

Deep History, Evolutionary History, and Animals in the Anthropocene

Anita Guerrini

Abstract How do we write a history of animals in the Anthropocene? In the past decade, there have been several attempts to bring biological thought into historical writing. One, ‘deep history’ as advocated by Daniel Lord Smail, aims to push the beginnings of human history back into the Pleistocene, long before the advent of written documents. In another, environmental historian Edmund Russell advocates the study of co-evolution (of humans and other living things) to explain particular historical events. Neither of these approaches specifically comments on animals. This essay examines these approaches and others to develop a new historical discourse that de-centers humans and incorporates both human and non-human animals. Such a history will help to recapture the original moral aims of historical practice.

1 History in the Anthropocene

What is the role of history in the Anthropocene? Ecologists now speak of ‘no-analogue’ environments with no precedents in the past, and historians and philosophers have been predicting ‘the end of history’ since the 1980s from a number of different perspectives (Jackson and Hobbs 2009; Fukuyama 1992; Agamben 2004). Climate change has added new anxiety to these musings. Historian Dipesh Chakrabarty began his 2009 *Critical Inquiry* article, ‘The Climate of History: Four Theses’, with an arresting question: is history possible in a world without humans? Will climate change lead to human extinction and therefore to the end of history? To put it another way, has the necessary continuity from past to present to future been ruptured owing to the possible lack of a (human) future? Chakrabarty goes on to argue that anthropogenic climate change will necessarily collapse the distinction between natural history and human history, but he does not address what role animals might play in this new order. Animal studies scholars

A. Guerrini (✉)
Oregon State University, Corvallis, USA
e-mail: Anita.Guerrini@oregonstate.edu

have made similar statements. In her well-known essay ‘A Left-Handed Blow,’ Erica Fudge concluded, ‘No longer separate, in splendid isolation, humans must be shown to be embedded in and reliant upon the natural order’ (Fudge 2002, 15). But such statements continue to assume that the subject of history is essentially and inevitably humans.

I agree with Chakrabarty that the Anthropocene merges natural history and human history. In his book *The Open*, philosopher Giorgio Agamben similarly postulates a merger of human and animal, which, he argues, will lead to the end of history. But I don’t agree that history itself therefore disappears. Rather, the Anthropocene requires a new concept of history that radically de-centers humans. This might seem ironic or paradoxical in an age named for human dominance. This essay, however, proposes a different reading of the relationship between natural and human history and therefore between humans and animals. Non-human animals, I argue, also have histories, both participating in and independent of human histories. Uncovering those histories, particularly but not exclusively in evolutionary terms, will enable us to deconstruct the animal-human divide and begin to write a new history that can underpin a new ethics for the Anthropocene.

The modern Western discipline of history as an interpretive enterprise began in the late middle ages with the beginnings of humanism, the retrieval and reinterpretation of classical culture. Renaissance humanists and modern historians distinguish ‘history’ from ‘the past’: the past presumably happened, but without the interpretive enterprise of history, we would know nothing about it. That interpretive enterprise is always contingent on the kinds of evidence available (material, written, oral) and on the person who does the interpreting.¹ There is no stable entity we can simply label ‘the past’. Rather, there are narratives about it that humans create. Historian of science Michael Gordin recently had this to say: ‘Historians do not, *cannot*, have direct access to the past ... [w]hat we all have are collections of traces—manuscripts, rocks, phonemes, fossils, genetic sequences, built structures—that we interpret today to create a narrative about what happened before’ (Gordin 2014).

Early modern humanism was based largely on texts and set up two boundaries: between the human and the divine on one side, and between the human and non-human nature on the other. The space between these two ideas of what constitutes the human is what Agamben refers to as ‘the open’. The question of a non-human history is therefore caught up in a larger question of the meaning and scope of the humanities. In its origins in early modern humanism, the humanities once included all of learning, and its practitioners viewed it as above all a moral and ethical enterprise. Humanism’s new emphasis on the value of the human as opposed to the divine, and its revival of pre-Christian learning, included both literature and science: *scientia* referred to all of knowledge. Before 1800 at least, the humanities and the sciences were not separate but took part in a larger quest for knowledge (Grafton and Jardine 1986). Natural history and human history were components of a single story that began with the Creation. A new history for the Anthropocene

¹For discussion of this point in relation to ecology, see Higgs et al. (2014).

returns to this larger story, with two important differences. Its essential components are the inclusion of non-human nature, particularly animals, as historical actors, and a greatly expanded time frame. As I will argue, the modern theory of evolution links these components.

2 Animal Histories

The historical study of animals crisscrosses many areas of humanistic study: literature, cultural history, the history of science, environmental history, social history. Although human histories have at times included animals in various ways, animals seldom appeared in works of mainstream academic history until the 1980s. Various histories of human mistreatment of animals appeared earlier, but their purpose was more polemical than historical.² As Harriet Ritvo comments in relation to her own career, ‘In the early 1980s ... it was considered both unusual and eccentric (which are not at all the same thing) to take animals seriously as historical subjects’ (Ritvo 2010, 1). She, like many others in the field of animal studies, credits the English historian Keith Thomas with taking the history of animals out of the realm of the eccentric. Thomas’s *Man and the Natural World* examined (as the subtitle to the English edition explained) changing attitudes toward the natural world in early modern England. Thomas took his topic expansively, and looked at multiple intersections between humans and early modern nature, from theology to agriculture to natural history and taxonomy to food and entertainment (Thomas 1983). Ritvo, probably the best-known American historian of animals, has followed a similar path of looking at animals in terms of a broader (human) cultural history, mainly in nineteenth-century England. Her first book, *The Animal Estate*, examined animals in Victorian England, finding that British treatment and uses of animals reflected the attitudes and anxieties of Victorian culture (Ritvo 1987).

While not precisely a historian of science, Ritvo in her second book, *The Platypus and the Mermaid*, considered scientific as well as popular ideas about the classification of humans and animals (Ritvo 1997). It touched on themes of breeding and wildness that she has continued to examine in other works, as she has moved closer to environmental history. Her third book, *The Dawn of Green* (2009), is not about animals at all, but she continues to write about them. Ritvo’s main emphasis in her work is that our ideas about and treatment of animals can tell us a lot about ourselves and other humans. Through history, animals have provided a lens through which to view human society. At the same time, Ritvo clearly believes that animals merit study in themselves; the essays collected in *Noble Cows and Hybrid Zebras* range widely, from broader studies of animal use and representation to more specialized studies of classification and breeding (Ritvo 2010). Major themes underlying much of her work are the inescapable continuity between the

²For more on this point, see Guerrini (2003), ‘Suggested Further Reading’.

past and the present, and the interweaving of animals into every aspect of human life. A moral purpose for history underlies much of Ritvo's work although she seldom takes an explicit ethical stance on human uses of animals.

In contrast, cultural studies scholar Erica Fudge has outlined an approach to the history of animals that finds its progenitor less in Keith Thomas than in Peter Singer, whose *Animal Liberation* (1975) changed the terms of moral engagement with animals and led to renewed activism on their behalf. Fudge's (2002) essay 'A Left-Handed Blow' links the history of animals to a present-day activism. In this she is not unlike the American environmental historian, Roderick Frazier Nash, who aimed to merge advocacy for nature with histories of it, particularly in his book *The Rights of Nature* (Nash 1989). To Fudge, the moral imperative of the historian, therefore, is clear-cut: 'A history of animals', she writes, 'would seem to be an obvious place where yet again the ethical nature of the historian's work should be clear' (Fudge 2002, 4). But, as she points out, animals have left no documents (written or oral), nor do they have a sense of historical time. She concludes that therefore a history of animals, as opposed to a history of human attitudes toward or relations with animals, is 'impossible' as history is currently constructed (Fudge 2002, 6).

Fudge puts aside environmental and evolutionary history to focus on text-based history, which she classifies into three types: one is intellectual (such as Thomas's work, which considers 'attitudes, not animals'); another is 'humane' history, which views animals as 'the site of [human] social change'. Fudge places Ritvo's work in a third category, 'holistic history', that looks not only at human-animal relations, but 'leads to the inevitable conclusion that the human is only ever meaningful when understood in relation to the not-human' (Idem, 8–10). Such a history, combined with a postmodern reading of documents 'against the grain', leads to Fudge's assertion of the purpose of a history of animals: 'If we identify the human as neither a given nor a transcendent truth, then intellectual attitudes that leave unquestioned the result of these assumptions—dominion—must themselves be reviewed as not true, but created' (Idem, 11). Fudge's history of animals, therefore, is above all a history of anthropocentrism, of cruelty and dominion. Only by questioning anthropocentrism can we write a legitimate history of animals.

While Fudge claims to challenge the status of the human by this approach, she nonetheless assumes the existence of a stable rhetorical entity we can call 'the human' against which is placed 'the animal'. But as we shall see, both 'human' and 'animal' are themselves highly contingent historical categories. Fudge seems to suggest this:

We must abandon the status of the human as it is presented within humanist history; we must read against this. Instead, we need to assert and assess the ways in which 'human' is always a category of difference, not substance: the ways 'human' always relies upon 'animal' for its meaning. By refusing humanism, and implicitly, anthropocentrism we place ourselves next to the animals, rather than as the users of the animals, and this opens up a new way of imagining the past, something that has to be central to the project (Idem, 15).

But Fudge believes that this new history will be based on a reinterpretation of existing documents. She does not take the further step of looking at different kinds of evidence that is not based on texts.

3 Expanding Time

Renaissance humanism gave the discipline of history its modern form. Like the humanities, history as a discipline underwent a further shift in definition in the nineteenth century. The humanist admiration of classical models and emphasis on comparative textual analysis gave rise to the narrative form and chronology of history writing in the West: by this definition, history begins with written texts; everything before that is ‘prehistory’ (Smail 2008, 1–2). The Creation served as the starting point for pre-modern histories in the West, dated by Anglican Archbishop James Ussher (employing Biblical chronology) in 1655 as the nightfall preceding Sunday 23 October 4004 BC. Nascent geological studies soon suggested a vastly older age for the earth. These studies, coupled with Darwin’s theory of evolution, effectively destroyed this 6000-year chronology of human existence. But nineteenth-century academic history quietly translated it to a secular chronology in which human history began with the rise of agriculture and the dawn of civilization, also approximately 6000 years ago, as we can see from any textbook in Western civilization. Historian of science Mott Greene has described how nineteenth-century scholars developed the concept of ‘prehistory’, defined as the era before written records. ‘Prehistory’ filled a gap between archaeology and history, between geological time and historical time, which scholars have until very recently been reluctant to cross. It is a ‘buffer zone’ (Greene 1992, 1–3).

Eliminating this ‘buffer zone’ of prehistory and consolidating these various chronologies are critical steps toward a redefinition of history for the Anthropocene. Over 30 years ago the iconoclastic environmental philosopher Paul Shepard suggested that evolutionary biology, archaeology and history form one unbroken story, arguing that the introduction of agriculture was disastrous for humans and nature alike. Both time and place were important; in *Nature and Madness*, Shepard wrote:

We must stand apart from the conventions of history, even while using the record of the past, for the idea of history is itself a Western invention whose central theme is the rejection of habitat. It formulates experience outside of nature and tends to reduce place to location... History conceives the past mainly in terms of biography and nations (Shepard 1982, 47).

More recently, historian Julia Adeney Thomas argued that scale, both temporal and geographical, ‘matter’ to the writing of history (Thomas 2014, 1588). Rejection of the ‘biography and nations’ approach to history is not new, however. Beginning in the late 1920s, the *Annales* school in France and particularly Fernand Braudel brought attention to scales of history, contrasting the ‘longue durée’ of geological time and geographic space to the shorter and more episodic history of human events. The first section of his magnum opus, *The Mediterranean and the*

Mediterranean World in the Age of Philip II, describes the geography of the Mediterranean, what he called ‘histoire profonde’ (Braudel 1972). In his book on the *Annales* school, Peter Burke claims that ‘Braudel has done more to change our notions of space and time than any other historian of the twentieth century’ (Burke 2015, 46). In his later book *Memory and the Mediterranean*, Braudel returned to geologic time to discuss the relationships between humans and the Mediterranean environment (Braudel 2001).

But few took up Braudel’s expansive approach to chronology until recently. In the past two decades, several approaches have emerged. The ‘big history’ approach pioneered by David Christian reaches back to the Big Bang. In *Maps of Time*, Christian aimed for a ‘grand unified story’, a modern ‘creation myth’ (Christian 2004, 4; 11). Christian and others link this expanded time frame to an expanded geographical focus beyond the West. The IHOPE (Integrated History and Future of People on Earth) project, based in Sweden, joins scientists, social scientists, and humanities scholars. The project’s 2007 volume *Sustainability or Collapse?* outlined its agenda, which is organized around two big ideas: ‘humans and the rest of nature’ as opposed to ‘humans and nature’, and three timescales. The timescales are the millennial (up to 10,000 years ago), the centennial (up to 1000 years ago), and the decadal (up to 100 years ago) (Costanza et al. 2007). As others have pointed out, these scales, based closely on the ice ages in the Northern hemisphere, are not equally applicable globally (Robin and Steffen 2007).

Perhaps most influential among academic historians has been Daniel Lord Smail’s ‘deep history’ that begins in the Paleolithic and encompasses human evolutionary history. Deeply influenced by evolutionary psychology (if not entirely convinced by it), Smail argues that one may trace the deep history of humanity by means of the human brain. Its chemistry reflects the evolutionary development of humanity, and a ‘neurohistory’ can both reflect and explain aspects of human culture such as patterns of dominance and submission. Smail’s work tapped into ongoing studies of the history of human emotions as well as work by historians of medicine and the environment on evolution, genetics, and disease. The ‘neurological turn’ among historians has morphed into a more general ‘biological turn’ whose diversity was recently signaled in a special section of the *American Historical Review* in December 2014 entitled ‘History meet Biology’. I will single out one of these approaches, evolutionary history.

Smail’s work, employing the evolution of the brain as a window into the past, suggests one way to incorporate evolution into history. Edmund Russell suggested another a few years ago in the context of environmental history (Russell 2003, 2011). Evolutionary history, as Russell defines it, focuses on human impacts on the evolution of other species, as well as the co-evolution—the reciprocal impacts—on both humans and non-humans. Although Russell notes that the causal arrow points both ways, in that humans influence animals and animals influence humans, his emphasis is on anthropogenic evolution and on its impact on human history. Once again history is, by definition, about humans. Russell’s focus in his book *Evolutionary History* is on domesticated species (both animals and plants) and on human diseases (Russell 2011). While evolutionary history has the potential to

extend far into the human past, even into the pre-human past, Russell adopts a conventional timeline of human history by focusing on domestication and agriculture.

In his most recent work on evolutionary history, Russell returns to coevolution, particularly in the context of domestication. Although most of his examples continue to emphasize humans as drivers of evolutionary change, he points out that ‘we could just as easily assume that non-human populations initiated the process’, such as in the domestication of wolves into dogs (Russell 2014, 1520). His recognition of animal agency recalls the arguments of Stephen Budiansky that animals ‘chose’ domestication. In his 1992 book *The Covenant of the Wild*, Budiansky argued that humans were ‘not... the arrogant despoilers and enslavers of the natural world, but... a part of that natural world, and the custodians of a remarkable evolutionary compact among the species’ (Budiansky 1992, 24). Among the drivers of domestication, according to Budiansky, was climate change—in this case, the advent of the Ice Ages (Idem, 72). As these examples show, expanding the timeframe moves toward decentering humans but does not entirely accomplish this task.

4 History, Prehistory, and the Human

Apart from expanding the time frame for history, considering history as an evolutionary story greatly broadens the kinds of evidence that historians may consider, to include what Gordin above (echoing Smail) refers to as ‘traces’. Archaeological, paleontological, geological, linguistic, biological, and even atomic evidence is therefore all fair game for the historian. But the implication that therefore non-humans might also be actors in the historical story is still not quite articulated or is even rejected by some who practice evolutionary history.

Smail justifies extending his timeframe to the Paleolithic because humanity existed that long ago. ‘Humanity’, he asserts, ‘is the proper subject of history’ (Smail 2008, 2). He approvingly cites Greene’s comment that ‘To abandon prehistory would be to postulate continuity between the biological descent of hominids, and the “ascent to civilization” of the abstract “mankind” of humanistic historical writing’ (Smail 2008, 2; Greene 1992, 3). Prehistory, adds Greene, ‘is a place where merely biological hominids turned into ‘Men’’ (Greene 1992, 3). Smail, no doubt purposefully, avoids defining when or how hominids became humans. But this lack of definition undermines his overall argument, which excludes animals from history-as-human. Although he opines that a lack of self-consciousness does not preclude having a history, he cannot quite accept that animals might have a history on the same level of complexity as human history: animals are not, by his definition of history, historical agents. History—here apparently defined simply as events in the past—happens to both humans and animals, but only humans have the self-consciousness that allows them to make history (Smail 2008, 57). Smail admits that animals have an evolutionary history, but it is a history ultimately of aggregates, of classes, and not of individuals. As in

certain kinds of social history that rely on statistical surveys of large populations, he argues that we cannot attribute agency to such aggregates (Idem, 71–72). In addition, he argues that language is a critical indicator of consciousness, so this too means that animals cannot have a history other than the ‘video-recorder style of natural history’ (Idem, 57).

Smail’s neglect of animals nonetheless leaves openings for a broader history. An explicit acknowledgment of the unclear margins between human and non-human in the evolutionary process would constitute one step toward such a history. Looking at the reciprocal impacts of animals and humans in this process is another, as Russell has suggested. While both of these approaches are fruitful and should be pursued, neither of them gets to the heart of the issue, which (returning to the humanists and to Fudge) is the moral enterprise of history and the humanities. Smail emphasizes a long time frame, but does not add animals to his framework; Russell notes that ‘Studying human evolution is not necessary (or sufficient) for evolutionary history’, but does not problematize history itself except to comment that ‘nearly everything historians study... would not have occurred without domestication’, a conclusion 180° from Smail, who argues that such events as domestication and writing are consequences of changes in brain chemistry (Russell 2003, 205; Smail 2008). Both ultimately assume there is a category we can call ‘the human’ but this is itself a contingent historical category, as each implicitly acknowledges. Ideally, evolutionary history calls into question what is human, but it is not quite there yet. And neither Smail nor Russell talks about value: what is the value of animals, both in terms of human culture and in terms of themselves? How does the human evaluation of nature change over time?

5 Animals, Natural History, and Evolution

What kinds of evolutionary-historical stories might we write about animals? Aristotle was not the first to regard animals as subjects of inquiry rather than as commodities, but he was the first Western philosopher to do this systematically. His works on animals, particularly *History of Animals*, *Parts of Animals*, and *Generation of Animals*, established a science of natural history that endured until Darwin and in some ways persists today. *Historia* (Greek ἱστορία) originally meant simply an inquiry or an investigation, or an account of such an inquiry. It did not imply the passage of time, and this definition of ‘history’ persisted into the modern era. Aristotle’s *History of Animals* offered detailed descriptions of all animals known to him. He took every opportunity to observe every animal he could: wild and domestic, native and exotic, terrestrial and aquatic. He investigated morphology, habitat, behavior, and what he called ‘manner of life’; what parts were the same and what were different; how they ate and reproduced. He noted natural kinds and attempted various classifications. Broad groupings seemed obvious: birds were different than fish. Some animals had two feet, some four, others none. Some animals were ‘blooded’, some, like insects, were not. Aristotle believed that nature

mirrored human society, and that human society mirrored nature. Hierarchy was the natural configuration of the world, and he found in animal and human generation a hierarchical system based on degrees of perfection as measured by degrees of natural heat. Thus warm-blooded viviparous animals were ‘hotter’ and therefore more perfect than oviparous animals, and so forth down to those animals that he believed produced larva rather than eggs. This hierarchical system, later known as the ‘chain of being’ or ‘ladder of nature’, proved to have remarkable staying power in Western thought. The chain of being was not only hierarchical but full, including every animal (and plant) that could possibly exist. It was also unchanging, so that species were fixed in time and space. And it was teleological: nature always worked toward a purpose.³ Medieval scholastics found this system quite compatible with Christian doctrine, and they transformed Aristotle’s eternal, uncreated nature into a created and temporal one.

The age of discovery in the sixteenth century led to an influx of previously unknown animals from the Americas, Africa, and Asia to Europe, and seriously disrupted the idea of the chain of being. For example, the Swiss naturalist Conrad Gessner did not quite know what to do with the armadillo in the 1550s, and he strained to fit it into a known niche on the chain of being. As translated by Edward Topsell half a century later, the ‘Tatus or Guinean Beast’ (‘Guinean’ in this era simply meant ‘foreign’)

is brought for the most part out of the new-found world, and out of *Guinia*, and may therefore be safely conveyed into these parts, because it is naturally covered with a harde shell, devided and interlined like the fins of fishes, outwardly seeming buckled to the backe like coat-armor, within which, the beast draweth up his body, as a Hedghog doth within his prickled skin; and therefore I take it to be a *Brazilian* Hedghog (Topsell 1607, 705).

In the eighteenth century, Linnaeus and Buffon attempted, in very different ways, to apply human reason to the seemingly chaotic organization of the natural world. Linnaeus developed a temporally static but all-encompassing system of classification of the plant and animal worlds based on mode of reproduction. Buffon initially rejected any system of classification, claiming that identity lay in the individual, but greatly expanded the timeframe of the natural world from 6 or 7000 years to at least 75,000 years in his multiple-volume *Histoire naturelle*.⁴ Both Buffon and Linnaeus later modified some of their stances: Linnaeus eventually accepted that species could change over time, while Buffon eventually accepted an idea of species. By the end of the eighteenth century, new discoveries in paleontology and new geological theories led to an even longer timeframe, in the millions of years. These discoveries also confirmed the fact of extinction. The ‘traces’ left by fossils became important evidence of change and contingency in the past, markers of a previously unknown animal history.

The evolutionary story developed by Darwin softened the boundary between animals and humans, but did not destroy it. Already studies of primates such as

³This paragraph and the next are adapted from a more extensive account in Guerrini (2015).

⁴Buffon secretly believed the earth could be as much as ten million years old (Roger 1997, 411).

Edward Tyson's 'ourang-outang' (actually a chimpanzee) of 1699 had thrown doubt on the rigid hierarchies of the chain of being, and Linnaeus classified both humans and certain apes such as the orang-outang under the genus *Homo*. Darwinian taxonomies separated primates into *Homo* and *Pan* as paleontological discoveries pushed the evolutionary split between humans and apes farther and farther back in time (Schwartz and Tattersall 2015). There is still fierce debate among scientists over when *Pan* and *Homo* split, or whether *Pan* and *Homo* should be separate genera at all.

The evolutionary history of humans therefore complicates the human-animal divide in one way. The evolutionary history of animals complicates it in another. On the one hand, it reveals a long and complex history of animals that often does not include humans at all. What can such a history tell us about the development of animal consciousness, social structure, migration, or interactions among animals? What can such a history tell us about present-day animals? Scientists employ the same tools to analyze animal evolution as to analyze early humans, including paleontology, genetic analysis, and neurobiology. But such analysis of animals seldom figures in historical accounts.

On the other hand, as we have seen, the tools of evolutionary science have revealed a rich history of human-animal interactions with widely-ranging implications for human and animal history. The history of domestication is only one aspect of this history; many other kinds of animal-human interactions in the past await study. New science as well as new ways of looking at history are on the verge of drastically changing our ideas of the past. In particular, the new science of inheritance based on epigenetics has implications far beyond human history. Epigenetic science studies changes in organisms caused by the modification of gene expression rather than by an alteration of the genetic code itself. Expression can be influenced by a number of external factors, particularly environment, and the changes thus induced are heritable (Brooke and Larsen 2014).

6 Evolution in Play: Rewriting History

Early modern natural historians grasped the notion of extinction with difficulty. The idea that a specific animal could simply disappear violated a number of common beliefs. Aristotle had declared that species, along with the rest of nature, were eternal. The great chain of being did not allow for spaces among its tightly packed rungs, and Christians argued that God did not make mistakes and that therefore extinction was impossible and indeed unthinkable. Yet, quite apart from the evidence of fossils, several animals had become extinct in historical times in Europe. Many commentators noted the death of the last native European ox or aurochs in 1627, a breed that had been under the protection of the king of Poland for over a century (Szafer 1968).

The discovery at the end of the eighteenth century of the bones of mammoths and of the giant sloth that Georges Cuvier named the megatherium provided convincing evidence of animals that no longer occupied the planet and had no living analogues. The fact of extinction became a key concept for Charles Darwin, who argued that species that could not adapt to changing environmental conditions would become extinct. According to evolutionary theory, other animals might occupy the ecological niches left by extinction. But extinction was forever—at least until recently.

‘Rewilding’ is an attempt by some ecologists to undo the effects of extinction by reintroducing animals to fill lost ecological niches. Various plans for ‘Pleistocene Parks’ have emerged around the world, and some have begun to be realized (Marris 2009). Jozef Keulartz’s essay in this volume discusses one of these, at Oostvaardersplassen in the Netherlands, and its ethical implications. However, the recent development of new genomic technologies known as ‘synthetic biology’ has led to proposals for a much more radical program. Some geneticists, foremost among them George Church, are promoting the de-extinction of a number of species by genetic means. Enough genetic material remains in preserved specimens of such animals as the passenger pigeon (extinct since 1914) and the thylacine (extinct since 1936) that the prospect of revival by genomic means is a possibility (Ogden 2014). There have been attempts to bring back certain extinct species like the aurochs by ‘back-breeding’, a process of selective breeding for characteristics of lost species (Maas 2011). Genetic de-extinction is a high-tech version of this, an attempt not to rewind the evolutionary process (as back-breeding does) but to short-circuit it. It is very much a science for the Anthropocene, assuming human control over nature and its processes. But while bringing back certain animals, de-extinction at the same time reduces them to cells and genes, and erases their history in favor of a human-made one.

7 Conclusion

The tools, therefore, are available for a new history in the Anthropocene that de-centers humans and reconceptualizes the animal-human relationship. Such a history would be based on an evolutionary timescale and would involve many kinds of sources apart from written texts. This new history must also regain the moral ground that academic history seems largely to have lost in the past century. As the practice of history has become more specialized and less generally accessible, it has lost its ethical authority and credibility. Together with a new ethics for the Anthropocene, a new history could do much to regain the moral aims of the humanities.

References

- Agamben, G. 2004. *The open: Man and animal* (trans: Kevin Attell). Stanford, CA: Stanford University Press.
- Braudel, F. 1972. *The Mediterranean and the Mediterranean world in the age of Philip II* (trans: Siân Reynolds), vol. 2. New York: Harper and Row.
- Braudel, F. 2001. *Memory and the Mediterranean* (trans: Siân Reynolds). New York: Knopf.
- Brooke, J.L., and C.S. Larsen. 2014. The nurture of nature: Genetics, epigenetics, and environment in human biohistory. *American Historical Review* 119(5): 1500–1513.
- Budiansky, S. 1992. *The covenant of the wild: Why animals chose domestication*. New Haven: Yale University Press.
- Burke, P. 2015. *The French historical revolution: The Annales school, 1929–89*, 2nd ed. Stanford: Stanford University Press.
- Chakrabarty, D. 2009. The climate of history: Four theses. *Critical Inquiry* 35: 197–222.
- Christian, D. 2004. *Maps of time: An introduction to big history*. Berkeley: University of California Press.
- Costanza, R., Graumlich, L.J., and W. Steffen, eds. 2007. *Sustainability or collapse? An integrated history and future of people on earth*. Cambridge, MA and London: MIT Press.
- Fudge, E. 2002. A left-handed blow: Writing the history of animals. In *Representing animals*, ed. N. Rothfels, 3–18. Bloomington: Indiana University Press.
- Fukuyama, F. 1992. *The end of history and the last man*. New York: Free Press.
- Gordin, M. 2014. Evidence and the instability of biology. *American Historical Review* 119(5): 1621–1629.
- Grafton, A., and L. Jardine. 1986. *From Humanism to the humanities*. Cambridge, MA: Harvard University Press.
- Greene, M.T. 1992. *Natural knowledge in preclassical antiquity*. Baltimore: The Johns Hopkins University Press.
- Guerrini, A. 2003. *Experimenting with humans and animals: From Galen to animal rights*. Baltimore: Johns Hopkins University Press.
- Guerrini, A. 2015. Animals and ecological science. In *Oxford handbook of animal studies*, ed. L. Kalof, forthcoming. Online February 2015. doi:[10.1093/oxfordhb/9780199927142.013.25](https://doi.org/10.1093/oxfordhb/9780199927142.013.25).
- Higgs, E., D. Falk, A. Guerrini, et al. 2014. The changing role of history in restoration ecology. *Frontiers in Ecology and the Environment* 12(9): 499–506.
- Jackson, S., and R. Hobbs. 2009. Ecological restoration in the light of ecological history. *Science* 325: 567–569.
- Maas, P.H.J. 2011. Recreating extinct animals by selective breeding. In *TSEW* (2016). The Sixth Extinction Website <http://www.petermaas.nl/extinct>. Downloaded on 3 January 2016.
- Marris, E. 2009. Reflecting the past. *Nature* 462: 30–32.
- Nash, R.F. 1989. *The rights of nature. A history of environmental ethics*. Madison, WI: University of Wisconsin Press.
- Ogden, L.E. 2014. Extinction is forever ... or is it? *BioScience* 64: 469–475.
- Ritvo, H. 1987. *The animal estate. The English and other creatures in the Victorian age*. Cambridge, MA: Harvard University Press.
- Ritvo, H. 1997. *The platypus and the mermaid and other figments of the classifying imagination*. Cambridge, MA: Harvard University Press.
- Ritvo, H. 2009. *The dawn of green: Manchester, Thirlmere, and modern environmentalism*. Chicago, IL: The University of Chicago Press.
- Ritvo, H. 2010. *Noble cows and hybrid zebras. Essays on animals & history*. Charlottesville, VA: University of Virginia Press.
- Robin, L., and W. Steffen. 2007. History for the Anthropocene. *History Compass* 5(5): 1694–1719.
- Roger, J. 1997. *Buffon. A life in natural history* (trans: Sarah Lucille Bonnefoi). Ithaca, NY: Cornell University Press.

- Russell, E. 2003. Evolutionary history: Prospectus for a new field. *Environmental History* 8(2): 204–228.
- Russell, E. 2011. *Evolutionary history. Uniting history and biology to understand life on earth*. Cambridge, New York: Cambridge University Press.
- Russell, E. 2014. Coevolutionary history. *American Historical Review* 119(5): 1514–1528.
- Schwartz, J., and I. Tattersall. 2015. Defining the genus homo. *Science* 349: 931–932.
- Shepard, P. 1982. *Nature and madness*. San Francisco, CA: Sierra Club Books.
- Singer, P. 1975. *Animal liberation: A new ethics for our treatment of animals*. New York: Random House.
- Smail, D.L. 2008. *On deep history and the brain*. Berkeley, CA: University of California Press.
- Szafer, W. 1968. The Ure-ox, extinct in Europe since the seventeenth century: An early attempt at conservation that failed. *Biological Conservation* 1: 45–47.
- Thomas, J.A. 2014. History and biology in the Anthropocene: Problems of scale, problems of value. *American Historical Review* 119(5): 1587–1607.
- Thomas, K. 1983. *Man and the natural world, changing attitudes in England (1500–1800)*. Harmondsworth, Middlesex, England: Allen Lane/Penguin Books Ltd.
- Topsell, E. 1607. *The historie of foure-footed beastes*. London: William Jaggard.

Animal Ethics in the Age of Humans

Blurring boundaries in human-animal relationships

Bovenkerk, B.; Keulartz, F.W.J. (Eds.)

2016, XVII, 414 p. 5 illus., Hardcover

ISBN: 978-3-319-44205-1