



NOME



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NORA AL-BADRI
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N O M E G A L L E R Y . C O M

FOSSIL LEGENDS OF THE FIRST AMERICANS

by Adrienne Mayor

Around the campfire that night...the talk drifted to the people who had known these fossil-rich badlands better than anyone ever would: the Crow, Blackfeet, and Sioux. Long before the arrival of Europeans, Native people had been the first to experience the thrill of discovery that we had felt today. They were the first to encounter dinosaur bones and other fossils buried in the earth for eons and then exposed, like our finds, by wind and rain.

Suddenly we all were wondering out loud: What did Native Americans think of these bizarre skeletons mysteriously turned to stone? How did they explain the bones and teeth and claws of gigantic creatures that no one had ever seen alive? Did they speculate about what could have destroyed such monsters? Did they collect fossils?

As a scholar of natural history legends, I had written a book about how the ancient Greeks and Romans interpreted the remains of enormous, extinct creatures buried around the Mediterranean. And I'd read about the pioneer paleontologists Edward Drinker Cope and Othniel Marsh battling over dinosaur bones in the American West. But Native American discoveries and conceptions of fossils — this was unexplored territory, full of exciting possibilities for understanding pre-Darwinian ideas about paleontology.

What did fossils mean to Native Americans? It was something I'd wondered about every time I had gazed at arrowheads and fossils exhibited side by side in museums. I knew that Plains Indians had gathered certain iridescent marine fossils for their magical power to summon buffalo herds. Growing up in South Dakota, I remembered reading Sioux myths about Thunder Birds fighting Water Monsters. Now I was curious to know whether those stories had been woven around dinosaur and giant reptile skeletons that people had observed weathering out of the Badlands.¹

I recalled an object I'd seen earlier that summer in the Phillips County Museum in Malta, Montana, a small town northwest of Hell Creek. Indian artifacts were displayed along with impressive dinosaur remains, just as they are in countless other American museums, whether large and famous or modest and obscure. This juxtaposition, which seems to equate the human artifacts with the animal fossils as relics of extinction, would become a common sight as I visited natural history collections across the country. I had always wondered why museum curators never made what seemed to me the obvious connection between the local Native cultures and the conspicuous evidence of remarkable creatures from another age that they had encountered in their lands.²

Most historians of science assume that traditional Indian knowledge of fossils is irretrievably lost. As the paleontologists David Weishampel and Luther Young recently put it: "Native Americans, so in tune with Earth and sky and water, surely noticed the giant bones weathering from the ground and the birdlike footprints preserved on slabs of stone. But their discoveries are lost to modern science; only their legends survive."³

But, in fact, the collection of New World oral paleontological traditions began nearly 500 years ago, in 1519, when Hernando Cortés brought Aztec fossil legends and a huge mastodon bone from Mexico back to the King of Spain. And it turns out that many of the great figures in early modern scientific history — from Georges Cuvier and Alexander von Humboldt in Europe to Benjamin Franklin and Thomas Jefferson in America — were avid investigators of indigenous American fossil lore.

The deep involvement in Native folklore of these scientifically oriented individuals — especially Cuvier, the father of paleontology — was one of the most surprising discoveries of my research. Their interest points to an important theme of this book: even though Native American understandings of the fossil record were not scientifically methodical in the modern sense, they offered an alternative, coherent way of interpreting earth's history at a time when Europeans were questioning their own mythic explanations for fossils and just beginning to develop the formal disciplines of geology and paleontology. Many of the Native

approaches to the fossil record — based on their careful and repeated observation of evidence and on rational speculation — are compatible with scientific inquiry. Observations of remarkable natural evidence stimulated explanations that became part of traditional Native knowledge, and those traditions were often verified and revised over time — activities that spring from the same impulses to "get it right" that led to the creation of scientific methods.

The interest in Native American fossil knowledge continued among scientific thinkers for 400 years after Columbus, but had already begun to wane by the time Marsh, Cope, and the other pioneer paleontologists began to hunt fossils in the American West in the late 19th and 20th centuries. These men depended on the help of Indian scouts to locate the bone beds, but they rarely preserved any traditional notions about the extinct remains offered by the guides — or even their names. I have made a special effort to recover the names of Indians who helped the early paleontologists find and collect fossils. They deserve no less than what the famous bone-hunter Charles H. Sternberg claimed as his "inalienable right." "I demand that my name appear as collector on all the material which I have gathered from the rocks of the earth," he wrote in 1909.⁴

In 1935, the Canadian paleontologist Edward M. Kindle (1869-1940) was the first scientist to suggest that Native Americans should be credited with several significant fossil discoveries, in a brief paper in the *Journal of Paleontology*. But in 1942-43, the eminent U.S. paleontologist George Gaylord Simpson (1902-84) strenuously rejected Kindle's suggestion, classifying all Indian fossil discoveries as "casual finds without scientific sequel." Simpson, Curator and Chair of the newly formed Department of Vertebrate Paleontology at the American Museum of Natural History (AMNH), effectively ended the earlier conversations between Native Americans and Euro-American scientists about the fossil record. And his pronouncements are one reason why the history of Native encounters with fossils is so little known today.⁵

Yet much more historical and natural knowledge has been retained and for a longer timespan than is generally appreciated. To find these nuggets of genuine knowledge, the Iroquois scholar Barbara Mann suggests that one should look for the “consistent elements” in the layered matrix of storytelling over the ages. Many scholars have questioned whether oral traditions are “real history.” Anthropologist Robert Lowie, for example, who studied several Native American cultures in the 1930s, famously declared in 1915 that “oral traditions [have no] historical value whatsoever under any conditions whatsoever.” But Lowie’s grip is loosening: today many mythologists and historians would agree with Roger Echo-Hawk, a Pawnee historian, that oral histories should be treated as “respectable siblings of written documents,” as valuable sources for reconstructing “ancient American history.” Indeed, the most recent analyses of the mythmaking process, drawing on modern linguistics and cognition studies and matching details in traditions with datable historical, astronomical, or geological events, are revealing that accurate geomythology can extend back over millennia.⁶

Other, mute, evidence for ancient curiosity about fossils is literally buried in the ground, since modern archaeological excavations have shown that many kinds of fossils were collected and used in various ways by paleo-Indians. Further evidence for interest in fossils is also stored in museum collections, in the form of medicine bundles and amulets containing petrified wood and fossil shells and bones.

Trying to reconstruct the outlines of an incomplete and ancient body of oral fossil knowledge is like trying to reconstruct a skeleton from disarticulated and incomplete remains. As in paleontology, luck plays a role and so does conjecture. The paleontologist assembles a framework from the fragmentary traces of a creature that were accidentally preserved in stone by a capricious geological process — a process as unpredictable as the preservation of spoken folklore over countless generations and cultural upheavals. Gaps are filled in with hypothetical bones. The reconstructed dinosaur skeleton is truly impressive, but it is still only a lifeless armature and one longs for so much more than dry bones. I remember Jack Horner exclaiming, as he pointed out

the remains of *T. rex* and *Triceratops* at Hell Creek: “But these are just skeletons! I wish I could see the *real* dinosaur, the living, breathing creature!”

Like paleontological resources on Indian lands, however, traditional fossil knowledge can be fraught with issues of ownership. Some oral knowledge is considered sacred or kept secret from outsiders. Deloria approaches the problem of sacred knowledge by trying to avoid being the first to publish oral material unless a comparable version has already appeared in print. This approach is generally accepted among Native Americans as they balance the tensions between revealing and sharing cultural wisdom. Juanita Pahdopony, a Comanche storyteller who related some personal memories about fossil-bone medicine in Oklahoma, remarked: “I would not like to be the first to reveal a tribal knowledge that is kept by our people. After all, what is left that hasn’t already been taken from us?”

Some traditional stories are the private possessions of individuals. The early ethnologists learned that offering something of value was often the price of a hearing a story. A rare few today feel that their stories remain personal possessions even after publication. For example, Virginia Driving Hawk Sneve, a Lakota writer in South Dakota, told me that I needed her permission to quote from books she has published with a university press. John Allen, Jr., an Assiniboine spiritual leader in Montana, on the other hand, says that it honors his culture whenever oral traditions are retold in writing.

Some elders believe that oral stories should never be put in print, for they “must have human breath or they will die,” in the words of the Shawnee storyteller Neeake. And sometimes stories are not recalled until the right question is asked, continued Neeake. “People sometimes suddenly give a story if they have found someone who knows how to listen with the heart, but at other times they decide not to share. A cardinal rule of Indian teaching must be followed: If you don’t know the proper question, or how to pose it properly, then you don’t need to know the answer.”⁷

Fossils of all sorts were collected in the Americas for a wide range of uses: as “deeds” to land, as historical evidence, as weapons, as healing medicine, and as personal amulets for protection or other special powers. Their mysterious presence in the earth inspired explanatory narratives both simple and surprisingly sophisticated.

Native Americans observed, collected, and attempted to explain the remains of extinct invertebrate and vertebrate species long before contact with Europeans, and their cultural connection with fossils continues today. Their explanations, expressed in mythic language, were based on repeated, careful observations of geological evidence over generations. Search parties traveled long distances to verify reports of fossil beds, and some remains were deliberately excavated to confirm old traditions and to obtain fossils for special uses. Discoveries of fossil traces resulted in etiological stories imbued with a sense of deep time. Earth’s history was visualized as a series of ages marked by different landforms, climates, and a succession of different faunas no longer alive today. The Native observers envisioned the extinct creatures’ appearance, behavior, habitat, and the cause of their disappearance, proposing gradual and catastrophic extinction scenarios. Some animals and plants observed only in fossil form were identified as ancestors or relatives of living species. Not only did many of the insights about earth’s past anticipate modern scientific theories, but some traditional narratives were revised to integrate new scientific knowledge. All these activities evince the stirrings of scientific inquiry in pre-Darwinian cultures. And as European and Euro-American naturalists became aware of the significance of fossils in the New World, Native knowledge and guides actively contributed to the development of paleontological science.

In expanding the definitions of paleontological discovery and inquiry, this book takes up the tapestry begun by Colton Mather, Thomas Jefferson, Georges Cuvier, and Edward Kindle. I have endeavored to gather enough dramatic evidence, backed up by rigorous documentation, to persuade even George Gaylord

Simpson, were he still alive, to relax his stance as a sentinel of hard science and give in to the “temptation” to contemplate First American fossil discoveries and insights as something more than simply a “diffuse awareness of fossils.” Would Simpson be convinced that Native American discoveries and interpretations deserve a place in the history of paleontology? That’s debatable — by all accounts he was an “irascible man and very firm in his convictions” — yet I feel that this new evidence would encourage Simpson to reconsider his judgment. As Michael Novacek, of the American Museum of Natural History, remarked to me in 1998 when I first began writing about the earliest recorded discoveries and interpretations of fossils in classical antiquity and among Native Americans, “It is important to uncover any inklings of the facts that fossilized creatures were indeed from the distant past, are now extinct, and have some connection with living creatures,” ideas usually credited to Steno in the 17th century. “Any foreshadowings of these scientific concepts would be fascinating.”⁸

But as Allison Dussias observed in her 1996 article tracing the legal ramifications of fossils on reservation lands, traditional beliefs “about land, stones, and fossils are not simply of historical interest.” Because many of the traditions about land, stones, and fossils survive in the living culture of Native Americans today, they influence tribal members’ interactions, for good or ill, with paleontologists who work on Indian lands. Native American fossil knowledge once enjoyed a mutually informing relationship with Euro-American science, but nowadays the two cultures often have clashing views of paleontology, especially in the American West, where conflicts over land and fossils are most recent and raw.

The chief disagreement between traditional Native Americans and paleontologists centers on the proper treatment of ancient animal remains that weather out of the earth where they have lain for ages. Both groups hold passionate ideas about the fossils. For many traditionalists, digging into and removing things from the ground, such as rocks and bones, violates the integrity of the Earth, the source of life. As the Sioux medicine man Lame Deer maintained, loose fossils and pebbles may be collected for

special uses, but embedded fossils and stones should not be dug up. Even a medicine man “finds his stones on the surface of high buttes,” said Lame Deer.

In the Indian worldview, the land and everything that composes it, including stones and fossils, are hallowed, vital entities. Wovoka, the Paiute holy man, expressed this reverence in powerful language in about 1890: “You ask me to plow the ground! Shall I take a knife and tear my Mother’s bosom? Then when I die, she will not take me to her bosom to rest. You ask me to dig for stones! Shall I dig under her skin for her bones?” Custer’s Crow scout, Curly, voiced similar sentiments in 1907: “The soil you can see is not ordinary soil — it is the dust of the blood, the flesh, and the bones” of our ancestors and relations.

The sense that the earthly remains of past lifeforms should be respected by leaving them in place was evident in each Native culture discussed in this book. People took notice of fossil bone beds, marked their locations, revisited the sites, and speculated on their identity and meaning, but generally refrained from taking away large bones except in special cases. This core belief was expressed by the Oglala leader Johnson Holy Rock in 2002: “Fossil bones should be left in the ground as they were found. It is not good to take them away and put them in a museum. If we want to understand them, shouldn’t we go to see the animals where they lived and died?” Clifford Canku, a Dakota teacher, declared, “It is madness to take a dead creature from the earth and set up its bones in a building as if it were still alive!” The Navajo spiritual leader Harry Manygoats warned that it courts environmental catastrophe to tear fossils out of the realm where they now “live” in a kind of suspended animation.⁹

The fact that weathering causes mineralized bones to disintegrate is not disturbing to traditional cultures, for that seems good and natural, a way of returning a lifeform’s energy to nature’s “hoop.” This holistic worldview, with its nonlinear idea of time and appreciation of the sacred nature of the earth, differs profoundly from the Euro-American approach to science. Many paleontologists regard Native misgivings about sundering animal fossils from the earth as superstition and ignorance, and they wince

to think of exposed fossil skeletons crumbling away uncollected and unstudied. Yet in the case of common species already well described in the literature, how many more plaster-jacketed specimens are really needed to further science? Numerous historical examples can be found of compulsive overcollecting in numbers that far exceed what is justified for scientific study.

The cultural disinclination to unearth creatures long dead is only one factor in the tensions over fossils, though. Compelling historical reasons underlie Native Americans’ distrust of paleontological work.

Paleontologists commonly complain that Indians tend to conflate archaeology and paleontology, and worry about digging up human ancestors along with dinosaurs. But these fears are neither irrational nor unfounded. “The Indians connect paleontology with archaeology,” explains Mike Flynn, a paleontologist who works on the Crow Reservation, “because they have had bad experiences with archaeologists who took human bones.” Beginning in 1868, U.S. soldiers were ordered to collect Indian skulls for “science,” and over the next decades, more than 4,000 heads were taken from bodies in battlefields, fresh graves, burial scaffolds, hospitals, mission cemeteries, and abandoned villages struck by smallpox and starvation. This deplorable episode in the history of science continued into the 20th century, as the skulls of Native men, women, and children were amassed by archaeologists and anthropologists — *and* paleontologists.

Field paleontologists today repeatedly assure Native people that they are only interested in animal bones millions of years old, not in recent human remains. But some Native Americans, such as the Shoshone and Bannock, believe that ancient animals buried in the earth should be accorded the same respect as human ancestors. Others, like the Navajo, fear that dinosaur excavations might interfere with ancestors’ bones. Scientists often attribute such concerns to ignorance of geochronology. But, besides the fact that the early paleontologists saw little difference between robbing fresh human graves and excavating fossilized dinosaur specimens, burial customs are another reason for anxiety about paleontology.

A third reason for distrust of paleontological activity is the systematic removal of significant animal fossils from Indian lands without consent, often facilitated by the government despite treaty obligations.

As I gathered research for this book, some paleontologists who work in the West expressed fears that publishing the extensive evidence for Native fossil traditions not only would encourage tribes to ban fossil hunting on their lands, but also might inspire tribes to use NAGPRA to request the return of fossils now in museums. “The days of the wild and free-roaming paleontologists are over,” one BLM paleontologist lamented. Traditional Native folklore about fossils may be an interesting subject, I was told, but it has ominous implications for the discipline of paleontology.¹⁰

We need fossils to understand our place on this planet, observes paleontologist Mark Norell (American Museum of Natural History). “Without fossils we would have no indicator of our own species’ relative insignificance even during the time that humans have occupied the planet. If this does not strike one as a revelation concerning our place in nature, then it is best to look to mysticism for answers.” “All organisms are interrelated through our evolutionary heritage,” continued Norell. Everything alive is reciprocally related and even the “extinct species are not isolated entities from Earth’s past. They, like we, are all integrated actors in the drama” of life.

These ideas resonate with Native American insights that everything on earth is intricately imbricated: nothing is without life and nothing exists in isolation. “Seeing in a sacred manner,” explained Lame Deer, means perceiving this dynamic interrelatedness and vitality and not interfering with its flow. Norell’s impassioned perspective shows how creative scientists are developing similar holistic conceptions of nature.¹¹

Adrienne Mayor, excerpt from the book *Fossil Legends of the First Americans* (2005, Princeton University)

Notes:

1. I use the terms *Native Americans*, *Native people*, *Indians*, *First Americans*, *American Indians* and *Amerindians*, and *First Nations* interchangeably, giving the names of specific cultural groups (often called nations in the east and tribes in the west), whenever possible. I use the term *paleo-Indians* for prehistoric, early cultures for which there is archaeological evidence, specifying Clovis, Folsom, Fremont, and so on whenever known.
2. David Hurst Thomas 2000, chapter 3, argues that the definition of Indians as natural history specimens like mastodon and dinosaur fossils began in 18th century America.
3. Weishampel and Young 1996, 51.
4. Sternberg 1990, 30-31. Each of Marsh’s Yale students hunting fossils in the Bridger Basin in 1870 received “full credit for all his discoveries, and the thought of having one’s name attached to some rare specimen in the Yale Museum led to sharp competition.” Lanham 1973, 108.
5. Kinde 1935 credited Indians with several important fossil discoveries, but was roundly criticized by Simpson, 1942 and 1943. Simpson referred to Native American involvement in some historic paleontological discoveries, but denied that their finds constituted “true” scientific discoveries. Simpson 1942, 132; 1943, 26-27. Occasional, brief references to Native American fossil traditions may be found in paleontological literature since Simpson. For example, Paul Semolin, in *American Monster* (2000), recounted some Indian interpretations of mastodon remains in the Colonial era, in order to show how such myths were appropriated by early Americans to create a national identity based on the mastodon as a patriotic totem. Claudine Cohen’s *The Fate of the Mammoth* (translated into English in 2002), focuses on European myths and theories about prehistoric elephants, with passing reference to American Indian legends. Native American scholar Vine Deloria, Jr., pits Native American worldviews against Euro-American science, with some paleontological examples, in *Red Earth, White Lies* (1997). Deloria also presents examples of Native knowledge excluded from orthodox science and history as superstition and fantasy. A few archaeologists have collected evidence for Native American interest in fossils. For example, rock art scholar Peter Faris presented a survey titled “Native American Paleontology: Fossils, Myths, and Imagery” to the Utah Rock Art Research Association in 2001, and continues his investigations. See also Jerry McDonald’s 1989 paper “A Collection of Fossils from an Adena Mound [Ohio] and Notes on the Collecting and Uses of Fossils by Native Americans.” An important article by Allison Dussias, “Science, Sovereignty, and the Sacred Text: Paleontological Resources and Native American Rights,” *Maryland Law Review* 55 (1996), surveys the history of legal issues surrounding fossils in the western United States since the era of Cope and Marsh, from the Native American point of view (thanks to Daniel Usner for this reference).

6. Barbara Mann, Interview, June 2002. Lowie cited by Thomas 2000, 99-101. Folklore scholars now generally accept that oral traditions about historical events endure for about 1,000 years, although some oral myths about geological and astronomical events can be reliably dated to about 6,000 years. On studies testing the antiquity and accuracy of oral history and traditions, see Roger Echo-Hawk 2000, quote 267. The processes of creating reliable oral myths about datable geological, historical, or astronomical events thousands of years ago are now analyzed in terms of linguistics and cognition by Barber and Barber 2004. These issues were broached by Deloria in 1997, 126-36, 39 (observation and accuracy), and 186 (Deloria believed the extent of human memory is about 3,000 years). See also Thomas 2000, chapter 10, on the history of the ethnological debate over whether oral traditions preserve "real history."

7. Deloria 1997, xiv-xv. Juanita Pahdopony, Interview, April-May 2002. Virginia Driving Hawk Sneve, per. cor., May 6, 2002. John Allen, Jr., Interview, September 6, 2000. Neeake, elected Principal Storyteller of the Shawnee Nation United Remnant Band, Interview, March-April 2002. I am grateful to Deloria, Pahdopony, Neeake, and Roger Echo-Hawk for valuable discussions of these issues.

8. Paleontological historian Martin Rudwick, in his preface to the 1985 edition of Rudwick 1976, characterized all paleontological knowledge before the "Renaissance of Western civilisation" as nothing but a "diffuse awareness of fossils." "Inscrutable": Peter Dodson, per. cor. July 13, 2003. Michael Novacek, per. cor., April 3, 1998.

9. Lame Deer and Erdoes 1972, 194-95. Wovoka and Curly cited on Indigenous Peoples Literature website. Holy Rock Interview, October 14, 2002. Canku Interview, July 28, 2000. Manygoats, Interview, see chapter 3. Dussias 1996, 97, see 100-107 on the inviolability of the earth. See Wildschut 1960, 90, on Crows leaving rocks and fossils in the ground, or collecting them for personal medicine.

10. Mike O'Neill, National Paleontology Program Director, BLM, Washington DC, per. cor., April 23, 2003. So far, O'Neill continued, "no tribal entity has officially identified fossils as sources of cultural or religious values." Actually, in 1992 the Cheyenne River Sioux Tribe claimed an interest in the disputed *T. rex* named Sue as part of the tribe's cultural heritage, but this consideration was ignored by the courts, see below. I know of one repatriation under NAGPRA of a Navajo medicine bundle, or *jish*, that happened to include a small marine fossil, but the fossil was only incidental to the case (see note XX, chapter 3).

11. Norell et al. 2000, 96. Lame Deer and Erdoes 1972, xiv-xv.

THE LAST DINOSAUR BOOK

by W. J. T. Mitchell

One key to our fascination with dinosaurs is ambivalence. They are like us, yet unlike us. They are terrifying monsters, yet safely extinct. We look at the dinosaur as we look at the homeless or unemployed with mixed feelings of superiority and anxiety, pity, and apprehension. After all, we are not obsolete, homeless, or on the road to extinction... are we? And they can't hurt us... can they?

The alien visitors will also see a parallel between the paradoxes of the dinosaur and a whole series of crises in modern history, a linkage between this image and controversies in politics, science, and culture. They will quickly discover that dinosaur bones have been put on display to make arguments for and against evolution; to express anxieties about uncontrolled migration and racial mixing, and to illustrate the consequences of failure to migrate and adapt to new conditions. They will observe that the greatest epidemic of dinosaur images occurs in the late twentieth century, just at the moment when widespread public awareness of ecological catastrophe is dawning, and the possibility of irreversible extinction is becoming widely evident. But they will also note the curious way in which the dinosaur image serves as a monument to the prestige of modern states and nations. Why, they will ask, does the United States have a "Dinosaur National Monument," and why does every state in the union want its own dinosaur? (The New Jersey state legislature declared *Hadrosaurus* its "state dinosaur" in 1994; New Mexico claims *Seismosaurus*, the biggest dinosaur in the world, of which only a few tail bones have been found; Texas brags about its "Lone Star Dinosaurs" that "roamed where jumbo jets now roll down runways"; California has no real dinosaurs to brag about, but it displays them "in response to public demand" at the La Brea tar pits and Universal Studios.) We presume that Theodor Adorno's famous remark that the appearance of the dinosaur is a symptom of the "monstrous total State" was directed at the fascist regimes of Europe. But suppose it has an unintended significance, an application to places like New Jersey and (of course) California? Or simply to that "state of affairs" we call the modern world?

THE TOTEM ANIMAL OF MODERNITY

By this I mean, first, that it is a symbolic animal that comes into existence for the first time in the modern era; second, that it epitomizes a modern time sense — both the geological “deep time” of paleontology and the temporal cycles of innovation and obsolescence endemic to modern capitalism; and third, that it functions in a number of rituals that introduce individuals to modern life and help societies to produce modern citizens. I call it the totem animal because it is unique, *sui generis*. The modern world has many symbolic animals and many monsters, but none of them function in precisely the way the dinosaur does. It is not just a totem animal of modernity, but the animal image that has, by a complex process of cultural selection, emerged as the global symbol of modern humanity’s relation to nature. The word “totem,” as Claude Lévi-Strauss reminds us, “is taken from the Ojibwa, an Algonquin language of the region to the north of the Great Lakes of northern America. The expression *ototeman*... means roughly, ‘he is a relative of mine.’” A totem (which is generally an animal, but can also be a plant, mineral, or even an artificial object) is thus a social symbol, a sign of the clan or collectivity. In the world of sacred or superstitious objects and images, totems occupy a kind of middle ground between the fetish (a private object of devotion or obsession) and the idol (a collective projection of absolute power and divinity). Totems are more social than fetishes, less absolute and authoritarian — less religious — than idols. Fetishes, in psychoanalytic theory, are associated with severed body parts, idols with human sacrifice. The totem animal, by contrast, is itself the sacrificial object, a substitute for the human victim.

Everything that concerned the true nature of the Dinosaurs must remain hidden. In the night, as the New Ones slept around the skeleton, which they had decked with flags, I transported it, vertebra by vertebra, and buried my Dead.

— Italo Calvino, *The Dinosaurs*

Totem animals in traditional, premodern societies played four basic roles. They served (1) as symbols of the social unit (tribe, clan, or nation); (2) as ancestor figures reminding the clan of its ancient origin and descent; (3) as “taboo” objects, both in the general sense of sacred or holy things, and in the more specific sense of a prohibition against touching or eating the totem animal or having sex with a member of the same clan; and (4) as ritual objects, connected with the sacrifice of the animal followed by a “totem meal,” in which the normally taboo animal is consumed. These functions are all independent of one another (it is relatively rare to find all of them present in traditional societies), and sometimes even contradictory: the forbidden object of sexual or culinary “consummation” may become the compulsory object of the sacrificial feast, the ritual meal or love object.

A moment’s reflection reveals that the dinosaur plays all four of these roles, albeit in modified ways, in modern societies. The dinosaur is a “clan sign” for a wide range of social collectivities, from national to federal “states,” from vanishing races to dominant, imperial civilizations, from warrior-hunter brotherhoods to dangerous new sisterhoods of “clever girls.” As social symbol, moreover, the dinosaur is not merely a single, positive symbol for a specific tribe, nation, or species, but is itself a figure of collectivity, a group or series of species whose differences may be mapped onto any parallel set of differences in human society. Thus, the contrast between carnivorous and herbivorous dinosaurs can be encoded as a gender difference, equating “male with devourer and female with devoured” (the dominant tendency in traditional societies), or inverted (as in *Jurassic Park*, in which all the dinosaurs are female, and all their human victims are male). The major “types” of dinosaurs in folk or vernacular taxonomy (the “cookie cutter” stereotypes of *T.rex*, *Brontosaurus*, *Triceratops*, *Stegosaurus*, and *Pterodactyl*) provide a readymade bestiary for the differentiation of individuals and groups. Elementary schoolchildren are routinely encouraged to select (and identify with) their “favorite” dinosaur, inspiring role-playing fantasies of flight, monstrous ferocity, gentle giantism, and armored invulnerability. It is a tribute to Spielberg and Crichton’s inventiveness that they have actually succeeded in introducing a new member to the folk taxonomy of dinosaurs. *Velociraptor*,

the packhunting, fast-moving, highly intelligent predator, has now entered the global vernacular, and has been adopted as the clan sign and emblem of Toronto's professional basketball team. These differentiated dinosaurial types may also, on the other hand, be dissolved into a generalized figure of homogeneous mass society, as Capek does with his "Newts" or "erect salamanders."

The ancestral function of the dinosaur is relatively straightforward: The Age of Reptiles precedes and makes way for the Age of Mammals in the master narrative of modern paleontology. Dinosaurs are the rulers of the earth before humankind. They must die out so that we can live; they must disappear or devolve into degenerate "creeping things" (or relatively harmless birds) so that we can appear and evolve into the dominant species. They are rather like the Chthonian (often reptilian) gods of the underworld in Greek mythology, the "giants of the earth" who had to be killed or imprisoned so that humanoid skygods, the Olympians, could assume dominance. This ancestral narrative is replayed, moreover, at the individual level in children's identification of their parents as dangerous dinosaurial giants who (fortunately) will inevitably make room for their offspring by becoming extinct.

The most complex feature of the dinosaur totem is the cluster of taboos and rituals that surround its excavation and display. These form the core of public dinosaur fascination and "dinomania," the set of emotional and intellectual associations that give dinosaurs "magic" and "aura" in mass culture. Here we must note a few salient differences between dinosaurs and traditional totem animals. The traditional totem was generally a living, actually existing animal that had an immediate, familiar relation to its clan. The dinosaur is a rare, exotic, and extinct animal that has to be "brought back to life" in representations and then domesticated, made harmless and familiar. The traditional totem located power and agency in nature; totem animals and plants bring human beings to life and provide the natural basis for their social classifications. By contrast, the modern totem locates power in human beings: we classify the dinosaurs and identify ourselves with them; we bring the dangerous monsters back to life in order to subdue them. The McDonald's commercial perfectly illustrates this process: the resurrection of the monster followed

by its transformation into a domestic pet that can be compelled to "play dead." The not-so-hidden message of this commercial might be summarized as follows: let's awaken and then subdue the totem animal of modern consumer desire (the T.rex as figure of rapacious, carnivorous appetite) with the totem vegetable of modernity, the french fry. Since the vast majority of the world's potatoes wind up as french fries, this commercial is, in a very real sense, just telling it like it is.

What about the sexual and culinary "consummation" taboos that were thought to accompany the traditional totem, the prohibitions on eating the totem animal and having incestuous relations with a member of the same clan? I do not see any direct analogy with the mandate for exogamy in the folkways surrounding the dinosaur, but I do see a link with the fundamental issue of procreation that underlies the incest taboo. Anxieties about proper sexual roles and reproductive potency are connected with stories of dinosaur extinction and resurrection. Dinosaurs may have died out because they stopped having babies, or because they laid eggs that became increasingly vulnerable to nest robbers. Spielberg's *Jurassic Park* is not only about the biogenetic cloning of dinosaurs, but also about the danger that humans will fail to reproduce. The relationship of Drs. Grant and Sattler, the male paleontologist and female paleobotanist, is shadowed by her anxiety over his dislike for children, and the story is largely about his learning how to care for children. One of the most interesting changes in the public image of the dinosaur since the 1960s has been its transformation from a solitary predator, the lone male hunter, into a "good mother" figure, guarding the nest and living in social groups. Spielberg's *The Lost World*, the sequel to *Jurassic Park*, is a veritable hymn in praise of dinosaur family values, portraying its T.rex couple as ferociously nurturing parents. The Field Museum dinosaur exhibition that opened in the spring of 1997 to coincide with the release of *The Lost World* was, not surprisingly, entitled "Dinosaur Families," building on the work of Montana paleontologist Jack Horner with the *Maiasauras* or "good mother lizard." Horner was the paleontological consultant to *Jurassic Park*.

The other meaning of dinosaur "consummation," having to do with the totem meal, reappears in the form of symbolic inversion. If the traditional totem animal was not to be killed, or was to be killed and eaten only under special ritual conditions, the dinosaur is an animal that cannot be killed (being already dead), but must be brought back to life so that it can be consumed as public spectacle. More generally, the dinosaur itself is generally portrayed as a massive eating machine. It provides a spectacle of rapacious consumption that becomes more fascinating the closer the meal comes to including one of our own species.

Perhaps the most subtle contrast between the modern and traditional totems lies in the question of their status, their authority and legitimacy as social symbols. We might be tempted to say that the traditional totem is religious and magical, an object of superstitious reverence and animistic thinking, while the modern totem enjoys the authority and prestige of science. But the contrast between science and religion is undermined by the tendency of science to play the role of a modern, secular religion, popularly misconceived as the final arbiter of truth and reality in all matters. This sort of "scientism" or scientific ideology needs to be distinguished, from the actual practice of science, which tends to be skeptical, provisional, and modest about the extent and durability of its claims. Traditional totems, similarly, are probably not as dogmatically religious or magical in their authority as early anthropologists thought. The notion of a radical distinction between the "savage" and "modern" mind is precisely what totemism tends to undermine. Traditional totem animals and plants may, in fact, have as much to do with ethnozoology and ethnobotany, traditional bodies of natural lore based in accumulated observations and experiments passed on over many generations, as with any magical or religious symbolism. As the rain forests disappear from our planet, we are learning too late that their human inhabitants possess a fund of "folk biology" that consists not of "superstition," but of refined and precise understandings of numerous exotic plants and animals, including their medicinal and poisonous properties.

The crucial point here is that ethnoscience and magic, just like modern science and that modern form of magical thinking known as "scientism," are woven together in the everyday life of human beings. There is no question that an essential part of the taboo (in the sense of aura or magic) of the dinosaur resides in its status as a scientific object, or more specifically, in its role as a monument to "Big Science," and even more aptly to what might be called "pure scientism." The dinosaur exemplifies pure science because it is useless and impractical, and yet it provides a highly visible speculative object in which areas of uncertainty and controversy are very broad. "The" dinosaur is so speculative, in fact, that (as we have seen) it may never have existed as a natural kind or a coherent scientific concept, but only as a name that survives because of its popular appeal. The attractiveness of the modern dinosaur totem is, like that of the traditional totem animal, marked by ambivalence. The dinosaur is monument and toy; monstrous and silly; pure, disinterested science, and vulgar, fraudulent commercialism. The taboos (in the sense of prohibitions) surrounding the dinosaur tend to manifest themselves, then, as efforts to deny or overcome this ambivalence by declaring the dinosaur to be a purely scientific object, a serious and real object untainted by magic, money, or "cultural" interest. Stephen Jay Gould's fear that the authentic dinosaur will be destroyed by the "deluge" of commerce and vulgar publicity is an expression of this taboo. The truth is that the dinosaur is never really separable from its popular and cultural status; the flood of publicity that seems to threaten its existence is the very thing that keeps it alive.

There is one conspicuous problem with the concept of totemism that needs to be faced at this point. Most anthropologists regard totemism as itself an obsolete notion, a relic of an earlier, Eurocentric, imperial phase of anthropology, when a radical division between the "savage" and the "civilized" mind was a basic assumption of all field research. Freud's absorption of totemism into the psychoanalytic paradigm simply extended this boundary to include children and neurotics among the "savages" who continue to hold the sort of animistic, superstitious beliefs on which totemism relies. In the early 1960s, however, Claude Lévi-Strauss declared that totemism was an illusion. It had been inflated, he argued, into an umbrella term for "primitive

religion.” Lévi-Strauss also pointed out that the totem had long been recognized as an incoherent scientific concept. As early as 1899, E. B. Tylor had noted that it had “been exaggerated out of proportion to its real theological magnitude.”

I trust that the parallels between the dinosaur and the totem are clear. Both are “scientific” concepts of dubious utility that have been inflated into master terms. Both involve a kind of back-projection into the “pre-history” of animal life and the human species, the one into the deep time of paleontology and geology, the other into the dreamtime of anthropology. Both were developed during the same imperial epoch of the sciences of nature and culture. Both involved the absorption of a diverse mass of evidence into a general concept of dubious coherence. Lévi-Strauss opened his critique of totemism with the following remark: “Totemism is like hysteria, in that once we are persuaded to doubt that it is possible arbitrarily to isolate certain phenomena and to group them together as diagnostic signs of an illness, or of an objective institution, the symptoms themselves vanish or appear refractory to any unifying interpretation.”

We might well ask, then, what is the point in using an obsolete concept from anthropology (the totem) to explain a possibly obsolete concept in paleontology (the dinosaur)? Can we use a dinosaur to catch a dinosaur? Or is this more like killing two birds with one stone? These questions are only made more vexing by the curious “afterlife” of both concepts. The dinosaur insists on living on as the marquee attraction of paleontology. Totemism continues to rear its head despite its authoritative dismissal by Lévi-Strauss. In fact, Lévi-Strauss himself rescued the concept by raising it to a higher level, linking it to an instinct for classification, an intellectual and ideological mapping of nature onto culture. There is a kind of uncanny parallel between the history of the dinosaurial and totemic concepts. Both enjoy an early flowering in the second half of the nineteenth century as key images and ideas in the development of paleontology and anthropology, respectively. Both fall into scientific disrepute and obsolescence in a middle period, the first half of the twentieth century, and enjoy a renewal in the sixties that has continued to the present day. The “dinosaur renaissance” inaugurated by John Ostrom

and Robert Bakker is paralleled by a rebirth of totemism. As the anthropologist Roy Willis notes, “though officially pronounced dead nearly 30 years ago, totemism obstinately refuses to ‘lie down.’” It survives in social science and anthropology, now as a way of breaking down (rather than securing) the opposition between the “savage” and “civilized” mind and of reopening questions about the ecological and biological dimensions of modern culture and society. Similarly, the dinosaur, which had also been “pronounced dead” as a concept as well as a living thing, has been reborn in a new form. It is no longer an automatic synonym for failure and obsolescence, but has been refashioned as an evolutionary “success story” a 170-million-year saga of ruling reptiles that makes the prospects of human and mammalian world dominance look rather puny by comparison. We are almost tempted to say that the concepts of the totem and the dinosaur were made for each other, and that the dinosaur may well be not just a modernized version of the “savage” totem, but the first and last real totem in human history.

The relation between the dinosaur and the totem, finally, is not merely a matter of strikingly similar functions, or even of similar and parallel histories. The two concepts, and the real objects associated with them, constantly appear together in the concrete space of natural history exhibitions. Dinosaurs and totem poles are the marquee attractions of the two disciplinary “wings” of the natural history museum, the cultural and the biological. The McDonald’s commercial stages their encounter quite explicitly: the dinosaur passes in review before the silent witness figures of the Indian totem poles; the shadow of the modern dinosaur skeleton passes over the faces of the traditional animal ancestors. Which object is more magical and superstitious, we must ask ourselves: the silent totem poles glaring out of the darkness, or the ghastly monster brought back to life by the miracle of digital animation?

What difference does it make to see the dinosaur as the totem animal of modernity? The crucial shift is in the one feature that the dinosaur does not share with traditional totems, and that is precisely the consciousness of its function as a totem. The disavowal of the “savage” or “mythical” character of the

dinosaur is what is crucial to its workings as the modern totem. Many people who might be willing to grant that the dinosaur functions as a cultural symbol would still hold out for a distinctively modern and scientific (that is, nonsymbolic, nonimaginary, and purely "real") role for the terrible lizards. My claim, however, is that this holdout position is no longer tenable once one sees that the dinosaur is a totem, not just a symbol. In other words, scientific interest in the dinosaur is not to be seen as a separate enclave, protected from contamination by "cultural" issues (values, myths, superstitions, false-and-true beliefs). Science is also a cultural practice, a ritual activity with traditions, customs, and taboos. The realization that this is so should not prevent science from producing the kind of knowledge it is equipped to produce, nor should it prevent nonscientists from trusting the validity and usefulness of that knowledge.

The dinosaur, however, may be another matter. Insofar as the successful functioning of the dinosaur as totem animal (and as scientific object) depends upon the disavowal of its mythical status, the dinosaur might not survive exposure as a cult object. When a magical object depends upon mystification and disavowal, its exposure to the light of reason may transform it or cause it to disappear. Could it be possible that the current worldwide epidemic of dinomania is making its cult status undeniable? Could *Jurassic Park* actually be the last hurrah of the terrible lizards, a premonition that they could disappear a second time?

My prediction is that second extinction of the dinosaur will be a slow, gradual process, but one in which the final decade of the twentieth century will be seen as decisive. A similar fate befell the dragon at the end of the sixteenth century. Spenser's Faerie Queene was the "apex of medieval dragon lore," providing the richest narrative and iconographic representation yet known. *Jurassic Park* (both the novel and the film) may be the greatest dinosaur story ever told, but that doesn't mean it will have any worthy successors. It may have the effect of killing off the genre (except for parodies, sequels, and spin-offs) for a long time. (Crichton's own sequel is remarkably lame, even stooping to the theft of the title of an earlier dinosaur classic, Arthur Conan Doyle's *The Lost World*; Spielberg's sequel is a pale imitation of

a pale imitation.) With the death of Spenser's dragon at the hands of the Redcrosse Knight (Saint George), as Jonathan Evans points out, "the dragon itself passes from English literature — or at least goes dormant. On the Continent, dragons remained active only as subspecies of serpents in encyclopedias and works of natural history."

ON THE EVOLUTION OF IMAGES

The very concept of an "evolution of images" is an ideal place to try out such a synthesis of Marx, Freud, and Darwin. Images are, as we have seen, a kind of artificial species. The dinosaur image is the intersection of cultural and natural determinants, a crossroads of scientific knowledge, social interests, and psychological desires. The dinosaur, as we shall see, has itself "evolved" from its original function as a counter-example to Darwinism into its current role as a kind of monument to the reign of Darwinism. Unlike most images, the dinosaur has an origin and development that are open to investigation. We know when it was invented, and we can describe how it changed.

These changes, however, clearly do not reflect a model of progressive evolution, but rather a dialectical, punctuated model of controversy, debate, and paradigm shift. The dinosaur is never seen "as such." It is always governed by the rule of what Ludwig Wittgenstein called "seeing as": the visual image is riddled with metaphor, with the representation of the unknown and the invisible in terms of the known and the familiar. The Victorians saw dinosaurs as terrible lizards, as reptilian hippos and rhinos, as scaly mammals, as kangaroos, as leathery, bat-like birds, or just as all-purpose monsters and hybrids reminiscent of medieval dragons. The moderns settled on a view of them as giant erect reptiles. Now the postmoderns are attempting to forge a consensus around seeing them as birds. But this is occurring in a time when the relation of the unknown to the known, the invisible to the visible, has changed. The dinosaur is no longer an exotic, unfamiliar novelty; it is now the most publicized animal image on the planet. It hardly comes as a surprise, therefore, that the direction of "seeing as" is reversing field, and some

paleontologists are beginning to urge us to see birds as dinosaurs! At this point, however, dinosaurology becomes so successful that it threatens to glut the market, to kill the romance and mystery of its object, and to disperse it into a dead metaphor, a framework for seeing almost anything "as" a dinosaur. When Bakker concludes *The Dinosaur Heresies* by urging us to say, when we see Canadian geese flying north, "The dinosaurs are migrating, it must be spring!" we know that the cart is pulling the horse.

The internalist, progressivist history of scientific images depends upon a notion of visual transparency that ignores the inevitable role of metaphor in visual imaging. Paleontologist Dale Russell puts it this way: "Artists are the eyes of paleontologists, and paintings are the windows through which nonspecialists can see the dinosaurian world." This clearly cannot be right. Artists, no matter how obedient, are not simply "eyes," nor are paleontologists simply "brains" waiting to be wired up to a cooperative retina. (If you want to think of the art-science collaboration in terms of body parts, a better comparison would be to think of the scientist as the eye and the artist as the hand. Their collaborative relation would then be more like "eye-hand coordination.") But the important point is that both scientists and artists are human beings, participants in cultures that impinge on their "pure" scientific pursuits, guaranteeing that their work will never be pure or pristinely objective. And even if their images were "windows through which nonspecialists can see the dinosaurian world" (which they clearly are not), those nonspecialists would also be coming to those windows not with pure, innocent eyes, but with preconceptions, fantasies, and prejudices much like those shared by the scientists and artists. There is no getting around "seeing as" to simple seeing as such. The innocent eye, as E. H. Gombrich showed long ago, is blind.

All this might be put in the form of a much less controversial claim: that the history of dinosaur images (like that of any other scientific representation, especially one put into mass circulation) is the product of a larger history than the sequence of events internal to science. From the standpoint of an iconologist, who looks at the history of images across media and across the boundaries of art and science, their history is more like the history of everything

else in the period from 1840 to 2000: filled with crises, conflicts, reversals, and multiple levels of determination. The wonderful histories of paleontology by Adrian Desmond, Martin Rudwick, Peter Bowler, Robert West Howard, Edwin Colbert, and others have made clear what a weird and intricate relation bone and fossil science has with social, political, and cultural issues. While the evolution of dinosaur images might seem incredibly brief compared with the history of dinosaurs themselves (150 years as contrasted with 170 million), their iconological history is probably just as complex and filled with incident. After all, not a whole lot happened in the average century or millennium of the long "Age of Reptiles." It is what Lévi-Strauss characterizes as a "cold" historical period, in contrast to the "hot" era of modernity. It has the temporality of a "frozen zone." Even a catastrophic (much less a gradual) extinction probably took many thousands of years to occur.

By contrast, the century and a half since dinosaurs first appeared in public has been filled with momentous transformations in the human condition and the physical condition of the earth. In that time, empires have risen and fallen, major revolutions and radical social experiments have occurred, new technologies, scientific paradigms, and habitats have been created, and the global ecosystem has itself begun to be modified by human activity. Most notably, the rate of extinction of plant and animal species has accelerated rapidly, and a new, distinctly modern phenomenon has emerged in the mass extermination of human beings. The technologies of mass destruction, and the willingness to industrialize genocide and mass death, have reached unprecedented levels.

COMING TO AMERICA

“Westward the course of empire takes its way,” wrote Bishop Berkeley over two hundred years ago in his treatise “On the Prospect of Planting the Arts and Sciences in America”. The dinosaur image was naturally destined to migrate to America, and ultimately to the rest of the world. (It was already, in the nineteenth century, migrating from France to Germany and to Eastern Europe, where Louis Dollo’s reproductions of the Belgian *Iguanodon* led the way.) Today the modernization of backward African countries is measured in part by their willingness to sustain up-to-date scientific dinosaur excavation and give up traditional superstitions about the great bones. Everywhere that the modern world goes, it finds the dinosaur already there waiting for it. Places that don’t have dinosaurs by nature (like Southern California) produce them by art. The La Brea tar pits may boast their authentic mastodons, but they must also offer life-size robotic dinosaur models to gratify popular demand. The migration of dinosaurology to America is sometimes seen as a natural inevitability, given the brute fact of the abundance of easily accessible bones in the New World and the longstanding interest in natural history as a national pursuit. North America’s “bone fields,” like its reserves of minerals and precious metals, were a natural resource awaiting exploitation in the midst of what chroniclers never tire of calling a “Virgin wilderness,” a phrase that erases the presence of native populations. From a scientific point of view, the abundance of fossils and the vast number of complete skeletons promised an access to ancient times unheard of in the fragmentary and deeply buried fossil record of Europe. Actually, the survival of the North American bone reserves was not merely a “natural fact,” but a result of a rather consistent set of Native American cultural attitudes toward them. The Delaware Indians who reported their legends about the mastodon to Jefferson made it clear that the bones were taboo, and had left them largely untouched. Associated with memories (and perhaps premonitions) of famine and war, the bones were relics of God’s justice and mercy — his destruction of the enemies of the Indians and his protection of them from extermination.

There were similar legends about large animal bones among the Plains Indians. The big bones found in the bluffs of Nebraska and Dakota were thought by the Sioux to be the remains of the Unktehi, subterranean and sub-aquatic giants and reptilian monsters who were big enough to eat men, and whose appearance would make one go crazy or blind. The Unktehi were sometimes described as huge oxen, or as giant rattlesnakes with legs, and their destroyers were the sky gods, especially the Thunderbird. Despite their archaic, ancient pedigree, the Unktehi were often depicted with modern metaphors: “Its back-bone is like across-cut saw, being flat and notched like a cog wheel”; its “den” is “constructed of iron.” One legendary sighting even makes the water monster sound like a strangely familiar spectacle on the Missouri in the 1870s: “Long ago ... the people saw a strange thing in the Missouri River. At night there was some red object, shining like fire, making the water roar as it passed upstream.” Given the catastrophic results for Indians of the arrival of the iron horse and the paddle-wheel steamboat in their country, it is hard to see their perception of these monsters as Unktehi as a mistake. One of the still unsolved puzzles of the bone rush is the curious tolerance shown by the Indians for bone hunters.

Dinosaur bones were not, like the relics in Indian burial mounds, sacred traces of the ancestors that it would be impious to disturb, but relics of enemies whose death had made Indian life possible. C. Marsh, the leader of the Yale paleontological expeditions after the Civil War, was actually able to befriend Chief Red Cloud when the Indians decided that the bone hunters (unlike the miners and ranchers) were not attempting to take possession of their land. In return, Marsh helped to publicize the reduction of the Sioux to abject poverty as a result of corruption in the Bureau of Indian Affairs. Marsh’s chief rival in the bone rush from 1864 to 1889, Edward Drinker Cope, managed to charm the Crow Indians into tolerating his excavations during the very summer (1876) when Custer and the Seventh Cavalry were being wiped out 150 miles to the south of his dig. Cope’s theatrical haunting of his false teeth reportedly led to his being named “Magic Tooth” among the Crow. One senses in these stories a toleration for the manifestly crazy white men who would want to risk their lives for worthless and probably dangerous relics. The bones of “enormous

serpents“ found in the Black Hills, for instance, were thought to be certain death to the finder. The testimony of frontiersman James H. Cook about paleontologists is that “they were usually spoken of as bone or bug-hunting idiots.” In any case, the Indians were in no position to challenge the paleontologists, who were working with the permission and protection of the US government (and often a company of cavalry). The Indians were probably too concerned with their own extinction to worry about a few crazy white men robbing the bones of dead monsters.

If the dinosaur was at the leading edge of the advancement of empire, then, it played a role rather different from those self-evidently valuable objects of imperial expansion — fertile land and mineral resources. In the transit from England to America, it encountered both straightforward resistance and complex forms of ambivalence and transformation. Jefferson may have established the institutional space in which big American bones could find a home, but the contention about those bones had not ended with the Mammoth Presidency. Peale’s attempt at a national museum of natural history was in ruins, his mastodon destroyed by fire, his museum in the hands of P. T. Barnum. Waterhouse Hawkins came to America at the invitation of New York City’s Central Park Commission in 1868 with the goal of establishing a Jurassic Park near the Sixty-third Street entrance, adjacent to the present location of the American Museum of Natural History. His hopes for repeating his Crystal Palace triumph were dashed, however, when thugs hired by Boss Tweed and the Tammany Hall ring broke into his studio and destroyed his dinosaurs with sledgehammers. Adrian Desmond speculates that the motive (aside from the usual power struggles of big city politics) may have been “religious prejudice”: Tweed referred to Hawkins’s dinosaurs as “specimens of animals alleged to be of the pre-Adamite period.” “Antediluvian monsters,” victims of Noah’s Flood, were one thing. At least they could be reconciled with the Bible. But pre-Adamite monsters, even the specially created divine “archetypes” of Richard Owen, were enough to produce a coalition of Catholic and Protestant reaction, countered only by Quakers, Unitarians, and some quiet support from Episcopalians.

Although dinosaur research and the bone rush became a mania in post-Civil War America, dinosaur publicity (with the exception of the Cope Marsh “bone wars”) lagged behind. Dinosaurial fame in America seems to begin not with the bones, but with the bone hunters. Marsh was probably the most famous scientist in the United States in the late nineteenth century. Waterhouse Hawkins, despite some successes (most notably the construction of a short-lived plaster Hadrosaurus for the centennial of the Declaration of Independence in Washington), never managed to adapt his reconstructions to the conditions of American mass culture. He returned to England shortly after completing his Hadrosaurus and died in obscurity in a cottage near the Crystal Palace.

The American public had plenty of other spectacles to distract them in this era. P. T. Barnum had once considered hiring Hawkins to make some replicas of the Crystal Palace dinosaurs for his American Museum, but he decided that it was a “European phenomenon” and confined himself to pious hoaxes such as the “Cardiff Giant,” a ten-foot fake “fossil corpse” that had been “excavated” (after a discreet burial) in upstate New York. The Bible did say that there were “giants in the earth” before the Flood, and Milton had depicted the serpent as walking erect before God condemned him to crawl on his belly for tempting Adam and Eve. (We have already noted the uncanny resemblance between the erect reptilian tempter and Hawkins’s Hadrosaurus). But the American public after the Civil War was simply not ready for the dinosaur. Perhaps the surplus of public attractions was compounded, paradoxically, by a surplus of dry bones. The wealth of authentic and complete skeletal reconstructions being assembled in Philadelphia, New Haven, and later New York were not accompanied by the kind of widely circulated sculptural or pictorial “restorations” necessary to create a public image of the dinosaur for America. That had to await the formation of a modern image of the dinosaur, one that would break decisively with the Victorian archetype and epitomize the New World Order at the end of the nineteenth century.

W.J.T. Mitchell, excerpt from *The Last Dinosaur Book*
(1998, The University of Chicago Press)

CONFLICTING EVIDENCES

by Susanne Leeb

“To correct the unintentional error committed in 1913, the Berlin Museum declares itself ready and willing to return the head of the queen, the object of disagreement, to the Cairo Museum.”¹

This memorandum was written by Egyptologist Pierre Lacau in 1931; commissioned by the French government, Lacau served as director of the Department of Antiquities in Cairo from 1914 to 1936. Due to Adolf Hitler's veto in 1933, the agreed upon return never took place. Since then, Nefertiti has been in Berlin. With their “other Nefertitis,” the artists Nora Al-Badri and Nikolai Nelles use fictions and replica to intervene in this field, still very controversial today: that of colonial excavations around the year 1900, and thus questions of ownership, the production of “cultural goods,” and the value of collector's items.

THE SOURCE OF THE CONFLICT

Evidentia is a figure of accumulation in rhetoric. A main thought is divided into parts that explain the main idea in variations to make it seem obvious. Evidence is created from a chain of arguments, or from a variation of the main idea. In the case of the question of where the Nefertiti bust belongs, still controversial today, there are two conflicting main thoughts: for Western museums, it is evident that they have the right to possess the cultural heritage of other countries. For critics of this argument, it is evident that they have no such right. At issue is not the re-nationalization of culture or the question of an authentic context, but the conditions of injustice during colonialism under which the objects first came to Europe or to other Western collections where they are now considered invaluable treasures.

NEFERTITI 1.0

Museums create their evidence in various ways: juridically, aesthetically, academically, architecturally. The staging of Nefertiti within a museum temple in a glass case, standing on its own, the only piece in a dark hall, makes it into an absolute “highlight” of the collection. This framing is a “partial thought” that serves to make the main thought seem evident. “Nefertiti is the most beautiful woman in Berlin,” as has been said ever since the 1920s, and she belongs here. But this includes an entire apparatus of scholarship and narratives according to which these objects would no longer exist without Western archaeological research or that they would have been destroyed in the countries where they were found.² In the case of Nefertiti, in turn, it is also argued that there has been no official demand for restitution on the part of the Egyptian government. The demands of various antiquities authorities have always been dismissed by saying that they were issued by the “wrong” authority. For example, although Zahi Hawas, the former Egyptian Minister of State for Antiquities Affairs and previously the Secretary General of the Egyptian Supreme Council of Antiquities, had been trying to regain the statue since 2002, he was at this point in his career not part of the government itself, even if he later became part of it briefly. In the case of archaeological artifacts, museums refer primarily to the legality of the division of archaeological finds. In certain regions, the division of finds only took place in the mid-1920s or later, so that a great many artifacts had already left the country before such agreements. In addition, the division of finds under colonialism did not necessarily involve sharing the finds with the colonized region, but first and foremost with the respective colonial power. In the case of Egypt, the situation was even more complicated: the colony was under British rule, but the French were those responsible for archaeological sites and finds. German archaeologists and the French agreed on dividing up the finds, but the conditions under which Nefertiti could be removed from the country without expert evaluation on site give cause for speculation about the possible illegality of the transport.³ For Bénédicte Savoy, who recently reconstructed this history, the sharing of the finds that took place on January 20, 1913 was “the result of an administrative, diplomatic, and personal constellation

in which French-British rivalries played as great a role as the policy practiced for decades by the French antiquities administration policy of *laissez faire* regarding foreign excavators.”⁴ Symptomatically, Egypt has no place in this conflict of rivalries: it was not a sovereign state, but a British colony. The legality of the possession thus seems evident, since an argument to keep the bust where it is remains in the framework of the narration that made the objects what they are: finds from the colonial period, objects of scholarly research, and ancient “treasures” and legally valid because the laws either of the colonial powers or the nation-state that insists on protecting the property of their own holdings. But this very evidence is controversial, for not a single partial thought takes the Egyptian perspective. For others, it is much more evident that Nefertiti belongs in Egypt. And this applies not just to the Egyptian Ministry of State for Antiquities. If you ask people in Egypt about the statue, few are aware that it is not located in an Egyptian museum. As a copy, the image of Nefertiti is omnipresent in Egypt. If you say that it is located in a German museum, the most common, usually indignant answer is that it’s not right, that she belongs to Egypt. Beside this subjective sense of injustice or the discussion of cultural identity, relations of power and inequality relations are inscribed in the “acquisition” or the “collection” of these cultural goods. With the frequent recourse to legality as a form of justification, no mention is made of the context of colonial politics, although archeology has for some time now engaged in self-critique about its involvement in colonialism.⁵ Although the division of finds was legal according to the understanding at the time, the ethical framework and archeology’s own self-conception have changed dramatically.

NEFERTITI 2.0

Since a political decision is not in sight at the moment — and in light of the fact that Western collections make up a large part of Africa’s cultural heritage, the question cannot be clarified just in terms of Nefertiti — artists and cultural workers have the opportunity to intervene in the discourses, forms of value production, public opinion formation, a discussion on the ethics of collecting and in the power relations of knowledge production.

The Other Nefertiti is accordingly more than a true-to-original 3 D print of the bust. It also includes a video that acts out an excavation find, a video that shows the scanning process in the museum, the open source publication of the print data and finally discursive formats — a podium discussion in Cairo on the question of the relationship between contemporary art and heritage, hosted by the artists in Cairo together with the Goethe-Institut.⁶ In the age of the postfactual, the art of falsification needs to be defended, because in art artifice is not used to conceal a truth or to spread an untruth but to address a problem. This problem becomes visible in disclaimers or in the transparency of the construction. In this sense, Nora Al-Badri and Nikolai Nelles have created an excavation video filmed on the Egyptian coast where a second Nefertiti bust is found. In the age of the digital, the reference no longer guarantees the authenticity of what is presented, but conventionalized framing conditions serve as a warranty: the form of recording — shaky, grainy, poor quality — the time code in the shot, the plausibility of the situation in which a film was recorded, and not least the site of circulation, that is, the platforms in which a video is made public. Secret, illicit excavations take place on a nightly basis in Egypt. The find is usually documented by videos made using bad cameras shot by flashlight. These find-videos are then uploaded onto certain platforms to sell the pieces on the black market. Such framing conditions are easily imitated, and in this way the “fact” is created that a second Nefertiti was found. By raising the question of where the original Nefertiti is, the focus is placed not only on the current place of custody and the question of possession, but also on the black market, where all forms of collecting antiquities are ultimately involved. If the objects at the time were purchased for a ridiculously low price or simply distributed in the framework of dividing up the finds, now the objects are worth millions. But this contributes to the emergence of the black market that Al Badri/ Nelles bring attention to in their video. One of the participants in the Cairo podium discussion Monica Hanna, a member of the Egyptian archaeological NGO the Egypt Heritage Task Force, also reported of the “underside” of archaeological knowledge. On Facebook, the EHTF documents illicit excavations, illegal sales or neglect of cultural heritage sites by the Egyptian government. A secondary effect of ownership is the copyright on replicas

or images of the original that “belongs” to an institution. The release of 3-D print data as open-source makes it possible for many people to create an exact replica of the Nefertiti statue. Since Nelles and Al-Badri’s public release of the data in December 2015, the artists have received numerous requests from universities (some from Egypt itself) whether the data could be used for academic purposes or they were asked if the data was available for commercial use. Since then, thousands of 3D prints and digital remixes have been made all over the world and posted online. The digital replication of the bust has opened a new digital space, independent of the institutions. This form of participation was a central idea behind the artists’ action. Even if the print out in its original size in good quality is relatively expensive — a high quality 3D print costs currently 6000 euros — it can also be made in poorer quality for 100 euros — the data allows for the possibility of reproduction without permission of the museum and the fees related to this. In the wake of the data’s release, the museums have declined to take any legal action. But the original is impossible to separate from its reproductions. The ubiquitous presence of the copies will not solve the problem linked to the ownership of the original. The Berlin Nefertiti continues to provide the gold standard for all reproductions. Even if Al-Badri and Nelles concretely intervene in one of the secondary effects of possession, their work poses the greater question of who owns what works and why in what value systems the notion of original and copy circulate. The artists simply demand what the museums claim to be: world heritage that all have access to. With *The Other Nefertiti*, they also show to what extent museums have distanced themselves from their own declared self-understanding.

Susanne Leeb, 2017

Notes:

1. Cairo, July 1, 1931, memorandum written by Pierre Lacau on the bust of Nefertiti.

2. There is now an entire sub-branch of archaeology involved in critiques of these narratives in the form of an intellectual history of the discipline. See for example Lynn Meskell, ed., *Archaeology Under Fire: Nationalism, Politics and Heritage in the Eastern Mediterranean and Middle East* (London: Routledge 1998); Colin Renfrew, *Loot, Legitimacy and Ownership: The Ethical Crisis in Archaeology* (London: Duckworth, 2000); Zainab Bahrani, Zeynep Çelik, and Edhem Eldem, eds., *Scramble for the Past: A Story of Archaeology in the Ottoman Empire 1753-1914* (Istanbul: SALT, 2011).

3. For a reconstruction of the early history of the Nefertiti (find with references to other literature, see Bénédicte Savoy, ed., *Nofretete. Eine deutsch-französische Affäre 1912-1931* (Cologne: Böhlau, 2012).

4. *Ibid.*, 12.

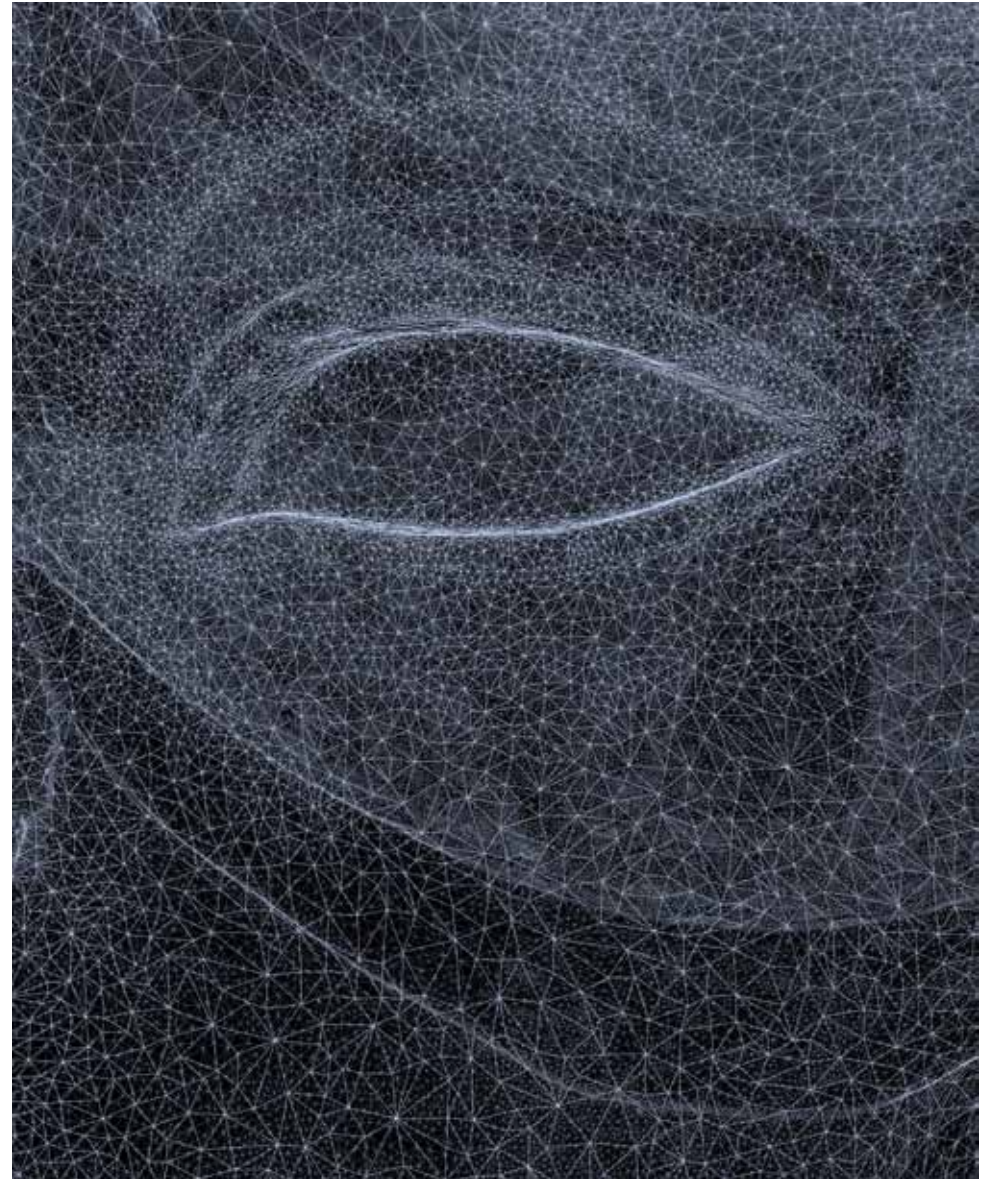
5. Oscar Moro-Abadía, “The History of Archaeology as ‘Colonial Discourse,’” in: *Bulletin of the History of Archaeology* 16 (2), 8 (last accessed on Feb, 4, 2017). Oscar Moro-Abadía sums up the most important aspects: archaeologists contributed to a colonial discourse in the form of knowledge of power over the past. They created a romantic image of archaeological practice that in the 19th century was linked to a focus on spectacular discoveries of “lost civilizations.” They omitted the link between colonial expansion and a field of scholarship and justified the appropriation of material cultures from the colonized regions.

6. See *The Actuality of the Ancient: Contemporary Art, Icons and Identity* November 30, 2015 (last accessed on March 1, 2017).

A R T W O R K S

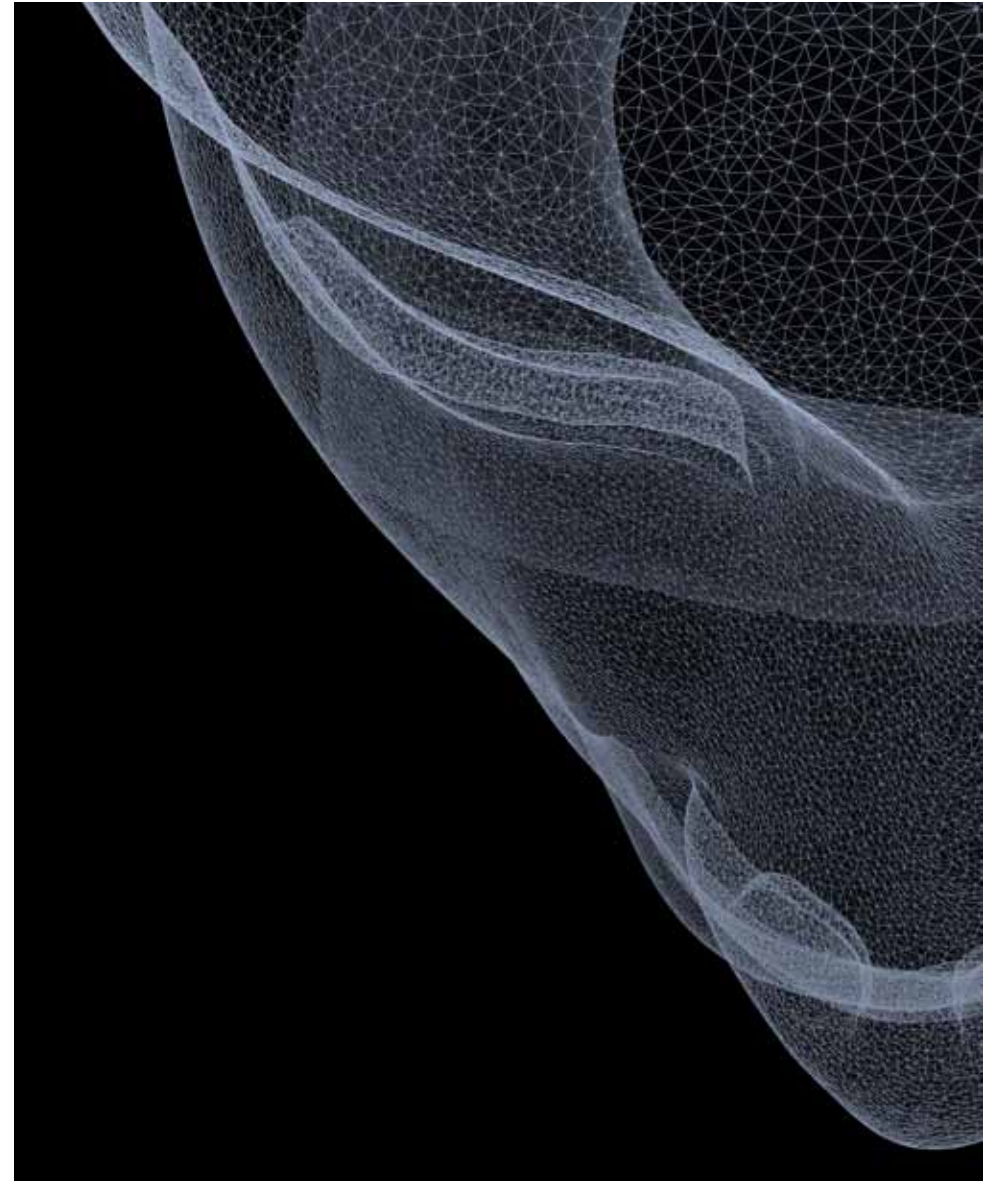
DISENTANGLED NO. 1, 2017

Nora Al-Badri and Nikolai Nelles
Ditone print
100 x 82 cm
Edition of 3



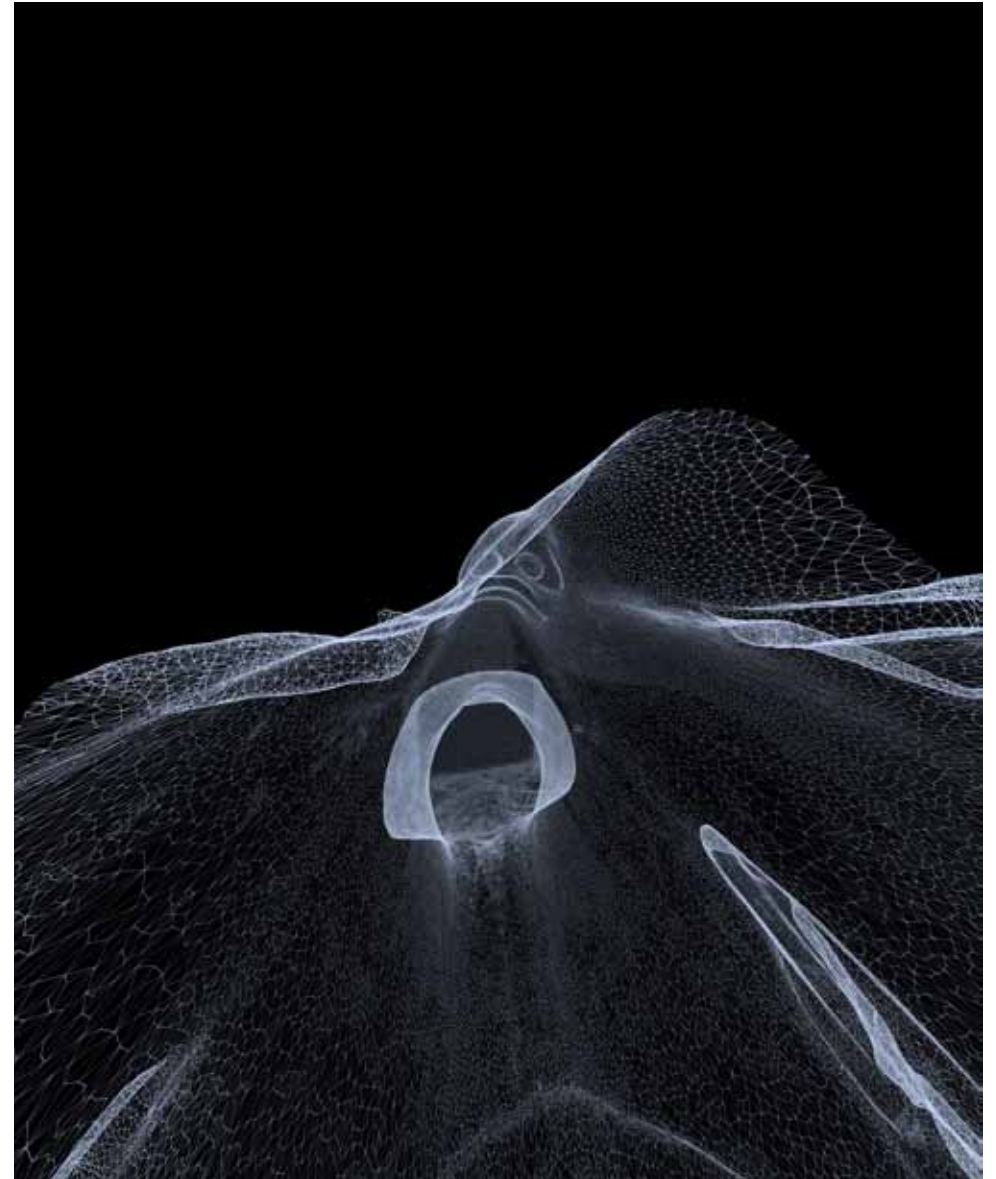
DISENTANGLED NO. 2, 2017

Nora Al-Badri and Nikolai Nelles
Ditone print
100 x 82 cm
Edition of 3



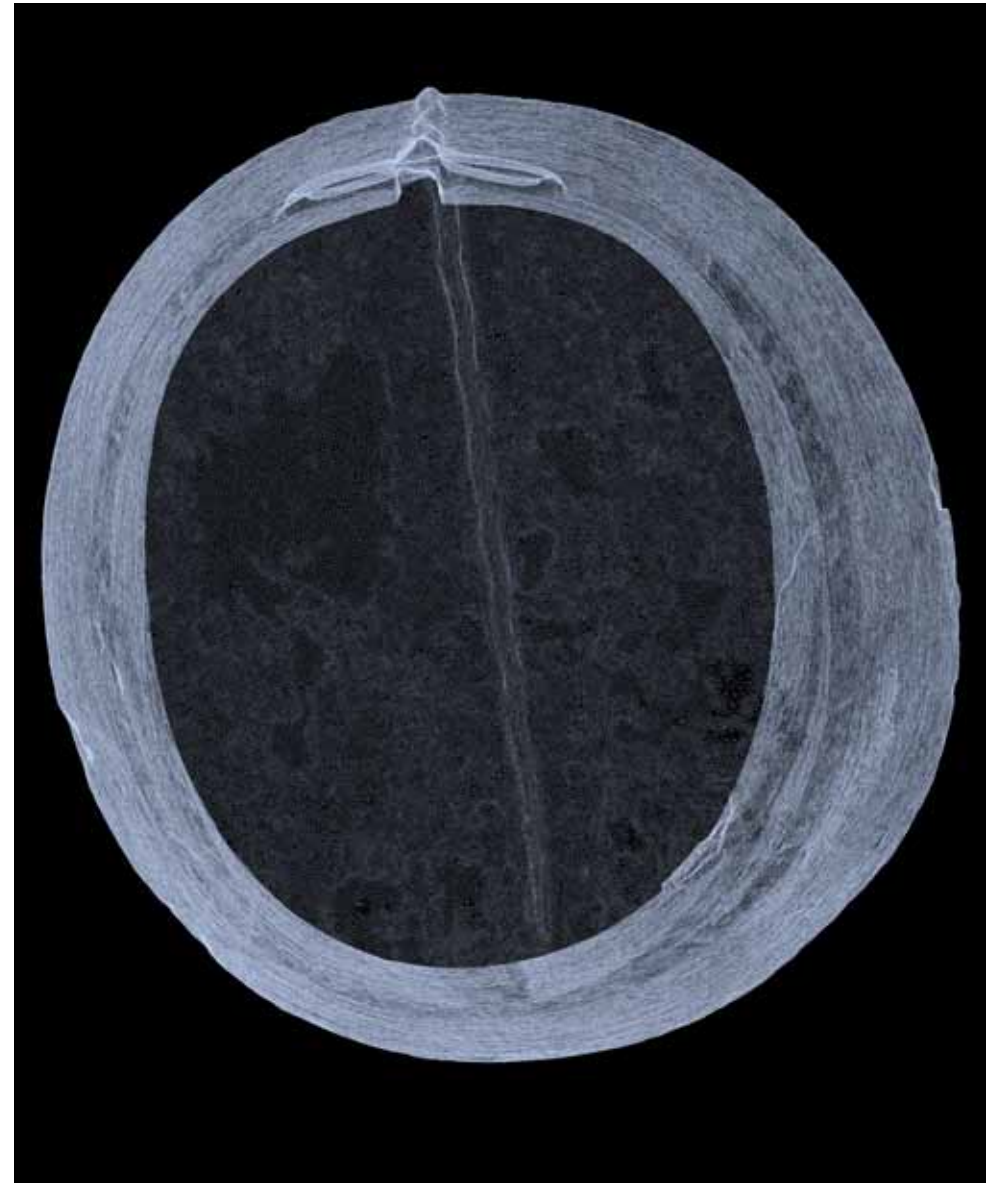
DISENTANGLED NO. 3, 2017

Nora Al-Badri and Nikolai Nelles
Ditone print
100 x 82 cm
Edition of 3



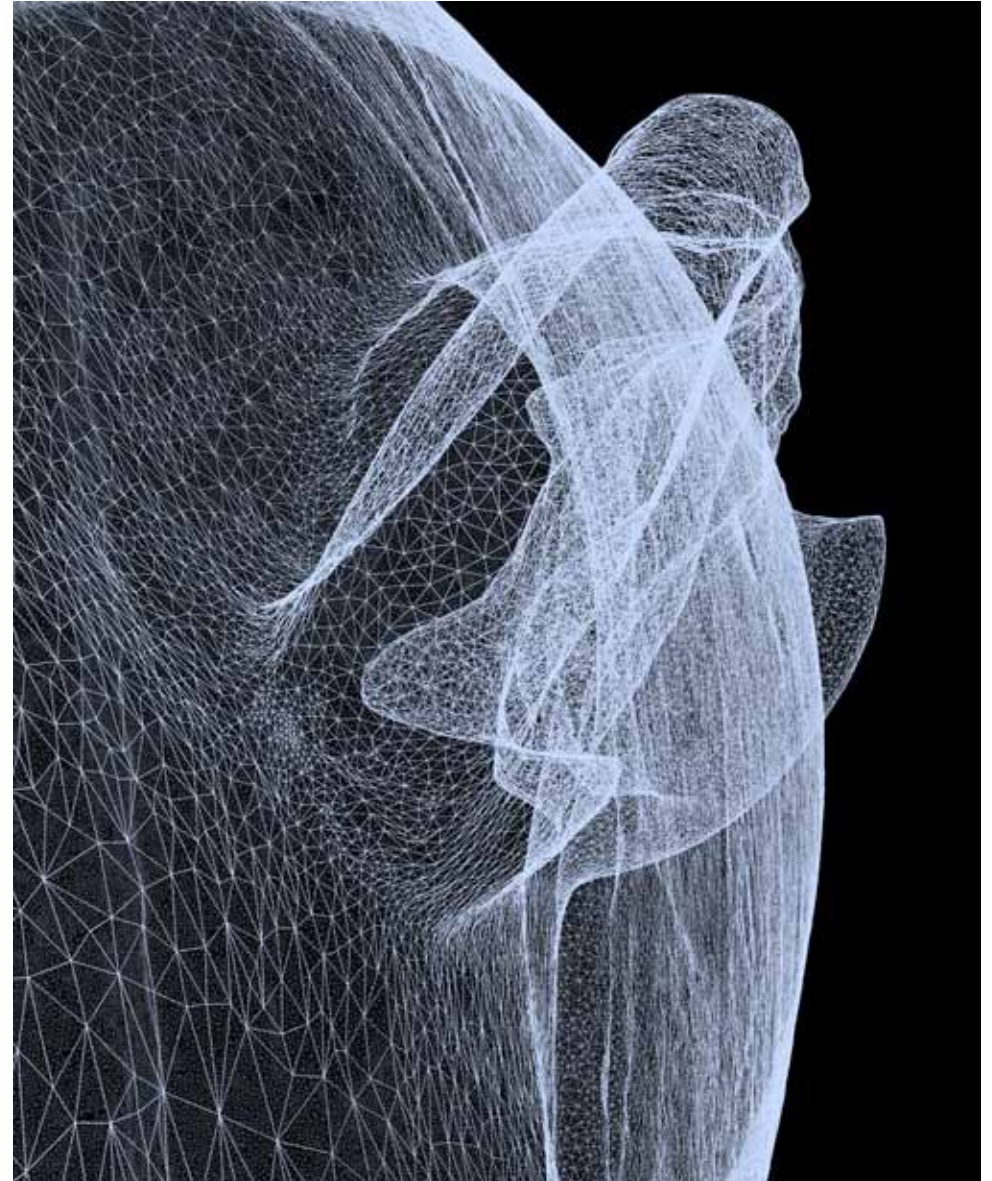
DISENTANGLED NO. 4, 2017

Nora Al-Badri and Nikolai Nelles
Ditone print
100 x 82 cm
Edition of 3



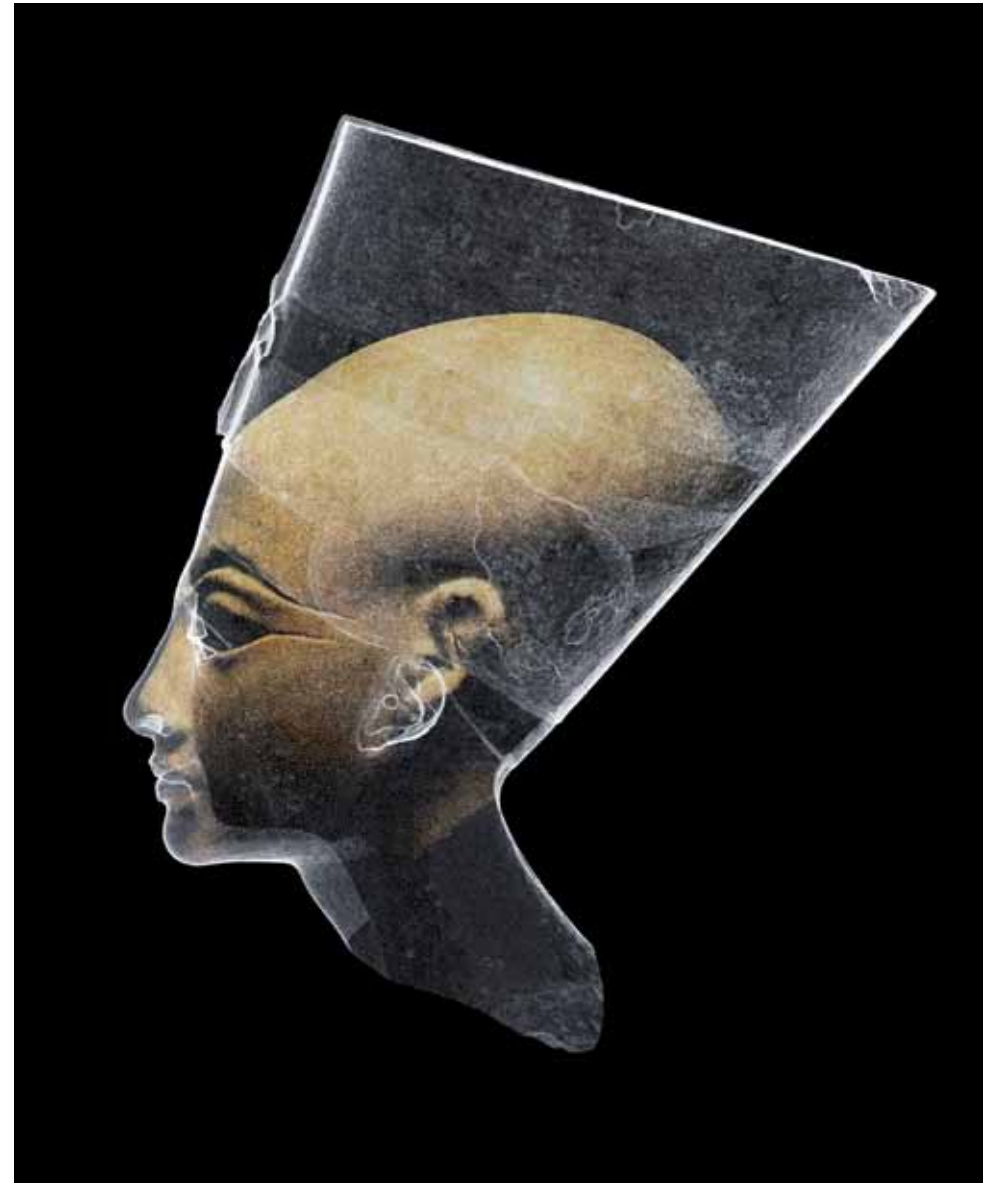
DISENTANGLED NO. 5, 2017

Nora Al-Badri and Nikolai Nelles
Ditone print
100 x 82 cm
Edition of 3



UNTITLED, 2017

Nora Al-Badri and Nikolai Nelles
Ditone print
150 x 183 cm
Edition of 3



THE OTHER NEFERTITI, 2017

Nora Al-Badri and Nikolai Nelles
glas w/ laser engraving/ metall
14 x 14 x 22,5 cm
Edition of 3



NOT A SINGLE BONE, 2017

Nora Al-Badri and Nikolai Nelles
Plaster, paint, iron
200 x 45 x 45 cm



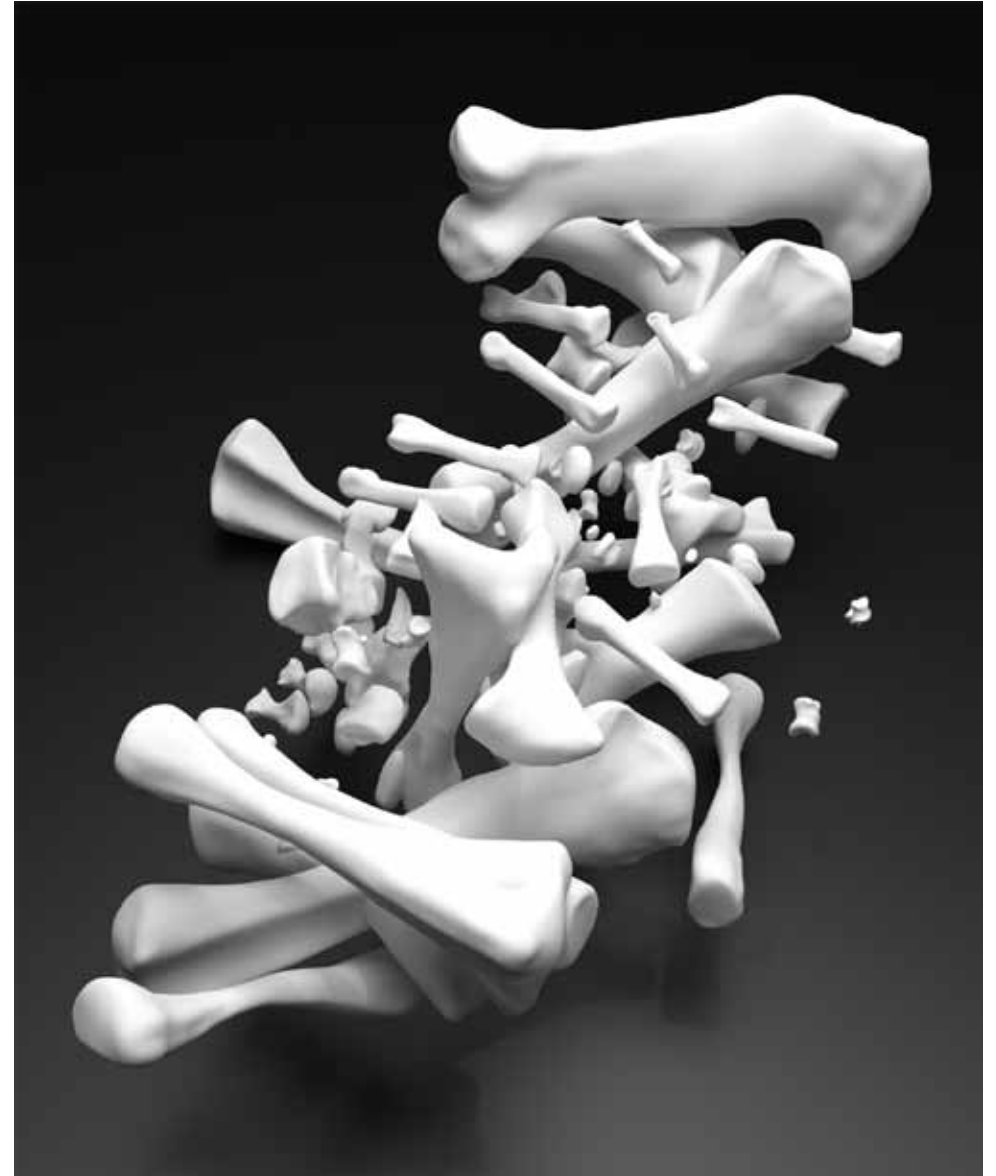
TERRITORIES OF CULTURAL FRACKING, 2017

Nora Al-Badri and Nikolai Nelles
Single channel video
07:00 minutes



HOW AN AI IMAGINES A DINOSAUR N°1, 2017

Nora Al-Badri and Nikolai Nelles
3D print
Various sizes



HOW AN AI IMAGINES A DINOSAUR N°2, 2017

Nora Al-Badri and Nikolai Nelles
3D print
Various sizes



HOW AN AI IMAGINES A DINOSAUR N°3, 2017

Nora Al-Badri and Nikolai Nelles
3D print
Various sizes



R E S E A R C H









C O N T R I B U T O R S



Denny Gayton, Standing Rock, USA



Zawadi Joseph Jilala,
Regional Natural Resources Advisor, Tanzania



Adrienne Mayor, Stanford University, USA



Prof. Norman MacLeod,
The Natural History Museum London, UK



Prof. Ciraj Rassool, University of Capetown, South Africa



Prof. W.J.T. Mitchell, University of Chicago, USA

NORA AL BADRI — NIKOLAI NELLES

Multidisciplinary artists Nora Al-Badri and Nikolai Nelles have worked together since 2009. Their artistic practice encompasses media art, investigative documentary and cultural activism. Their work addresses hegemonic and neo-colonial power structures and representations of the Global North and South, reflecting on the absurdity of the human condition. The duo stage interventions to challenge social infrastructures and institutions through civil disobedience, and pursue a critical re-evaluation of the cultural commons. *The Other Nefertiti* (2016) involved the public release of a high-res 3D data file of the Nefertiti Bust, an Ancient Egyptian artifact housed in the Neues Museum in Berlin, so that anyone can study, reconstruct or remix it. The work considers the role of copying and authenticity in preservation and questions how access to global heritage is controlled. A scale reproduction of the bust was included in the exhibition "A World of Fragile Parts", curated by the Victoria & Albert Museum at the 2016 Venice Architecture Biennale.

Al-Badri and Nelles have participated in the 3rd Design Biennial (Istanbul), the Something Else, Off Biennale (Cairo), and the Darmstadt Tage der Fotografie (Germany), and have staged public interventions at Biennale 4, Thessaloniki (Greece) and Occupy Frankfurt. They have exhibited in many galleries and project spaces across Germany.

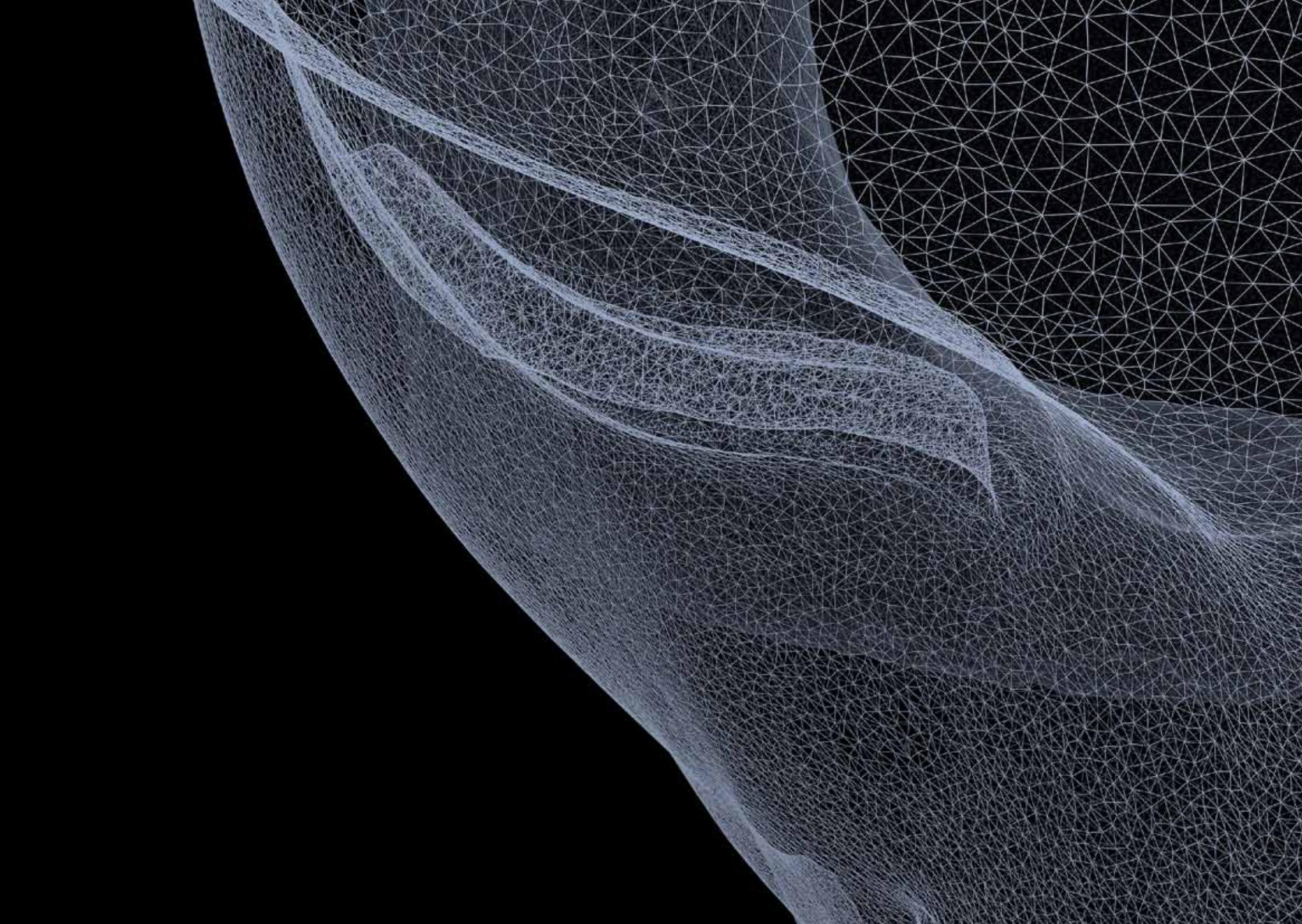
Their work has been featured in international media including the *New York Times*, BBC, Arte, *The Times*, *Le Monde Afrique*, *Egypt Today*, *Hürriyet*, *Wired*, *Der Spiegel*, *New Scientist*, *Dezeen* and *Artnet*.

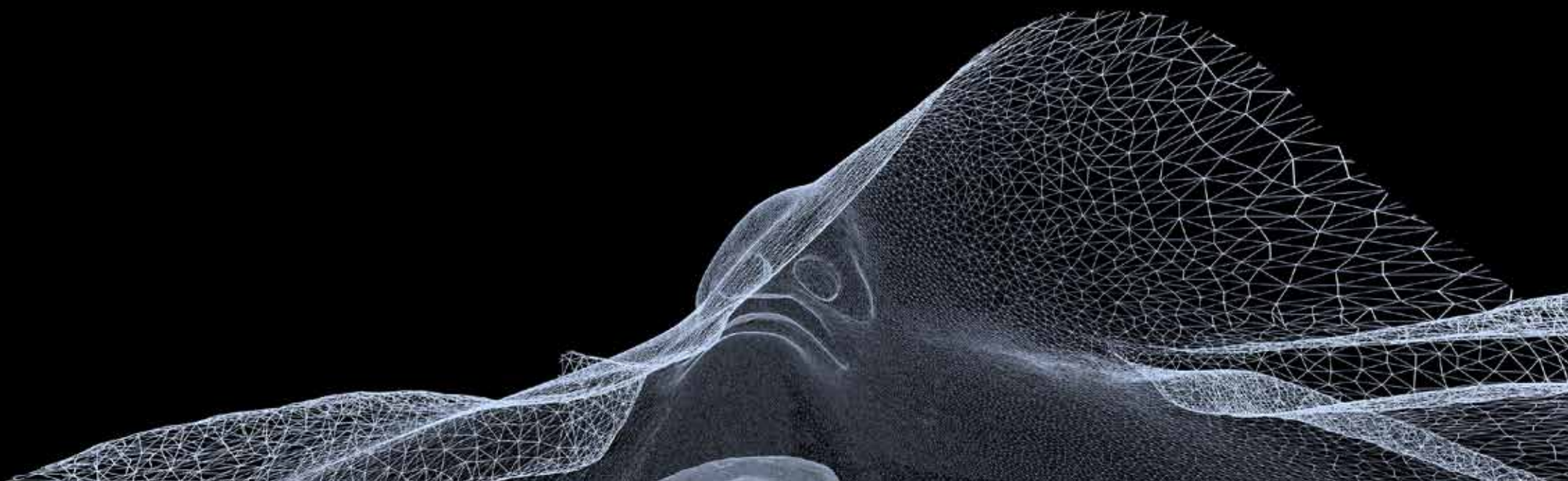
Nora Al-Badri is a multi-disciplinary artist with a German-Iraqi background. She studied Visual Art at Offenbach University of Art and Design and graduated in Political Sciences at Johann Wolfgang Goethe University in Frankfurt am Main.

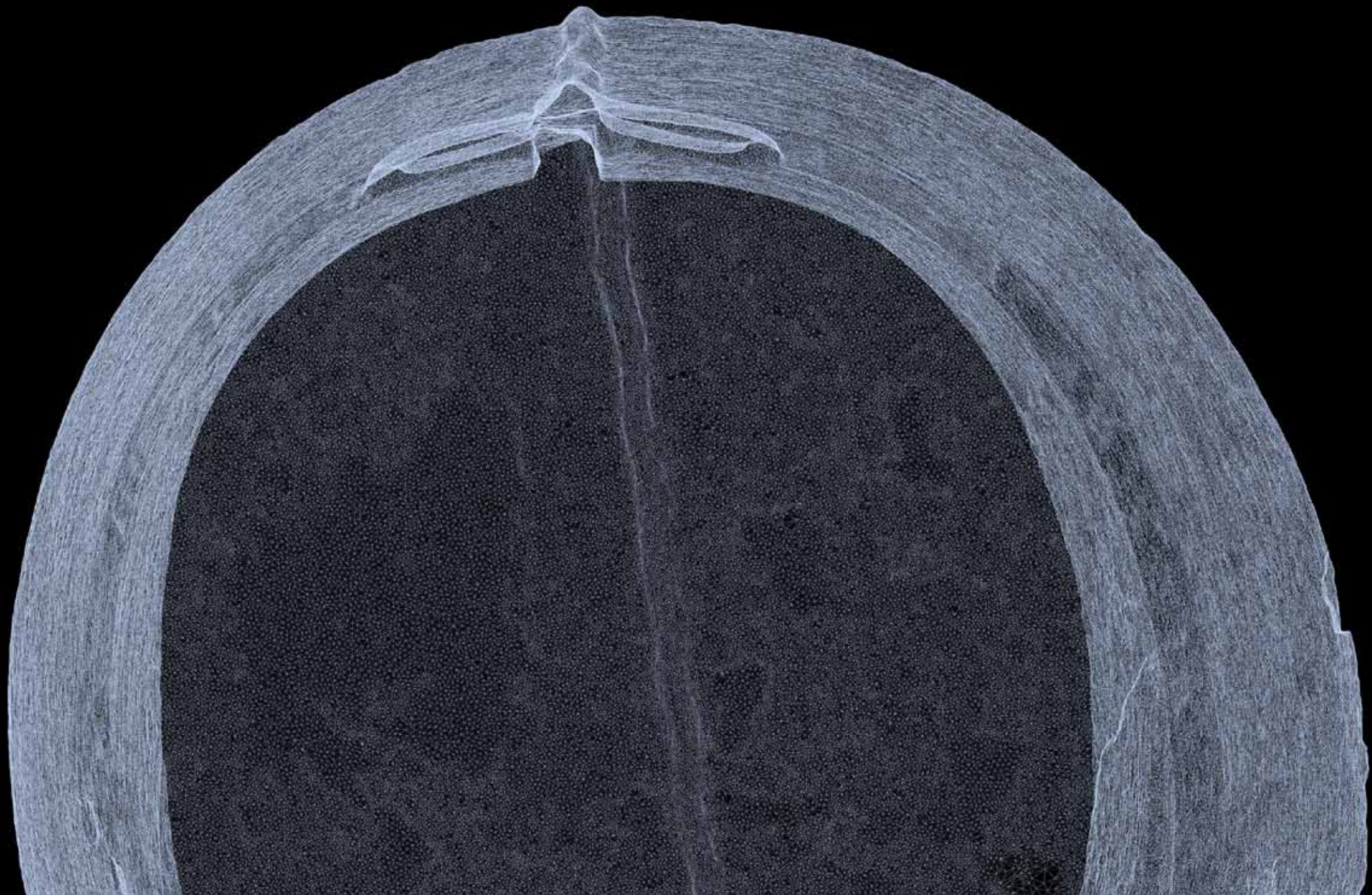
Nikolai Nelles is a German multi-disciplinary artist, graduating from Offenbach University of Art and Design in 2011. They have received grants from the Haus der Kulturen der Welt (HKW), Goethe-Institute, Institut für Auslandsbeziehungen (IfA), German Federal Foreign Office and European Cultural Foundation (ECF).

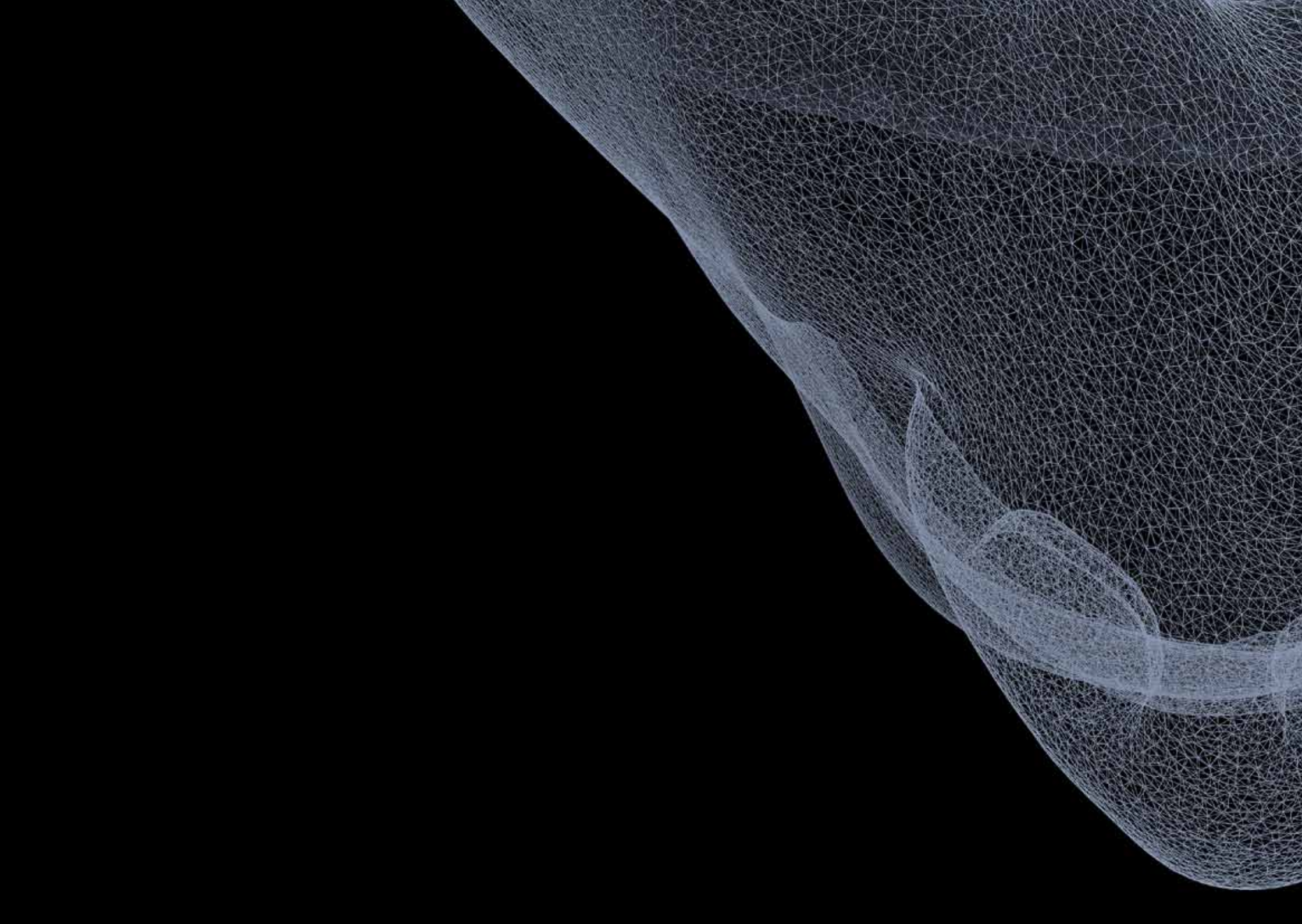
Both artists are based in Berlin.

<http://nellesalbadri.com>









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