

MULTISPECIES ARCHAEOLOGY

Multispecies Archaeology explores the issue of ecological and cultural novelty in the archaeological record from a multispecies perspective. Encompassing more than just our relationships with animals, the book considers what we can learn about the human past without humans as the focus of the question. The volume digs deep into our understanding of interaction with plants, fungi, microbes, and even the fundamental building blocks of life, DNA. *Multispecies Archaeology* examines what it means to be human—and non-human—from a variety of perspectives providing a new lens through which to view the past.

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INTRODUCTION

Suzanne E. Pilaar Birch

The time is ripe to address the issue of ecological novelty in the archaeological record from a multispecies perspective. Pivotal research topics in archaeology have long simplified ecological novelty—or at least centered it on the human—by framing that novelty as one of many “major transitions” emphasizing the uniqueness of our species rather than viewing novelty as a collective shift shared amongst multiple species and their habitats. For example, a focus on the origins of art, language, and culture, spread out over tens of thousands of years, are often bundled together as the “human revolution”, a phrase still popular in paleoanthropology today. Childe’s (1936) “Neolithic Revolution” and “Urban Revolution” in Old World archaeology still loom large, implicitly if not explicitly, as major research foci, as if there is something essential to understanding ourselves emergent in what are regarded as major periods of transition.

In fact, these phenomena—of agricultural lifestyles and urbanism—have had lasting impact on human society but also ecological networks and environmental systems, visible in our globalized world today, and not just at “origin points” but throughout history. It is perhaps less common for archaeology as a discipline to look forward, but some are beginning to consider yet another “revolution”: the large-scale human manipulation of terrestrial (and extra-terrestrial) systems, in the form of the Anthropocene, though the legitimacy of the period as a geological epoch and indeed its date of origin are still up for debate (e.g., Barnosky 2013; Ellis et al. 2013; Smith and Zeder 2013; Zalasiewicz et al. 2015).

Human exceptionalism and our place in nature have long been topics of academic consideration from earliest conceptualizations of the “Great Chain of Being”. The dissolution of the barriers between human and nonhuman, and natural and cultural, has been a critical area within postmodernist thinking (e.g., Haraway 2008; Hartigan 2015; Latour 1993, 2013), but this paradigm has not quite found its place in archaeology, which has long been synonymous with the human past, to the detriment of gaining a more nuanced understanding of one that is shared. In the parallel—but in practice, often separate—fields of paleobiology and paleoecology, scientists have worked to understand a “natural” past, often to the point of excluding the role of the human, or viewing it as a disruptive element. Here, I argue for a multispecies archaeology that seeks to draw together these disparate foci, which create and reinforce an artificial boundary between humans and the natural world of which they are an integral part.

Though views have somewhat evolved in the last few decades from completely anthropocentric perspectives in archaeology, natural history, and related fields in the nineteenth century,

there is still a pervasive sense of progressivism when we center our points of inquiry on human originality (e.g., Domanska 2010). Even in biological anthropology, many primatology studies revolve around what makes the great apes more like us rather than themselves (King, in Mullin 2002). To some extent, the very debate surrounding the creation of the “Anthropocene” belies a paradigm wherein humanity is gaining importance as a central object of inquiry in the geosciences (cf. Ellis and Ramankutty 2008; Ellis et al. 2013; Latour 2014).

It is useful here to consider the current multispecies movement in anthropology before turning to the discussion of a multispecies *archaeology*. The topic of “multispecies ethnography” was broached at the 2010 American Anthropological Association Meetings, a reprisal of a “Multispecies Salon” that also took place at the 2006 and 2008 meetings, which sought to approach the topic from anthropological and artistic perspectives. In the proceedings volume, Kirksey and Helmreich (2010) define multispecies ethnography as something that brings to the foreground what was previously taking place at the “margins of anthropology”; that is, our interactions with other species as food, parts of the landscape (environment), and symbols. They also considered the recognition of other species as integral, not subsidiary to what it means to be human—and indeed, what it means to exist. Though this growing movement in anthropology appears to have gained ground in the last decade, the start of it may be identified in an earlier movement towards understanding human-animal relationships in cultural anthropology and archaeology more broadly, when sessions at the AAA in 2000 and 2001 brought human-animal relationships to the fore (Mullin 2002).

Anthropology is far from the only discipline to recognize the importance of a multispecies perspective, and contributions from the biological and geological sciences have a longer history in this area. For example, Lynn Margulis’s groundbreaking body of work in biology, first in establishing the theory of endosymbiosis, and later championing symbiosis as a driving force in evolution, broaches the idea of microbial agency and cooperation at a fundamental level (Margulis 1998). Shapiro (2007, 2013) advocates moving away from a focus on the study of “matter” in microbiology, arguing instead for studies that center on understanding information exchange and process in bacterial cooperation. The diverse contributions to this volume grounded in archaeology attest to not only theoretical conception of a pan-species agency rooted in cultural anthropology as a lens for understanding the processes that have shaped our collective past, but one that is empirically based as well.

Studying the interactions between entities in the biological, chemical, and physical realms form the basis of our scientific understanding of the world as we know it today, but the ephemeral nature of these relationships—their lack of a material trace that forms that basis of archaeological inquiry—proves a challenge in cultivating a multispecies knowledge of the past, one that requires interdisciplinary collaboration and discussion in its resolution. So, although a “multispecies ethnography” and human-animal studies offer many useful insights, they are not enough. It is essential to take as inspiration a much broader compass from the earth and life sciences that challenge our notions of evolution and life on earth.

Multispecies archaeology does not just encompass human relationships with animals or with other living organisms; nor should it be taken to mean the study of other species to better understand ourselves *per se*. Rather, what can we learn about the past without humans as the focus of the question? What can we learn if we frame ourselves as one actor among others in the long march of time? Archaeologists must dig deeper into considerations of life; into a wider ecology of interactions with plants, fungi, microbes, and even the fundamental building blocks of life, DNA.

Indeed, even as Kirksey and Helmreich (2010) ask what role multispecies ethnography might play in anthropology, this volume seeks to question what a wider consideration of life might play

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within archaeology. How might situating humans within a wider ecology serve to extend or alter our knowledge of the past? Whether interested in the emergence of the genus *Homo*, early art, language, and culture, or the later spread of domesticated species and agricultural systems to early urban trade networks—it's important as archaeologists to not only consider the interconnections between people and things but also between living beings. Viewing ecological novelty and multispecies interactions within the structure of feedback loops and in the context of niche construction theory is therefore helpful.

Behavioral ecology looms large in model building for prehistoric archaeology, and in fact optimal foraging theory, “borrowed” from ecologists, is often a first choice for explaining human interactions with other species: for example, the hunter-gatherer will choose to pursue the organism that provides the highest net gain for energy expended. In contrast, niche construction theory presents a challenge to creating archaeologically testable models because of its dependence on feedback loops and multiple variables, but at the same time may provide a better framework for an approach that is likely closer to the complexity of reality than simple one-to-one relationships (e.g. Laland and O'Brien 2010; Kendal et al. 2011; Smith 2012; Smith 2015; Zeder 2012; see also Riede 2011). We might also talk here of interspecific niche construction (borrowing a term in Candea 2010; cf. Fuentes 2010).

Multispecies archaeology in practice

The subject of human-animal interaction has recently become a hot topic in anthropology, but has always been the focus of the branch of archaeology known as zooarchaeology (or in Europe, archaeozoology). As nascent science in the 1950s, a large body of research has been produced in the last seven decades that combines aspects of zoology, biology, and ecology with archaeology. This field may still be overlooked as specialist by many archaeologists, but has wide applicability for multispecies approaches in archaeology and anthropology (e.g. Overton and Hamilakis 2013). Though not limited to human-animal interactions of the warm and fuzzy kind, less charismatic creatures such as fish, shellfish, birds, rodents, and insects are not always considered in individual studies. And while there has been a growing tendency to consider animal-animal interactions (see Speth 2013 for an excellent example of herd dynamics), there is need for more approaches that consider animals as agents in animal-human interactions. At the time of writing, the exploration of these topics in archaeology is still somewhat marginal; the recent volume “Archaeology and Human-Animal Studies” was notably published as a special issue of a philosophy journal, *Society and Animals*, rather than in a mainstream archaeology journal (Oma and Birke 2013). As the quintessential “other”, animals define humanity, and our interactions with animals in the archaeological record are often considered through a lens of dominance over animals (whether from an economic, behavioral, ecological, or socio-cultural perspective). We “use” them—as sustenance, objects, symbols, and material culture. Yet, from a symbiotic point of view, this relationship can and should be seen as one of exchange. Certainly in the case of domesticated species, this partnership with humans has been an evolutionary boon, while for some wild species it has spelled disaster—the long-term consequences of which we are not yet aware.

In addition to zooarchaeology, paleoethnobotany or archaeobotany has relevance for a multispecies approach within the field of archaeology. For some archaeologists, the role of plants and vegetation may be easy to overlook as we talk about hunting and meat yields, or how food production systems might affect the overall functioning of urban societies and social hierarchy. But plants too are incredibly important determinants: for mobile hunter-gatherers, they might dictate a seasonal move; for sedentary agriculturalists, the reliability of your crop yields means

the difference between survival and starvation. During the maximum extent of the last ice age, the die-off of vegetation caused the eradication of whole ecosystems, spurring mass migrations of people and animals that necessitated technological transformations, dietary shifts, and cultural exchange as well as novelties within ecosystems in refugial areas. Fungi and microbes may also be given short shrift in archaeology because they are more difficult to study; what we really have in archaeology is an ichnology of these things, perhaps only able to detect their physical traces on a bit of preserved wood or fabric or in the signs of pathology on a skeleton. Yet they are huge determining factors that cannot be overlooked. So too we might include proteins and DNA in our summary of what might be defined as multispecies archaeology. Their analysis is made possible by ever more sophisticated technology, and gene flow and symbiotic exchange play an indispensable role in the story of life (Margulis 1998). In particular, methods of stable isotope analysis and DNA analysis make it possible, from a practical standpoint, to assess these microscopic interactions through an archaeological lens.

Multispecies archaeology can really be viewed as archaeo-ecology, as an archaeology of life which understands the past through networks and interactions rather than stochastic events and places. The sections in this volume focus on pivotal areas of research within which a multispecies archaeology may bear fruitful outcomes by questioning what it means to know other living things archaeologically without recourse to humans as the subject of the inquiry, or as a controlling force.

Living in the “Anthropocene”

By its very nature, the Anthropocene suggests a split between humans and nature of the kind multispecies anthropology might seek to disrupt. There has been ample debate about the nature and existence of the Anthropocene in the earth sciences. Though they may have been a little late to join the party, archaeologists have also begun to weigh in on the topic en masse. To some extent, research in this area should include discussion of the establishment of the Anthropocene at the start of the Holocene (i.e. coinciding with ecological upheaval wrought by the onset of agricultural environments) versus the establishment of a historical date coinciding with the “Industrial Revolution” at the turn of the last century. It might also, however, consider multispecies archaeology within this modern period as an ecological setting that is radically different from anything that has come before, shedding light on the contributions of applied archaeology to issues including climate change, wildlife and habitat conservation, and the integration of natural and cultural heritage management. In this section, Heringman explores the natural historical context of anthropocentrism, considering its early conceptual role in the beginnings of archaeology and the study of the past. Witmore frames the Anthropocene as a disruption, as he considers long-term relationships with landscapes and animals in two disparate case studies in Greece and the US. Chapters by Leppard and by Campbell and colleagues consider the playing out of the Anthropocene in island environments from the Pacific to the Channel Islands, serving as models for the concept at larger scales. A photoessay by Pétursdóttir rounds out the section, musing on the role of things—and ephemerality—in this new anthropocentric epoch.

The multispecies ecology of the built environment

Cities are spaces ripe for the development of novel ecological relationships—in their genesis, continuity, and decline. The evolution and disintegration processes of urban environments and exchanges from both within and outside of built spaces, viewed from a multispecies perspective, opens up a range of opportunities for consideration of coeval relationships, whether

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centered on the earliest urbanization processes or later developments and expansion. Within this remit, we can manipulate that space between living and non-living things, entities, and/or objects. For instance, what types of new symbiotic interactions arise with the creation of new material environments, including different types of productive urban spaces and the introduction of new technologies?

How does the internal environment—inside a room, inside a building—differ from that of the outside (on the microscale), and what about relationships between city center, boundaries, and hinterland (on the macroscale)? The contributions in this section vary from those on built spaces—Lucas’s consideration of symbiotic architectures in the case of old turf buildings in Iceland and Thompson and Pluckhahn’s discussion of oyster mound-islands in Florida; to those focused on altered places—Domanska’s chapter on the multispecies interactions occurring at abandoned cemeteries in Poland and Alberti and Fowles’ contribution on rock art in New Mexico; and finally, the city—from ancient Rome (MacKinnon) to early urban centers in the Levant (Marom and Weissbrod).

Agrarian commitments: towards an archaeology of symbiosis

Currently a major research area, the origins and initial spread of agriculture worldwide offer a number of themes to be explored through multispecies archaeology. But the later emergence, movement, and adoption of agriculture, horticulture, husbandry, and pastoralism through time cannot and should not be dismissed for an emphasis on the “earliest”. Relationships in agrarian environments/lifestyles/networks can be viewed as symbiotic ones, and so are crucial to development of an archaeology of symbiosis. Of interest are transitions from systems of scarcity to ones of wastefulness, as well as the specialization or narrowing of niches in response to pressures introduced by the ecological novelty of agricultural and pastoral structures. Animal and plant agency in the domestication process and the role of agriculture in the development and spread of microbial consortia are also nascent areas for research. Chapters by both O’Connor and Boyd thoroughly review these questions of agency and early domestication in the Neolithic and in southwest Asia, respectively, while Oma deals with some of the same concepts in her case study in Bronze Age Norway. Weyrich provides a rich overview of the role of these co-evolutionary relationships, developed and sustained through agrarian practices, on our microbiome.

The ecology of movement

Large-scale movement and mobility serve as another focal point for multispecies archaeology, including research questions delving into the introduction of humans into different biomes for the first time and environmental influences on different technological and cultural developments. A multispecies approach to the ecology of large-scale movement is especially needed, as many of the questions driving research in this area are human-centric, even if interdisciplinary methods are used (e.g., coring and pollen analysis for environmental reconstruction); there is lack of integration and consideration of what other factors contributed to the dispersal of individual or groups of species, for example, such as movement or regional extirpation of certain game species due to the introduction of new predators, human or otherwise. Likewise, the nuance of seasonal movements governed much of our shared human/nonhuman history. Seasonality is explored in the context of herding in Iceland (Aldred), late Pleistocene hunter-gatherers and reindeer in France (Britton), and regional settlement in Mesolithic Croatia (Pilaar Birch). Overton goes so far as to consider the role of daily movements in shaping multispecies relationships in Mesolithic

Britain, while Hodgkins and colleagues slide the scale to consider landscape use by foragers, hyenas, and ostriches in Pleistocene South Africa over thousands of years.

Conclusion

As outlined here, multispecies studies is a new, evolving area of scholarly interest which has only recently emerged in anthropology and has not been considered in detail by archaeologists. In addition to the Oma and Birke volume, a number of papers on “social zooarchaeology” in the December 2013 issue of the journal *Archaeological Dialogues* moves in this direction. Likewise, the November 2013 issue of the journal *Archaeological Review from Cambridge*, “Humans and Animals”, included both more traditional zooarchaeological papers on subsistence as well as more exploratory articles on long-term human-animal relationships. These journal volumes provide evidence of interest in the topic, though no one collection of writing has successfully demonstrated a truly integrated multispecies perspective, which can only be achieved by drawing together authors with expertise in diverse areas, including archaeology, human-animal studies, biology, ecology, evolutionary theory, and philosophy for a comprehensive consideration of the topics discussed herein.

Multispecies ethnography as a form of anthropology appears to have taken hold as a formal movement in sociocultural anthropology, and multispecies perspectives have existed longer still in the biological sciences. It is necessary to assess viewpoints from archaeology and other disciplines together in order to consider perhaps the most essential linchpin in the study of the past: the multi-specific nature of major transformational periods in an inclusive, shared history of life. Research should be based not so much around these transitional periods as around the ecological novelties that underlie these concentrated areas of research foci in archaeology.

Indeed, the current disciplinary and institutional matrices seem to channel us along familiar routes, even if we want to break out of them. In this respect, it will be difficult to avoid revisiting central themes that have a strong pull in archaeological research today; this can be seen as both an asset and a challenge. While exploring some of these conventional frameworks for understanding transition, it is essential to engage with the idea that ecological novelties should not be viewed as a synonym for “origin points” or as precedent for what will come next; rather, the changing relationships and networks between organisms in disparate place and time are of primary interest. Ultimately, it is not only the subject or object of archaeology, but also broader disciplinary identities, that will be challenged by this field of research, which in addition will lead away from the reinforcing of the trope of “revolution” by approaching key changes in life with which humans are enmeshed and question what it means to be human—and nonhuman—from a variety of perspectives. To paraphrase Kirksey and Helmreich in their 2010 volume, we have at least “never only been human”.

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