CHAPTER 7

Roles for the Sexes

The (Bio)archaeology of Women and Men at Çatalhöyük

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Approaches to Sex and Gender in Bioarchaeology

The unique nature of the human skeleton as a product of both tissue level bone biology and behavioural influences incurred over the life course, provides bioarchaeologists with a powerful perspective on the construction of gendered identity in past populations. The observation of variation in bone morphology has been used in the study of health and disease, and in a number of bioarchaeological studies that have examined gender roles in the past (Larsen, 1995; Grauer & Stuart-Macadam, 1998; Hollimon, 2011). The bioarchaeological consideration of gender in studies of health and disease, however, begins with and is tied to the assignment of biological sex. The need to be able to divide skeletal samples into biologically known and distinct sex groups forms the basis for how we consider gender differences in the past (Sofaer, 2006a; Agarwal, 2012).

The conventional procedure of dividing skeletal samples into male and female groups at the beginning of analysis of data is based on the assumption that the most significant social difference is that of sex, and thus that we should expect to see most variability between males and females. Agarwal (2012) has argued that the initial assignment of individuals to sex categories makes it more difficult to appreciate the role of cross-cutting variables such as age or class. Biological sex frames our expectations and interpretations of gendered life in the past. For example, the health of women is often considered to be linked to their role as a 'reproducer,' with costs of childbearing and childrearing as focal points framing health. The limited bioarchaeological studies of gendered roles in the prehistoric past support the early suggestion that there is a strict sexual division of labour and lifestyle prior to settled agriculture that evolves to a more similar lifestyle between the sexes by early farming (Larsen, 1997; Peterson, 2002).

There has been longstanding interest in the role of women in early agricultural settlements, and early excavation and interpretation of material culture at Çatalhöyük was suggestive of gender differences in power with a fixation on mother goddess imagery. For many decades Çatalhöyük was considered the key example of an early matriarchal society thought typical across Europe with the spread of agriculture (Hodder, 2006). However, recent data from the study of the human remains from the site, including data on diet, disease, and trauma suggest minimal difference in lifestyles between the sexes, although some of the biological data do mark sexual dimorphism in the community (see Sadvari et al., 2015a). Simultaneously, work in the past decade on funerary practices, imagery, and variability in figurines and burials goods has emphasized more complex interpretations of gendered identity. While the determination of biological sex of the human remains is a pivotal first step of data collection that grounds the bodies at Catalhöyük for our subsequent interpretations of gender, holistic reconstruction of social identity is not possible without concurrent consideration of the material culture. We present here an approach to envisioning gender roles in the past weaved from multiple threads of biological and social data that together allow us to project a more synergistic representation of sexual difference and division of labour for the individual and community at Çatalhöyük.

Sex-related Patterns of Diet, Activity, and Lifestyle at Çatalhöyük

As outlined in earlier chapters of this volume, Çatalhöyük is large Late Neolithic settlement site (*c.* 7300–5950 BCE), first excavated by James Mellaart in the 1960s (currently under the direction of Ian Hodder). The site is located in south-central Anatolia *c.* 50 km from the modern city of Konya. It is perhaps

best known for its close-packed houses with rooftop entrances and remarkable paintings, reliefs, and installed bucrania. Individuals are buried within houses, notably under platforms and floors, although the dead were also placed within building foundations, infill, benches, and midden (Boz & Hager, 2013, 2014). The unique intramural burial placed the living both physically and symbolically with the dead (Nakamura & Meskell, 2009). At the peak of its occupation, Çatalhöyük is estimated to have had a population size between 3500 and 8000 (Cessford, 2005). During this long period of continuity in architecture and burial practice at Çatalhöyük, however, there was much change, with an increase in the size and density of occupation and corresponding changes seen in symbolism and ritual elaboration at the peak period, and the later levels after *c.* 6500 BC indicating a shift to greater mobility and dispersal (Hodder, 2014; see also Sadvari et al., 2015a). Excavations of the most recent levels of the site on the South side have shown a dramatic change in the late phases of the Neolithic community, with change in house structures and symbolic elaboration, and also change in from intramural burial to dedicated burial chambers with elaborate decoration (Marciniak & Czerniak, 2007; Marciniak et al., 2015). Over the years, the study of the human remains has contributed much to our understanding of social structure, health, diet, and lifestyle at Çatalhöyük. We specifically focus here on the sex-related patterns in diet, skeletal pathology, and bone turnover and loss that are relevant to the discussion of gendered lifestyle at Çatalhöyük.

Direct evidence of what people ate at Çatalhöyük is known from stable isotope analyses (see also Pearson et al. 2015). Analyses of stable isotope ratios of carbon and nitrogen show a range of variation, but suggest that animal protein, particularly from domesticated sheep and goats formed a significant portion of the diet. The same data also indicate the expansion into areas with more resources farther from the community in the later phases of the site's occupation (see also Sadvari et al., 2015a). What is particularly interesting is that there is no evidence for differences in diet between adult males and females. Mean female isotope ratios for carbon and nitrogen are almost identical to males (–18.8 and 12.6‰ in females, and –18.6 and 12.7‰ for males) (Pearson, 2013) (Figure 1).

The suggestion that males and females at Çatalhöyük lead similar lifestyles is also supported by observations of skeletal and dental indicators of health. For example, dental caries, or decay, is a disease in which the oral bacteria break down the hard tissues of the teeth. The prevalence of carious lesions in prehistoric populations at the transition to agriculture has been extensively studied, particularly the differential distribution among males and females (Larsen, 1995). At Çatalhöyük dental caries is seen primarily on the molar and premolar teeth of older adults, showing a pronounced increase with age (Figure 2). There is no significant difference in caries prevalence between males and females, supporting the assertion of the isotope data that there was little difference in overall diet between men and women (Hillson et al., 2013). This is particularly interesting in that sex differences in

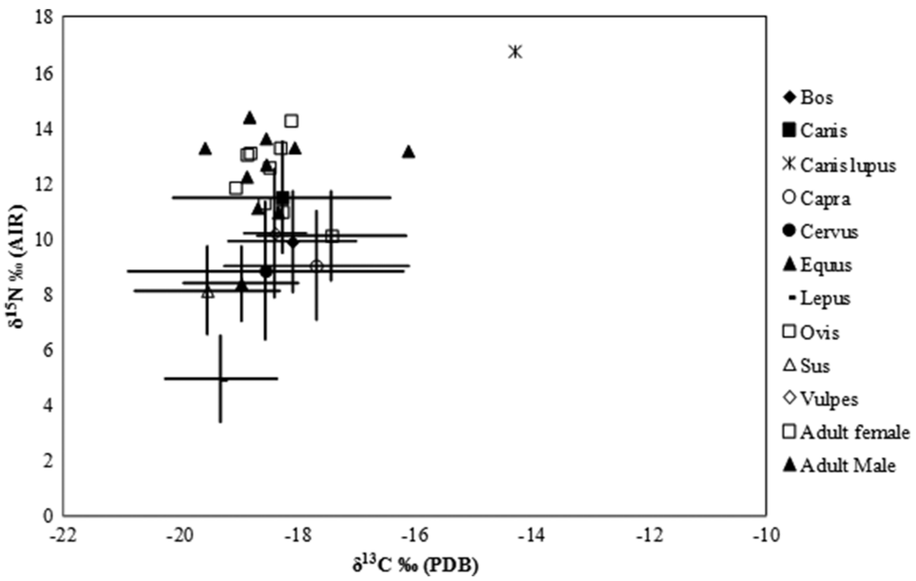

Figure 1. *Mean isotope ratios for carbon and nitrogen indicate that diets between the sexes were essentially the same. Females are –18.8 and 12.6‰, respectively, which are virtually identical to males, –18.6 and 12.7‰, respectively. Sample size* n = *350 (Pearson, 2013).*

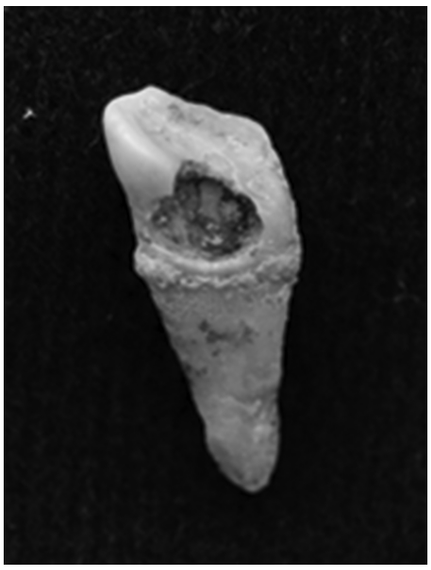

Figure 2. *Adult tooth from Çatalhöyük individual showing evidence of caries.*
Image courtesy of Scott Haddow.

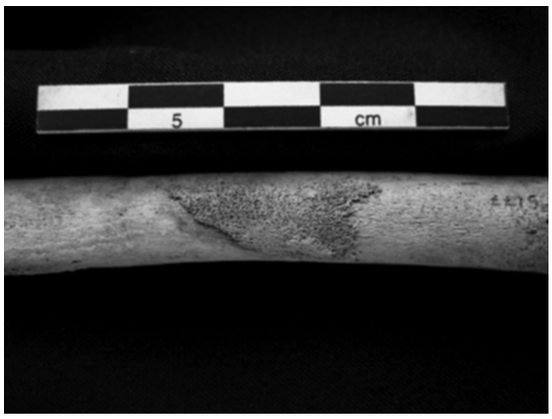

Figure 3. *A discrete patch of periosteal reactive bone indicative of non-specific infection on the right femur of an infant from Çatalhöyük.*
Image courtesy of Scott Haddow.

caries prevalence have been seen globally in many populations due to gender difference in food preparation and diet, and suggested biological sex differences in oral health (Lukacs & Largaespada, 2006).

Another skeletal indicator of overall health, osteoperiostitis, also shows similar patterns between males and females. Osteoperiostitis is an inflammatory response to bacterial infection or trauma visible on the bone surface. The visible lesions are considered a non-specific stress indicator as multiple disease processes can lead to the inflammatory response. Generally farmers show higher prevalence of osteoperiostitis as compared to foragers, related to the increased exposure of pathogens that accompany the transition to sedentism (Larsen, 2006). At Çatalhöyük, 20 of 166 adults (12 per cent) and 38 of 213 juveniles (17.8 per cent) show periosteal lesions (Figure 3) (Hillson et al., 2013). Among adults, young adults display the highest prevalence of osteoperiostitis (17.9 per cent), followed by older adults (15.6 per cent) and middle adults (12.5 per cent), although the difference between these age groups is not statistically significant. There is no statistical difference in the prevalence of osteoperiostitis between males and females, with 14.8 per cent of adult males showing evidence of periosteal lesions as compared to 12.5 per cent among females. This suggests that both sexes were exposed to similar levels of risk for exposure to infectious diseases (Hillson et al., 2013).

Similar sex-related patterns were also found in the examination of trauma at Çatalhöyük. In a sample of 166 adults, 39 individuals (23.5 per cent) exhibited evidence of skeletal trauma (Hillson et al., 2013). The pattern of trauma in the skeletal sample suggests that the greater preponderance of injuries is likely attributable to accidental causes stemming from everyday activities, with the highest frequency of skeletal trauma found in the clavicle, ulna, ribs (Figure 4), sacrum/coccyx, and fibula. Fractures of the clavicle and ulna have been suggested to have resulted from individuals suffering hard falls onto to their shoulders or attempting to 'catch themselves' while falling forward (Larsen et al., 2013). Analysis of skeletal trauma on the basis of sex using the person-years construct shows no significant difference between males and females ($Z = 0.68$, $p = 0.2477$) (Larsen et al., 2013). Although these patterns of trauma at Çatalhöyük appear to be accidental in origin, there is some evidence of trauma related to interpersonal violence. While the study of cranial trauma is in progress, currently there are twenty-four individuals showing depressed fractures of the cranial vault or related cranial injuries that are strongly indicative of blows to the head, although again they are seen in both

Figure 4. *Multiple healed rib fractures observed in a middle adult female (8115) from Neolithic Çatalhöyük.*
Image courtesy of Scott Haddow.

males and females (Glencross & Knüsel personal communication; Larsen et al., 2013).

This story of little evidence for gendered lifestyles is also suggested in a fourth indicator of overall health, bone loss, and turnover. Bone growth and turnover (or remodelling) is what keeps the balance of bone gain on the internal (endosteal) and external (periosteal) surfaces of cortical bone until about age 40. In the case of long bones, the process can end up with an overall loss of bone primarily due to greater endosteal (inner) bone surface resorption and/or the lack of continued bone gain on the periosteal (outer) surface. Bone turnover is regulated by many things, but hormonal balance, age, diet, and activity are some of the primary influences (Stevenson et al., 1989; Ward et al., 1995). Bone loss in modern populations is highly gendered, primarily occurring in women with the onset of menopause compounded with senescence and modern lifestyles (what we think of typically as osteoporosis) (Agarwal, 2008). Rates and patterns of bone loss and turnover in archaeological samples are sensitive indicators of overall metabolic health and disease loads, as well as mechanical loading. Several parameters of bone turnover have been examined at Çatalhöyük, including the amount and turnover of cortical bone of the ribs and the second metacarpal (hand bone) (Figure 5). For the rib, quantitative histomorphometry was used to look at the amount and turnover of the cortical bone which can tell us about the metabolic activity of the bone tissue and overall health. In the metacarpal, non-invasive X-rays were used to measure and quantify the amount of bone present standardized for size (Glencross & Agarwal, 2011). The rib is more indicative of the amount of bone present and remodelling in recent decades prior to death, whereas the cortical bone of the metacarpal is a site influenced more by biomechanical activity (use of hands) and reflects both bone gain accumulated in young age, and then lost over the life cycle. In the rib, the amount of bone (measured as % cortical bone) does show an age-related trend, with females showing a reduction in the amount of bone by middle age, while males show a reduction in bone by old age (Figure 6). What is interesting here is that there is only a significant sex difference in middle age, in old age both sexes appear to show the same amount of bone in the rib. The same trend is observed in indicators of bone turnover in the rib. For example, activation frequency (a measure of bone turnover estimated with histomorphometry) indicates that both sexes show reduction of bone turnover by old age, with the oldest age group showing lowest values in formation and activation (Figure 7). This is an age-expected trend in human bone turnover, with metabolic activity turning down with age. What is interesting in both measures of bone loss in the rib is the lack of sex differences in old age, with both men and women at Çatalhöyük showing similar levels of bone turnover. This is a highly surprising observation, given that women in Western modern populations typically show much lower bone turnover as compared to men in old age due to the compounding influence of menopause. Similar levels of bone turnover suggest that males and females had overall similar health and activity patterns. In the metacarpal bone of the hand, the patterns of bone loss are more similar to what is observed in modern populations with both sexes showing lower bone amount in the oldest age category (Figure 8). However, here again, there is no significant sex difference in older age (Glencross & Agarwal, 2011).

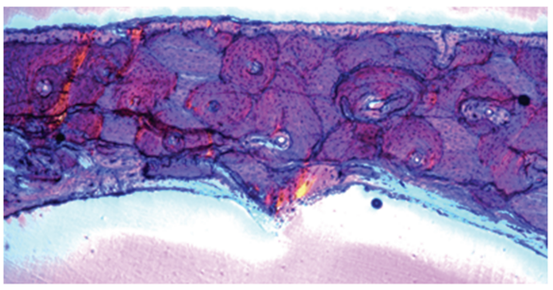

Figure 5. *Thin section of cortical bone in the rib of an adult individual from Çatalhöyük used to measure the amount and turnover of cortical bone tissue using histomorphometry. Image courtesy of Sabrina Agarwal.*

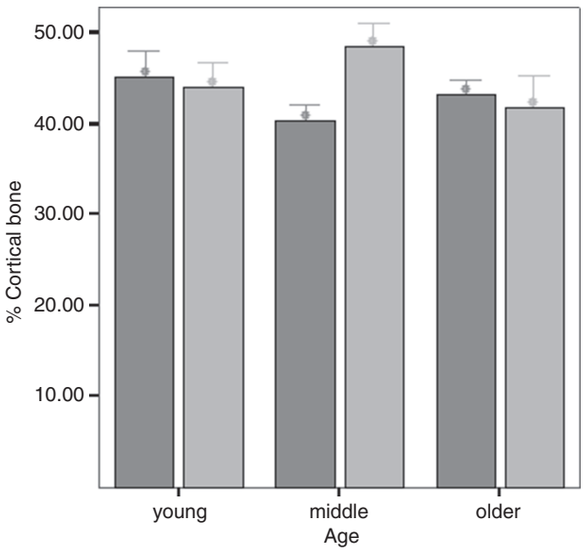

Figure 6. *% cortical bone (an indicator of the amount of bone cortex) in the rib across three broad age groups in the adults at Çatalhöyük (females in dark grey, males in light grey). Females show significant bone loss by middle age, while males show change in the older age group. There is a sex difference only in middle age with both male and females showing similar amount of bone in older age. Young age (20–29 years), middle age (30–49 years), older age (50+ years). Sample size* n = 57 *(Agarwal et al., 2011).*

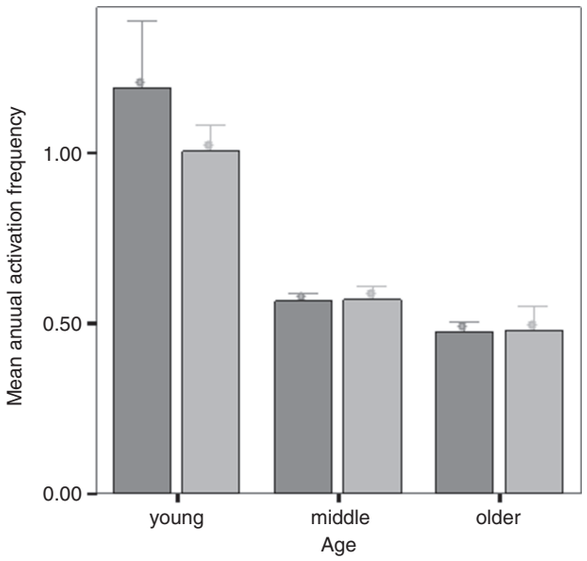

Figure 7. *Mean annual activation frequency (an indicator of bone turnover) in the rib across three broad age groups in the adults at Çatalhöyük (females in dark grey, males in light grey). Both sexes show reduction in metabolic activity in older age, but there is no sex difference in any group. Young age (20–29 years), middle age (30–49 years), older age (50+ years). Sample size* n = *57 (Agarwal et al., 2011).*

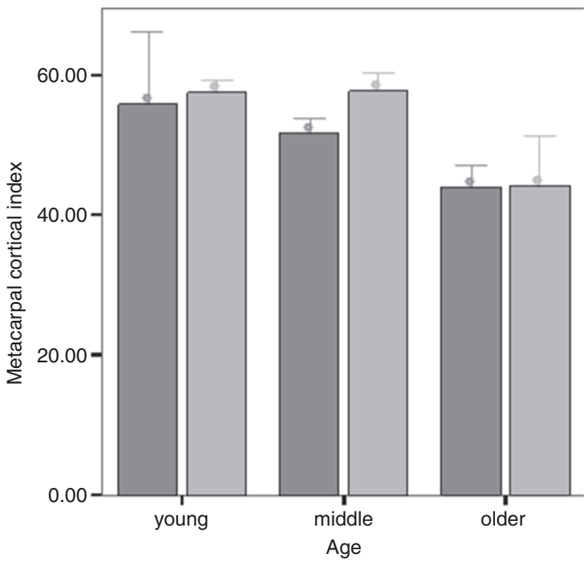

Figure 8. *Metacarpal cortical index across three broad age groups in the adults at Çatalhöyük (females in dark grey, males in light grey). Both sexes show a lower amount of bone in the metacarpal in oldest age group, but not significant sex difference in older age. Young age (20–29 years), middle age (30–49 years), older age (50+ years). Sample size* n = *49 (Glencross & Agarwal, 2011).*

Gender Differentiation in Material Culture: Figurines and Goods at Çatalhöyük

The suggestion that sex was not the primary structuring principle for the community is strongly supported not only by the skeletal data, but also by the material culture. There is a high degree of variation in mortuary practices at Çatalhöyük, and no particular group, either males or females are favoured in primary burials (Nakamura & Meskell, 2013). There is, however, variation in the number of burials per building, and some temporal and spatial distribution among the skeletons (Nakamura & Meskell, 2013). While the assemblage of burial good is not very large, it is diverse, and Nakamura & Meskell (2013) have argued that the distribution of burial goods suggests that goods are more personalized in nature rather than representing inclusions as standard practice. Although the early excavations by James Mellaart noted marked differences between the burial goods of males and females, more recent research has not shown such clear patterns of differentiation in goods (Nakamura & Meskell, 2013). Both men and women appear to be consistently buried with a similar number of artefacts, and sex does not constitute the major organizing marker of difference in burial goods or treatment. Nakamura & Meskell (2012) have instead suggested that *age* may have been the most significant factor in burial goods, suggestive of roles and relations during life. They note that children are often buried with gifted items, while adolescent or young adults rarely receive items; many of the oldest individuals have the most biographically elaborate assemblages.

The importance of age, and more specifically the ageing body, is also suggested by the figural representation at the site. The early focus by Mellaart and others on female power and mother goddess imagery is perhaps most associated with voluptuous figurines. While the visual emphasis in figurines on breasts and large stomachs prompted earlier researchers to suggest a focus on fertility or pregnancy at Çatalhöyük, Nakamura & Meskell (2009) have more recently discussed what they coin the 'three B's' – breasts, buttocks, and bellies (stomachs)—as representing maturity instead of fertility. They note the manner of the features on the figurines as typically depicted as flattened, drooping, or angular—rather than round or pregnant, and typical instead of an ageing body (Figure 9). Together, the material from the figural record and burial assemblage show a community where age, maturity, and longevity are distinctions made during life and death.

Difference over the Life Course

The examination of age as an axis of difference in the material evidence can serve to better refine our focus

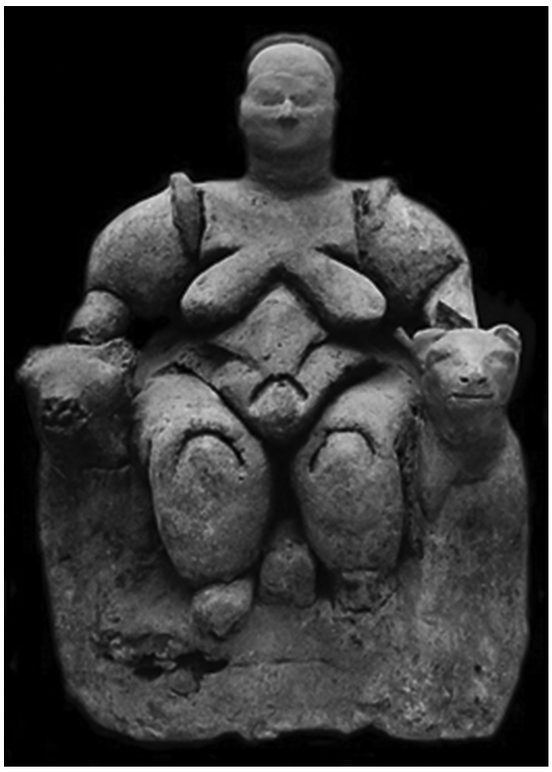

Figure 9. *The early focus by Mellaart and others on mother goddess imagery was largely based on the visual emphasis on figurines at Çatalhöyük, such as this well-known figurine of a seated female figure. More recent interpretation of the figural representations has been suggested to represent maturity instead of fertility (Nakamura & Meskell, 2009). Image courtesy of Çatalhöyük Research Project.*

on gendered differences in the skeletal data. While there are little striking overall sex differences in diet and skeletal health at Çatalhöyük, age is a cross-cutting variable that is a key axis of difference. For example while there is no sex distinction in diet, a key difference has been shown to occur in diet with age (Pearson, & Meskell, 2013). Carbon isotope ratios of adults of different age groups (broken down as young, middle, older) show a trend for younger adults of both sexes to have different diets as compared to middle age and older adults. Specifically, younger adults appear to have a diet of different plants or animals with lower amounts of C4, one possibility being more wild vs. domesticated meat (Hillson et al., 2013). Similarly, while the analysis of skeletal trauma on the basis of sex using the person-years construct shows no significant difference between males and females, it should be noted that within the young adult age category only males show evidence of skeletal injury. Larsen et al. (2013) have suggested that evidence of trauma in young aged males could reflect occupational hazards of heavy workload early in life, when compared with females. Other skeletal markers of activity-related stress in the Çatalhöyük skeletal sample include degenerative changes to the joint surfaces called osteoarthritis. Males and females at Çatalhöyük do show differing patterns of some joints affected by osteoarthritis that suggest different activities during life (see Sadvari et al., 2015b). However, osteoarthritis prevalence appears to be relatively similar in older age. Larsen et al. (2013) have suggested that these patterns support the assertion that young males began work at an earlier age or were engaged in more physically demanding activities as compared to their young aged female counterparts.

What women might have been doing differently in young age is suggested from the evidence on bone turnover and maintenance. While patterns of bone loss at Çatalhöyük do not show the expected sex-related differences, we do see young aged females with significantly lower cortical bone in the rib as compared to young aged males. The loss of cortical bone in the rib is indicative of more recent bone remodelling during life, and as such the unusually low levels of % bone and high bone turnover in young aged females could be indicative of reproductive stress. Isotope analysis indicates that weaning age at Çatalhöyük began at eighteen months (with cessation of breastfeeding at about three years) (Pearson, 2013). Most women of reproductive age would likely have been pregnant or breastfeeding at the time of death. This could account for the loss of bone and high metabolic turnover in young age (Figure 10). What is key to note is that this bone loss would have been transient. There is no long-term disadvantage to the skeleton as suggested by return to higher bone values in the oldest age group, and the lack of sex difference in old age in the indicators of bone maintenance.

Figure 10. *Female burial with fetus* in situ *excavated at Çatalhöyük. Many young aged adult female skeletons at Çatalhöyük such as this one, show unusually low levels of % cortical bone and high turnover that could be indicative of transient reproductive stress. Image courtesy of Çatalhöyük Research Project.*

Meshing Biological Life History with the Biographies in Material Culture

The data presented here so far do not imply that biological sex was not a reality at Çatalhöyük, but the combined evidence suggests that social roles in life and death were not defined strictly by sex. The human remains data alone are complex—each marker we have examined is a record in the bone that represents a specific moment of life history. When looking at one skeletal indicator alone, we cannot simply say men and women ate the same foods or performed the same tasks. Each dataset must be woven together, and when the biological data are meshed with datasets from the material record, more rigorous interpretations can be constructed. In archaeology more broadly, scholars have emphasized the importance of a life course perspective in providing contextualization for the physical lifecycle (Gilchrist, 2000; Knudson & Stojanowski, 2008). Although life course approaches have been used in the analysis of mortuary data (e.g. Joyce, 2000; Meskell, 2000; Sofaer, 2006b), they have not been widely applied in the examination of skeletal data (Agarwal & Beauchesne, 2011).

One way to approach a life course perspective with the bioarchaeological record at Çatalhöyük is to mesh our population level data with the individual stories and outlier skeletal data. If we take the bone loss as an example, two individuals in the rib and metacarpal bone maintenance dataset are statistical outliers as compared to other individuals in the oldest age group —they are an older male and older female estimated to be over fifty years of age. They have nearly identical bone values, with a similarly high degree of age-related loss of bone that indicates not only living to a similar old age, but also a lack of highly gendered lifestyles. These same two burials are also what Nakamura & Meskell (2009) have termed 'biographical burials' having a large array of burial goods. The older female has unusual items, notably three incised boar tusks placed upon the body, which could have been used as jewellery or part of a garment. The older male has a number of direct finds associated with him, including a bone hook placed on the chest and a cluster of five flint tools and an antler tool, with some of the flint tools showing significant wear and others appearing quite new. Nakamura & Meskell (2009) have argued that nearly all primary adult burials of individuals over fifty years have been found with artefacts, and that the large number of personalized items in these burials suggests that sex was not a marker of difference, but that age and individual identity likely was. It is relevant that highly individuated skeletons in burial treatment and burial goods are also the most individuated skeletons as shown through indicators such as bone loss.

When we move between the individual and population level, from both biological and social aggregates of data, we open the potential to produce a more nuanced and realistic representation of social identity. Further, the use of this multi-stranded approach allows us to more confidently interpret biological data that do not easily fit our expectations. For example, while figural and burial good representations suggest that sex is not a key factor in social roles, wall art at Çatalhöyük does show depictions of young, active individuals that are clearly male (Hodder, 2006; Nakamura & Meskell, 2013). This could indicate a distinction between the sexes at young age with males more associated with active hunting activities (Nakamura and Meskell, 2013). Some of the skeletal data discussed here do support this assertion, the possible higher risk of injury- and activity-related stress in younger males (Larsen et al., 2013) and both metacarpal data on bone growth and loss, suggest that males could have been more active and stronger earlier on in life as compared to females. What emerges then is a picture of gender differences during life that were fluid and dynamic, changing over the life course. Finally, it should be kept in mind that gender differences were also likely dynamic over the span of occupation of Çatalhöyük itself. As mentioned earlier, while stability and repetition in structure and burial are seen during the middle phases of the site, there is evidence for an increased change in later phases, particularly in the last centuries before the site's abandonment that would have had profound changes on the social structure of the community, including likely gender roles and activities. While data gleaned from skeletal bodies can provide us with the most direct insight into lived histories, placing the data into the larger mosaic of archaeological evidence gives us the chance to glimpse into the social realm of changing roles which the individuals and groups at Çatalhöyük may have occupied.

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