.1093/jmp/22.6.589>.
- Ellefsen, B. K., M. A. Frierson, E. M. Raney, and J. A. Ogden. 1994. "Humerus Varus: A Complication of Neonatal, Infantile, and Childhood Injury and Infection." *Journal of Pediatric Orthopedics* 14 (4): 479–86. <http://dx.doi.org/10.1097/01241398-199407000-00011>.
- Finlay, Nyree, ed. 1999. *Archaeological Review from Cambridge. Theme Issue: Disability and Archaeology* 15(2).
- Folkins, John. 1992. "Resource on Person-First Language: The Language Used to Describe Individuals with Disabilities." Electronic document. http://www.asha.org/publications/journals/submissions/person_first.htm. Accessed June 12, 2012.
- Fowler, Chris. 2004. *The Archaeology of Personhood: An Anthropological Approach*. London: Routledge.
- France, Diane L. 1998. "Observational and Metrical Analysis of Sex in the Skeleton." In *Forensic Osteology: Advances in the Identification of Human Remains*, 2nd ed., edited by K. J. Reichs, 163–86. Springfield, IL: Charles C. Thomas.
- Frohlich, Bruno. 1986. "The Human Biological History of the Early Bronze Age Population of Bahrain." In *Bahrain through the Ages: The Archaeology*, edited by S.H.A. al-Khalifa and M. Rice, 47–63. London: Kegan Paul International.
- Frohlich, Bruno, Donald J. Ortner, and Haya Ali al-Khalifa. 1989. "Human Disease in the Ancient Middle East." *Dilmun: Journal of the Bahrain Historical and Archaeological Society* 14:61–73.

- Goffman, Erving. 1963. *Stigma: Notes on the Management of Spoiled Identity*. New York: Prentice-Hall.
- Goodman, Alan H., and Jerome C. Rose. 1991. "Dental Enamel Hypoplasias as Indicators of Nutritional Status." In *Advances in Dental Anthropology*, edited by M. A. Kelley and C. S. Larsen, 279–93. New York: Wiley-Liss.
- Grosman, Leore, Natalie D. Munro, and Anna Belfer-Cohen. 2008. "A 12,000-Year-Old Shaman Burial from the Southern Levant (Israel)." *Proceedings of the National Academy of Sciences of the United States of America* 105 (46): 17665–69. <http://dx.doi.org/10.1073/pnas.0806030105>.
- Hall, Christine. 2005. "Spondyloepimetaphyseal dysplasias." Electronic document. <https://www.orpha.net/data/patho/GB/uk-SEMD05.pdf>. Accessed June 5, 2012.
- Haverkamp, D., and R. K. Marti. 2007. "Bilateral Varus Osteotomies in Hip Deformities: Are Early Interventions Superior?" *International Orthopaedics* 31 (2): 185–91. <http://dx.doi.org/10.1007/s00264-006-0147-2>.
- Hawkey, Diane E. 1998. "Disability, Compassion and the Skeletal Record: Using Musculoskeletal Stress Markers (MSM) to Construct an Osteobiography from Early New Mexico." *International Journal of Osteoarchaeology* 8 (5): 326–40. [http://dx.doi.org/10.1002/\(SICI\)1099-1212\(1998090\)8:5<326::AID-OA437>3.0.CO;2-W](http://dx.doi.org/10.1002/(SICI)1099-1212(1998090)8:5<326::AID-OA437>3.0.CO;2-W).
- Hershkovitz, I., B. Ring, M. Speirs, E. Galili, M. Kislev, G. Edelson, and A. Hershkovitz. 1991. "Possible Congenital Hemolytic Anemia in Prehistoric Coastal Inhabitants of Israel." *American Journal of Physical Anthropology* 85 (1): 7–13. <http://dx.doi.org/10.1002/ajpa.1330850103>.
- Højgaard, Karen. 1980. "Dentition on Bahrain, 2000 B.C." *Scandinavian Journal of Dental Research* 88:467–75.
- Højgaard, Karen. 1986. "Dental Anthropological Investigations on Bahrain." In *Bahrain through the Ages: The Archaeology*, edited by S.H.A. al-Khalifa and M. Rice, 64–71. London: Kegan Paul International.
- Højlund, Flemming. 1987. *Failaka/Dilmun: The Second Millennium Settlements*. Moesgaard, Denmark: Jutland Archaeological Society Publications.
- Højlund, Flemming. 2007. *The Burial Mounds of Bahrain: Social Complexity in Early Dilmun*. Moesgaard, Denmark: Jutland Archaeological Society Publications.
- Højlund, Flemming, and H. Hellmuth Andersen. 1994. *Qala'at al-Bahrain*. Moesgaard, Denmark: Jutland Archaeological Society Publications.
- Hubert, Jane. 2000. "Introduction: The Complexity of Boundedness and Exclusion." In *Madness, Disability and Social Exclusion: The Archaeology and Anthropology of "Difference"*, edited by J. Hubert, 1–8. London: Routledge.
- Ibrahim, Moawiyah. 1982. *Excavations of the Arab Expedition at Sar el-Jisr, Bahrain. State of Bahrain*. Manama: Ministry of Information.

- Insoll, Timothy. 2007. "Changing Identities in the Arabian Gulf: Archaeology, Religion, and Ethnicity in Context." In *The Archaeology of Identities: A Reader*, edited by T. Insoll, 308–25. New York: Routledge.
- Jacoby, David B., and Robert M. Youngson, eds. 2005. *Encyclopedia of Family Health*. 3rd ed. Tarrytown, NY: Marshall Cavendish.
- Jeffreys, David, and John Tait. 2000. "Disability, Madness, and Social Exclusion in Dynastic Egypt." In *Madness, Disability and Social Exclusion: The Archaeology and Anthropology of "Difference"*, edited by J. Hubert, 87–95. London: Routledge.
- Johnson, Karl J., and A. Mark Davies. 2006. "Congenital and Developmental Abnormalities." In *Imaging of the Hip and Bony Pelvis: Techniques and Applications*, edited by A. M. Davies, K. Johnson, and R. W. Whitehouse, 93–105. Berlin: Springer. http://dx.doi.org/10.1007/3-540-30000-7_7.
- Johnstone, David. 2001. *An Introduction to Disability Studies*. London: David Fulton Publishers Ltd.
- Joyce, Rosemary A. 2008. *Ancient Bodies, Ancient Lives: Sex, Gender, and Archaeology*. London: Thames & Hudson.
- Kacki, S., P. Duneufjardin, P. Blanchard, and D. Castex. 2013. "Humerus Varus in a Subadult Skeleton from the Medieval Graveyard of La Madeleine (Orleans, France)." *International Journal of Osteoarchaeology* 23:119–26. <http://dx.doi.org/10.1002/oa.1249>.
- Kveiborg, Jacob. 2007. "Appendix 2: Animal Bones from the Aali, Saar and Dar Kulayb Mound Cemeteries." In *The Burial Mounds of Bahrain: Social Complexity in Early Dilmun*, by Flemming Højlund, 149–53. Moesgaard, Denmark: Jutland Archaeological Society Publications.
- Lane, Harlan, Robert Hoffmeister, and Ben Bahan. 1996. *A Journey into the Deaf-World*. San Diego: DawnSignPress.
- Laursen, Steffen Terp. 2008. "Early Dilmun and Its Rulers: New Evidence of the Burial Mounds of the Elite and the Development of Social Complexity, c. 2200–1750 BC." *Arabian Archaeology and Epigraphy* 19 (2): 156–67. <http://dx.doi.org/10.1111/j.1600-0471.2008.00298.x>.
- Littleton, Judith. 1998a. *Skeletons and Social Composition: Bahrain 300 BC–AD 250*. Oxford: Archaeopress.
- Littleton, Judith. 1998b. "A Middle Eastern Paradox: Rickets in Skeletons from Bahrain." *Journal of Paleopathology* 10:13–30.
- Littleton, Judith. 2003. "Unequal in Life? Human Remains from the Danish Excavations of Tylos Tombs." *Arabian Archaeology and Epigraphy* 14 (2): 164–93. <http://dx.doi.org/10.1034/j.1600-0471.2003.00014.x>.

- Littleton, Judith. 2007. "The Political Ecology of Health in Bahrain." In *Ancient Health*, edited by M. N. Cohen and G. M. M. Crane-Kramer, 176–89. Gainesville: University Press of Florida.
- Littleton, Judith. 2011. "Moving from the Canary in the Coalmine: Modeling Childhood in Bahrain." In *Social Bioarchaeology*, edited by S. C. Agarwal and B. A. Glencross, 361–89. Chichester, England: Wiley-Blackwell. <http://dx.doi.org/10.1002/9781444390537.ch13>.
- Littleton, Judith, and Bruno Frohlich. 1989. "An Analysis of Dental Pathology and Diet on Historic Bahrain." *Paléorient* 15 (2): 59–75. <http://dx.doi.org/10.3406/paleo.1989.4509>.
- Littleton, Judith, and Bruno Frohlich. 1993. "Fish-Eaters and Farmers: Dental Pathology in the Arabian Gulf." *American Journal of Physical Anthropology* 92 (4): 427–47. <http://dx.doi.org/10.1002/ajpa.1330920403>.
- Liversidge, H. M., and T. Molleson. 2004. "Variations in Crown and Root Formation and Eruption of Human Deciduous Teeth." *American Journal of Physical Anthropology* 123 (2): 172–80. <http://dx.doi.org/10.1002/ajpa.10318>.
- Lucas, Leo S., and Joseph H. Gill. 1947. "Humerus Varus following Birth Injury to the Proximal Humeral Epiphysis." *Journal of Bone and Joint Surgery: American Volume* 29 (2): 367–69.
- Lukacs, John R. 1995. "The 'Caries Correction Factor': A New Method of Calibrating Dental Caries Rates to Compensate for Antemortem Loss of Teeth." *International Journal of Osteoarchaeology* 5 (2): 151–56. <http://dx.doi.org/10.1002/oa.1390050207>.
- Mackay, E. J. H. 1929. "The Islands of Bahrain." In *Bahrain and Hamamieh*, edited by E. J. H. Mackay, G. K. L. Harding, and W. M. F. Petrie, 1–35. London: British School of Archaeology in Egypt.
- Martin, Debra L., and Daniel T. Potts. 2012. "Lesley: A Unique Bronze Age Individual from Southeastern Arabia." In *The Bioarchaeology of Individuals*, edited by A. L. W. Stodder and A. M. Palkovich, 13–126. Gainesville: University Press of Florida.
- Meindl, Richard S., and C. Owen Lovejoy. 1985. "Ectocranial Suture Closure: A Revised Method for the Determination of Skeletal Age at Death based on the Lateral-Anterior Sutures." *American Journal of Physical Anthropology* 68 (1): 57–66. <http://dx.doi.org/10.1002/ajpa.1330680106>.
- Merbs, Charles F., and Ellen M. Vestergaard. 1985. "The Paleopathology of Sundown, a Prehistoric Site Near Prescott, Arizona." In *Health and Disease in the Prehistoric Southwest*, edited by C. F. Merbs and R. J. Miller, 85–103. Tempe: Arizona State University.
- Meskell, Lynn. 1999. *Archaeologies of Social Life: Age, Sex, Class et cetera in Ancient Egypt*. Oxford: Blackwell.

- Meskeil, Lynn M., and Rosemary A. Joyce. 2003. *Embodied Lives: Figuring Ancient Maya and Egyptian Experience*. London: Routledge.
- Molleson, Theya. 1999. "Archaeological Evidence for Attitudes to Disability in the Past." *Archaeological Review from Cambridge* 15 (2): 69–77.
- Molto, J. E. 2000. "Humerus Varus Deformity in Roman Period Burials from Kellis 2, Dakhleh, Egypt." *American Journal of Physical Anthropology* 113 (1): 103–9. [http://dx.doi.org/10.1002/1096-8644\(200009\)113:1<103::AID-AJPA9>3.0.CO;2-A](http://dx.doi.org/10.1002/1096-8644(200009)113:1<103::AID-AJPA9>3.0.CO;2-A).
- Moorey, P. R. S. 1991. *A Century of Biblical Archaeology*. Cambridge: Lutterworth Press.
- Moser, Stephanie. 2007. "On Disciplinary Culture: Archaeology as Fieldwork and Its Gendered Associations." *Journal of Archaeological Method and Theory* 14 (3): 235–63. <http://dx.doi.org/10.1007/s10816-007-9033-5>.
- Mughal, M. Rafique. 1983. *The Dilmun Burial Complex at Sar: The 1980–82 Excavations in Bahrain*. Manama: State of Bahrain, Ministry of Information.
- Munoz-Baell, Irma M., and M. Teresa Ruiz. 2000. "Empowering the Deaf: Let the Deaf Be Deaf." *Journal of Epidemiology and Community Health* 54 (1): 40–44. <http://dx.doi.org/10.1136/jech.54.1.40>.
- Nelson, Margaret C., Sarah M. Nelson, and Alison Wylie, eds. 1994. *Equity Issues for Women in Archaeology*. Washington, DC: Archaeological Papers of the American Anthropological Association.
- Nunn, John F. 1996. *Ancient Egyptian Medicine*. Norman: University of Oklahoma Press.
- Ogden, John A., Ulrich H. Weil, and Robert F. Hempton. 1976. "Developmental Humerus Varus." *Clinical Orthopaedics and Related Research* (116): 158–66.
- Ortner, Donald J. 2003. *Identification of Pathological Conditions in Human Skeletal Remains*. 2nd ed. San Diego: Academic Press.
- Ortner, Donald J., and Bruno Frohlich, eds. 2008. *The Early Bronze Age I Tombs and Burials of Bab edh-Dhra', Jordan*. Lanham, MD: AltaMira Press.
- Özbek, M. 2005. "Skeletal Pathology of a High-Ranking Official from Thrace (Turkey, Last Quarter of the 4th Century BC)." *International Journal of Osteoarchaeology* 15 (3): 216–25. <http://dx.doi.org/10.1002/oa.777>.
- Padden, Carol. 2008. "The Decline of Deaf Clubs in the United States: A Treatise on the Problem of Place." In *Open Your Eyes: Deaf Studies Talking*, edited by H-Dirksen L. Bauman, 169–76. Minneapolis: University of Minnesota Press.
- Perry, Megan A. 2005. "Redefining Childhood through Bioarchaeology: Toward an Archaeological and Biological Understanding of Children in Antiquity." In *Children in Action: Perspectives on the Archaeology of Childhood*, edited by J. E. Baxter, 89–111. Arlington, VA: Archaeological Papers of the American Anthropological Association. <http://dx.doi.org/10.1525/ap3a.2005.15.89>.

- Peterson, Hamlet A. 2012. *Physcal Injury Other than Fracture*. Heidelberg: Springer. <http://dx.doi.org/10.1007/978-3-642-22563-5>.
- Podzorski, Patricia V. 1990. *Their Bones shall not Perish: An Examination of Predynastic Human Skeletal Remains from Naga-ed-Deir in Egypt*. Malden, England: SIA.
- Porter, Benjamin W., and Alexis T. Boutin. 2012. "The Dilmun Bioarchaeology Project: A First Look at the Peter B. Cornwall Collection at the Phoebe A. Hearst Museum of Anthropology." *Arabian Archaeology and Epigraphy* 23 (1): 35–49. <http://dx.doi.org/10.1111/j.1600-0471.2011.00347.x>.
- Potts, Daniel T. 1990. *The Arabian Gulf in Antiquity*. Vols. 1 and 2. Oxford: Clarendon Press.
- Rashidi, J. S., D. J. Ortner, B. Frohlich, and B. Jonsdottir. 2001. "Brucellosis in Early Bronze Age Jordan and Bahrain: An Analysis of Possible Cases of Brucella Spondylitis." *American Journal of Physical Anthropology* 114:122–123.
- Resnick, Donald, ed. 1995. *Diagnosis of Bone and Joint Disorders*. 3rd ed. Philadelphia: W.B. Saunders Company.
- Roberts, Charlotte. 1999. "Disability in the Skeletal Record: Assumptions, Problems, and Some Examples." *Archaeological Review from Cambridge* 15 (2): 79–97.
- Roberts, Charlotte. 2000. "Did They Take Sugar? The Use of Skeletal Evidence in the Study of Disability in Past Populations." In *Madness, Disability and Social Exclusion: The Archaeology and Anthropology of "Difference"*, edited by J. Hubert, 46–59. London: Routledge.
- Roberts, Charlotte. 2011. "The Bioarchaeology of Leprosy and Tuberculosis: A Comparative Study of Perceptions, Stigma, Diagnosis, and Treatment." In *Social Bioarchaeology*, edited by S. C. Agarwal and B. A. Glencross, 252–81. Chichester, England: Wiley-Blackwell. <http://dx.doi.org/10.1002/9781444390537.ch9>.
- Roth, Martha T. 1987. "Age at Marriage and the Household: A Study of Neo-Babylonian and Neo-Assyrian Forms." *Comparative Studies in Society and History* 29 (4): 715–47. <http://dx.doi.org/10.1017/S0010417500014857>.
- Safont, Santiago, Assumpció Malgosa, and M. Eulàlia Subirà. 2000. "Sex Assessment on the Basis of Long Bone Circumference." *American Journal of Physical Anthropology* 113 (3): 317–28. [http://dx.doi.org/10.1002/1096-8644\(200011\)113:3<317::AID-AJPA4>3.0.CO;2-J](http://dx.doi.org/10.1002/1096-8644(200011)113:3<317::AID-AJPA4>3.0.CO;2-J).
- Scheuer, Louise, and Sue Black. 2004. *The Juvenile Skeleton*. London: Elsevier Academic Press.
- Schipper, Jeremy. 2006. *Disability Studies and the Hebrew Bible: Figuring Mephibosheth in the David Story*. New York: T & T Clark.
- Scurlock, JoAnn, and Burton R. Andersen. 2005. *Diagnoses in Assyrian and Babylonian Medicine*. Urbana: University of Illinois Press.

- Senghas, Richard J., and Leila Monaghan. 2002. "Signs of Their Times: Deaf Communities and the Culture of Language." *Annual Review of Anthropology* 31 (1): 69–97. <http://dx.doi.org/10.1146/annurev.anthro.31.020402.101302>.
- Siebers, Tobin Anthony. 2008. *Disability Theory*. Ann Arbor: University of Michigan Press.
- Smith, Adam. 2004. "The End of the Essential Archaeological Subject." *Archaeological Dialogues* 11 (1): 1–20. <http://dx.doi.org/10.1017/S1380203804211412>.
- Stiker, Henri-Jacques. 2000. *A History of Disability*. Translated by William Sayers. Ann Arbor: University of Michigan Press.
- Stirland, A. J. 1997. "Care in the Medieval Community." *International Journal of Osteoarchaeology* 7 (6): 587–90. [http://dx.doi.org/10.1002/\(SICI\)1099-1212\(199711/12\)7:6<587::AID-OA340>3.0.CO;2-J](http://dx.doi.org/10.1002/(SICI)1099-1212(199711/12)7:6<587::AID-OA340>3.0.CO;2-J).
- Suchey, Judy Myers, and Darryl Katz. 1998. "Applications of Pubic Age Determination in a Forensic Setting." In *Forensic Osteology: Advances in the Identification of Human Remains*. 2nd ed., edited by K. J. Reichs, 204–36. Springfield, IL: Charles C. Thomas.
- Tilley, Lorna, and Marc F. Oxenham. 2011. "Survival against the Odds: Modeling the Social Implications of Care Provision to Seriously Disabled Individuals." *International Journal of Paleopathology* 1 (1): 35–42. <http://dx.doi.org/10.1016/j.ijpp.2011.02.003>.
- Trigger, Bruce G. 1980. *Gordon Childe: Revolutions in Archaeology*. New York: Columbia University Press.
- Trigger, Bruce G. 1989. *A History of Archaeological Thought*. Cambridge: University of Cambridge Press.
- Trinkaus, Erik, and M. R. Zimmerman. 1982. "Trauma among the Shanidar Neandertals." *American Journal of Physical Anthropology* 57 (1): 61–76. <http://dx.doi.org/10.1002/ajpa.1330570108>.
- Trotter, Mildred, and Goldine C. Gleser. 1952. "Estimation of Stature from Long Bones of American Whites and Negroes." *American Journal of Physical Anthropology* 10 (4): 463–514. <http://dx.doi.org/10.1002/ajpa.1330100407>.
- Tubb, Johnathan N. 2000. "Two Examples of Disability in the Levant." In *Madness, Disability and Social Exclusion: The Archaeology and Anthropology of "Difference"*, edited by J. Hubert, 81–6. London: Routledge.
- Vanderbeck, Jennifer L., John M. Fenlin, Jr., Charles L. Getz, and Anthony F. DePalma. 2009. "Congenital Anomalies and Variational Anatomy of the Shoulder." In *The Shoulder*. 4th ed., vol. 1, edited by C. A. Rockwood Jr. and F. A. Matsen III, 101–43. Philadelphia: Saunders. <http://dx.doi.org/10.1016/B978-1-4160-3427-8.50009-X>.

- Waldron, Tony. 2007. "Hidden or Overlooked? Where are the Disadvantaged in the Skeletal Record?" In *The Archaeology of Identities: A Reader*, edited by T. Insoll, 195–210. New York: Routledge.
- Walls, Neal. 2007. "The Origins of the Disabled Body: Disability in Ancient Mesopotamia." In *This Aabled Body: Rethinking Disabilities in Biblical Studies*, edited by H. Avalos, S. Melcher, and J. Schipper, 13–30. Atlanta: Society of Biblical Literature.
- Weatherall, D. J., and J. B. Clegg. 2001. *The Thalassaemia Syndromes*. 4th ed. Oxford: Blackwell. <http://dx.doi.org/10.1002/9780470696705>.
- White, Tim D., Michael T. Black, and Pieter A. Folkens. 2012. *Human Osteology*. 3rd ed. Burlington, MA: Elsevier.
- Wiley, Gordon R., and Jeremy A. Sabloff. 1993. *A History of American Archaeology*. New York: W.H. Freeman.
- Woolley, Leonard. 1953. *Spadework: Adventures in Archaeology*. London: Lutterworth Press.