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EMBODYING BIOARCHAEOLOGY

Theory and practice

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At its core, embodiment theory provides a conduit between the corporeal body and the social world with which the body engages; it assumes a process of biological adaptation to social and ecological factors (Krieger, 2001, 2005). According to Meskell, “an embodied body represents, and is, a lived experience where the interplay of natural, social, cultural, and psychical phenomena are brought to fruition through each individual’s resolution of external structure, embodied experience, and choice” (Meskell, 2000:13, citing Berthelot, 1991:395–398). Historically, body/culture were seen to have an object/subject divide and were generally conceived of as mutually exclusive to one another. This distinction has been reconceptualized over time and contributions from feminist theory, sociology, philosophy, and anthropology have more recently led to a more fluid conception of body/culture that is now employed in a number of disciplines (Csordas, 1990, 1994). Importantly, the advances made in this ongoing theorization of the body have resulted in a means of employing embodiment theory to assess how an individual, past or present, physically incorporates the world in which they live.

Embodiment theory is particularly applicable to bioarchaeology, as bioarchaeologists examine the (skeletonized) body in order to address social questions about the past. The argument that the skeleton is mutable and plastic, able to change and adapt to an individual’s environment, is essential to a bioarchaeology of embodiment (Agarwal and Glencross, 2011). More generally, in social bioarchaeology human remains are not thought of as static, unmoving, and passive—simply a vehicle to transport the self. As such, a number of approaches consider the body as more than biology. With embodiment theory, bioarchaeologists are animating the skeleton and illustrating the wealth of knowledge accessible from human bones that goes beyond simple measures of elements such as disease or physical trauma. Using an embodiment framework, human remains can be viewed as experiential, social, and agentive, allowing a wealth of interpretive lenses that were previously inaccessible concerning identity, intimacy, and the experience of the archaeological past

(Knudson and Stojanowski, 2008; Agarwal, 2016). The applicability of embodiment theory to bioarchaeology cannot be underestimated. Embodiment is crucial for biosocial bioarchaeological research because it enables interpretations that extend beyond the physical body and brings lived experience to human remains and mortuary contexts (Torres-Rouff, 2012). With this in mind, we support the argument that bioarchaeological applications of embodiment theory are inherently biocultural (Goodman and Leatherman, 1998; Sofaer, 2006). By examining the osteological products of lived experiences, social identity, socioeconomic status, and resistance, we can more fully address lifeways in the ancient past. In our field, the skeleton can be viewed as a nexus of biology and culture that incorporates and reflects both of these elements. Lastly, it is imperative that bioarchaeological work acknowledge that this is a transformative process that occurs throughout the life course of an individual and as such must be interpreted in light of this inherently shifting nature (Joyce, 2005; Ingold and Pálsson, 2013). The skeleton should be viewed as a product of an entire life of events, rather than a snapshot of life at the time of death. From this, an entire genre of bioarchaeological literature has developed that has been impactful and innovative in addressing the tangible correlates of lived experience in the past (see Cheverko, this volume).

Here we address the theoretical development of the concept of embodiment and consider the ways in which bioarchaeology has implemented an embodiment perspective. Bioarchaeological methods that have been applied to embodiment theory will also be discussed, paying particular attention to those areas that we envision will continue to expand and contribute to ongoing conversations in bioarchaeology, archaeology, and beyond. Finally, we present a brief case study from San Pedro de Atacama, Chile, as an example of how we are implementing embodiment theory in our bioarchaeological research.

Embodiment: Interdisciplinary origins and bioarchaeological applications

The theoretical origins of embodiment theory are diverse. Feminist theory, history, sociology, philosophy, and anthropology have all contributed to current conceptions of embodiment in the academic realm (Mauss, 1934; Armstrong, 1983; Turner, 1984; Bell, 1985; Levin, 1985; Bynum, 1987; Johnson, 1987; Butler, 1988, 1990; O'Neill, 1989; Wendell, 1989; Csordas, 1990, 1994; Grosz, 1994; Shilling, 1993). Beginning in the 1970s, an anthropological interest in “the body” helped to solidify embodiment as an important theoretical framework (Douglas, 1973; Foucault, 1973, 1977; Blacking, 1977; Jackson, 1981; Ortner, 1984; Favazza, 1987; Martin, 1987; Scheper-Hughes and Lock, 1987). With this development of embodiment theory, it became clear that the body was no longer an isolated object:

this approach to embodiment begins from the methodological postulate that the body is not an *object* to be studied in relation to culture, but is to be considered as the *subject* of culture, or in other words as the existential ground of culture.

(Csordas, 1990:5; emphasis in original)

The body began to be viewed as mutable and agentive: “the body should be understood not as a constant amidst flux but as an epitome of that flux” (Csordas, 1994:2, citing Frank, 1991). It is also important to draw attention to overlapping theoretical constructs. Bourdieu, for example, engages with embodiment through his own discussion of practice and taste (Bourdieu, 1977, 1984). Similarly, Jacques Lacan, Jean Baudrillard, Anthony Giddens, Bryan Turner, Richard Sennet, Maurice Merleau-Ponty, and Michel Foucault also engage with embodiment alongside their own theoretical perspectives (Csordas, 1990; Meskell, 1996, 1998). Many of these interpretive frameworks can provide strong perspectives for bioarchaeological research.

In the late 1990s and early 2000s, anthropological archaeologists began employing embodiment theory, focusing on the notion of the “archaeology of the body.” This often took the form of analyses of gender, body ornamentation, body inscription, and performance (Montserrat, 1998; Gilchrist, 1999; Hill, 2000; Joyce, 2000, 2004, 2008; Rautman, 2000; Alvrus et al., 2001; Loren, 2001; Gillespie, 2001; Hamilakis, 2002; Fisher and DiPaolo Loren, 2003; Meskell and Joyce, 2003; Fowler, 2004; Schildkrout, 2004; Sørensen, 2000; see Joyce, 2005 for further detail). Some scholars have extended more traditional archaeological notions of materiality to include visual images and inscribed surfaces, dress and adornment, as well as representations of the body, yielding numerous fruitful analyses (Sørensen, 1991; Joyce, 1993, 1996, 1999, 2001, 2002, 2003; Marcus, 1993; Shanks, 1995; Bazelmans, 2002; Bachand et al., 2003). Archaeologists continue to engage with embodiment theory and, more recently, have begun to successfully incorporate the individual and phenomenological perspectives (Crossland, 2010; Bulger and Joyce, 2012; Dornan-Fish, 2012; Tarlow, 2012).

There is a long and undeniable history of studying skeletal remains and developing a biological profile (e.g., estimating sex and age-at-death) that was presented as a sort of proxy for the individual at death. However, prior to the 2000s, this was frequently detached from theoretical perspectives such as embodiment (Agarwal, 2012); “Once age or sex has been determined, the body no longer seems of interest to the archaeologist” (Sofaer, 2006:2). In this way, the skeleton for a long time had served as an underpinning for archaeological research, rather than serving as a focus of analysis. Since Sofaer’s publication of *The Body as Material Culture: A Theoretical Osteoarchaeology* (2006), great strides have been made in bridging the gap between theory and the analysis of human remains. Below we consider these advances in the realm of cultural intersection with the body through a series of vignettes focused on cranial vault modification, dental modification, body piercing, tattooing, and castration.

Among the most productive avenues of investigation, bioarchaeologists have examined cranial vault modification as an embodied indicator of ethnicity, identity, beauty, status, and gender (Tiesler, 2012). The artificial modification of the cranium begins in infancy and involves constant constriction and compression, while the bones of the skull grow and take their final shape. Because this cultural practice occurs at such a young age, it can be argued that cranial modification reflects the cultural practices and beliefs of the mother or those involved in childrearing and perhaps the broader community, as they are the actors that are binding the child’s skull (see Box 2.1). A

number of bioarchaeologists have documented and explored instances of cranial modification as an embodied social practice (Kellner, 2002; Torres-Rouff, 2002; Blom, 2005; Williams and White, 2006; Andrushko, 2007; Fletcher et al., 2008; Lorentz, 2008; Duncan, 2009; Bonogofsky, 2011; Tiesler, 2012; Palomo et al., 2017; Tiesler and Lozada, 2018). In their research about the Maya, Duncan and Hofling (2011) argue that the shaping of the head does more than mark some kind of social standing, be it vertical or horizontal among the Maya; rather it is also specifically tied to socialization. This practice served in effect to protect the child's soul, creating in the act of binding the head a means of protection of the body and socialization into the Maya worldview. Rather than simply documenting and describing modified skulls, Duncan and Hofling engage directly with embodiment theory by framing their research with identity, agency, and social practice.

Like cranial modification, dental modification can also inform ancient social practice. Various forms of dental modification, including filing, incising, inlay, ablation (i.e., removal), exist and have been documented in skeletal collections. Like cranial modification, bioarchaeologists have examined cultural modification of the dentition in various world regions (Milner and Larsen, 1991; Williams and White, 2006; Finucane et al., 2008; Domett et al., 2013; Wasterlain et al., 2016). In many contexts, these modifications occur later in life (i.e., late adolescence or early adulthood; frequently found in fully erupted permanent teeth) and therefore, unlike cranial modification, may reflect the individual person's choice (Geller, 2006; Tiesler, 2014). It is also worth noting that anterior teeth are those most commonly modified, likely due to their conspicuousness (Alt and Pichler, 1998; Wasterlain et al., 2016). In Geller's examination of dental modification in the pre-Columbian Maya, she found significant evidence for varied inlays and filings. She postulates that through these painful modifications, individuals transitioned from one identity to another. This rite of passage "was also enacted according to socially acceptable norms that referenced culturally potent and widely understood symbols" (Geller, 2006:289). Tiesler also discusses pre-Columbian dental modification practices in Mesoamerica and suggests it may be a product of status distinction (Tiesler, 2014). Interestingly there was no relationship between presence and style of dental modification and cranial modification among the lowland Maya. This may indicate that dental and cranial modification conveyed differing types of social information and/or displayed distinct identities given the different life stages in which they were enacted.

While many forms of piercing may not be visible archaeologically, as piercing typically involves soft tissue exclusively, Torres-Rouff documents two Chilean contexts where evidence for labret (lower lip plugs/piercings) use was present osteologically. Torres-Rouff outlines the dental and skeletal outcomes of labret use in a male from the site of Solcor 3 (400–900 CE) in San Pedro de Atacama. Wear and polish on the labial surface of the lower canines in addition to periosteal reaction suggest the use of a pair of labrets on either side of the midline of the lower lip (Torres-Rouff, 2003). In another study, Torres-Rouff examines labret use at a cemetery of the El Molle cultural complex, El Torín (1–700 CE; Torres-Rouff, 2012). Of the excavated individuals ($n=34$), four individuals presented oral

evidence for labret use. All of these individuals were adult male and, furthermore, the labrets themselves were found in the grave. Torres-Rouff (2012:155) argues that Chilean labret use suggests an embodied masculinity that may be associated with pain, interpersonal violence, and lineage. In this context, the presence of a labret is highly meaningful: “The labret, then, an ornament acquired over the course of life, can be explored as more than a superficial decoration of the body; it may serve as a physical expression of ‘embodied personhood.’”

Another form of body modification that is not typically available for bioarchaeological examination is tattoo. The permanence of tattoos can be variable, ranging from ephemeral body paint to permanent inking. Tattoos that are permanent and located in a visible public place on the body can serve as an interface between the individuals and society, embodying religious views, gender, political status, and rites of passage (Schildkrout, 2004). Austin details a unique discovery of a mummified female from Deir el-Medina with at least 30 tattoos dating to the Ramesside New Kingdom (*ca.* 1292–1069 BCE; Austin and Gobeil, 2016). The tattoos span the individual’s arms, shoulders, neck, and back and include images of seated baboons, *wadjet* eyes, *uræi*, hathor cows, and lotus blossoms. All tattoos, with the exception of a pair of lotus flowers, were placed on very visible parts of the body, with the presumable intention of symbolic communication. Austin and Gobeil note that in Ancient Egyptian society, these images symbolized protection, healing, and goodness and hypothesizes that this woman may have been actively involved in healing and protecting people, perhaps a magician, doctor, or priestess. The people of ancient Deir el-Medina may have viewed this woman and her tattoos as the embodiment of power and the divine. Rather than simply treating the tattoos as a purely aesthetic choice, Austin and Gobeil consider the lived experience of this woman and the social power that these tattoos may have embodied in life.

Castration—the removal of the testes—is another form of body modification performed in young adulthood that can also contribute to osteological changes. With the growing popularity of modern opera in Italy (beginning in the 17th century), the practice of castrating pre-pubescent boys as a way of maintaining the high-pitched soprano voices became increasingly popular. Belcastro and colleagues (2011) examined the skeletal remains of known opera singer, Farinelli (1705–1782), and suggested that long limb bones, persistence of epiphyseal lines (even into the eighth decade of life), and severe *hyperostosis frontalis interna* (fairly common in postmenopausal women and rare in men with the exception of individuals with androgen deficiency) were skeletal manifestations of castration. Similarly, Zanatta et al. (2016) report several skeletal indicators of professional singing, including long limb bones, pronounced repertory muscle attachment sites, and epiphyseal line presence, in Italian opera singer Gaspare Pacchierotti (1740–1821). These two very interesting and perhaps exceptional cases reflect instances where, with a great deal of contextual information, occupation was, to some degree, embodied in the skeletal frame.

Embodied inequality and structural violence, or the normalization of social inequities, have also been examined in human skeletal remains. Some have assessed non-specific stress markers and trauma and have concluded that an environment of inequality existed

that was embodied in skeletal remains (Harrod et al., 2012; Klaus, 2012). Nystrom interestingly argues that inequality and structural violence can also be extended to the post-mortem body through dissection and autopsy of vulnerable groups (Nystrom, 2014). He examines two 19th century almshouses, Albany County Almshouse and Erie County Poorhouse (both New York State). Nystrom cogently argues that during the 19th century in the US, there was a deep and systematic marginalization of politically and economically disenfranchised groups that led to health disparities in life and “dis-embodiment” in death. Nearby medical schools would take the skeletons of the vulnerable populations from the almshouses and use them in gross anatomy courses. Large saw marks from the dissection reflect significant damage to the skeletons. The vulnerable almshouse inmates did not have the social, economic, or political position to resist or stop the acquisition of the dead and were likely dissected against their wishes. This compelling case illustrates how social inequality can persist beyond death and that the body, living and dead, embodies these inequities (see also Nystrom, 2017).

These examples illustrate how complex biocultural practices have the ability to reshape the human skeleton. This is frequently a gradual process as bones slowly adapt to the ecological and social pressures being placed upon them. However, in the case of the New York State almshouses, the skeletons were embodied with a pronounced inequality in life, which persisted in death. Here, we have presented case studies that examine the embodiment of gender, rites of passage, ethnicity, socioeconomic status, occupation, religious beliefs, inequality, and structural violence. Some of these skeletal alterations were conscious (i.e., the individual or the person administering the alteration were fully aware of the skeletal, dental, or bodily modification—e.g., cranial vault modification, dental modification, tattoo, piercing) while others were unconscious (i.e., the individual was likely unaware of the skeletal modifications— e.g., castration, dissection; see more below). The examples discussed here refer to conspicuous forms of body modification, which is certainly associated with the argument that these bodily transformations were meant to be seen and convey information. Lastly, the examples above also illustrate permanent modifications to the body; while social information is certainly embodied via more ephemeral practices, the permanence of the cases described above speaks additionally to the significance of the information being conveyed. That this type of information is stored in skeletal material is a truly transformative concept for the discipline. Embodiment theory has already had a large impact on bioarchaeology and, we envision, will continue to do so for years to come.

Future directions

While a biocultural bioarchaeology was already in place in the early 1990s (see Buikstra, 1991), it wasn't until the early 2000s that bioarchaeologists began engaging with embodiment theory. Anthropological archaeologists offer insight into embodied artifacts and mortuary contexts; however, bioarchaeologists are uniquely positioned to analyze directly the embodied body. We are able to draw conclusions about lived experiences of individuals from their biologically and socially adapted

skeletons. The vast methodological toolkit with which we are equipped further broadens the possibilities of linking social systems to skeletal frames. Sofaer (2006) presents an excellent model for the conceptualization of materiality of human skeletal remains and embodiment in bioarchaeology. While much has been done since this seminal publication, embodiment theory has not been used to its greatest potential in our field (see Agarwal, 2016). Here we present some final thoughts on and future directions for considerations of embodiment in bioarchaeology.

We have provided multiple examples of how embodiment can be examined via human skeletal remains. However, bioarchaeologists are limited to some degree by the contextual information necessary to link the biological and the cultural osteologically. In some cases, cultural information is required in order to interpret the biological data. For example, the identified graves and skeletons of the two castrati discussed above were essential in associating their embodied daily practice with the skeletal manifestations of intensive opera and castration. Bioarchaeologists are also typically limited to addressing embodiment via the human skeleton. Torres-Rouff investigated cranial vault modification as a means of embodied ethnicity in pre-Hispanic Chile; however, if the Atacameños had instead actively embodied ethnicity in septum piercing or body painting, this information would be inaccessible. This brings us to our third contextual limitation: preservation. Soft tissue preservation was essential to Austin's examination of tattoos on a New Kingdom magician/doctor/priestess. When the contextual information necessary is present, the modified body is present, and preservation is adequate, the results can be highly informative.

BOX 2.1 EMBODYING INTIMACY: CRANIAL VAULT MODIFICATION AS CHILD REARING PRACTICE

The binding of a child's skull, with the intent of deliberately altering the shape of the head (cranial vault modification), is a substantive process and a highly meaningful act. It should be noted that depending on the cultural system there may have been expectations or mores in place that did not allow much flexibility in whether or not the child's cranium would be modified and what shape it would take. That said, the act of doing so is an intimate process involving both the child being bound and the adults engaging in this process. First, the parents, family, or community decided if cranial shaping was to take place and, if so, select the style of modification. This decision was likely heavy with meaning as the results of these forms of intentional cranial vault modification are, of course, permanent and potentially highly visible and consequential. This meaning would be carried forward into adulthood and read both inside and outside of their natal group. Any of these bindings would necessarily employ a particular series of accoutrements with which a child's head was regularly bound and compressed. The material culture surrounding this practice could also be imbued with decorative and functional roles as seen in some ethnographic examples of head wrapping boards and pads. As a quotidian practice likely involving cleaning and care, the bindings had to be wrapped and

rewrapped frequently, and the involved adult would sit with the young child and enact this binding. This performance was no doubt very intimate, for example, as a mother would hold her child close, deliberating over placement, and tension and envisage the ultimate shape and social significance of this body modification. Head binding may have been performed in the comfort and closeness of a domestic space or perhaps among friends and family. Head shape can reflect any one (or more than one) of a number of meaningful group identities, such as ethnicity, status, resistance, family, and/or community and the practice itself carries the weight of this social construct. It is an identity that a child is born into, their head is modified accordingly, and they maintain throughout their life. In addition to visibly and permanently signaling these important identities, cranial modification also embodies the intimate daily practice of head binding between mother and child. This was a practice that was passed down from one generation to the next; it tied an individual with their family, their community, and a deep historical past. As such, the shapes that we document in the skeletal record engage with more than the minutiae of shape and style, but rather serve to characterize important experiences in individual lives, from the period of binding through the myriad impacts of display.

Nearly every method in a bioarchaeologist's toolkit can be applied to investigations of embodiment, if adequate contextual information is present. Oftentimes, bioarchaeologists draw on consciously modified skeletal and soft tissue material (e.g., modified crania, modified dentition, piercing, tattoo), but this should not come at the expense of unconsciously modified material. Isotopic studies are an excellent example of unconscious embodiment. While the act of water consumption, for example, is not consciously related to identity, human migration most certainly is (White et al., 2009:158). Similarly, Torres-Rouff and Knudson encourage the use of light stable isotopes to investigate how paleodietary data align with embodied lived experiences. Biomechanics and activity reconstruction are another venue for bioarchaeologists to investigate unconscious embodiment, as the manner in which individuals move through life is reflected in their skeleton (Schrader, 2015).

It is important to remember that individuals will have multiple, complex, and overlapping identities, any of which could be embodied in various ways (Meskell, 2001). While ongoing work on intersectionality (Crenshaw, 1991; Shields, 2008; Cho et al. 2013) has been discussed in archaeological literature, it has not yet made substantive impact on embodied bioarchaeology. Torres-Rouff and Knudson suggest a multiscalar approach in which both mutable and immutable aspects of social identities are examined using multiple lines of evidence (Torres-Rouff and Knudson, 2017). They illustrate this approach by examining mortuary, bioarchaeological, and isotope data from the San Pedro de Atacama oases and the Loa River Valley. Group identities from these regions are explored and then individual identities are examined within the context of these groups. Torres-Rouff and Knudson advocate for extensive use of carbon-14 data for temporal control in

order to address chronological patterns of social identities. They also encourage a consideration of postmortem agency, elucidating how social identities were shaped by the dead. Going forward, it is important to remember the complex nature of social identities and how they may be embodied in the skeleton. The implementation of a multiscale, multi-method approach, linking osteobiographical interpretations with population-level analyses, is recommended.

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