

The Mammoth: Endangered Species or Vanishing Race?

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In January 2000, ranchers, ecologists, conservationists, and federal land managers gathered for a conference in Douglas, Arizona, concerning the Malpai borderlands, a region of the Sonoran desert straddling Mexico, New Mexico, and Arizona.¹ Many at the conference shared a belief that fire suppression and real estate development, not ranching, are the biggest threats to regional ecosystems, and that practical conservation solutions must involve private landowners and should accommodate wild-life habitat alongside cattle grazing and other agricultural uses.

The most novel proposal in this new pragmatism was offered by Paul S. Martin, a professor emeritus of Geosciences at the University of Arizona. In his presentation, Martin advocated "re-introducing" the elephant to the desert Southwest. The browsing (that is, tree- and shrub-eating) of elephants could balance the grazing of cattle, he explained, helping to restore grasslands that have been decimated by decades of ranching. Citing studies of elephants and cattle in Africa by colleague David Western, Martin suggested that bison and mammoths (elephants' close relatives) may have sustained a similar ecological relationship in prehistoric America: "introduced elephants might have a great deal to teach us about the dynamic nature of wildness in America in evolutionary time. In the absence of elephants inferences made on the dynamics of American vegetation types could be as one-sided as those made in the absence of fire" ("Bring Back the Elephants" 14). Martin recommended the lower Colorado and Rio Grande river valleys as starting points, where elephants could forage on alien *Tamarix* and Bermuda grasses that have choked out native flora. His proposal was mentioned in the July/August 2000 Nature Conservancy membership magazine.

"Reintroduce" the elephant? Most Americans think of elephants as living only in Africa and Asia, and as being creatures

of the jungle, not the desert. But this prejudice betrays our short evolutionary memories and the status most of us share as non-natives of our continent. As Martin puts it, our ideas about American nature are limited by a "Columbian Curtain' [that] is unrealistic in evolutionary time" ("Bring Back the Elephants" 5). The African Elephant, or *Loxodonta*, and the Asian Elephant, *Elephas*, are the only surviving genera of the taxonomic order *Proboscidea*. Mammoths (*Mammuthus*) and mastodons (*Mammot*) were also members of this order, and dozens of skeletons found in the American Southwest prove that these genera were plentiful there as recently as 11,000 years ago.² Gary Haynes, a leading paleoecological expert on mammoth and mastodon anatomy and behavior, has built much of his knowledge of these extinct creatures on studies of African elephants, most of which live in arid environments resembling the Sonoran desert. So, Martin argued, an effort to restore the ecology of the Malpai borderlands should include a place for proboscideans.

I wish to show that Martin's concern for the loss and possible return of the mammoths is not an eccentric nor even a novel one. American naturalists in the late eighteenth and early nineteenth centuries excavated many bones of these giant creatures, and the possible existence of such animals, whether in the present or the dim past, profoundly affected their conceptions of the continent's natural heritage. Most significantly, they imagined the relationship that early native American peoples had with the mammoths, a relationship that still absorbs scientists today. I believe that Martin's proposal to reintroduce the elephant to America is motivated not simply by ecology or wildlife conservation, but can only be understood within a complex of ideas about the place of Euro-Americans with respect to indigenous North American peoples and animals, ideas indelibly marked by colonialism.

Ever since Aldo Leopold, American conservation ecologists and popular environmentalists have shared the basic goal of restoring ecosystems to their natural or native state, to a balance of animal and plant populations as they were before the disruptions of modern humans. Leopold in the 1930s led a movement to end predator extermination programs aimed at wolves and grizzly bears, because without these large animals no food web could be complete. He advanced his ideas with a moral, not merely a scientific, agenda, as part of what he called a "land ethic." Yet Martin's elephant proposal complicates this ethic. Should a species, or rather an order, *Proboscidea*, which has long been extinct in North America, nonetheless be regarded as

native, as deserving of a restoration effort similar to those underway for other "charismatic megafauna" in the Southwest, such as the Mexican grey wolf or the California condor? Does the absence of the mammoth represent a deficit in the balance of nature, one that humans can repay? Professor Martin answers Yes, and I believe he does so not only because the elephant would be a means to correct overgrazing by non-native cattle, but because of his earlier, provocative theory that Proboscideans in North America were forced into extinction by humans.

"Prehistoric Overkill," the title of Martin's groundbreaking 1967 article, has become the name for his theory about the Pleistocene extinctions of North American megafauna, including mammoths and mastodons.³ Carl Sauer, the dean of American cultural geographers, had actually proposed the idea in the 1950s, and I will show that many elements of the theory date to the eighteenth century. It is Martin's scientific expertise and persistence, however, that have brought the notion credibility, if not consensus, among paleoecologists and anthropologists. The theory of prehistoric overkill has drawn evidence out of many areas of scientific research, from lake-bed pollen revealing the vegetation of ice age North America, to radiocarbon dating of mammoth bones and scat, to DNA analysis measuring American Indians' genetic variance from indigenous Siberians. Martin has assembled this multidisciplinary evidence over more than thirty years, and I cannot hope to summarize it all here. Briefly put, however, Martin challenged the competing theory that the demise of the *Proboscidea* and other Pleistocene megafauna was a result of climatic and associated environmental changes. He argued that whereas any climatic change would be expected to affect all sizes of animals, nearly all the extinct species from 8,000 to 15,000 years ago were large herbivores like the mammoth. Although the popular image of the woolly mammoth, its hair hanging nearly to the ground, associates it with frigid ice age habitats, in fact it was the mastodon that lived in colder coniferous forests, while mammoth species including *Mammuthus columbi* and *Mammuthus jeffersoni* thrived in temperate grasslands.⁴ Since as the glaciers retreated all types of temperate habitats grew, "mastodons of the northeastern state . . . elected extinction after the climate changed for the better, while their range, and that of the men who hunted them, was expanding" ("Prehistoric Overkill" 63).

Martin turned the search for causes from climate to predation, and to the arrival of humans in North America. According to a longstanding consensus among anthropologists, humans

did not live in America before about 11,000 years ago, when they arrived via a land bridge between Siberia and Alaska that was exposed by the lower sea levels of the Ice Ages. These first Americans and the date of their arrival have become associated with the famous discoveries unearthed at Clovis, New Mexico, in the 1920s. This site, and others near Dent, Colorado, and Naco, Arizona, excavated in the 1930s and 50s (Ward 125-29), revealed the remains of dozens of mammoths alongside flaked stone spearheads (or projectile points) of an elegant and distinctive design that took its name from the Clovis location. Before this, anthropologists had believed that no humans lived in North America until long after mammoths and other megafauna species had become extinct, but suddenly here was evidence that humans had not only known these giant animals, but had killed them! An image of a Clovis culture soon emerged—intrepid hunters who bravely pursued the mammoth and preferred its meat over all others. Even if most of the large Pleistocene species vanished because of climatic or other pressures, *proboscidea* is the only one of the thirty-one extinct genera that has repeatedly been found in sites showing evidence of human consumption. Thus mammoths have become central to the debate of the overkill theory. Adding to this romantic scene was the curious fact that all the Clovis sites were dated to within a relatively narrow window of time. “Clovis fluted-point hunters pursued the mammoth for a very short period of time in western North America before being replaced after 11,000 B.P. by hunters who used Folsom points and killed Bison” (“Prehistoric Overkill” 97). The demise of the Clovis culture therefore became associated with that of the mammoth.⁵

The narrative that Martin suggested was provocative. Such mass extinctions had of course occurred elsewhere on earth, notably in Australia, Madagascar and New Zealand shortly after the arrival of the first humans to those islands. Martin drew upon that evidence to bolster his argument, but doing so challenged North America’s status as a continent, reducing it conceptually to an insular ecosystem with a menagerie of fragile fauna that had not been toughened by evolutionary competition against a continent’s worth of other species.⁶ Paleontologists, unlike conservationists, regard extinctions as routine. But this case was extraordinary, Martin argued, because the extinctions left empty niches in the ecological system. It damaged the web of life in a way that many environmentalists believe has occurred only in the modern industrial era. Martin therefore concluded his article with an ironic salvo apparently aimed at modern con-

servation ethics: "The thought that prehistoric hunters ten to fifteen thousand years ago . . . exterminated far more large animals than has modern man with modern weapons and advanced technology is certainly provocative and perhaps even disturbing. With a certain inadmissible pride we may prefer to regard ourselves, not our remote predecessors, as holding uncontested claim to being the arch destroyers of native fauna" (115). Martin linked the Clovis hunters with modern man based on the rapacious impact that each culture has had on wildlife, implying that if the Clovis culture did not long survive the extinction of the mammoths, this might serve as a warning to modern humans. Following this logic, the restoration of elephant populations in North America deserves the same support from environmentalists as efforts on behalf of the condor or wolf, or any endangered species. Martin has even evoked Thoreau to support his contention that an "entire earth," or at least its North American component, cannot be complete without these ancient megafauna: "Those who ignore the giant ground sloths, native horses, and saber tooth cats in their vision of outdoor America sell the place short, it seems to me. This land is the mastodon's land" ("The Last Entire Earth" 32).

As Martin takes his research across disciplines to address conservation ecologists, such as at the conference in Douglas, he is shifting his inquiry from the causes of the Pleistocene extinctions to the consequences for how we regard contemporary American environment and wildlife. Such an intervention is no less provocative than the overkill theory, because it involves claims about which species and cultures are native to America, and how primitive humans regarded animals. To propose that prehistoric Americans were responsible for the extinction of even one large mammal, the mammoth, a species which if it survived today would transform popular images of American wildlife, upsets some cherished ideals. For one thing, Martin's overkill theory strikes a blow at the now-conventional idea of Native Americans as living in harmony with nature.⁷ The Sioux intellectual and historian Vine Deloria Jr. has been one of the leading advocates of this philosophy. Deloria wrote in 1970, echoing Leopold's "land ethic," that "To survive, white society must return the land to the Indians in the sense that it restores the land to the condition it was in before the white man came" (*We Talk, You Listen* 194). In his 1997 book *Red Earth, White Lies*, he discusses the threat that Martin's theory poses to this vision of Native Americans as defenders of nature. A chapter entitled "Mythical Pleistocene Hit Men" sees high stakes in the debate over what happened to

mammoths and other megafauna: "It matters immensely because the image which science has given American Indians is such that modern Indians are blamed for the extinction of these creatures" (97). Deloria brings a persuasive case against the overkill theory, drawing upon evidence gathered by other paleoecologists, such as the concurrent extinction of several bird species that were not likely targets for the Clovis hunters, and the survival of mammoths in Siberia thousands of years after they became extinct in America. Yet his overall rhetorical strategy is to inflate the malevolence of his foes by suggesting a pattern of "irrational academic racism" (108) against American Indians. He claims that the overkill hypothesis has become scientific consensus, when in fact it is still hotly debated. And more significantly, Deloria implies that the cultural distinction between European and Native American was as relevant 12,000 years ago as it is today. He quotes as a straw man another paleontologist, Robert Ardrey, who had written that "The new hunters, who would father the American Indian, left an unmistakable record: within a few thousand years they and their descendants, armed only with throwing spears and Asian sophistication, exterminated all the large game in both North and South America" (98). Deloria seizes upon the literary flourishes employed in these popularized narratives of the overkill scenario to argue that science has cast the land bridge migrants as poachers in a pristine North American game park.⁸ He also quotes Martin's 1990 article "Who or What Destroyed Our Mammoths," which paraphrased the thinking of Pleistocene hunters in stereotypical "Indian" language: "large animals were easily killed just for the fun of it, although wise elders spoke against this" (qtd. 109). According to Deloria's critique, Martin implies that ancient megafauna species somehow belong to modern Americans, not to the Native Americans who knew and hunted them, just as contemporary wildlife is legally treated as an asset managed by the state for the benefit of its citizens, of whom hunters and Native peoples are just two constituencies.

Deloria reads Martin's theory as accusing Native Americans of over-exploiting wildlife. Yet the consanguinity of the Americans of 11,000 years ago with the Indians of historic times cannot be taken for granted. The recent controversy over Kennewick Man demonstrates that modern ideas of racial identity and the definition of "Native American" barely make sense when applied to Ice Age humans.⁹ As a legal consequence of this uncertainty, the status of NAGPRA (the Native American Graves Protection and Repatriation Act, which mandates the return of bones and

artifacts taken from Indian gravesites) with regard to Paleolithic bones is still in dispute. The history of discourses surrounding the mammoth is also filled with ambivalence on this issue. Those who crafted Clovis points and wielded them against mammoths and other large herbivores may have been the "first Americans," but they are presented in much of the popular and anthropological literature as an extraordinarily complex culture with extraordinarily lethal weapons, much as modern humanity regards itself. Martin's concluding lines from his 1967 paper compare the extinctions "we" have caused to those of "our remote predecessors." In his paper at Douglas he was more explicit, calling for the reintroduction of the elephant to help remedy "the extraordinary loss of flagship species on our watch. By 'loss on our watch' we mean not just the extinctions of this or the last five centuries of European take-over in the New World; we mean the time scale of our species in this continent, the last 13,000 years at least" (10). And although Vine Deloria Jr. tries to assert a continuity of American Indian culture stretching back to the Ice Ages, he cannot avoid ambiguity about the identity of the Pleistocene hunters. In his chapter in *Red Earth, White Lies*, he abruptly switches tacks, dropping claims of a conspiracy to blame Native Americans for the mammoth's extinction and instead affirming Martin's hints that "these mega-killers would probably be Europeans" (136).

In the narrative constructed by the overkill theory, mammoths become the victims of the colonization of North America by humans invading from Asia. The analysis of this narrative, such as in Deloria's critique, or by dissenting paleontologists, suggests an analogy with the colonization of the continent by Europeans ten thousand years later, and the status of Native American humans as a colonized population. While the analogy may be muted in modern scientific debates, it was more explicit in the writings of natural historians about the mammoth in the eighteenth and early nineteenth centuries. In the remainder of this essay I will trace the history of American visions of the mammoth in this period. Ever since the first discoveries of mammoth bones in North America, Western science has constructed narratives about the prehistoric relations between these megafauna and early humans, and their common dependence on the continent's resources. Colonial thinkers were entranced by the enormous bones, and also by the stories that native peoples told of life-and-death struggles between humans and giant animals. Long before the theory of natural selection, at a time when European colonists fought American Indians for control of the

land, mammoths and humans were seen as antagonists, and as competitors for the scarce resources of America. Science has sought to adjudicate this conflict, to define its terms and its winners and losers. The story of the mammoth is an ecological tale before ecology, one that, like Martin's proposal, challenges common assumptions about wildlife conservation and extinction by inducing an unexpected analogy to the relations between colonists and natives.

Early white travelers west of the Alleghenies sent back astonishing reports of mammoth bones. Traders and envoys including George Croghan, Christopher Gist, and James Kenny wrote in their journals of seeing large teeth and tusks found at Big Bone Lick on the south bank of the Ohio River.¹⁰ Lewis Evans's *Map of the Middle British Colonies in America*, published in 1755, marked the site with the words "Elephant Bones found here." Some of these bones and tusks were taken to prominent colonists in the Southeast, who asked their African slaves for confirmation that they were in fact the remains of elephants (Semonin 193). In 1762 Peter Collinson, a leading English natural history collector, wrote to John Bartram, North America's leading naturalist, asking for "some more particular Observations on the Great Buffalo, Their Bones or skeletons are now standing in a Licking place not far from the Ohio of which I have two of their Teeth. One Greenwood an Indian trader & my friend Geo. Croghan both saw them & gave Mee relation of them" (*Correspondence of John Bartram* 563). Collinson's sources must have referred to the mammoth bones and teeth as those of a "Great Buffalo," for Thomas Jefferson likewise wrote in *Notes on the State of Virginia* (1785) that "The mammoth, or big buffalo, as called by the Indians, must certainly have been the largest" animal on the continent (43-44). It was Jefferson who made proboscidean paleontology important in American history. In his *Notes*, the future president put the mammoth at the top of his list of the quadrupeds of America, a list he assembled as part of his refutation of the notorious opinions of George Louis Leclerc, Comte de Buffon, the leading French naturalist of the day. Buffon believed that the American continents had emerged more recently than Eurasia from a primordial ooze or universal deluge, that America was in effect still wet behind the ears—immature and unable to support vigorous large animals, or humans. As Wayne Franklin has shown, Jefferson, who would also later become

president of the American Philosophical Society (the major scientific organization of the young nation), manipulated his lists and the weights of the animals included on them so that America would emerge with more and larger fauna than Europe. By the logic Jefferson used to combat Buffon, the mammoth, the Indians, and the colonists all shared a status as Americans, and all deserved exoneration from the low blows of the French naturalist, who had written that "le sauvage du nouveau monde . . . est foible & petit par les organes de la génération; il n'a ni poil, ni barbe, & nulle ardeur pour sa femelle."¹¹ Jefferson supported his belief in the survival of the mammoth by a pre-Darwinian "chain of being" logic that now seems hopelessly dated: "such is the oeconomy of nature, that no instance can be produced of her having permitted any one race of her animals to become extinct" (55). But on the issue of the mammoth's extinction, I believe that Jefferson was not being intentionally deceptive. The trans-Mississippi West was barely known to Anglo-Americans when he wrote in 1782, and bones of giant creatures were among the most notable findings of early explorers of the Ohio Valley.

Jefferson's diatribe was part of "The Dispute of the New World," as Antonello Gerbi has termed the polemic between American colonists and Europeans like Buffon and Cornelius dePauw, who had become famous for theories about the deleterious environment of America. But it was also a serious scientific discourse. In addition to Buffon's theory, Jefferson also cited the assertions of Louis-Jean-Marie Daubenton, one of the first comparative anatomists and author of "the first truly scientific paper on the bones from the Ohio salt lick" (Semonin 127), read to the French Royal Academy on 28 August 1762. Daubenton had examined bones found at Big Bone Lick in 1739 by a French colonial official, the Baron de Longueuil, and concluded that the tusks and leg bones were an elephant's, but the teeth, or "grinders," because they were not flat but studded with points, must have come from the hippopotamus, which sometimes eats meat. Daubenton also was the first to compare the American mammoth bones with those from Siberia, which he affirmed were specifically similar.¹² Jefferson echoed this conclusion (45) but turned it to his own polemical ends: "to whatever animal we ascribe these remains, it is certain such a one has existed in America, and that it has been the largest of all terrestrial beings. It should have sufficed to have rescued the earth it inhabited, and the atmosphere it breathed, from the imputation of impotence in the conception and nourishment of animal life on a large scale" (47).

Jefferson and other American naturalists scorned Buffon, but were inspired by a 1769 article by the British anatomist Dr. William Hunter, who asserted that the mammoth was a carnivore. The carnivorousness of the mammoth is at odds with modern paleontological opinion, and is a key aspect of the myths surrounding the creature. George Turner, in a paper read to the American Philosophical Society in 1797 and based on "personal acquaintance with the Great-Bone Lick" (516), outlined a violent scenario of the mammoth as predator. Of "[t]he bones of the buffalo and smaller animals" found in one stratum of the site, "almost every bone of any length had received a fracture, occasioned, most likely, by the teeth of the mammoth, while in the act of feeding on his prey." Turner supposed that "Nature had allotted to the mammoth the beasts of the forest for his food," and, "as the immense volume of the creature would unfit him for coursing after his prey through thickets and woods" (517), he imagined a scene of a stealthy mammoth approaching the lick, and, cat-like, leaping upon his unsuspecting prey. In Turner's mind, size implied power implied domination, height=might=right. He even took Jefferson's case one step further, by suggesting that the American mammoth might not be the same species as the Siberian. His assumptions necessarily led to an image of a fearsome beast akin to the wolf: "With the agility and ferocity of the tiger; with a body of unequalled magnitude and strength, it is possible the mammoth may have been at once the terror of the forest and of man!—And may not the human race have made the extirpation of this terrific disturber a common cause?" (518). A carnivorous mammoth was in Turner's theory a pest, a creature whose extinction would increase the value of the land, not decrease it.

Writing in 1797, Turner conceded that no complete skeleton of a mammoth had been found in North America. This changed just four years later when Charles Willson Peale, the Philadelphia portrait painter and founder of the nation's first museum, traveled to Newburgh, New York, following news that a farmer named John Masten had found in a marle pit on his land, four miles west of town, the bones of a giant creature. Peale negotiated for the purchase of the bones, hired "twenty-five hands at high wages" (554) to dig, and even contrived a machine to bail water from the excavation pit. Later in that same summer of 1801, Peale was led to two other nearby sites with mammoth bones, one of which yielded a lower jaw, a key part lacking in the other skeletons. By mixing, matching, and making plaster replicas of missing bones, Peale was able to reconstruct two full

mammoths, the first skeletons of extinct animals displayed in America in the manner in which so many dinosaurs are today. One became the leading attraction of his museum in Philadelphia, and the other he sent with his son Rembrandt to England, as a profit-making venture, but also, one suspects, as ocular proof of Jefferson's argument about the power and size of American nature. The Peale family's excavation brought the mammoth fully into the American imagination by making it visible to a non-scientific public, even an illiterate one. Rembrandt, like his father a skilled artist, did engravings of the skeleton and of individual bones for broadsides and for *An Historical Disquisition on the Mammoth*, a pamphlet he published to promote the show. This text explained in great detail the appearance of the fossil teeth and the reasons that led him to conclude that the mammoth lived in a marshy habitat and pursued an omnivorous diet similar to that of the hippopotamus. Recalling the moment when the team of excavators found the long-sought lower jaw, he wrote "Gracious God, what a jaw! how many animals have been crushed between it" (556). The Peales initially even mounted the skeleton with its curved tusks inverted (pointed downward), as if designed to spear its prey.

In his comprehensive study of the mammoth, *American Monster*, Paul Semonin argues that Jefferson, Turner and Peale emphasized the powerful, aggressive nature of the *American Incognitum* (as he refers to the creature which still had not received a complete taxonomic classification) because "the *incognitum*'s bones could be viewed as symbols of the immense power of the nation's newly discovered natural antiquity" (339). For instance, when Rembrandt Peale organized a "mammoth feast" before departing with the skeleton for Europe, the guests dined at a table set up inside the rib cage, and drank a toast to "The American People: may they be as preeminent among the nations of the earth, as the canopy we sit beneath surpasses the fabric of the mouse" whose skeleton Peale also exhibited in his museum.¹³ Although Semonin's thesis accounts perfectly for Peale's and Jefferson's use of the mammoth, I believe that the symbolism of the creature was sometimes more ambiguous, that in its supposed hostility to humans, and its extinction, the mammoth was linked to the American Indians and their relations to colonials and to the young United States. Nationalistic naturalists could easily make a heroic symbol out of a ferocious monster that they knew from bones but had never faced in the flesh. If they had, its monstrous nature would have posed more of a threat, like the wolf. The mammoth could be rhetorically revived to defend

the status of the continent (as by Jefferson against Buffon's slanders), but then snuffed out once again (as in Turner's article) to make the Ohio Valley safe for the white settlers who were pouring into the region in the 1790s. Legends about the mammoth also enjoyed great flexibility because the source for them was often the native Indians themselves. Although George Turner wrote, "There is little or no dependence to be placed on Indian traditions" (516), Native Americans' stories about the mammoth were nonetheless collected and repeated by early American writers. These narratives represent an appeal by the discourse of science to the wisdom of folk memory that continues to this day, and exposes a nexus between western reason, colonial power, and indigenous ethnozoology.

The paleontological discoveries of Native Americans enter colonial literature as early as Bernal Diaz's *True History of the Conquest of New Spain*, when Tlascalcan natives showed the Spaniards bones they claimed to be those of giant humans. The great Puritan poet Edward Taylor wrote a poem about "the Gyant whose Thigh Bone about 17 foot long & as thick as the body of an ordinary man took up out of the river bank at Clavarack about 26 miles below Fort Albany belong to New Yorke, June 1705" (211). Without any discourse of comparative anatomy to tell him otherwise, Taylor imagined it to be from a giant human, and received it as confirmation of Indian legends that he had previously dismissed: "an Indian one/There was upon Yorke River (like him none)/As tall as tall Pine trees" (215). Taylor's poem placed this discovery in the context of other "marvels of God's handiwork." But by the end of the century skepticism had replaced this pious awe at such phenomena. Jefferson, who was more reluctant to accept Indian knowledge as equivalent to Western science, nonetheless reprinted an Indian legend, related by "warriors from the Delaware tribe having visited the governor of Virginia" (Jefferson himself). It bears quotation in full:

[I]n antient times a herd of these tremendous animals came to the Big-bone licks, and began an universal destruction of the bear, deer, elks, buffaloes, and other animals, which had been created for the use of the Indians: that the Great Man above, looking down and seeing this was so enraged, that he seized his lightning, descended on the earth, seated himself on a neighboring mountain, on a rock, of which his seat and the print of his feet are still to be seen, and hurled his bolts among them till the whole were slaughtered, except the big bull, who presenting his forehead to the shafts, shook them

off as they fell; but missing one at length, it wounded him in the side; whereon, springing round, he bounded over the Ohio, over the Wabash, the Illinois, and finally over the great lakes, were he is living at this day. (44)

Jefferson's *Notes* contains the first appearance of this version of the tale, and so it is likely that he did hear it from Delaware Indians who had come eastward from Kaskaskia, near modern Saint Louis (see *Notes* 301). The only earlier version that I have found is in a letter to John Bartram from James Wright in 1762, which paraphrases a tale told by "two Sincible Shawanese Indians" about giant creatures that once were hunted by giant humans, until killed by God's lightning, "that they should not hurt the present race of Indians" (568-69). A more embellished version appeared in an anonymous article in the Philadelphia periodical *American Museum* in December 1790, which Rembrandt Peale later copied into his promotional pamphlet (577).

Folklorists and anthropologists have devoted much attention to this tale and its later variations. A series of articles in *American Anthropologist* in the 1930s and 40s (see Lankford for citations), including one by Ashley Montagu, addressed the question of whether such oral legends demonstrated an eyewitness memory of living Pleistocene mammoths, or whether they were simply native expressions of the same curiosity which led white researchers to consult them—explanations for the existence of large bones unearthed at sites such as Big Bone Lick or in the Hudson valley. Even though in Jefferson's version the giant animal is a "big buffalo" and some of these scholars concluded that it was a bear, the temptation to see it as a mammoth or mastodon was apparently as irresistible to later scholars as it was to Jefferson. And even if not a proboscidean, the monster in these stories offers an interesting test of the reach of oral history. Pleistocene megafauna included oversized species of bison, beaver, bear, and elk. Indeed, there are many stories among Algonquian peoples of ancient game animals such as beavers much larger than contemporary ones. Yet most of these species became extinct before the mammoth, and so Native Americans' familiarity with them would indicate an oral history extending back more than 10,000 years. It took many years after the Clovis findings for anthropologists to accept the idea that humans had inhabited the Americas as long as 10,000 years ago, and historians have often questioned the veracity of oral traditions beyond even a hundred years (see Strong 87). So to believe the story is, in light of modern paleontology, to assert a continuous cultural

identity linking eighteenth-century American Indians to the Pleistocene era. Deloria accepts such evidence of oral history extending back to the Ice Ages; Jefferson also accepted the story, but had no inkling of the span of time involved.

Like many such native legends reported in colonial texts, this tale shows signs of cultural syncretism; the God descending from heaven and hurling lightning-bolts in defense of his worshippers reminds one of Zeus, or of a *deus ex machina* punishing the giant's hubris. Like a dragon, the monster lives in isolation, in the despotic loneliness of the monarch. In Peale's Shawnee version of the legend, which he admits is "a little too highly dressed," "the enraged monster . . . leaped over the waves of the west at a bound, and this moment reigns the uncontroled monarch of the wilderness, in despite of even Omnipotence itself" (578). As an avatar of the wild, this mammoth exists in opposition to a God who apparently defends civilized humanity.

Natural historians and anthropologists can make appeal to oral legends and dispute their authenticity, but to construct a full-blown dramatic narrative to explain the prehistoric relations between American humans and the mammoth required literature. In 1839 an editor, poet and all-around hack writer named Cornelius Mathews published a novel entitled *Behemoth: A Legend of the Mound Builders*. If Mathews is remembered at all by literary scholars today, it is as a partner of Evert Duyckinck, the editor who launched Herman Melville's career. But Mathews was prominent in his own right in New York literary circles in the 1840s, and his other portrayals of American history, such as the play *Witchcraft, or the Martyrs of Salem*, also met with success at the time. Perry Miller called him "New York's vociferous, incessant, obnoxious preacher of literary nationalism" (86).

In *Behemoth*, Mathews took the logical step of combining current knowledge of the mammoth with another popular myth of American prehistory, that of the Mound Builders. After all, in the years after the Big Bone Lick first yielded remains of giant animals, the Ohio Valley also revealed thousands of mysterious mounds, fortifications, and other earthworks. As I have explained in a previous essay, these discoveries fostered an imaginative vision of the Mound Builders as a great antique civilization far superior to that of the contemporary Indians of the region, a vision which served as a "classical" heritage for new settlements being promoted there. By the reckoning of modern anthropologists, the Ohio Valley mounds were the work of the Adena and Hopewell cultures between roughly 900 BC and 1200 AD. But Mathews and his contemporaries had no reason not to believe

that the mammoths of Big Bone Lick had lived among the Mound Builders.¹⁴ In setting the scene for his romance, he drew upon the legend that Jefferson and the *American Museum* had published: "vivid and traditionary descriptions of the mighty herd of brutes which had once tyrannized over the earth," monsters that were vanquished by a "majestic race of heroes." In the opening scene the dreaded Behemoth appears on the western horizon, "blotting from sight" the departing sun (2). This epic mastodon takes on proportions far larger even than the fossil bones had suggested—he "lay[s] prostrate trees of greatest magnitude" (46), clearing a path of destruction wide enough for the huge army that pursues him. The Mound Builders do not hunt this mastodon for food, of course, but in a desperate warfare. "[F]rom the first, by a strange instinct, they had looked upon it as their foe" (6): even though there is just one mastodon, the West is not big enough for both species. This animus is equally necessary to the overkill hypothesis: Clovis man could not possibly have killed the last mastodon merely to eat its flesh; some mythic belief must have motivated the hunters. So although Mathews exaggerated to suit his epic pretensions, the basic conflict between man and mammoth is consistent with scientific accounts from Jefferson's time to Paul Martin's. In reducing this conflict to a battle between Behemoth and the Mound Builder leader Bokulla, Mathews followed not only the conventions of epic, but the logic of extinction as his age best knew it, through the trope of "the last of his race."

Today we think of extinction as a problem of wild animal species, but in the language of nineteenth-century natural history and popular fiction like James Fenimore Cooper's, the word "race" was used as synonymous with "species" and applied to human and animal alike. With no theory of natural selection, the conflict between mammoth and man was determined not by ecological niches or gene pools, but under the hand of Providence. This logic when applied to the American Indian created the pervasive nineteenth-century ideology of the Vanishing Indian, a myth that naturalized and justified the removal and extermination of Native Americans (see Dippie). In *Behemoth*, Mathews created a doubly tragic plot with two vanishing races, mammoth and Mound Builders. Thus although the Mound Builders ultimately vanquish Behemoth, his appearance, as foretold by ancient legend, infects the civilization with a sense of its own doom:

This mighty and puissant nation, whose strength was that of a giant, and whose glory rivalled the sun, was stricken by

terror into a feeble and child-like old age. All its proportions were diminished; its heart was shrunk, and it dragged on a slothful and decrepid existence amid the cold and monumental ruins of what had once been its beautiful domain.

(24)

This passage conflates the fate of the Mound Builders with Behemoth himself and with the Vanishing Indian ideology. Like the opening image of the giant mastodon, the Mound Builders rival the sun, but the figure of the sun invokes Hegelian cyclical historiography to celebrate the glory of their civilization only by insisting on its necessary disappearance. The next sentence personifies the culture, another naturalizing metaphor to explain its death, and specifically embodies the race in the figure of a giant, just as Behemoth represents all mammoths, and much as Native American legends may have arisen to explain the discovery of giant bones by imagining a lost race of giant heroes. The name "behemoth" comes from Job 40, where biblical scholars believe it refers to a hippopotamus. Mathews also seems to have drawn upon other biblical texts such as Genesis 6, where the "giants in the earth in those days" mated with the daughters of men and brought down God's wrath in the form of the flood.¹⁵ Whatever its sources, the novel offers what neither Martin nor Deloria could, a narrative to explain the difference between the mammoth hunters and modern Native Americans. The trauma and dread of the battles with the mastodon had reduced the Mound Builder culture to a shadow of its former self.

Bokulla, the brave Mound Builder leader, alone defies this sense of dread and draws courage for his battle from a confidence that "Amid a thousand changes of nature, man had endured; mountains had been cleft asunder; seas had leaped upon continents . . . yet man stood, steadfast amid the shock and the mutation" (25-26). Modern science has of course relegated humans to latecomers in the drama of geo-history. But it also has told us just such apocalyptic stories of rising and falling sea levels and exploding mountains, and even, by splitting the atom, of the demise of the human race itself. Bokulla's confidence comes off like tragic hubris in light of what contemporary readers believed about the Mound Builders, and even more so in light of the discoveries of Darwin.

A literary work is often most powerful when its literal ending runs counter to the symbolic message it imparts. At the end of the novel, the Mound Builders succeed in besieging Behemoth by walling him up inside a natural corral ringed with steep moun-

tains. The creature dies wedged in a narrow canyon trying to escape, a fate that seems designed to preserve his bones in a manner such as they were found in the Ohio Valley. The novel nonetheless conveys the message of the demise of Mound Builder culture. After an initial pursuit and attack on Behemoth ends in failure, "The awe of the great shadow was upon them. Now more than ever they felt the folly of gain-saying or attempting to withstand a power which shrouded itself in a form so vast and inaccessible" (21). Mathews may have chosen the title *Behemoth* from Job 40, but in his notes he repeated an etymology that derived the Russian name "mammoth" from the Tartar or Muslim "mehemet" (175). At an early stage of the battle some of the pagan Mound Builders regard Behemoth as a manifestation of the Deity. Mathews's title also suggests why, like "Leviathan," Thomas Hobbes and Franz Neumann both used the word "Behemoth" as a term for large and often evil political organisms. Mathews suggests that, in battling the mastodon, the Mound Builders tried to resist a force as inexorable as white America saw its own westward expansion and the demise of the Indians to be. In the eyes of many white Americans, the decline of Mound Builder civilization into the Indian nations that inhabited the Ohio Valley around 1800 justified the removal of the Indians as the continuation of a natural process. Science then, as now, had not fully resolved the story of the battle between megafauna and man in prehistoric North America, so perhaps only God could bestow victory. Euro-Americans claimed God's favor for their progress and used the mammoth as a totem for their appropriation of the continent's ancient natural history.

Behemoth and the Shawnee legend that may have inspired it both portrayed a single mammoth in an epic contest with humans. But if the population of mastodons became scarce, would Paleolithic hunters have continued to hunt them in preference to other large and more numerous species such as bison? The overkill theory is vulnerable on that point.¹⁶ To imagine the Clovis or "big game hunter" culture of 11,000 years ago tracking down and killing the last of the proboscideans in spite of the availability of many other large mammals is to suggest that, similar to today's persistent black market in body parts of endangered species such as rhinoceros and tiger, the value of mammoths was driven sky-high by their very scarcity, a value probably expressed through some pre-economic myth complex. The vision is absurd, but does it not follow from Martin's reasoning? And is it not consistent with the great cultural value accorded endangered species in the United States today?

Extinctions may be routine in the context of geologic time, but Paul S. Martin contends that the megafauna extinctions of 11,000 years ago differed from other Pleistocene extinction episodes in that several entire genres became extinct, leaving ecological niches empty: "the life forms lost were not replaced or maintained by related species . . . the record is one of extinction without replacement" ("Prehistoric Overkill" 78).¹⁷ Three-quarters of animal species that weighed more than one hundred pounds became extinct. Martin in effect argues that Buffon was right after all. Holocene (that is, post-Ice Age) America, as measured by the size of its native quadrupeds, is impoverished compared to Eurasia. Another paleoecological finding actually documents a gradual diminution in the size of larger herbivores during the Pleistocene, in response to climatic or other environmental stress. A famous site on Santa Rosa Island off California, as well as digs on Mediterranean and Siberian islands, has yielded bones of subspecies of pygmy mammoths. (And you thought jumbo shrimp was the only oxymoronic animal! See W. E. Edwards in *Pleistocene Extinctions*.) If American humans were affected by the same factors that reduced the size of native fauna, Jefferson and other colonial Creoles had much cause for fear. Martin's proposal to reintroduce the elephant would in part redress this imbalance, much as Jefferson had hoped to do by including the mammoth on his list of native quadrupeds.

The ideologies of imperialism attempt to naturalize, explain, or justify the domination of one culture over another. The natural history of the mammoth is full of these ideologies, from Buffon's belief in American inferiority to Mathews's explanation of the fall of the Mound Builders. The issue of why isolated or poorly endowed cultures have fallen victim to colonization or to the ancient "globalization" of species continues to attract popular interest, as demonstrated by the recent success of Jared Diamond's bestseller, *Guns, Germs and Steel*. Germs like smallpox were a powerful factor, of course, and one that might appear to lie outside ideology, since those who spread them were in most cases ignorant of their micro-biological function. For Native Americans the great plague in their memory was not the mammoth, but the epidemics of disease, chiefly smallpox, introduced by Europeans. There is another strain in the oral history of ancient America, one that, puzzlingly, escaped the notice of all those anthropologists who searched in the 30s and 40s for native memories of the mammoth. The narrative of David Thompson, a Hudson's Bay Company explorer and surveyor who traveled all over Canada and the Northern U.S. between 1784 and

1812, offers some of the most poignant accounts of this epidemic. Among many of the Cree and Athapaska peoples whom Thompson knew best, smallpox had not struck until 1780-82, just a couple of years before he arrived in Canada. He wrote that

A strange idea prevails among these Natives, and also of all the Indians to the Rocky Mountains, though unknown to each other, that when they were numerous, before they were destroyed by the Small Pox, all the animals of every species were also very numerous and more so in comparison of the number of Natives than at present . . . it might justly be supposed the destruction of Mankind would allow the animals to increase, even to become formidable to the few Natives who survived, but neither the Bison, the Deer, nor the carnivorous animals increased, and as I have already remarked, are no more than sufficient for the subsistence of the Natives and Traders. (93)

Thompson was a very knowledgeable geographer, and of course an experienced hunter. In his writings he estimated the population densities of both natives and game animals, and speculated, in a proto-ecological fashion, on the causes and meaning of his findings. For instance, just prior to the above passage he calculated for the Musk Rat country (between Hudson's Bay and Lake Winnipeg north of latitude 54) a density of 35 square miles per person, "a very thin population." His findings challenged not only the ecological principle of a balance between predator and prey, but also the biblical doctrine of God's punishment for giant or arrogant creatures, and it evoked an heroic age of great hunters and big game not unlike paleontologists' image of the Clovis culture.

Thompson's tale also supports a traditional Native American vision of game animals as guided by spiritual forces, *manitous* in the Algonquian languages, that supported hunters' efforts so long as they followed certain ritual protocols. Calvin Martin's famous study argues that this eco-spiritual relationship was disrupted not only by the fur trade's demand for ever more killing of beavers, otters, and martens, but by diseases that infected both Native Americans and beavers. The plagues of colonial contact were not only devastating to the bacterially isolated Indians, but to animals as well, and thus had the effect of disrupting the expected ecological population equilibria between predators and prey. Thompson's *Narrative* is one of Calvin Martin's most important sources.

A sophisticated twenty-first century analysis of megafauna extinctions must, like Thompson's, consider not only animal/human and predator/prey relationships but also the microbiological horizon. And one is now emerging. According to the latest paleontological findings, the last place on earth that mammoths survived was on Wrangell Island in the Siberian arctic, where numerous mammoth tusks, bones, even entire frozen corpses, have been unearthed and dated to as late as 3,700 years ago. Ross MacPhee of the American Museum of Natural History in New York has made many trips to Wrangell, and proposed a new theory to explain why the species became extinct. MacPhee said in an interview that he had an epiphany after reading in the *New Yorker* excerpts from the book *The Hot Zone* about the Ebola virus. MacPhee proposes a sort of "virgin soil" epidemic that afflicted the mammoths in the same way that smallpox and other diseases were passed to Native Americans by Europeans. He describes this theory as a variation on Martin's "Overkill, except for the final agency This is evidence of people coming, interacting with the animals, and the animals disappearing" ("Explaining Pleistocene Extinctions" 14). If smallpox served as the microbial agent of the colonial vanishing Indian myth, victimizing an insular population, the new "hyperdisease" hypothesis reverses the terms, turning Pleistocene Americans into colonists who infected and exterminated the native mammoth population. MacPhee is currently working on verifying the hyperdisease hypothesis by searching the bones of the Wrangell Island frozen mammoth carcasses for traces of such a virus or bacteria. The remarkable preservation of these specimens, along with the latest laboratory techniques, has made such a theory possible by making available a means for its proof. Indeed, there is talk of cloning a mammoth from these DNA remains. MacPhee admits that no infectious disease currently known to medicine would be capable of exterminating the mammoths, that "you've got to have something really nasty" (17) because the mammoths, given their abundance and adaptation to the habitat, "should NOT have gone down" (19). But in spite of this weakness, the hyperdisease hypothesis is attractive, I believe, because it removes the conscious agency for extinctions from both parties; it presupposes neither greedy human hunters, nor weakened witless mammoths. Instead, it grants the power of extinction to an invisible hand, a modern bacteriological version of divine providence.

At a time when natural history museums are outbid by private collectors who wish to acquire newly-excavated dinosaur skeletons, the economic and cultural value of prehistoric

megafauna cannot be denied. A recent television documentary about the excavation of a complete mastodon carcass from the Siberian permafrost yielded top ratings for the Discovery Channel, a cable network that also financed the expedition. The program's climax was a dramatic and expensive helicopter airlift of the ice-cubed proboscidean. The prehistoric overkill theory and Matthews's *Behemoth* both also reflect the mythic value of the mammoth to humans. If a lone Behemoth trampled a Mound Builder village, then it invited retribution by a kind of Old Testament ethic. But if the mammoth was driven extinct by humans, as Paul Martin believes, it follows that humans might atone for that sin by reintroducing the Proboscidean order to North America. The disproportionate expense and effort required for the restoration of a wild elephant population would be justified by the exponentially greater value to tourists and taxpayers that large mammals carry, and the beneficial impact that they might have upon the Sonoran desert flora. The mammoth was the most "mega" of all fauna, and even though it has been extinct for thousands of years, the proposal to reintroduce the elephant in North America revives the mammoth as an endangered species subject to the discourse of wildlife conservation.

Martin wishes to reintroduce the elephant to restore, as he wrote in the conservation journal *Wild Earth*, "our birthright, a continent whose wilderness once echoed to the thunder of many wild beasts, a fauna that eclipsed all that remains, including the wild animals of Yellowstone and Denali" ("The Last Entire Earth" 32). But how can it be "our birthright" if we are not native to North America, or if, by virtue of the vague cultural affiliation between modern Americans and the Clovis hunters that both Martin and Deloria affirm, we are ourselves responsible for the extinction of these mighty beasts? The desire in twenty-first century America for a more wild earth is a powerful myth, all the more so for its resemblance to Thompson's account of the Indians' golden age of larger game and more plentiful humans.

Paleontology remains divided over the truth of the overkill hypothesis, but for students of mammoth history, this merely reflects other deeper ambivalences. The mourning that Paul Martin feels at the loss of the American proboscideans is not only expressed in terms that echo those of conservationists' fight against modern extinctions, it also echoes America's imperial mourning over the vanishing Indian, the victim of its expansionist impulses. And *Behemoth* and other works show that the mammoth itself was regarded with considerable ambivalence, as a fearsome foe and as a continental hero. Was the extermina-

tion of the mammoth a human victory, an environmental accident, or a tragic mistake? Our answers reveal much not only about the value of ancient megafauna to modern humans, but also about the relations between colonizers and natives in North America.

Notes

¹I wish to acknowledge my brother, Nathan Sayre, who attended this conference and told me about it. Most of all I wish to thank Paul Semonin, whose book, *American Monster: How the Nation's First Prehistoric Creature Became a Symbol of National Identity* (NYUP, 2000), provides a more thorough history of the myths of the mammoth than this article can hope to offer. I began my research before I knew of Semonin's work, although by coincidence we live in the same city. When I learned of it, he generously met with me and shared his manuscript, which was then still in press. I highly recommend his book to all readers curious about the mammoth or about eighteenth-century natural history in general.

²*Proboscidea* also includes three extinct genera of South American gomphotheres, but I will not be concerned with those species here (see Haynes 3-4).

³Martin used the still more sensational term "Blitzkrieg" for a more dramatic and swift version of the process by which large herbivores were hunted to extinction by humans who came into North America armed with spears, arrows, and fires (see Ward 140).

⁴The exact taxonomy and number of species of American *proboscidea* varies according to different sources, but there were several species of mammoths and one of mastodon. I shall refer to all of these elephantine creatures as "mammoth," a vernacular term that quickly gained popularity in America in the 1790s, acquiring its secondary meaning of "huge."

⁵The existence of a distinct "Clovis culture," however, is based on little more than the style of projectile points that these people produced. Such categorizations are endemic to archeology.

⁶Alfred Crosby's *Ecological Imperialism* is a fascinating study, written for a non-scientific audience, of the consequences of the introduction of invasive species into North America, Australia, New Zealand, and the Canary Islands by European colonizers.

⁷For a strong critique of this stereotype see Calvin Martin's "The Indian and the Ecology Movement" in *Keepers of the Game*, 157-188.

⁸Martin himself has used this comparison: "The continent had indeed known better days, with a suite of large mammals on a par with what can now be seen only in an African game park" ("The Last Entire Earth" 32).

⁹Kennewick Man is a skeleton uncovered near Kennewick, Washington, in July 1996. The media quickly reported the assertions of anthropologists who described the skull as that of a Caucasoid, not an American Indian. The Yakama, Colville, and Umatilla tribes all asked for return of the bones under NAGPRA, and only recently won the right to rebury the remains. Ongoing press coverage represents the conflict

as one between Indian sovereignty and scientific knowledge, but has not sufficiently examined the absurdity of assigning a racial identity to a 9,000 year-old person. For a fine survey of the controversy, see Downey.

¹⁰Kenny, who ran a trading post near Pittsburgh in 1761, wrote of a prisoner ransomed from Shawnee captors who "brought a tooth weigh'd 4 1/2 lbs & says that these Teeth are Esteem'd, that there are some Teeth too Heave to be carried, that there are Horns about 12 foot Long, as I suppose is the Eye teeth of Elephants" (163). For Gist and Croghan, see Semonin 92-97.

¹¹"[T]he savage of the new world is weak in his organs of generation; he has neither hair nor beard nor any ardor for his female" (*Notes on the State of Virginia*, 61, 305). Jefferson quoted these lines in a long passage from Buffon's *Histoire Naturelle* XVIII, 146.

¹²Another French comparative anatomist, Georges Cuvier, finally did the formal taxonomic description of the mastodon in 1806. The name was derived from the breast-like protuberances on the teeth.

¹³The toasts were printed in the Philadelphia *Aurora*, February 18, 1802. See Miller, *Selected Papers* 401-8.

¹⁴Mathews was current with the latest scientific findings on the Mound Builders. A third of the book consists of endnotes with long quotations from archeological publications.

¹⁵God calls Job's attention to behemoth (which "eateth grass like an ox," contrary to the notion of the carnivorous mammoth), as to the leviathan in the next chapter, to show that even creatures more powerful than humans are subject to God.

¹⁶By the principles of population ecology, it would not have been necessary for humans to kill the very last mammoth; hunters might simply have driven the population below its level of sustainability. Paleoecologist Gary Haynes has a different answer, however. His studies in Africa have documented the volatility of elephant populations in response to droughts, and observed the remains of "die-offs" that left dozens of carcasses at the sites of watering holes. Haynes hypothesizes that the Clovis kill sites may be results of the same phenomenon, that humans were drawn to these places where weak and already dead mammoths could be found: "late Pleistocene hunting-gathering groups were not mammoth specialists who spread into the New World and caused the disappearance of mammoths because of their superiority as big-game hunters. Rather, the rapid spread of humans was in response to their awareness that mammoths were clustering in certain identifiable regions and habitats, where die-offs were occurring" (284). This scenario deflates the image of the Clovis culture as intrepid big-game hunters, transforming them into savages picking at the bones of corpses.

¹⁷Other paleoecologists disagree, however. See Guilday 121-40.

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