ARCHAEOLOGICAL ORIENTATIONS

Multispecies Archaeology

EDITED BY SUZANNE PILAAR BIRCH

ROUTLEDGE

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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Edited by Suzanne E. Pilaar Birch

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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

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

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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PART I

Living in the Anthropocene

1

CALABRIAN HOUNDS AND ROASTED IVORY (OR, SWERVING FROM ANTHROPOCENTRISM)

Noah Heringman

Epochs, humans, and other species

In a review of *The Epochs of Nature* by Georges-Louis Leclerc, Comte de Buffon, the German naturalist and antiquary Johann Reinhold Forster took issue with Buffon's radical notion that human beings were a late arrival on the scene of antiquity. More like a writer of romances than a naturalist, in Forster's view, Buffon defines the limits of the primeval ocean, produces now-extinct megafauna, and then causes the continents to separate before allowing humans to exist. Forster comments disapprovingly: "At last human beings too become inhabitants of this earth" (Forster 1780: 148). Zealous to prove that human antiquity is the only antiquity accessible to science, Forster disregards the uncertainty concerning human origins that is built into Buffon's account.

The uncertainty is part of the point, however, and Buffon reflects explicitly on the instability produced by situating human origins in a diachronic history of species. *Epochs of Nature* is one of the first geochronologies to insist on a comparatively long prehuman past, and Buffon anticipates some of his contemporaries' objections by establishing a human epoch, a seventh and final age "in which Man assisted the operations of Nature." In this chapter, he locates the first advanced civilization precisely at the date of 7000 BCE. But in discussing the earlier epochs, such as the fifth, in which "the elephants [i.e., mammoths], and other animals of the south, inhabited the northern regions" (Buffon 1785: 306), Buffon raises the possibility of an earlier human presence, of beings roughly corresponding to what we now term "early hominins." The interspecies nexus designated by Buffon's term for fossilized mammoth tusks—"roasted ivory"—marks a point of archaeological curiosity in the late Enlightenment, a sub-epoch that some scholars are now calling "the early Anthropocene" (Menely 2015b: 3). Following the advent of modern geology in the nineteenth century, archaeologists located "men" more firmly "among the mammoths" (Van Riper 1993). This chapter is concerned with Buffon and his interlocutors in the 1770s and 1780s; although their conjectures on fossils and prehistory predate the discipline of archaeology (Schnapp 1997), I use the term anachronistically in the interest of a conceptual history (Koselleck 2002). Enlightenment naturalist-antiquaries such as Buffon began this conversation by expanding the area of uncertainty surrounding human antiquity, designating a domain in which fossil bones or knapped flint might count as evidence. For Buffon, then, the "archives

of nature" (Buffon 1780: 1) include an archaeological record that encompasses other animal species as well as artifacts unattested in the written record.

A similar uncertainty attends the history of the Anthropocene, which some scholars backdate as far as the era of knapped flint and megafauna extinction, while others favor an industrial or postindustrial date, which correlates to Buffon's epoch of "advanced civilization" (cf. Waters 2016).[1] As Kieran Suckling points out, one of the problems with the term "Anthropocene" is the absence of a biological criterion for dating the epoch. All other epochs (e.g., Miocene, Pliocene) are "named for the condition of the Earth's plants and animals in that epoch. Epochs and epoch names are biocentric," meaning that they describe ecological conditions rather than geological "drivers" or (in this case) a single species (humans) identified as a geological driver via climate change (Suckling 2015). This break with paleontological criteria feeds into a more widely noted problem with the idea of the Anthropocene, namely the encroachment of a ubiquitous human actor on the stage of geohistory. If Buffon's seventh epoch anticipates these problematic aspects of the Anthropocene, then his earlier epochs de-center the human perspective, promoting the radical separation of history from geochronology that enabled geological reckoning in the first place. Although (pace Forster) he raises the possibility of a human presence before the separation of the continents in the sixth epoch, this is nevertheless the time of the mammoths and the question of human presence is peripheral to it. The recent recommendation by the Anthropocene Working Group to locate this epoch in the mid-twentieth century (Waters 2016; cf. Steffen et al. 2016) deliberately foregrounds human agency, but most attempts to define an "age of man" since Buffon have reached more deeply into the history of our species and others. This recommendation changes the terms of the debate, but does not diminish its relevance.

Buffon's "Age of Man" implies earlier ages in which humans are not the main actors. If, then, archaeology has become "synonymous with an exclusively human past," this may not be solely the result of its failure to depart sufficiently from the "completely anthropocentric perspectives in archaeology, natural history, and related fields in the nineteenth century" (Pilaar Birch 2018: 1). Multispecies archaeologists might, in fact, productively reach farther back to their precursors, the antiquary-naturalists, who entertained a version of the question of "how to know other living things archaeologically without recourse to humans as the subject of the inquiry, or as a controlling force" (4), before anthropocentrism became dominant in this form. The difference between Forster and Buffon illustrates the wide range of possibilities in natural history, which accommodated both Forster's insistence that all antiquity was human and Buffon's decentered engagement with geochronology, in which human time is almost an afterthought. The instability of the discourse and Buffon's particular iteration of it are both useful for contesting the modern sense of scientific terms such as "anthropology" and "paleontology," as this volume sets out to do. The project of redefining archaeology in multispecies terms calls for new origin stories, in which the boundary between archaeology and precursor sciences might be drawn differently—hence my occasionally anachronistic use of the term "archaeology" in this chapter.

The antiquity of other species

Although Buffon seeks to establish criteria for ecological novelty independent of any human-made record, he also mines the literature of antiquarianism to establish geochronological markers for his later epochs, especially the loosely defined transitional period during which "primitive" and then the first civilized societies might have established themselves. Other species play a part in these interactions, and geological conditions are even more fundamental, especially because (so Buffon claims) modern humans have a sort of evolutionary memory of the "convulsive motions of the [still-cooling] earth" that terrified their earliest ancestors (Buffon 1785: 381).

For eighteenth-century antiquaries concerned with the excavation of cities buried by the eruption of Vesuvius in 79 CE, observations of the mountain's current behavior played a somewhat similar part—though admittedly on a smaller temporal scale—in helping to establish what the experience of the ancient inhabitants of Pompeii and Herculaneum might have been. The volcanic inundation from Vesuvius was recognized as the "driver" of at least this local environmental history, and a bit later, in 1812, Cuvier used analogy to extrapolate the global force of geological catastrophe by describing the fossil record in toto as "the ruins of the great Herculaneum overwhelmed by the ocean" (Cuvier 1822: i).

The archaeological evidence from these sites, which made the daily life of the ancients so vividly present, disrupted historical temporality itself in profound ways. In addition to the volcano's continued activity, other species—dogs in particular—were among the ecological constants that suggested a deeper, unrecorded human past underlying the ruins of 79 CE. Pierre Hugues d'Hancarville, glossing a scene on a famous black-figure vase found near Naples (the Hunt Krater), insists that the species of hunting dog depicted on the vase, originally from Epirus in Greece, survives in modern-day Calabria, south of Naples (D'Hancarville 1767: 3.206). The scene itself, d'Hancarville argues, depicts an actual event so ancient as to have survived in classical Greece only as a myth (the myth of the Calydonian boar hunt). The continuity of the nonhuman species is therefore important as a kind of source material on human antiquity that predates the historical record—what we would now call prehistory. D'Hancarville, espousing a euhemerist reading of mythology indebted to Giambattista Vico's *New Science*, indicates that the boar in the vase painting is "of a monstrous size" (3.205) appropriate to the age of "heroes" in which it lived (3.207).

Buffon gives other reasons for the monumental size of the fossil bones and teeth of mammoths and other megafauna found in parts of Siberia as well as at celebrated New World sites, such as Big Bone Lick on the Ohio, remarking that "Nature was then in her primitive vigor" (Buffon 1785: 303). Buffon's version of prehistoric gigantism makes the record of nonhuman species into something more than source material for human antiquity, but in both versions nonhuman species mark a locus of continuity in the archaeological record as it was understood in the late eighteenth century. As opposed to the "unknown animal" whose molars were found in conjunction with more familiar teeth and bones, the latter could be clearly attributed to "elephants" and "hippopotami" like those of the present day in all but size. The natural histories of Vesuvius and of Big Bone Lick, though on somewhat different scales, both concerned themselves with the continuity of species (boars, dogs, "elephants") as well as their discontinuity ("the unknown animal"), unhindered by the distinction between paleontology and archaeology.

The history of Pompeii, and antiquarianism more broadly, also inspire scenarios in which humans are not the main actors. When Giuseppe Fiorelli perfected his technique of pouring plaster into the hollows that surrounded skeletons engulfed by volcanic ash and rubble—thus revealing the exact shape of the bodies of Vesuvius's victims at the time of their deaths—his second subject was the entombed body of a watchdog, who thus became "perhaps Pompeii's best-known victim": "the cast of the dog with his slender legs seeming to flail in midair has never failed to evoke pity in those who see it" (Dwyer 2010: 87–88). Taken together with the famous mosaic of a dog bearing the legend "Cave Canem," also found at Pompeii, this sympathetic identification suggests a way of decentering the human perspective in archaeology. Considering these canines, or the mammoths who take center stage in Buffon's fifth epoch, as agents in an archaeological context might be seen as promoting a goal set by Donna Haraway in *When Species Meet*, the goal of "positive knowledge of and with animals" (Haraway 2008: 21). In the case of dogs in particular—who dominate Haraway's inquiry—considering animal agency in this way might also express a kind of co-evolutionary nostalgia, harking back to a time in

which hunter-hominins and their wolf-things roamed the savanna. Haraway herself rightly challenges such nostalgia (36), but acknowledges that the "temporalities" of companion species "include the heterogeneous scales of evolutionary time" (25). Cary Wolfe further extends this figurative sense of symbiogenesis, arguing that human faculties such as language derive from "ahuman evolutionary processes" and "recursive co-ontogenies" (Wolfe 2010: xxii).[2]

In one of Buffon's variations on the story of human origins, the last survivors of a giant hominin "nation" migrate across what is now the Bering Strait at roughly the same time as the "elephants"; while the elephants ultimately perish in North America because they are unable to cross the mountains, the human giants press on all the way to Patagonia (Buffon 1988: 193). The appeal for sympathy here is more muted, but this story of the New World elephants' demise arguably makes the survival of the Old World elephants more poignant. It also opens a distant prospect of the early history of domestication. In a more antiquarian register, Pietro Fabris illustrates the survival of an interspecies relation in his 1775 etching of the excavation of the Temple of Isis in Pompeii, which shows the antiquarian spectators accompanied by a hunting dog (Figure 1.1).

By asking in what sense these nonhuman creatures might have a "voice," or inscribe themselves into the "archives of nature," we are asking a question that has ethical roots in the Enlightenment. Tobias Menely offers a useful theoretical paradigm for recentering animal agency by describing Enlightenment arguments for the "creaturely voice" of animals—a term linked etymologically to "vote"—that arose as a rebuttal of Descartes' animal-machine thesis and culminated in the poetry of sensibility (which Menely credits with inspiring the first animal welfare laws). On this basis, Menely re-imagines community as literally premised on communication, as "open" to the "prelinguistic semiosis humans share with other animals" (Menely 2015a: 1). In different ways, both Buffon's multispecies history of the earth and the early archaeology of Vesuvius promote an ecological view of the past by focusing on human/nonhuman relationships. From Menely's point of view, the situation of animal rights in the late industrial era is fundamentally different because of the scale of animal exploitation. Buffon promoted the multiplication of "men and animals" as a way of generating heat to slow the approach of an ultimate ice age (Buffon 1785: 399). In the Anthropocene, the scale of Confined Animal

Figure 1.1 Pietro Fabris, "Excavation of the Temple of Isis at Pompeii" (1776). By permission of Staatsbibliothek zu Berlin—Preußischer Kulturbesitz, Abteilung Historische Drucke.

Feeding Operations (CAFO) is doubly of concern because of their production of greenhouse gases. The future past of the Anthropocene, too, looks grim from the point of view of creaturely inscription: if the assumptions of Anthropocene science are borne out, the epoch's creatures will register in the fossil record as mass extinction. Zoe Crossland helpfully frames the archaeology of the Anthropocene as a project of turning "our gaze away from [this] projected dystopia . . . to the present and past conditions that underwrite its potential unfurling" (2014: 127).

In this chapter, I am advocating for the openness and uncertainty of Enlightenment archaeological thought, for the moments when it swerves from anthropocentrism and considers other species as drivers in the history of life. As much as they differ on these points, though, the accounts by Forster, Buffon, d'Hancarville, and their contemporaries never depart entirely from a shared teleology of domestication. It remains an open question whether a future archaeologist excavating a former CAFO site would be guided by "present and past conditions" of domestication or would have a new paradigm from which to operate. Therefore it is essential to look within the history of anthropocentric (or nominally anthropocentric) thought to unravel those moments when it swerves from its ostensible teleology, such as the discourse of human animality that Buffon adopts from New World and Pacific voyage narratives.

Mammoth protagonists

The mammoth is arguably the main actor of Buffon's *Epochs of Nature*, even though the work covers the whole history of life as Buffon understood it. I have adopted the poetic phrase "roasted ivory" from William Smellie's 1785 translation because it captures the uncertain status of the mammoth as a mediator.[3] (Buffon himself does not use "mammoth" to describe the megafauna associated with find spots in Siberia and North America, but rather "unknown animal," "hippopotamus," and especially "elephant," which sometimes serves as a metonymy for all three.) "Elephant" in the specific sense of "Siberian mammoth" is used in conjunction with the substance that Buffon refers to both as *ivoire fossile* and *ivoire cuit*, with the latter being credited explicitly to the ivory merchants he consulted in Paris. Smellie's translation is admittedly eccentric; Claudine Cohen's modern rendering, "baked ivory" (2002: 98), more accurately captures the probable association with fired earthenware, and "cured ivory" might have better etymological support. Precisely as an eccentric translation, "roasted ivory" also designates an "area of uncertainty" in the sense developed by Bruno Latour in *Reassembling the Social*. Defining the "agency" of objects as one of the areas of uncertainty that disclose networks in action, Latour uses fossils to illustrate the way in which distance in time can highlight the object's role as mediator: "Even the humblest and most ancient stone tools from the Olduvai Gorge in Tanzania have been turned by paleontologists into the very mediators that triggered the evolution of 'modern man'" (Latour 2005: 80). Cohen argues that the uncertainty surrounding fossil ivory inspired *Epochs of Nature* itself: "it is not too much to claim that the question of the Siberian mammoth and the 'unknown Ohio animal' is the keystone—maybe the key—of this masterwork" (Cohen 2002: 96).

Buffon calls "elephants" into service just a few pages into his "Preliminary Discourse" to support his main hypothesis of global cooling, but in the process he also gives them their own rich history. Their remains first appear as one of five "monuments" that "prove" Buffon's account of the earth's major rock types and their formation (Buffon 1988: 11–12). Because they are found in the northern parts of both the Old and the New Worlds, he argues, the fossil tusks and bones of giant elephants and other megafauna support his thesis of the separation of the continents. The wealth of available evidence enables Buffon to construct a major portion of his narrative, the fifth epoch referred to at the outset of this chapter ("when the elephants, and other

animals of the south, inhabited the northern regions"). Their history unfolds in the course of the chapter-length narrative devoted to this epoch and in parts of the following epoch as well, but Buffon provides a surprising amount of detail on these animals even at the outset, when he is simply outlining his history of the earth. The established trade in "roasted" ivory from Siberia and Tartary, together with recent discoveries in North America that had been widely debated in London and communicated to Buffon, along with specimens, in the late 1760s, increased both the visibility of the mammoth and its contemporaries and the uncertainties surrounding them. He harnesses this visibility to illustrate the magnitude of the geological transformations that would have needed to occur for large land animals to appear.

Buffon monumentalizes their remains in a more literal sense, too, in the form of engravings that dramatize their scale while at the same time collapsing the categories of natural and civil history, fulfilling a promise made in the first sentence of this work. The idea of fossils as "the antiquities of the earth" was not new, but Buffon escalated the analogy to posit geological "revolutions" of incomparably larger magnitude than civil ones (cf. Buffon 1785: 305). He gave the "elephants" and other fossil fauna tens of thousands of years to emerge and to flourish, focusing especially on giant specimens of everything from ammonites to hippos that seemed to him to corroborate formerly higher global temperatures. This long independent history is the main point of a very long excursus note on elephants—one of thirty-six essay-like *notes justificatives* that accompany the more philosophical narrative ("romance," to its critics) of the *Epochs* and were chosen by Smellie, almost to the exclusion of the main text, as the basis of his translation—that follows the initial discussion of the fourth "monument," their fossil remains. Unlike most of the other volumes of Buffon's forty-nine volume *Histoire naturelle*, which are richly illustrated, *Epochs of Nature* has only five engravings, and all five were made to accompany this one note. The first of these (Figure 1.2), like three of the others, shows the pointed molars of the "unknown animal" (mastodon) to demonstrate the scale of life in earlier epochs and support the controversial idea that these animals and others had become extinct as global climate changed. These fossil teeth and the engravings function as monuments or mediators in both the material space of print and the conceptual space of natural history, where they enact the declension from a gigantic past into modernity.

The long note (n. 9) quotes extensively from correspondence Buffon received from around the world in his position as director of the Royal Botanical Garden in Paris. On the authority of these observations and specimens from Russia and what was then New France, Buffon argued that megafauna "species had formerly existed and flourished there, in the same manner as they now exist and multiply in the southern latitudes" (Buffon 1785: 283). By insisting on an independent history for these species, Buffon is not only substantiating his new geological time scale, but also rebutting historical and catastrophist explanations of this seeming biogeographic anomaly. Prevailing theories held that the animals had been driven there by humans or by a mega-flood in the Indian Ocean, but according to Buffon, the extent of the remains precluded the idea that only "some individuals" had migrated. On the contrary, the ancient elephants lived in the North "in a state of nature and entirely at liberty" (Buffon 1988: 14). These elephants and kindred species established themselves and flourished over hundreds of generations in the locations where their remains were found, before migrating southward (and, in at least one case, becoming extinct). Hence "more ivory, perhaps, has already been brought from the north than all the elephants of India now existing could furnish," and a great deal more remains to be discovered (Buffon 1785: 278). Moreover, a substantial length of time was required for this fossil ivory to "roast." The ivory merchants, Buffon reports, distinguish fossilized tusks by the quality of their matrix, and the length of time they remained buried in it, saying that in most cases "very

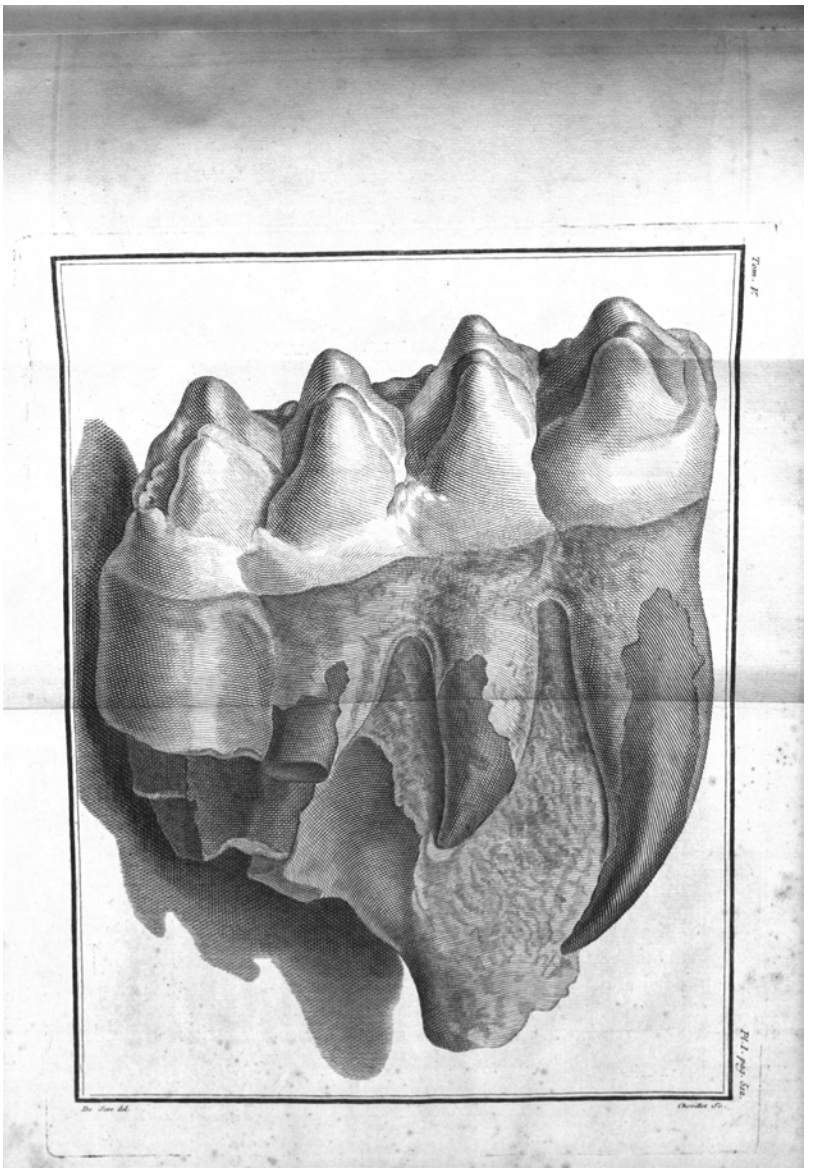

Figure 1.2 Buffon 1780: 2.235 [Plate One]. Courtesy of the Division of Special Collections, Archives, and Rare Books, University of Missouri.

fine works may be made of them" (280). This lapse of time gives him room to maneuver in his narrative of these animals' subsequent fate, including his account of their attempt to pass the Isthmus of Panama during the sixth epoch. In spite of the size difference and the lapse of time, the merchants still recognize fossil ivory as identical in structure with modern ivory: apart from size, these elephants were elephants, so their habitats must have derived their warmth from the interior of a younger, more vigorous globe (287).

Giant species and human origins

Since the earth could only have cooled very gradually (as verified by Buffon's experiments on iron), these super-heated conditions persisted for long enough to infuse the very first living creatures, followed by a whole succession of giant flora and fauna, and perhaps even—this is Buffon's most radical suggestion—a giant race of early humans. The conundrum of the "elephants" prompts his first analysis of these conditions, and they make such apt protagonists because they lend support to a larger narrative arc extending from the gigantic fossil shells of the third epoch all the way to the first humans of the sixth. The animals were larger during the "long tract of time" it took for the earth to cool (Buffon 1785: 286) because "Nature was then in her primitive vigor. The internal heat of the earth bestowed on its productions all the vigor and magnitude of which they were susceptible. The first ages produced giants of every kind" (303). Smellie is not to be faulted for rendering the singular "premier âge" (Buffon 1988: 17) as "first ages" here, as the original is full of slippages between plural and singular forms such as "age of giants" and "primitive times" (17–18, cf. 77–78). Buffon himself concedes that the epochs of nature, unlike those of civil history, are relative and not clearly demarcated (Buffon 1785: 305), but the cool temperatures of recorded history seem to have arrived only recently. In the main body of the narrative, versions of the same argument—residual internal heat producing gigantism—occur as early as the third epoch (Buffon 1988: 78) and as late as the sixth, which contains a third long excursus note (n. 30) developing the issues raised in the initial account of "elephants." This narrative strategy lends a certain coherence to the long prehuman past that Buffon proposes. The multispecies "archive of nature" displaces the human record (and with it sacred history), while also establishing geocentric and ecocentric criteria for locating human origins among those of other species.

Buffon conscientiously takes up the discourse of gigantism elaborated by scientifically minded conjectural historians from Lucretius to Vico (a discourse also manifested in d'Hancarville's mythographic thesis of boars "of a monstrous size"). He gains a critical purchase on it by introducing a much longer time scale, including the notion of extinction, and by distinguishing more sharply between descriptions of fossil bones of humans or hominids and those of other species. Pursuing an Enlightenment program inspired by his contemporary Jean-Étienne Guettard (Buffon 1988: 291n.16), Buffon singles out certain descriptions from the so-called *Gigantologie espagnole*, arguing that some of the bones described in this text must be of the same species as the "unknown animal" from the Ohio River (237). Although sacred history and "superstition" are displaced by this approach, they are not evacuated entirely. On a psychological level, the nostalgia for nature's "primitive vigor" and its gigantic forms suggests desire fueled by a trauma associated with "convulsions of nature." Not only the natural theology of the Deluge but even more secular accounts, such as that of Nicolas-Antoine Boulanger, explained human history as the effect of an original, traumatic flood.

Though he is circumspect, Buffon does not rule out the possibility of human giants, and the manuscript of *Epochs of Nature* reveals that he entertained the possibility of human beings contemporary with giant northern elephants but then suppressed it in the printed text. Buffon concludes his discussion of the fossil evidence of giant tropical animals and plants in the North with an abrupt turn to the human species, asking if the earth could have been populated with "men" at the same time that it was populated with these plants and animals, before the separation of the continents (Buffon 1988: 159). In the printed text Buffon strategically placed this question in the mouth of an imaginary interlocutor and answered in the negative, citing a separate act of creation and firmly deferring the discussion of human origins to its proper epoch (161–62). In the manuscript, both the rhetorical tactics and the long pious interpolation are absent; instead,

the narrator raises this question in his own voice and answers nearly in the affirmative, citing the uniformity of the laws of nature and the worldwide distribution of human populations as premises for this conclusion:

> Without wishing to affirm it we therefore presume, according to our hypothesis, that the human species is as ancient as the elephant; that, being able to sustain the same degree of heat and perhaps an even higher degree, man will have penetrated the southern lands before the animals; but that his first long sojourn was in the northern lands.
>
> *Buffon 1988: 161n.*

The manuscript proceeds to introduce Buffon's thesis that this first civilization was established on the high plateaux of central Asia, though even at this stage he planned to defer the details and the "proofs" to the discussion of his last epoch (162n.). By deleting this material and revising the quoted passage, Buffon does much to create the impression that God deferred man's arrival till the earth was "worthy of his empire" (161).

It is striking that even this rhetorical pose of anthropocentrism was not enough to satisfy Buffon's contemporaries, including Forster and, more impressively, the Sorbonne, which condemned parts of the seventh epoch (Buffon 1988: 306n.1). The deletion of manuscript material alone provides adequate evidence for questioning the "sincerity" of the published version, as Jacques Roger pointed out in 1962 to caution those who would "accuse Buffon of anthropocentrism" (302n.29). And even though he consolidated his thinking on human origins into the seventh epoch, written last, significant material referring to human or semi-human giants was allowed to stand in the sixth epoch and the excursus notes—further suggesting human proximity to other species. In the printed text, Buffon retracted his claim that "monuments and even traditions" attest that "the human species has followed the same course and dates from the same period as other species," rendering it purely a matter of "analogy" (159n.). Several of these monuments and traditions are reported, all the same, in the material on giants that was not deleted. As Buffon puts it in one of the deleted passages, all these indications give us strong reason to presume that gigantic humans, too, existed in "these primitive times close to the origins of animated nature and on the same terrain as the first elephants and other animals" (162n.). In light of theological objections to the published work, it is thoroughly ironic that he tried to be *more* orthodox by *post*-dating the species in his revisions.

The most salient episode to have escaped these revisions is the migration of the giant species, including humans, prior to the separation of the continents. The primary evidence for such a migration, once again, is the presence of fossil remains of the same megafauna in both northern Eurasia and North America. As Roger points out, this is essentially the same body of evidence as that put forward by Alfred Wegener in the twentieth century in support of the supercontinent Gondwanaland (Buffon 1988: 275n.56). In the sixth epoch Buffon proposes that "some giants, as well as the elephants, passed from Asia into America" via the same overland route, finding there "the liberty and the tranquility" they required to "propagate their gigantic race" at a time when lowland South America was still entirely covered by the primeval ocean (193–94). Buffon points to the Patagonian giants, whose existence had been corroborated as recently as 1767 by John Byron on HMS *Dolphin*, as the last vestiges of this race. The Asiatic parent stem died out much earlier with Goliath, according to the excursus note accompanying this passage (Buffon 1785: 332). Buffon cites scripture infrequently, but in this instance it bears out his general claim in the manuscript that written tradition conserved the memory of giants; in conjunction with the Patagonians, he uses the stories of Goliath, the sons of Anak, and others to

posit "permanent and successive races of giants" (341). The original account of human origins, partially overwritten by the seventh epoch, is thus a synchronic one, in which "the origins of animated nature" describes an indefinitely long process that leaves traces, such as gigantism, in most species. In *Epochs of Nature*, gigantism provides a secular vocabulary for the proximity of species as well as their collective proximity to origins. The corresponding vocabulary of domestication, though it has a biblical warrant in Genesis, now appears to connote the belatedness of modern civilization in relation to the deep gigantic past.

Species memory and the fossil archive

The memories recorded in ancient texts pass through several stages between the epochs marked by fossil "monuments" and their later preservation in writing. These stages may be traced more indistinctly in oral tradition and in a kind of race memory, or what might today be termed evolutionary memory. These other forms of memory are crucial because they substantiate the apparent agreement between the monuments and the earliest recorded traditions, such as the Old Testament stories of giants. Buffon added a substantial excursus note after the rest of *Epochs of Nature* had passed through the proof stage to report on an Arctic travel narrative delivered to him by the Russian minister Schouvaloff in autumn 1777. This narrative (based on first-hand accounts by the navigator Aphanassei Otcheredin) includes material from oral tradition among the Chukchi people on the Asian side of the Bering Strait as well as observations on the current state of their trade with people on the American side. Buffon concludes that since the Chukchi have carried on this commerce "since time immemorial" (Buffon 1988: 253), it could be regarded as a survival of the traffic occurring during the separation of the continents. More general human memory of "races of giants," having been preserved at least until the time of the earliest writings, confirms the hypothesis of gigantism in similar fashion. The high antiquity and gigantic size attributed to the first men by tradition corroborate the idea that they "received" great size and strength "from nature" during the same extended "primitive" moment in which the first elephants acquired their "prodigious" tusks (162n.). Buffon also takes the testimony of ancient geographers such as Strabo concerning the uninhabitability of the "torrid zone" as a kind of species memory of the fifth or even earlier epochs (139).

This type of geological memory "preserved by tradition" operates most powerfully at the beginning of the seventh epoch. This bleak narrative of human origins declares that "the first men were witnesses of the convulsive motions of the earth, which were then frequent and terrible" (Buffon 1785: 381). Reminiscent of the state of humanity in Plato's *Protagoras* before the intervention of Prometheus, these early humans or giants were "naked in mind as well as in body, exposed to the injuries of every element, victims to the rapacity of ferocious animals, which they were unable to combat, [and] penetrated with the common sentiment of terror." Small wonder, then, that even the first nations remained "deeply affected by the miseries of their original state"; "having still before their eyes the ravages" of flooding, earthquakes, and volcanoes on a giant scale, "these men . . . have preserved a durable, and almost eternal, remembrance of the calamities the world has suffered" (383). The secular convictions underlying this bleak narrative of human origins must have been readily apparent to the Sorbonne, and Roger has shown how deeply it is influenced by the freethinker Nicolas-Antoine Boulanger, who takes a similar approach to human origins and the origin of superstition in particular, in *Anecdotes of Nature* as well as in other works. The narrative arc of "giant race[s]" enjoying "liberty and tranquility" before declining into a cooler modern world, the onset of which is loosely marked by a "convulsion" or series of catastrophes, bears some general resemblance to an idea that Boulanger shared in common with other, more orthodox antiquaries: that laws, religion,

and other institutions originated from, and commemorated, a traumatic dispersal of humanity associated with the Biblical Deluge (see further de Luca 1991: 180–87).

Boulanger's influence did not entirely change the course of the work, however, as Roger suggests; on the contrary, Boulanger's skepticism allowed Buffon to preserve a deep ambivalence about human hegemony at the beginning of the very chapter that concludes by celebrating human domestication of nature in the most strident tones. The idea of species memory, in particular, goes against the grain of some of Buffon's late theodical revisions. Using the same word, *témoin*, to designate human witnessing of larger planetary processes, Buffon's manuscript expresses a kind of relief that human beings came too late to witness the planetary upheaval of the fourth epoch, "when the volcanoes began to act." A late revision appearing from recently discovered manuscript material has these "petrifying and terrible scenes" of volcanism "heralding the birth of intelligent and sensible Nature" (Buffon 1776: 28).[4] The opening of the seventh epoch suggests that "the first men" did remember, on some level, the great eruptions of the fourth epoch, or at least their aftermath. Throughout the work, then, a synchronic, multispecies narrative that decenters human hegemony infiltrates and complicates the stock Enlightenment narrative of nature subdued.

This Enlightenment narrative prevails at the end of the final epoch, but the triumph of domestication is nonetheless instructive as an aversive reaction against the half-unwilling discovery of human animality. When he abuses "barbarians" of various eras (prehistoric, Germanic, Native American) as "animals with human faces" (Buffon 1785: 394), Buffon is, in part, exorcising a kind of newly discovered terror inherited by the entire species from its deep, turbulent past. The same goes for his extravagant claim that the twenty or so species entirely domesticated by humans are "more useful to the earth than all the others" (403), which on some level contradicts the work's preoccupation with ancient megafauna. The earlier, more nuanced account of domestication, though still teleological, depicts its history as embedded in the collective history of species and dependent on a long prehistory of sedentism (Buffon 1988: 161n.).

Perhaps the strongest support for a multispecies approach to Buffon's *Epochs of Nature* lies in the justification that he offers for his extended time scale. We can only begin to grasp the scope of geological time, he argues—an expanse that for him is ten times larger than the period generally accepted in Europe until the mid-nineteenth century, though still short by modern standards—by putting the history of our own species in relation to that of others. In a remarkable passage added to the end of the first epoch during the process of revision, Buffon enjoins his readers to envision a 6,000-foot hill of slate (as at Caen in Normandy) surmounted by a stratum of limestone (Buffon 1988: 42). Supposing that the original sediment accumulates at a rate of five inches per year, it will have been 14,000 years before shells begin to be transported to this site, and these in turn must accumulate and be turned to limestone before the sea level drops and the hill can assume its final form. Reflecting on the formation of this topography in a manner that anticipates James Hutton and Charles Darwin, Buffon enters on a philosophical digression, much of it deleted in revision, that problematizes temporal apperception on this scale. He defends his proposed chronology as already "abridged" from a scale forty times larger that would have been philosophically more adequate (40n.) This "little" scale is needed, he explains to preserve the clarity of the idea, for the "human mind," Buffon reflects, "loses itself in the expanse of duration much more readily than in that of space or number" (40). "Our too brief existence" constrains us to minute analysis of the "numerous centuries required to produce the mollusks with which the earth is filled; [and of] the even greater number of centuries that have passed since their shells were transported and deposited," and so on through the processes of petrifaction and desiccation illustrated in the example of the Norman coast (41). Scaling up or down seemingly at will, Buffon makes the point that the history of other species is indispensable

for arriving at a conception of geological time that is at least commensurate with "the limited power of our intelligence" (40n.)—but may still be far short of its true extent.

Forster's rebuttal, in the review quoted at the beginning of this chapter, depends on his reading of ancient geographers, who provide him with adequate evidence for every kind of geological upheaval within the confines of the written record. In levying this criticism, Forster capitalizes on the ambivalence displayed in Buffon's handling of memory and tradition. It is unclear, in the end, how much geological upheaval the "first men" witnessed, or how far back their origin may be traced. Buffon calculates that after 60,000 years, the planet reached the state of "repose" necessary to "its most noble productions," the land animals (202). But he acknowledges that "this repose was not absolute," since the separation of the continents, and other "great changes," were still to come. Forster marshals evidence from ancient geographers to support the notion that a megaflood originating in the Black Sea basin produced the Mediterranean Sea, offering recorded (or at least remembered) "great changes" of this kind as adequate to the task of explaining the earth's present landforms. Although he does not refer to it explicitly, Forster's Pacific voyage may have conditioned his defense of a young earth model, since he had learned to identify atolls and recent volcanic islands in the course of the voyage.

The eruption of Vesuvius in 79 CE, well within the scope of the written record, captured the imagination of eighteenth-century audiences in part because it suggested that natural and social revolutions were commensurable in a certain sense. (Or, to put it another way, it might have seemed to affirm the recentering of human antiquity that Forster also was promoting.) When Fiorelli prepared his cast of the watchdog in its death throes in the 1860s, the response was conditioned by over a century of sublime pathos, and by the more recent sentimentalism of works such as Bulwer-Lytton's *The Last Days of Pompeii*. The entrance onto the scene of this one nonhuman specimen, even if it became "Pompeii's best-known victim," cannot be said to have initiated a multispecies turn in the archaeology of Vesuvius.

It does, however, evoke the evolutionary past (an appropriate term for the 1860s) in at least two ways. First, the dog as a companion animal recalls the co-evolution that underlies and complicates domestication, as Haraway observes, and as Darcy Morey further explains (Morey 2010). Since this is a watchdog specifically, like the animal labeled with the legend "Cave Canem" in the mosaic, its aggression may be seen as a carefully cultivated survival from its evolutionary past. The threat of rapid reversion in dogs is dramatized forcefully in contemporary post-apocalyptic narratives such as Octavia Butler's *Parable of the Sower*, but this specimen had no opportunity to revert to its wild type. The catastrophe came too fast. Second, this Pompeiian watchdog functions as a metonymy for the agon of extinction. The mammoth co-evolved with Pleistocene humans, and perhaps with their wolf-things, as a prey animal. At some find spots, such as the Manis Mastodon site in Washington, the accumulation of fossil bones and tusks appears with clear evidence of hunting by humans, which is sometimes held to have hastened the Pleistocene megafauna extinctions. (Science fiction again offers an analogy in the form of the "megodonts" in Paolo Bacigalupi's *The Wind-Up Girl*, mammoth clones that are carefully engineered but half-wild all the same.) In Buffon's time, it was already clear that large numbers of animals had died at some locations, including Big Bone Lick, and the sheer quantity of remains gave a certain symbolic weight to the thesis of their extinction long before it was generally accepted. The sculptor Allan McCollum, in his 1990 remediation of the cast from Pompeii (Figure 1.3), converts the agony of the individual dog, calculated to provoke sympathetic identification, to a proliferation of agonies evoking mass extinction, while commenting at the same time on the mechanical reproduction associated with the ideology of neoclassicism.

In these two very different scenarios of human-animal interaction—Fiorelli's and Buffon's—evolutionary memory is activated as a medium for recalling a more distant past, preclassical in the

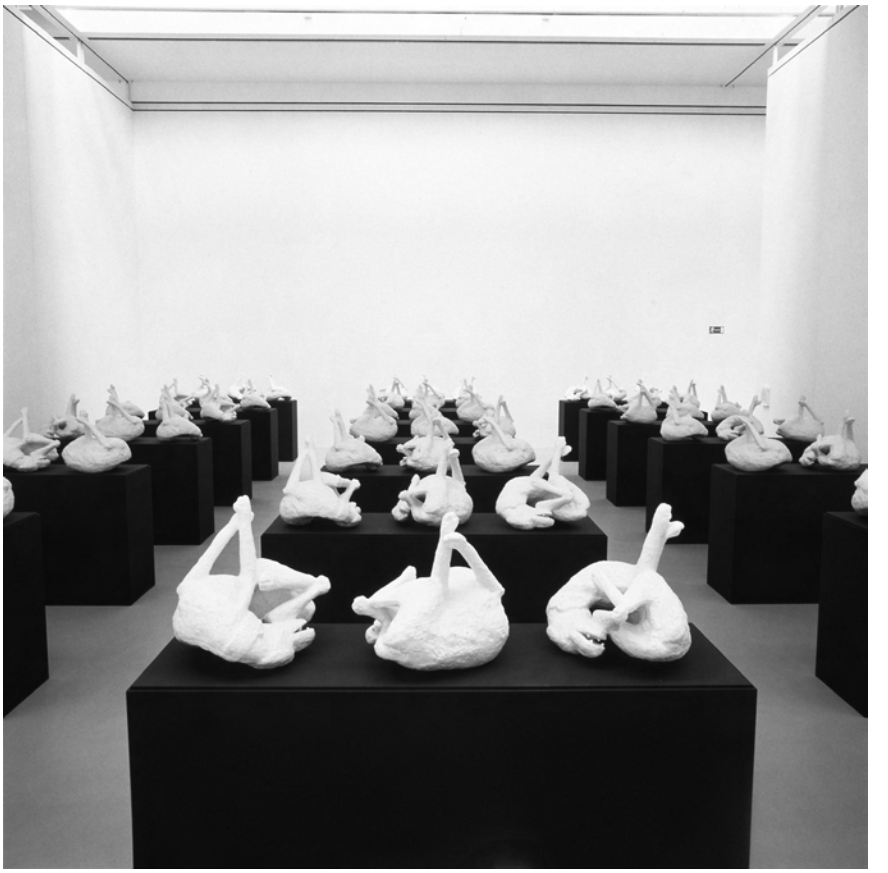

Figure 1.3 Allan McCollum, *The Dog From Pompeii*, 1991. Cast glass-fiber-reinforced Hydrocal. Approximately 21 × 21 × 21 inches each. Replicas made from a mold taken from the famous original "chained dog" plaster cast of a dog smothered in ash from the explosion of Mount Vesuvius, in ancient Pompeii, in 79 AD. Produced in collaboration with the Museo Vesuviano and the Pompeii Tourist Board, Pompeii, Italy, and Studio Trisorio, Naples, Italy. Installation: Sprengel Museum, Hannover, Germany, 1995. Reproduced by permission of the artist.

former case and prehuman in the latter. In both cases, other species—the dog in Fiorelli's case and a variety of megafauna in Buffon's—mark continuities in the archaeological record, linking the human past and the human present. But at the same time, they decenter human beings as protagonists by foregrounding humans' evolutionary proximity to other species, as well as larger patterns of ecological succession. Buffon does not refer to Vesuvius, but does use travelers' accounts of Etna to illustrate the larger volcanic transformations that dominate his fourth epoch. Forster rejected Buffon's relative post-dating of human origins to maintain the possibility of a unified creation that remained indispensable to natural theological paradigms until Darwin's time and beyond. Although Buffon was unambiguous in his Eurocentrism and his commitment to the domestication of nature, he was more ambivalent than his contemporaries on the subject of anthropocentrism. By deferring human origins to a later stage in the history of life, he not only promoted a generative uncertainty but also created a unique perspective on the expanse of prehuman time required for the earth to have its own history. In this way, the study of natural

history and antiquities together, not only in Buffon but throughout the early modern period, incorporates multispecies archaeology as a basic part of its intellectual framework. This legacy is essential for multispecies archaeology in the Anthropocene, this new/old epoch with its widely varying start dates and its claims on other species that range from early hunting to farming to industrial-scale exploitation to what may already be the next mass extinction.

Notes

1 In referring to the Enlightenment as the "early Anthropocene," therefore, Menely and other scholars are deliberately deviating from the very different, more famous "early Anthropocene" hypothesis of William Ruddiman, which locates this moment much earlier, in the early Holocene. The recent announcement by the Anthropocene Working Group (Waters 2016) resets the terms of this discussion without rendering it wholly moot.

2 The watchfulness of Pompeii's watchdogs invokes the long history of domestication but also the vestigial ferocity signaled, in spite of its pathos, by the studded collar clearly visible on the cast.

3 Smellie's translation is greatly abridged, but I cite it (Buffon 1785) when referring to the parts of *Epochs of Nature* that he included in vol. 9 of his translation of the *Natural History* (second edition). For all other passages, including those from manuscript portions available before 1962, I refer to Jacques Roger's critical edition of that year, *Les Epoques de la Nature* (Buffon 1988). A new translation, the first modern English version of *Epochs of Nature*, is currently being prepared by Jan Zalasiewicz of the Anthropocene Working Group together with Jacques Grinevald, Libby Robin, and Sverker Solin (forthcoming 2018 from University of Chicago Press).

4 The manuscript entitled "Quatrième époque" was acquired by the Musée national d'histoire naturelle in 2000 and integrated with MS 883. The last page of this section reads, in part: "Nous remercierons le Créateur de n'avoir pas rendu l'homme témoin de ces désastres." In print, "ces désastres" becomes "ces scènes effrayantes et terribles, qui ont précedé, et pour ainsi dire annoncé la naissance de la Nature intelligente & sensible" (28).

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