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Human Biology in Ancient Complex Societies

Some Concepts for Bioarchaeology

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Over the last 400 generations or so, a number of unprecedented behavioral transitions have occurred. A few in particular have no comparable analogs in the previous seven million years of *Hominidae* and were so transformative that their legacies and ongoing expressions directly structure our modern world. Specifically, the histories of many human societies over the last ten millennia have been characterized by increasing social complexity and economic inequality that is found in the appearance and growth of stratified, territorial, and sedentary societies whose subsistence economies were based on large-scale domestication of plants and animals. The anthropological search to understand the reasons, processes, and consequences of these changes has led to some of the most fundamental and important questions that have ever been posed in the study of human history, biology, and behavior.

This book brings together studies by physical anthropologists, archaeologists, and economists that attempt to provide snapshots across time and space in order to better understand the potential effects of social complexity on human biology in the past. The authors are less focused on questions about the origins of social complexity than they are on a range of historical, archaeological, and biological questions related to the entanglements between sociopolitical organization, economic variation, and inequality in specific times and places in Europe, northern Africa, Asia, and the Americas.

The Bioarchaeology of Complexity: Conceptual and Theoretical Grounds

The modern archaeological study of social complexity is broadly concerned with the development of hierarchical formations of social, political, and economic structures such that management of labor and production is functionally beyond the control of a household or immediate kin group (Arnold 1996). The concept of “complex society” generally relegates the complexity of linguistic, artistic, or cosmological systems to a marginal status. Instead, social complexity has long been glossed in archaeological thinking as a phenomenon expressed in socioeconomic and political terms (Hayden 2014). Roots of such thinking are found in the typological and nomothetic thinking of Lewis Henry Morgan and Edward Tylor in the nineteenth century and in the cultural ecology and neoevolutionary approaches of Julian Steward and Leslie White in the mid-twentieth century. Even today, the origins, variability, and consequences of social complexity are some of the biggest questions we can explore regarding history, social change, and human nature. Perhaps another reason for such persistence of this research theme involves a desire for reflexive commentary about social inequality, one of the “facts” of modern Western society (Lauguens 2014; McGuire and Saitta 1998; Tainter 1990).

Many scholars in the anthropological tradition have contemplated the evolution of social complexity, including Childe (1951), Stewart (1955), Fried (1967), Flannery (1972), Plog (1974), Service (1975), Cohen and Armelagos (1984), Johnson and Earle (1987), Price and Feinman (1995), Bogucki (1999), Boehm (1999), and Yoffee (2005). Studies of complexity have been often been entwined in the cultural discourses of their day, such as the social evolutionism of the nineteenth and early twentieth centuries, the positivist and teleological emphases of early processual archaeology, and the postmodern historiographic conceptions of the *longue durée* of the Annales School (for further discussion, see Trigger 1999 and Yoffee 2005). In U.S. archaeology, work explicitly concerned with social complexity seems to have found one peak within processual archaeology in the latter half of the twentieth century, but recently new foci have emerged, inspired by comparative empirical approaches, evolutionary theory, and postmodern social theory (e.g., Smith 2012; Whiten et al. 2012; Yoffee 2005). Other recent discussions (e.g., Flannery and Marcus 2012), eschew explicit theorization and gravitate toward pattern-seeking approaches oriented in terms of contemporary social concerns. Today, a good number of archaeologists,

at least in our circles, tend to be wary of or avoid evolutionary typological labels such as “chiefdoms” or “states” in the wake of the critique of positivist and neoevolutionary conceptions. Yet the concepts, definitions, and comparative characteristics of a band, chiefdom, or state are notions within studies of social complexity that eventually come full circle and often must be confronted one way or another.

Archaeologists have employed diverse methods and measures to characterize complexity over the last century. These include: 1) settlement patterns, including estimations of community size and degrees of population nucleation; 2) mortuary patterns; 3) comparative distribution of utilitarian and high-value or exotic goods; 4) development of regional and centralized economic systems with internally specialized mechanisms; 5) centralization of religious and leadership systems; 5) size, differentiation, labor investment, and quality of construction materials used in built spaces from corporate architecture to sites of craft production, domestic occupation, and cemeteries, and; 6) cultural constructions of landscapes and territory.

Of all the possible lines of evidence, human remains are newcomers to this area of study. This may seem paradoxical, as skeletal remains probably represent the most information-dense form of any archaeological material (Gowland and Knüsel 2006). Due to the development of bioarchaeological science over the last four decades, human bones and teeth today impart increasingly compelling understandings of the interplays between biology and behavior (e.g., Larsen 2015) and shed new light on core anthropological questions about the nature, development, and consequences of social complexity and inequality.

The bioarchaeology of social complexity can be a fundamentally social or contextual form of bioarchaeology (Agarwal and Glencross 2011). Especially for these types of questions, skeletons cannot be analyzed in a vacuum: researchers must engage with archaeological data and theory. Otherwise, the bioarchaeology of social complexity is devoid of purpose and becomes an exercise in counting lesions. In other words, a bioarchaeology of social complexity depends on the degree to which researchers integrate archaeological data and other forms of contextual information with their findings. Since a contextual bioarchaeology of social complexity and inequality requires conceptual and theoretical grounding in broader archaeological frameworks, the following section discusses a few relevant concepts, issues, processes, caveats, and opportunities—with interpretive bioarchaeology and behavioral impacts on skeletal biology directly in mind.

Roots of Early Social Complexity

Why, when, and how social complexity developed in human history is, to us, a profound intellectual and scientific question. The causes of increasing social heterogeneity have been debated for over a century, developing from social evolutionary typologies to neoevolutionary thinking and more recent critiques that provide fresh perspectives (e.g., Yoffee 2005). Our purpose here is not to summarize the evidence or weigh competing models of the origins of social complexity but to touch on some thoughts that have potentially meaningful bioarchaeological implications.

Considering that the last common ancestor shared by chimpanzees and hominins was probably behaviorally more akin to chimpanzees than modern humans, it is likely that the origins of human beings lie among rather hierarchical apes. Egalitarianism, which is so often assumed to be an innate quality of ancestral hunting and foraging lifestyles, was a novel form of social organization that had to develop at some point in human history (Boehm 1999). Furthermore, it has been understood since the 1960s (Lee and DeVore 1968) that hunter-gatherers are very complex people indeed (Cumming et al. 2014). The study of social complexity cannot be skewed just toward the study of large social systems, and we further elaborate on this point in the concluding chapter of the volume.

Beginning some 2 million years ago, various hominins engaged in a sequence of migrations out of our African homeland. Ethnographic analogies (Lane 2014) have long been used to suggest that these foragers and scavengers and, much later, hunters, existed in social groups comparable in size and structure to modern analogs. The multiple transitions from this form of social structure and subsistence economy began some 12,000 years ago from unique confluences of ecological factors, preexisting social asymmetries, new technologies, and new manners of food production. Still, fundamental questions surround the specific timing of these transitions (which began only some twelve millennia ago), their geographical and ecological distributions, the role of demography, the nature of the preceding foraging economy and society, and the applicability of push, pull, or social models (e.g., Hayden 1992; Flannery 1969; Stark 1986) for the various origins of sedentary food-producing societies.

For most of the last 40,000 years, many different kinds of hunter-gatherers demonstrated signs of social differences and inequalities through the distribution of prestige goods, changes in mortuary patterns, and subsistence technologies (Hayden 2014; Nillson Stutz 2014) that established

the groundwork for more complex forms of culture and food production. Flannery and Marcus (2012), who link their global survey of archaeological trends to ethnohistoric and ethnographic perspectives, think that the first steps toward hierarchical social organization was completely unintended and was rooted in the Pleistocene era as larger social units (i.e., clans) emerged. From there, similar trends toward increasing complexity were initiated in many (but not all) human societies that took these steps (Bogucki 1999; various chapters in Smith 2012). Such changes notionally promoted the emergence of hereditary rank to culminate (so far) with nation-states.

Flannery and Marcus (2012) also posit that the roots of inequality were neither common nor inevitable but that strong structural asymmetries nonetheless have emerged independently over the last 10,000 years. Perceived differences in life force, virtue, intellect, generosity, debt, and prowess in combat connected achievement-based systems of social organization to formulations of hereditary rank in varied ways. Price and Bar-Yosef (2010) reflect on the possibility that the rise of agriculture coincided with the creation of status differentiation linked to emergence of surplus foods in the Near East. Along these lines, varying access to and control of food or arable land appear to be another major factor in the establishment of gradients of social rank. Sex, age, and other unique skill sets that have economic bases can also sow seeds of emergent inequalities (Flannery and Marcus 2012; Hayden 1995).

As short-term camps gave way to multi-generational, achievement-based villages, cultivation of wild plants intensified, food surplus increased, and wild animals were domesticated. As sedentary subsistence economies strengthened, ceremonial customs transformed from small-scale supplications into ancestor veneration rituals. “Men’s houses” developed into ritual houses and restricted-access temples. Ritual knowledge, too, became increasingly exclusive under the purview of ritual specialists. Conflict became all too frequent and was harnessed as a tool for the aggrandizement of chiefs (Flannery and Marcus 2012). One may ponder to what degree existing bioarchaeological evidence of intergroup violence at pre-agricultural sites such as Jebel Sahabah in Egypt (Wendorf 1968), Neolithic Europe (Schulting and Fibiger 2012), and elsewhere reflect the role of violence in this broader process.

Archaeological evidence indicates that long-term trends of increasing social diversity have been generally irreversible over large regions. However, this broad pattern probably emerged from many oscillations between

cycles of increasing and decreasing complexity (Schwartz and Nichols 2006). Still, increasing fertility leading to greater population sizes tend to require, in a very practical sense, progressively intricate socioeconomic and political systems to manage or manipulate them (e.g., Carneiro 1981, 1991). Competition among different constituent polities, increasing sizes of central places and their associated hinterlands, and the magnification of subsistence economies seem to be widely recognizable cross-cultural effects of growing social heterogeneity.

Some Theoretical and Structural Characteristics of Complexity

Complex societies may be broadly characterized as having two basic organizational features: hierarchy and heterarchy. They are not mutually exclusive or fixed features of a society. On the contrary, their inherent mutability creates great dynamism in social interactions. Theoretically, an embedded habitus of difference may strengthen and reify these two components of social inequality (Bourdieu 1977; Jenkins 1992; Joyce 2000; Silliman 2001). Communal habitus serves to reproduce cultural norms and perpetuate the status quo or stability of social complexity. However, at the same time, an embedded habitus may be constantly manipulated to serve as a force of social change as agency gives both individuals and groups the power to challenge it.

These features may lend to the formation of certain frictions stemming from the coexistence of forces and factors that seek to maintain the social status quo, while at the same time other elements are attempting to challenge and transform the nature of society. Flannery and Marcus (2012, 563) also remark on how the escalation of inequality and entrenchment of power among progressively fewer people requires elites to overcome resistance. This is the tension between those who desire to be superior and those whose interests and agendas are overpowered in the process. These forces shape collective patterns of human behavior and, accordingly, aspects of skeletal biology as well (Goodman 2013), whether it be subtle variations in access to resources and nutritional status, physical activity patterns reflected in the ontogeny of long-bone cross-sectional geometry, or traumatic skeletal injuries produced by violent conflicts.

Hierarchy

Hierarchy, or vertical differentiation, involves rank stratification and asymmetrical, status-based distributions of power, resources, and privilege (e.g., Fried 1967). Hierarchy is probably the most bioarchaeologically accessible