

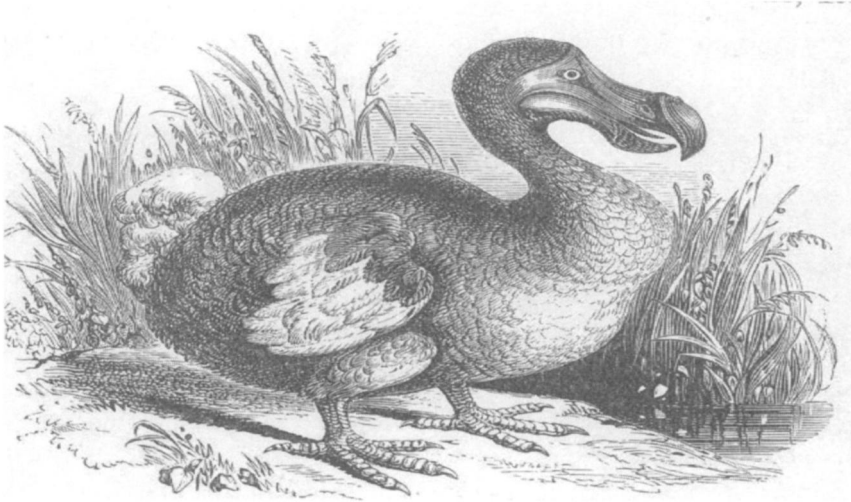
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# animal PLANET

IT IS HARD TO COUNT the ways in which other animals figure in the stories that environmental historians tell.<sup>1</sup> They are part of our epic tales—those with the longest chronological reach—about the movements of early hunters and gatherers. They are part of the grand narrative of domestication and the transformation of human existence through agriculture. They often have represented nature (however nature has been understood) in religious and scientific thought. Animals also play a large role in our novellas—that is, accounts of distinctively modern concerns (or distinctively modern variations on these age-old themes), such as species loss through habitat destruction, the simplification of ecosystems through monoculture and invasion, and the modification of organisms by means of biotechnology. Their ubiquitous presence has helped establish the city and the suburb as appropriate settings for environmental history. None of these stories—long or short—has yet come to a definitive conclusion: Certainly, at least from the perspective of the animals themselves, no happy endings are in sight. That may be one reason that animals have been appearing with increasing frequency in the work of environmental historians and of scholars in related disciplines. Another may be that many of the difficult issues at the intersection of academic studies of the environment (historical or otherwise) and environmental politics have an animal dimension, or even an animal-triggered flashpoint: preservation of threatened ecosystems, overexploitation of resources such as fisheries, emergent diseases, and cloning, to name a few.

Environmental historians are not alone in their heightened interest in animals, nor is scholarly attention to animals completely new. Livestock traditionally has attracted the attention of economic historians who focus on agriculture. Important animal-related institutions, from humane societies to zoos, have had their chroniclers. The history of zoology is a well-established branch of

Figure 1. Dodo.



Richard Lydekker, ed., *The Royal Natural History*, 6 vols. (London: Frederick Warne, 1895), IV, 388.

The dodo, one of the earliest acknowledged extinctions.

the history of science, most conspicuously in relation to the development of evolutionary ideas. People distinguished in their association with animals, whether as breeders or hunters or scientists, have had their biographers, as, indeed, have some animals distinguished in their own right—from Jumbo to Seabiscuit. Historians have investigated the moral and legal rights and responsibilities of animals, as well as animal-related practices, such as vivisection.<sup>2</sup>

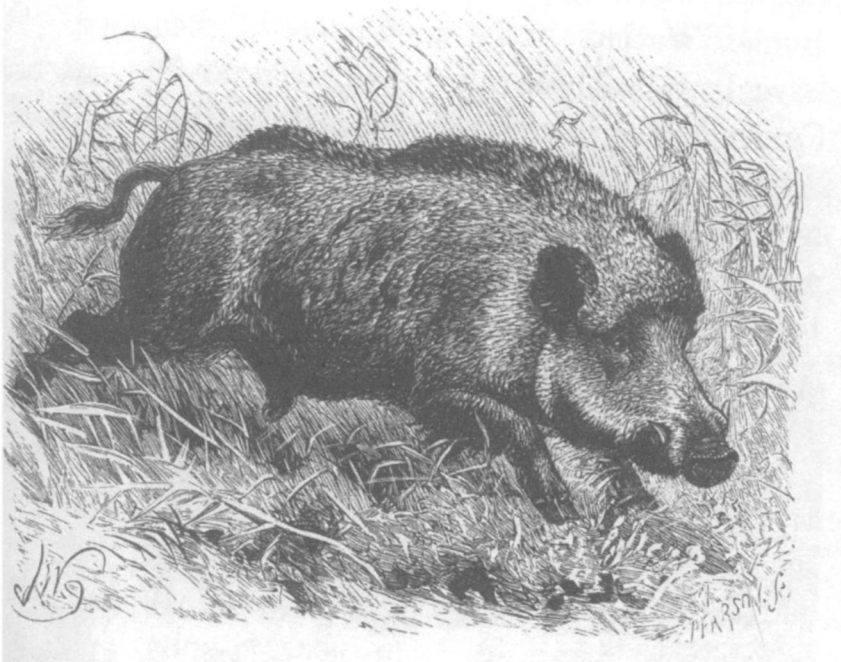
Nevertheless during the last several decades, the attitude of historians in general toward the study of animals has shifted significantly: To put it briefly, animals have been edging toward the mainstream. No longer is the mention of an animal-related research topic likely to provoke surprise and amusement, as was the case twenty years ago. There is now enough new work and enough interest in reading it to support a book series on the theme of “Animals, History, Culture,” published by the Johns Hopkins University Press, and a series of annual edited volumes, the *Colloques d’histoire des connaissances zoologiques*, published at the University of Liège in Belgium. There are several ways to understand this shift. Animals can be seen as the latest beneficiaries of a democratizing tendency within historical studies. As the labor movement, the civil rights movement, and the women’s movement inspired sympathetic scholars, so have, in their turn, the advocates of hunted whales, poached tigers, abandoned dogs, and overcrowded pigs. Even in fields like agricultural history, where animal topics have been routine, farmyard creatures have become less likely to be abstracted through quantification, and more likely to appear as individuals, or at least groups of individuals. Straws in this wind include Susan D. Jones’s recent study of veterinary treatment of livestock and horses, and the conference on “The Chicken: Its

Biological, Social, Cultural, and Industrial History, from the Neolithic Middens to McNuggets,” sponsored in 2002 by the Yale Program in Agrarian Studies.<sup>3</sup> In addition, of course, the vigorous growth of environmental history has helped direct the attention of other kinds of historians toward animals.

At least in the United States, environmental history originally developed from the history of the frontier. The field has moved away from these pioneer beginnings, both geographically and theoretically, as is perhaps most clearly indicated by the gradual problematization of the concept of wilderness. But concern with the relation between the sphere of human domination and what lies (or seems to lie) outside remains strong. This concern often has been mediated through the study of the relationship between people and wild animals, a focus that links modern ways of living with those of our earliest ancestors. The longest story ever told—at least the longest one with people as characters—chronicles the development of human cultures and societies. It exists in numerous variants, depending, among other things, on whether the story is limited to *Homo sapiens*, or whether it includes extinct congeners like *H. neanderthalensis* and *H. habilis*, or stretches still further back to the australopithecines, or moves laterally to embrace our living pongid cousins. All versions agree, however, on the importance of predation. Even if, as with the chimpanzees studied by Jane Goodall, hunting was a relatively infrequent activity, and meat an occasional dietary supplement rather than a dependable source of calories, the skill and cooperation required to kill small and medium-sized game provided significant social and intellectual stimulation.<sup>4</sup> In most pre-agricultural human groups, hunting was more routine and more important. The archaeological record suggests that small nomadic groups also had to worry about becoming the objects of other creatures’ hunts, which doubtless served in a complementary way to sharpen wits and enhance cooperation.<sup>5</sup>

In addition, hunting provides the earliest example of the disproportionate human power to affect the rest of the environment. Even though prehistoric human populations were relatively small, they may have had a significant impact on the large herbivores who provided the most rewarding and challenging objectives and, secondarily, on the large carnivores who also ate them. It frequently has been argued, most conspicuously by the biologist Edward O. Wilson, that the spread of modern humans outside their African homeland caused the rapid decline and, in many cases, the extinction of large animal species (and even genera) along their paths of migration.<sup>6</sup> Certainly the coincidence between the arrival of *H. sapiens* in Australia, North America, and South America and the subsequent impoverishment of their indigenous megafauna is very suggestive, especially as these continents, in contrast to Eurasia—where the impact of modern humans appears to have been less dramatic—had not been inhabited by earlier hominid species. This account has always been controversial, however, for several reasons. Inevitably, evidence is sparse and the argument relies heavily on inference. To acknowledge that small pre-agricultural human groups could have such an overwhelming impact on large animal species is to acknowledge that there was never any period or state of human society that existed in a completely

Figure 2. Wild Boar.



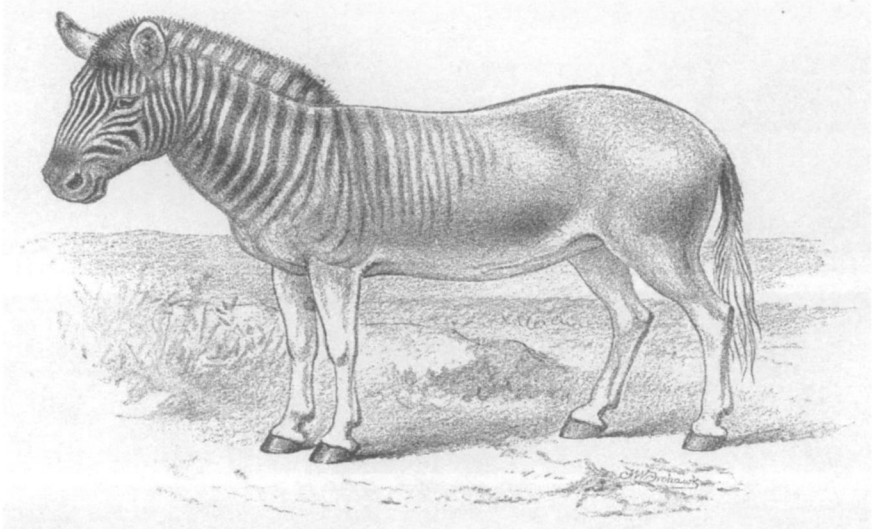
James Edmund Harting, *British Animals Extinct within Historic Times* (London: Trübner, 1880), 77.

The wild boar was extinct in England by the end of the Middle Ages.

harmonious or static relation to the rest of the environment—literally or metaphorically, no garden of Eden. Reluctance to relinquish this notion accounts for some of the emotion provoked by Shepard Krech's suggestion that PaleoIndians bore some responsibility for the Pleistocene extinctions in North America.<sup>7</sup> There are possible alternative explanations, of which the most prominent is that the same climatic changes that encouraged human migration, especially into the Americas, also altered the habitats to which the enormous Pleistocene animals had adapted. From this perspective, the cold-adapted fauna ultimately was displaced by competitors better-suited to a more temperate climate.<sup>8</sup> It is probably an indication of the enduring fascination of these animals, even to people with no opportunity or desire to hunt them, that the cause of their extinction has inspired learned and popular debate since their rediscovery in the nineteenth century.<sup>9</sup>

In many respects, the activities of modern hunters resemble those of their earliest forebears. In an overview of hunting from the Pleistocene to the present, Matt Cartmill has shown how, nevertheless, those activities have altered or been contested, along with shifting understandings of nature. The hunter has figured variously as heroic provider, as protector of threatened outposts, as sensitive intermediary between the human and the divine prey, as gallant sportsman, as brutal butcher, and as agent of extinction.<sup>10</sup> The last two epithets are the most

Figure 3. Quagga.



W. B. Tegetmeier & C. L. Sutherland, *Horses, Asses, Zebras, Mules, and Mule Breeding* (London: Horace Cox, 1895), opp. 61.

Quaggas, once common in southern Africa, vanished in the second half of the nineteenth century.

recent, and they have become increasingly prominent in the course of the last century or so. This is not to suggest that no animal species had been eliminated between the Pleistocene and the late nineteenth century, at least on a local basis. In Britain, for example, the wolf, the bear, the wild boar, and the beaver disappeared as a result of the activities of medieval hunters, and, with the possible exception of the beaver, they were not regretted. On the contrary, their absence was greatly appreciated. The last aurochs, the wild bovines from which domesticated cattle are descended, died in Poland in the seventeenth century, not long before the last dodos were killed on Mauritius. Their passing engaged the interest of naturalists and antiquaries, but it was not until the great imperial expansion of the eighteenth and nineteenth centuries that the diminution and disappearance of animal populations began to arouse concern.

Commercial interests raised the first real alarm. Overexploitation radically reduced the productivity of the North American fur trade from the middle of the eighteenth century, when the annual harvest of Canadian beaver skins was over 150,000, to the early nineteenth century, when a territory four times as large provided one-third the yield.<sup>11</sup> Naturalists and hunters (often the same people wearing different hats) corroborated this worrisome sense that even substantial animal populations might not be indefinitely resilient. Visitors to the Cape Colony at the southern tip of Africa observed that neither naturalists nor hunters could find much to amuse them, and that one species of antelope, the blaubok, had been killed off completely; similar complaints were made with regard to the parts of India most accessible to colonial sportsmen. Extinction even of more numerous species was ultimately recognized as a real possibility (a recognition that was inconsistent with some versions of creationist theology, although not so



Figure 4. North American Bison.



Samuel W. Baker, *Wild Beasts and Their Ways* (London: Macmillan, 1890), II, opp. 75. (2 vols.)

Buffalo hunting tales were still being published after the species was feared to be extinct.

troublesomely inconsistent as evolution proved to be). As formerly blank spaces on the map were filled in, the sparseness or complete absence of wild animals from areas where they had formerly been abundant no longer could be explained as their retreat to the unknown interior. Response to these dawning perceptions was mixed. Like Theodore Roosevelt several generations later, many enthusiastic sportsmen accepted the diminution of game as part of the march of progress. Throughout the nineteenth century, authorities in many parts of the world subsidized the extermination of wild animals perceived as threats to or economic competitors with farmers and their livestock.<sup>12</sup>

The near disappearance of the vast North American bison herds in the middle of the nineteenth century, followed by the actual disappearance of the quagga, a close relative of the zebra, from southern and eastern Africa, began to convert perception into action. Still symbolic of uncivilized nature, wild game was transformed from an obstacle into a valuable resource in need of protection. Yellowstone National Park was founded in 1872 to protect the remaining animals; for several decades the success of this endeavor remained in doubt.<sup>13</sup> Yellowstone and the many reserves and national parks that followed it represented a novel twist on an old idea. Restricted game parks had a long history in Europe and in parts of Asia where their purpose had been at least as much to defend the exclusiveness of hunting as to preserve the animal targets. This spirit permeated the preservation laws that were enacted by many British colonies in Africa and Asia in the late nineteenth and early twentieth centuries. They often specified differential access, quotas, and licensing fees, clearly privileging colonial officials and visiting dignitaries over both indigenous inhabitants and humble European settlers. They also discriminated among animal species, so that large carnivores

Figure 5. Thylacine.



Richard Lydekker, *A Handbook to the Marsupialia and Monotremata* (London: Edward Lloyd, 1896), opp. 152.

The thylacine was lamented only after it was late.

were excluded from the protective umbrella; indeed their slaughter was often encouraged with bounties. This complex of motives and goals was embodied in the “Conventions for the Preservation of Wild Animals, Birds, and Fish in Africa,” which was signed in London in 1900 by representatives of various European governments with colonial holdings, although most of them subsequently failed to ratify it or to honor its provisions. The Society for the Preservation of the Wild Fauna of the Empire, founded in 1903 by a distinguished group of sportsmen and colonial administrators, proved more durable, although (or perhaps because) its membership encompassed strongly conflicting viewpoints. By the time of the society’s diamond anniversary, the authors of its official history characterized these early members as “penitent butchers.”<sup>14</sup>

Efforts to protect wild animal populations have continued to provoke conflict, both internal and external. Some early campaigners for wild bird preservation wore elaborate feather hats, and so opened themselves to criticism as hypocrites (by the unconvinced) or as dilettantes (by their more rigorously logical coadjutors).<sup>15</sup> Poaching was an issue when game was protected only for the entertainment of elite hunters, and it continued to be an issue after the animals also became intended beneficiaries.<sup>16</sup> Nor was the need for wild animal protection universally acknowledged. In many places, competing human interests, alternative sources of information, and inconsistent official motivations meant that protections were not enforced or even enacted until targeted populations were severely reduced or entirely gone. Thus the last thylacine (also known as the Tasmanian tiger and the marsupial wolf) died in a zoo in 1936. Legal protection for its species in Tasmania was enacted just fifty-nine days before it expired (thylacines had been hunted to extinction on the Australian mainland long before any Europeans set foot there). Subsequently the thylacine has been the object of a great deal of apparently heartfelt but inevitably impotent regret.<sup>17</sup> The fate of

the tiger in Indonesia and Malaysia depended on the opinions of a variety of colonized and colonizing groups, possibly in addition, Peter Boomgaard gently suggests, to those of the tigers themselves.<sup>18</sup> And individuals always could change their minds—or be of several minds. In *Man-Eaters of Kumaon*, Jim Corbett chronicled his triumphs over numerous lethal tigers, mostly in the classic colonialist mode: That is, claiming to protect Indian villagers who could not defend themselves. By the time of its original publication during World War II, he had become an ardent conservationist (a national park in the Himalayan foothills was named in his honor after he died—in 1973, Project Tiger, which aims to save the tiger from extinction, was founded there), yet he wrote for a public that thrilled to the chase and the kill.<sup>19</sup> Very recent history offers many more examples of competing human claims to the resources represented by wild animals. *Eating Apes* by Dale Peterson explores one of the most extreme and problematic cases.<sup>20</sup>

If hunting represents the primeval relationship between humans and the rest of the animal kingdom, then domestication represents the most transformative one, from the perspectives of both the domesticators and the domesticatees. With the possible single exception of the dog, which may have been part of human social groups long before people began to settle down, animals were domesticated in conjunction with the development of agriculture. The period when domesticated dogs first appeared and the means by which wolves became dogs are highly controversial. Raymond Coppinger and Lorna Coppinger argue strongly that dog domestication was an indirect product of early agriculture—that is, that dogs who were inclined to scavenge in village waste sites domesticated themselves, much as cats inclined to hunt in rodent-infested grain stores did several thousand years later. Other zoologists prefer explanations that emphasize the human penchant for adopting wild pets and the similar hunting practices of humans and canids.<sup>21</sup> But cattle, sheep, goats, pigs, horses, donkeys, camels, and llamas all were domesticated by agriculturalists or proto-agriculturalists. It is a commonplace of the most sweeping environmental histories that, although domesticated animals were not essential to the development of agriculture, they made a tremendous difference. They supplemented human labor, enhanced transportation, and provided skins and fiber, as well as meat and milk (and selective pressure in favor of the evolution of adult lactose tolerance in some human groups).<sup>22</sup> They have often been identified by contemporary historians as the reason for the competitive success of societies ultimately derived from ancient southwest Asia, especially in comparison with the indigenous societies of the Americas and Oceania. In the nineteenth century, racist thinkers sometimes read this comparison in reverse, and used the absence of domesticated animals or even the failure to domesticate a particular kind of animal, as a way of denigrating human groups. Africans, for example, were criticized for not taming the elephant, which had proved so valuable in Asia.

Like most aspects of what is normally celebrated as progress, the domestication of animals had a downside, although the connection was not recognized until much later. Archaeological evidence suggests that small nomadic



groups were relatively untroubled by the contagious diseases that repeatedly have decimated most settled communities. The size and the mobility of these groups had contributed to this happy situation, and both these attributes altered as people settled down to farm. Increased population meant larger reservoirs for disease and fixed residences meant permanent proximity to waste, whether disposed of in middens or in nearby watercourses. If people had domesticated only plants, these changes would only have exposed them more intensively to disease organisms that they already harbored. But the domestication of wild ungulates—animals which, though mobile, lived in groups large enough to incubate contagions—brought people into contact with a new set of diseases. Such human diseases as smallpox and measles—and diseases of other domestic animals, such as cat and dog distemper—resulted from contact with viruses that originally caused livestock diseases.<sup>23</sup> Over the millennia, it has been theorized by environmental historians, all but the most isolated old world populations became accustomed to these diseases. Their social impact was minimized through childhood exposure and their individual impact was possibly reduced through maternally transmitted or inherited resistance.<sup>24</sup> But the human inhabitants of the Americas, who had left northeast Asia before the domestication of herds or flocks, had not enjoyed this protracted opportunity to adapt to the microbial cocktail to which European adventurers began to expose them in the late fifteenth century.<sup>25</sup> Most environmental historians of the contact have concluded that this exposure caused the dramatic drop in indigenous populations throughout the Americas in the ensuing centuries, although David Jones has recently suggested that social factors should be weighted more heavily.<sup>26</sup>

Of course epidemic disease was not the only effect that old world animals had on new world people. More direct, or at least more obvious, was the impact of the animals themselves, many of which escaped and multiplied vigorously in favorable habitats throughout the Americas. Elinor Melville characterizes such enthusiastic adaptations as ungulate irruptions. Unlike that of contagions, their impact was mixed. As they had done in Europe, Asia and North Africa, these animals provided food, power, and transportation to indigenous people as well as to colonists, while also subjecting some fragile environments to unsustainable strains.<sup>27</sup>

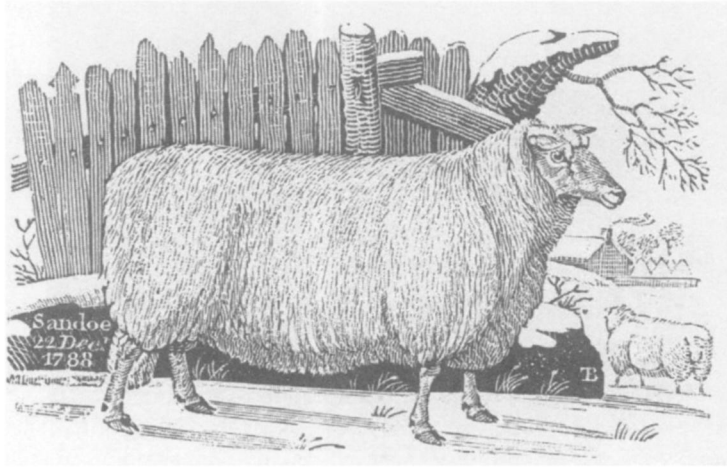
Although vaccines against most of these ancient scourges had been developed by the late twentieth century, and it had even become possible to contemplate the absolute extinction of a few of them, human epidemiological vulnerability to our vast dense populations of meat animals is not a thing of the past. Influenza returns each year, slightly reengineered in southeast Asia—probably a product of the mode of farming practiced there, in which people, chickens, pigs, and wild fowl live in sufficient proximity for their flu viruses to trade genetic material. Epidemiologists watched the avian flu that decimated flocks of chickens last winter with apprehension based only partly on fear of its economic impact on the poultry industry and on the few cases in which it spread (lethally) to people. They realized that the virus that caused the influenza pandemic of 1918 was derived from a different bird virus that developed the ability to infect mammals; possibly its avian origins made it more difficult for people to resist. Nor do animals need

to be domesticated to transmit zoonotic disease, although when wild animals play this role, they usually have been incorporated into human economy if not human society. Thus SARS (severe acute respiratory syndrome), which shut down travel to east Asia and to Toronto in 2003, apparently has been traced to civets, as AIDS has been traced to non-human African primates (both chimpanzees and monkeys). In each case, the attribution of responsibility has a blame-the-victim aspect.

The most compelling recent episode of zoonotic transmission is mad cow disease or BSE (bovine spongiform encephalopathy), an affliction that clearly was produced by human practices and human politics. The disease, which spread widely among British cattle in the 1980s—and in a limited number of cases to members of other species, including humans and cats—seems to have originated in cattle feed enriched with material from sheep carrying scrapie, a similar disease.<sup>28</sup> Although feeding cattle with material derived from fellow ungulates—a practice denounced by some excitable critics as enforced cannibalism—is not traditional, in a sense it represents an extension of a well-established technique. Since the eighteenth century, livestock farmers have attempted to streamline the inherently inefficient diets of their animals. Cattle fed on food like oilcake, a much richer source of calories than the grass they evolved to metabolize, matured earlier and gained weight faster, and thus became marketable more rapidly and more profitably. But if physical factors produced BSE, it was the Conservative British government of the 1980s that turned the disease into an epizootic. A philosophy that defined government as the protector of commercial enterprise rather than of its citizens meant that official concern with beef industry profits consistently overshadowed official concern with public health. Further, the British response to BSE (shared by some members of the public as well as government officials) was shaped by such elusive factors as national pride and national passion. Of course, any significant commodity can serve as a metonym for the nation that produces or consumes it, but animals have been particularly likely to fill such roles, and beef and beef cattle had occupied a particularly powerful emblematic position in Britain for several hundred years.<sup>29</sup> Not only were citizens urged to show their patriotism by continuing to eat British burgers, but non-British responses often suggested reciprocal national feeling. Thus the stalwart commitment proclaimed by other European governments to defend the health of their citizens against the British bovine menace could seem less absolute when BSE was rumored in their own herds. Although American politicians recently have taken alarm at a single detected case, rather than waiting, as was the case in Britain, for animals to succumb in their tens of thousands, they seem similarly inclined to view protection of the beef industry as their first priority, and to use the national border to distinguish among cattle suffering from the same affliction.

The vulnerability of livestock to diseases also has affected the human environment in various non-epidemic ways. That is, epizootics, such as outbreaks of cattle plague or foot and mouth disease, repeatedly have wreaked economic havoc without making people sick. Since both cattle and horses are susceptible to sleeping sickness, the prevalence of the tse tse fly made it difficult for the

Figure 6. New Leicester Sheep.



Thomas Bewick, *A General History of Quadrupeds* (Newcastle: T. Bewick, 1824), 63.

Robert Bakewell produced the celebrated New Leicester improved breed of sheep.

European biological assemblage, which had proved so effective in expediting the colonization of the temperate Americas and Australia, to move into large tracts of Africa. The waste produced by industrial concentrations of animals in stockyards and factory farms continues to strain sewage facilities. Nevertheless, as greatly as domesticated animals have influenced human existence, our impact on them has been greater still. Simply in terms of numbers, these few favored species now account for a much larger proportion of the world's biomass than did their pre-agricultural ancestors. In several cases—the camel and the cow—the wild progenitors of domesticates have disappeared. In others, such as the wolf, their populations are dwarfed by those of their domesticated relatives. If *Canis familiaris* were to be reclassified as *C. lupus* on the basis of willingness to interbreed and ability to produce fertile hybrid offspring, it would be difficult to argue for the protection of the wolf as an endangered species. So domestication has given target species an enormous evolutionary advantage, if evolutionary success is measured simply in terms of quantity.

In addition to exponentially increasing certain animal populations, the process of domestication has changed the very nature of its subjects. Archaeological evidence suggests that the early stages of domestication produced similar changes in a variety of species: reduced body size in general and brain size in particular, increased diversity in superficial characteristics like ear shape and coat color, and shortening of the face (part of a set of skeletal and behavioral changes that can be explained as the retention of juvenile characteristics into adulthood).<sup>30</sup> It is likely that people originally selected animals for tractability and for distinctiveness—characteristics that would make it easier to manage the creatures and to tell them apart. Once domesticated populations were firmly distinguished from their wild relatives, however, people probably began to breed for more specialized qualities. Modern breeders often claim that their favorite

variety of dog or horse or cow has ancient roots, but although it is clear that distinct strains existed in earlier times, it is difficult to make direct connections from them to particular modern types. (Of course every living animal has ancient forebears, just as every living human does; in both cases the problem is to figure out who they might be.) Over the past three centuries animal breeding has become a highly technical, self-conscious, and institutionalized process—a form of bioengineering before the fact. By the middle of the nineteenth century, breeding (or artificial selection) had become so widely understood, that Charles Darwin used it to introduce his audience to the less familiar process of natural selection in the opening pages of *On the Origin of Species*.<sup>31</sup>

When modern breeding practices were taking form in the eighteenth century or a little before, the aim of breeders was to enhance quality in ways that could be assessed quantitatively. The first kinds of animals for which elaborate public breeding records were kept—the kind that could sustain pedigrees—were the thoroughbred horse and the greyhound, both bred for speed, which could be easily measured. The first livestock breed to receive this kind of formal attention was the shorthorn cow, the subject of a herd book published in 1822. But careful breeding had been going on long before, validated by market prices if not by paper trails. On the contrary, the best-known stockbreeder of the eighteenth century, Robert Bakewell, made a point of obscuring the descent of his prized bulls, rams, boars, and stallions. The quality of his animals was a matter of judgment, guaranteed by his name rather than those of his animals. His own success was calibrated by the size of the stud fees. Although Bakewell often has been credited with developing the breeding techniques that he applied and marketed so brilliantly, it is likely that his fame obscured the earlier labors of modest breeders, whose unsung achievements served as the basis for his celebrated ones.<sup>32</sup>

By the nineteenth century, as pet keeping became a popular pastime among members of the middling and less-than-middling orders of western societies, the infrastructure of breeding was applied to dogs, cats, rabbits, rodents, and various kinds of birds. It often had been difficult to decide what made a cow or pig excellent—there were heated controversies over, for example, whether morbid obesity was a prime desideratum or the reverse. With animals whose major function was to provide companionship and amusement, however, such decisions could approach the impossible. Or at least, they were likely to be very arbitrary, often reflecting an appreciation simply of the human power to manipulate. Sometimes this power was exercised to the obvious disadvantage of established useful traits, and sometimes it was exercised capriciously enough to produce creatures that were perceived as monstrosities. For example, when collies became popular pets in the Victorian period, they lost many of the characteristics that made them effective herd dogs. Particularly lamented was their intelligence, which was sacrificed when their skulls were reshaped to feature a long elegant nose. As information about genetics filtered into the pet-fancying world during the twentieth century, breeders' techniques became more focused and powerful. They even were able to achieve some goals that had long eluded them, such as a canary colored red rather than yellow.<sup>33</sup>

The shift from breeding livestock to breeding pets was also ordinarily, although not inevitably, a shift from the country to the city. Animals are most frequently associated with rural settings, but cities always have been full of them. Before the development of modern technologies of refrigeration and transportation, towns needed to accommodate both dairies and abattoirs.<sup>34</sup> Dairy animals mostly stayed out of sight, while livestock bound for slaughter often marched through the streets, but both groups added significantly to the urban waste stream. Many people, including those living in tenements, kept their own chickens and even pigs. Before the twentieth century, all urban thoroughfares were choked with horses, which disappeared only gradually with the advent of the internal combustion engine. To some extent, at least in the affluent cities of the industrial world, these utilitarian animals have been replaced by burgeoning pet populations. Several zoonotic diseases typically have occurred in urban settings. Rabies is most frequently transmitted to people by dogs, and so is most feared where dog populations are densest, although rural dogs and various wild animals are also carriers. The black death of the middle ages and the early modern period, whether or not it was the same as the modern contagion called bubonic plague, was focused on cities, although its traditional association with rats and fleas recently has been questioned.<sup>35</sup> But whether or not they spread the great fourteenth-century plague, rats of several species would figure prominently in an animal census of most urban environments, along with other creatures similarly adapted to scavenging or parasitism (which is to say, semi-tame, if not semi-domesticated), including mice, pigeons, and stray dogs and cats. Also making their homes in cities are many animals ordinarily categorized as wild—monkeys in Calcutta, foxes in London, raccoons and coyotes in Boston.

Of course, it is as difficult to decide what makes an animal wild as to define wildness or wilderness in any other context. The Royal Ontario Museum in Toronto once introduced its display of stuffed specimens with a diorama featuring a pair of large raccoons vigorously toppling a garbage can. The diorama (now gone, unfortunately) evoked a set of incongruities or paradoxes—not only which animals are wild and which are not, but which are suitable subjects for scrutiny in cultural and educational settings. Thus most past and present zoos have preferred to collect exotic wild animals, segregating any resident domesticates into petting zoos for children; one of the things that distinguishes the Walter Rothschild Zoological Museum at Tring (now a branch of the Natural History Museum in London) is its large collection of stuffed dogs. And animals, especially domesticated ones, breach other boundaries as well. Or, to put it another way, they help expose some of the assumptions that underlie the stories that we tell, in particular stories about the extent to which we are part of or separate from our environmental subject. With animals the question of us and them is always close to the surface. Not only have they often functioned—even the most ingratiating of them—as representatives of the natural world, but they often have been selected as obvious representatives of human groups, whether as totems or national emblems or team mascots.<sup>36</sup>



This liminality is most obvious—and most problematic—with regard to the animals who resemble us most closely. From its Enlightenment beginnings, formal taxonomy has recognized not only the general correspondence between people and what were then known as quadrupeds (that is, mammals), but also the particular similarities that human beings shared with apes and monkeys. It was the non-functional details that proved most compelling: the shape of the external ear, for example, or the flatness of fingernails and toenails. On this basis, the celebrated eighteenth-century systematizer Carolus Linnaeus located people firmly within the animal kingdom: He constructed the primate order to accommodate humans, apes, monkeys, prosimians, and bats.<sup>37</sup> Humans also were claimed to demonstrate their animal affinities in ways that were less abstract and more sensational. In an age fascinated by hybrids, humans were sometimes alleged to be the objects or the originators of potentially fruitful relationships with orangutans and chimpanzees, although scientific accounts of such episodes tended to be carefully distanced by skepticism or censure.<sup>38</sup> Outside the community of experts, claims could be less restrained; in the nineteenth century non-Europeans who were unusually hairy or adept with their toes were ballyhooed as products of an ape-human cross. Physical and mental similarities between people and other primates often were foregrounded in zoo displays that featured chimpanzees who not only wore clothes, but ate with silverware, drank from cups, and turned the pages of books.

Such displays were not universally appealing, however, and as evolutionary theory suggested a more concrete and ineluctable connection, it provoked increasingly articulate resistance. As Darwin sadly noted at the end of *The Descent of Man*, written a decade after the appearance of the *Origin* in 1859, “The main conclusion arrived at in this work, namely that man is descended from some lowly-organized form, will, I regret to think, be highly distasteful to many persons.”<sup>39</sup> In the century and more since Darwin wrote, his evolutionary theory has been enshrined as biological orthodoxy. But some of the questions that troubled his Victorian critics continue to complicate modern narratives, whether told for a scientific or scholarly audience or for a less specialized one. Remote from the reflections of historians, animals clog the airwaves. A majority of the extravagantly produced commercials for Superbowl XXXVIII featured animal actors, although this was not their most frequently remarked attribute. An entire cable channel is devoted to animals, and zoological documentaries appear frequently on other networks. Many of these programs present an environmental context and an elegiac environmentalist message, at the same time that they celebrate the physical triumph of fit, canny trappers or photographers (hunters transformed to suit modern sensibilities) over dangerous beasts. It is often hard to know who is the hero of the story, let alone what the moral is meant to be.

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## NOTES

1. I will continue to assume that we are animals too, but for the sake of euphony, I will refer to nonhuman animals just as “animals” for the rest of this essay.
2. The literature on animal rights and responsibilities is relatively sparse and eccentric: See, for example, E. P. Evans, *The Criminal Prosecution and Capital Punishment of Animals: The Lost History of Europe's Animal Trials* (1906; reprint, London: Faber, 1987); and Vicki Hearne, *Bandit: Dossier of a Dangerous Dog* (New York: HarperCollins, 1991). The literature on vivisection is denser and more conventional: See, for example, Nicolaas A. Rupke, ed., *Vivisection in Historical Perspective* (London: Routledge, 1987); and Richard D. French, *Antivivisection and Medical Science in Victorian Society* (Princeton: Princeton University Press, 1975).
3. Susan D. Jones, *Valuing Animals: Veterinarians and Their Patients in Modern America* (Baltimore: Johns Hopkins University Press, 2003). For further reflections on this topic see Harriet Ritvo, “History and Animal Studies,” *Society and Animals* 10 (2002): 403-6. This issue of *Society and Animals* also includes essays on the relation of animal studies to other disciplines in the humanities and social sciences.
4. Jane Goodall, *The Chimpanzees of Gombe: Patterns of Behavior* (Cambridge: Harvard University Press, 1986), ch. 11.
5. See, for example, C. K. Brain, *The Hunters or the Hunted? An Introduction to African Cave Taphonomy* (Chicago: University of Chicago Press, 1981).
6. Edward O. Wilson, *The Diversity of Life* (Cambridge: Harvard University Press, 1992), ch. 12.
7. Shepard Krech III, *The Ecological Indian: Myth and History* (New York: W.W. Norton, 1999), ch. 1.
8. Discussions of the evidence for alternative points of view can be found in E. C. Pielou, *After the Ice Age: The Return of Life to Glaciated North America* (Chicago: University of Chicago Press, 1991), ch. 12; and Tim Flannery, *The Eternal Frontier: An Ecological History of North America and Its Peoples* (New York: Grove Press, 2001), chs. 14-17.
9. Claudine Cohen, *The Fate of the Mammoth: Fossils, Myth, and History*, trans. William Rodarmor (1994; Chicago: University of Chicago Press, 2002), especially chapter 12. See also A. Bowdoin Van Riper, *Men among the Mammoths: Victorian Science and the Discovery of Human Prehistory* (Chicago: University of Chicago Press, 1993).
10. Matt Cartmill, *A View to a Death in the Morning: Hunting and Nature through History* (Cambridge: Harvard University Press, 1993).
11. For statistical analysis of the consequences of the fur trade, see Arthur Radclyffe Dugmore, *The Romance of the Beaver; being the History of the Beaver in the Western Hemisphere* (London: William Heinemann, 1914), ch. 4; and Briton Cooper Busch, *The War against the Seals: A History of the North American Seal Fishery* (Kingston and Montreal: McGill-Queen's University Press, 1985).
12. Harriet Ritvo, *The Animal Estate: The English and Other Creatures in the Victorian Age* (Cambridge: Harvard University Press, 1987), chs. 5-6.
13. For an elaborate account of the decimation and partial recovery of the North American bison herd, see Andrew C. Isenberg, *The Destruction of the Bison* (Cambridge: Cambridge University Press, 2000).
14. John M. MacKenzie, *The Empire of Nature: Hunting, Conservation and British Imperialism* (Manchester: University of Manchester Press, 1988); and Richard Fitter and Peter Scott, *The Penitent Butchers: 75 Years of Wildlife Conservation: The Fauna Preservation Society 1903-1978* (London: Fauna Preservation Society, 1978).

15. For an extensive discussion of this campaign in the United States and Britain, see Robin W. Doughty, *Feather Fashions and Bird Preservation: A Study in Nature Protection* (Berkeley: University of California Press, 1975).
16. Karl Jacoby, *Crimes against Nature: Squatters, Poachers, Thieves, and the Hidden History of American Conservation* (Berkeley: University of California Press, 2001); and Louis S. Warren, *The Hunter's Game: Poachers and Conservationists in Twentieth-Century America* (New Haven: Yale University Press, 1997).
17. Robert Paddle, *The History and Extinction of the Thylacine* (Cambridge: Cambridge University Press, 2000).
18. Peter Boomgaard broaches the possibility of writing history, environmental or otherwise, that incorporates the perspective of animals, but regretfully decides to keep to the conventional path. Both his decision and his regret are understandable. Peter Boomgaard, *Frontiers of Fear: Tigers and People in the Malay World 1600-1950* (New Haven: Yale University Press, 2001).
19. Jim Corbett, *Man-Eaters of Kumaon* (1944; reprint, Oxford: Oxford University Press, 1993).
20. Dale Peterson, *Eating Apes* (Berkeley: University of California Press, 2003).
21. Raymond Coppinger and Lorna Coppinger, *Dogs: A New Understanding of Canine Origin, Behavior, and Evolution* (Chicago: University of Chicago Press, 2001). For an alternative view, see Juliet Clutton-Brock, *A Natural History of Domesticated Mammals* (Cambridge: Cambridge University Press, 1987), ch. 3.
22. For example, William McNeill and John R. McNeill, *The Human Web: A Bird's-Eye View of World History* (New York: W.W. Norton, 2003); Alfred W. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900-1900* (Cambridge: Cambridge University Press, 1986); and Jared Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (New York: W.W. Norton, 1997).
23. For overviews of the relation between humans and other animals as mediated by disease, see Lise Wilkinson, *Animals and Disease: An Introduction to the History of Comparative Medicine* (Cambridge: Cambridge University Press, 1992); and Joanna Swabe, *Animals, Disease and Human Society: Human-Animal Relations and the Rise of Veterinary Medicine* (London: Routledge, 1999).
24. Classically, in William McNeill, *Plagues and Peoples* (New York: Anchor, 1976).
25. The process that began in 1492 or thereabouts arguably continued until the flu pandemic of 1918. For description of that event, see Alfred W. Crosby, *America's Forgotten Pandemic: The Influenza of 1918* (Cambridge: Cambridge University Press, 1990); and Gina Kolata, *Flu: The Story of the Great Influenza Pandemic of 1918 and the Search for the Virus that Caused It* (New York: Farrar, Strauss and Giroux, 1999).
26. David S. Jones, *Rationalizing Epidemics: Meanings and Uses of American Indian Mortality since 1600* (Cambridge: Harvard University Press, 2004), chs. 1-2. For the standard explanation, see Alfred W. Crosby, *The Columbian Exchange: Biological and Cultural Consequences of 1492* (1973; reprint, Westport, Conn.: Praeger, 2003). While the fact of population decline is uncontested, the extent of the demographic disaster is highly controversial, on historical, scientific, and political grounds, as Krech explains in *Ecological Indian*, ch 3.
27. Elinor G. K. Melville, *A Plague of Sheep: Environmental Consequences of the Conquest of Mexico* (Cambridge: Cambridge University Press, 1994).
28. For a scientific discussion of BSE, see Pierre-Marie Lledo, *Histoire de la vache folle* (Paris: Presses Universitaires de France, 2001).
29. For an account of BSE in Britain, see Harriet Ritvo, "Mad Cow Mysteries," *American Scholar* (Spring 1998): 113-22.
30. Clutton-Brock, *Natural History of Domesticated Mammals*, ch. 1.

31. Charles Darwin, *On the Origin of Species* (1859; reprint, Cambridge: Harvard University Press, 1964), ch. 1. Darwin later wrote a very long book dealing exclusively with this subject: *The Variation of Animals and Plants under Domestication*, 2 vols. (1868; reprint, Baltimore: Johns Hopkins University Press, 1998).
32. For accounts of early breeding, see Nicholas Russell, *Like Engend'ring Like: Heredity and Animal Breeding in Early Modern England* (Cambridge: Cambridge University Press, 1986); Harriet Ritvo, "Possessing Mother Nature: Genetic Capital in 18th-Century Britain," in *Early Modern Conceptions of Property*, ed. Susan Staves and John Brewer (London: Routledge, 1994), 413-26; and Ritvo, *Animal Estate*, ch. 2.
33. Modern breeding efforts are discussed in Margaret E. Derry, *Bred for Perfection: Shorthorn Cattle, Collies, and Arabian Horses since 1800* (Baltimore: Johns Hopkins University Press, 2003); and Tim Birkhead, *A Brand-New Bird: How Two Amateur Scientists Created the First Genetically Engineered Animal* (New York: Basic Books, 2003).
34. On the development of modern abattoirs, see Nöelie Vialles, *Animal to Edible*, trans. J. A. Underwood (Cambridge: Cambridge University Press, 1994).
35. See David Herlihy, *The Black Death and the Transformation of the West* (Cambridge: Harvard University Press, 1997), introduction and ch. 1.
36. Keith Thomas has discussed the development of the association between animals and nature in *Man and the Natural World: A History of the Modern Sensibility* (New York: Pantheon, 1983), especially in chs. 3, 4, and 6.
37. Carolus Linnaeus, *Systema Naturae: Regnum Animale* (1758; reprint, London: British Museum [Natural History], 1956).
38. For an extended discussion of eighteenth and nineteenth century hybrids and cross-breeds, see Harriet Ritvo, *The Platypus and the Mermaid, and Other Figments of the Classifying Imagination* (Cambridge: Harvard University Press, 1997), ch. 3.
39. Charles Darwin, *The Descent of Man* (1871; reprint, New York: Modern Library, 1950), 919.