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Karl Kusserow

Introduction: Connected

FIGURE 1
Earthrise, 1968
Photograph by William Anders
Courtesy NASA

A gifted if rarely electric writer, Charles Darwin raised his game when completing *On the Origin of Species* in 1859, ending his five-hundred-page opus with one of the most majestic and exhilarating passages in all of natural history. "There is grandeur in this view of life," the final sentence reads, "with its several powers, having been originally breathed into a few forms or into one; and that, whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved."[1]

Perhaps Darwin felt he had to pour on the expository finesse in concluding a text he knew was bound to cause a sensation. For twenty years he labored unobtrusively on the idea of the transmutation of species, or evolution by natural selection, whose rudiments first occurred to him during his voyage in 1831–36 on the HMS *Beagle* to the Galapagos Islands and beyond. Scientists before him had offered supporting intimations. At the turn of the nineteenth century, the French naturalists Jean-Baptiste Lamarck and Georges Cuvier broached the idea of evolution and confirmed the reality of extinction, respectively, and in 1830 Darwin's geologist friend Charles Lyell hypothesized the notion of deep terrestrial (as opposed to shallow biblical) time. But only the prospect of being lapped by the similar theory of friendly rival Alfred Russel Wallace prompted Darwin to publish his thesis, at first in papers presented jointly with Wallace in 1858,[2] and the following year on his own, in "summary" form, with *Origin of Species*.

The book's final paragraph begins with a sentence nearly as compelling as the last. "It is interesting to contemplate an entangled bank," Darwin writes, "clothed with many plants of many kinds, with birds singing on the bushes, with various insects flitting about, and with worms crawling through the damp earth, and to reflect that these elaborately constructed forms, so different from each other, and dependent on each other in so complex a manner, have all been produced by laws acting around us."[3] Conjuring an image that bespeaks the fulsome diversity and interdependence of life, which his thesis shows are themselves intimately linked, Darwin is saying that we are all connected, bound together in a weblike network of mutual influence that, as he was later to show in *The Descent of Man* (1871), gave rise to our own species.[4]

Despite the eventual acceptance of Darwin's ideas about human evolution, our essential connectedness to everything else is a truth that Western cultures have been ruinously slow to grasp, notwithstanding the conducive insights of the German naturalists Alexander von Humboldt before him and Ernst Haeckel and others thereafter. Centuries of anthropocentric thinking, from the classical precepts of Aristotle through the religious philosophers Augustine, Aquinas, and on—not to speak of the rest of the alphabet—have ingrained notions of human separation and distinction. Christianity's origin story begins with the command that the anointed

Andrew Patrizio

Extreme Attention: The Ecological Eye in Art History

The amount of creative genius in any period is strictly in proportion to the amount of extreme attention . . . at that period.

SIMONE WEIL, *GRAVITY AND GRACE*

In the 1970s a well-known portrait painting became the focus of a brief contest between different forms of critical attention. *Mr and Mrs Andrews* (fig. 1), painted around 1750 by Thomas Gainsborough (1727–1788), seemed "melodious" and "enchanting" to the eye of Kenneth Clark, a prominent and aristocratic art historian who clearly enjoyed regarding two fellow landowners standing before their gloriously unfolding English grounds.[1] The Marxist art historian John Berger, in his savaging of elitist forms of attention, spent a few pages of *Ways of Seeing* (1972) scoffing at

FIGURE 1
Thomas Gainsborough
British, 1727–1788
Mr and Mrs Andrews, ca. 1750
Oil on canvas, 69.8 × 119.4 cm
The National Gallery, London.
Bought with contributions from
The Pilgrim Trust, the Art Fund,
Associated Television Ltd, and
Mr. and Mrs. W. W. Spooner, 1960

FIGURE 2
Francisco José de Goya y Lucientes
Spanish, 1746–1828
Duel with Cudgels, or Fight to the Death with Clubs, 1820–23
Mixed media on mural transferred to canvas, 125 × 261 cm
Museo del Prado, Madrid.
Acquisition for the Prado Museum, 1881/1889

Clark's analysis, preferring to focus instead on how the visual aspect of the work might be aligned with the political, social, and historical realities that made the picture look the way it does.[2] The landscape behind the newly married Mr. and Mrs. Andrews is far from an uncorrupted Eden. Instead, as Berger reminds us, it was a carefully guarded piece of private property on which poachers could be whipped if they were caught. In this brief skirmish in the battle between old and new forms of art history, Berger does not mention gender issues in the work, nor the actual and implied presence of animals and crops, nor the deeper natural and geological features captured in the painting. Its human focus is explicit in the title, of course, and its wider ecocritical features are implicit, yet the battle lines are clear enough: How widely and deeply must our attention go to achieve a more just understanding of this work and its like? The legacies of what came to be called the New Art History have become mainstream in our own time and the necessity of wider frames of reference more accepted. Yet the need for increased depth, more environmental nuance, and what the philosopher Simone Weil called "extreme attention" has become stark and urgent.

Such a shift is signaled in the opening passages of the philosopher Michel Serres's *The Natural Contract* (1990), which was written only eighteen years after Berger's *Ways of Seeing* and is more freighted with ecocritical intent. Serres opens with one of the "black paintings" by Francisco de Goya (1746–1828) as a metaphor for missing the real crisis. *Duel with Cudgels* depicts two individuals who are so interlocked in combat—so "attentive to the other's tactics"—that they fail to appreciate how endangered they are, "knee-deep in the mud" of the dense marshland in which they stand (fig. 2). As Serres notes, "they are gradually burying themselves together," so while the dramatic and mountainous landscape is swallowing them up, "the belligerents don't notice the abyss they're rushing into; from outside, however, we see it clearly."[3] Goya's painting, under Serres's pen, becomes a striking

Sugata Ray

From New Spain to Mughal India: Rethinking Early Modern Animal Studies with a Turkey

FIGURE 1
Mansur
Indian, active 1590–1624
Turkey Cock, ca. 1612
Opaque watercolor and gold on paper, 12.8 × 12.2 cm (image)
The Victoria and Albert Museum, London. Bequeathed by Lady Wantage

Do turkeys enjoy Thanksgiving?
ARUNDHATI ROY, 2004

On the sixteenth of Farvardin, March 25, 1612, the Mughal emperor Nuruddin Muhammad Jahangir (1569–1627) noted in his personal memoirs, the *Jahangirnama*:

I had ordered him [Muqarrab Khan, a high-ranking noble in the Mughal court] to go to the port of Goa on several items of business and see the vice-rei, the governor of Goa, and to purchase any rarities he could get hold of there for the royal treasury. . . . Without consideration for cost, he paid any price the Franks [Portuguese] asked for whatever rarities he could locate. . . . He had brought several very strange and unusual animals I had not seen before. No one even knew what their names were. . . . One of the animals was larger in body than a peahen and significantly smaller than a peacock.[1]

The animal in question was the American turkey (*Meleagris gallopavo*), a bird that had, until this time, never been seen in India. The emperor sought to comprehend the strangeness of the bird—whose name he did not know—through careful ekphrasis. Jahangir continued:

Sometimes when it displays itself during mating it spreads its tail and its other feathers like a peacock and dances. Its beak and legs are like a rooster's. Its head, neck, and wattle constantly change color. When it is mating they are as red as can be—you'd think it had all been set with coral. After a while these same places become white and look like cotton. Sometimes they look turquoise. It keeps changing color like a chameleon. The piece of flesh it has on its head resembles a cock's comb. The strange part about it is that when it is mating, the piece of flesh hangs down a span from its head like an elephant's trunk, but then when it pulls it up it stands erect a distance of two fingers like a rhinoceros' horn. The area around its eyes is always turquoise-colored and never changes. Its feathers appear to be of different colors, unlike a peacock's feathers.[2]

Eventually, the emperor designated the court artist Mansur (active 1590–1624), who had received the honorific title Wonder of the Age, *Nadir al-'Asr*, to draw the bird's likeness, or *taswir*, "so that the astonishment one has at hearing of them would increase by seeing them."[3] Echoing the emperor's punctilious ekphrasis, Mansur's circa 1612 painting, too, was a careful and precise study of the bird (fig. 1). Meticulously applying color in small areas to define the texture and sheen of plumage, the artist depicted the turkey against a tinted background to accentuate the bodily presence of the bird through naturalistic verisimilitude.

Mansur's perceptive delineation of the turkey was unprecedented within the artistic cultures of the Mughal court. Indeed, Mansur's own circa 1590 painting of a pair of gray francolins (*kanjal*) and western tragopans

Alan C. Braddock

Mestizo Mnemonics: Diego de Valadés, *Rhetorica Christiana*, and the Earthly Art of Memory

As a way of considering the ecocritical implications of art produced long before the German naturalist Ernst Haeckel (1834–1919) coined the term "ecology" (*Oecologie*) in 1866, this essay examines a sixteenth-century engraving by Diego de Valadés (1533–1582) representing the Great Chain of Being, a cosmic vision of hierarchical order in nature (fig. 1). Rooted in Western classical principles going back to Plato (ca. 428–347 BCE) and Aristotle (384–322 BCE), such imagery embodied ancient European beliefs about nature as a coherent system of life forms arranged on a sliding scale, or *scala naturae*, according to varying levels of animation and intelligence. During the medieval period in Europe, this tiered scheme became imbued with religious assumptions about divine creation, dictating that all life originated with God in perfect plenitude for eternity, anthropocentrically ranked with human beings at the top of the earthly realm, just beneath Heaven. Accordingly, any contradictory notions of change, disruption, or realignment constituted heresy. Valadés's engraving envisioned important linkages across categories—including the image of a literal chain connecting the various echelons of being—but its static theological structure seems to stand in direct contrast to modern ecology's understanding of nature as intrinsically dynamic and mutable. As both picture and concept, *The Great Chain of Being* apparently provides a foil to the more fluid sense of interconnection and change that characterizes ecological thought today. And yet, I argue, the engraving by Valadés reveals subtle artistic signs of environmental complexity arising from his particular historical circumstances and memories, suggesting the irrepressible power of ecology—and art of the distant past—to challenge entrenched ideas.[1]

FIGURE 1
Diego de Valadés (Didacus Valdes)
Spanish, 1533–1582
The Great Chain of Being, illustration in *Rhetorica Christiana* (Perugia: 1579)

FIGURE 7
Ford Madox Brown
British, 1821–1893
Work, 1852–65
Oil on canvas, 164 × 224.5 cm (framed)
Manchester Art Gallery, United Kingdom. Purchased 1885

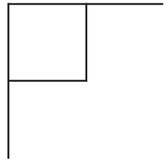
James Nisbet

On and Off the Grid

Then and Now

In late November 2018, I arrived with some two dozen students at a nondescript spot along a dirt road in southern Nevada's Tule Desert. Maps indicate that our location was Snow Springs Road, but we hadn't seen any signs of identification, for either this road or any other, in the thirty-some miles we had traversed since turning off the interstate. Armed with smartphones equipped with off-line maps downloaded from Google, we stepped out of our small caravan of vehicles and meandered into the cool air and warm sunlight of a desert landscape populated by Joshua trees and low-lying brush. We were in search of a specific point, a coordinate measured to a ten-millionth decimal place, that is punctuated by a pyramid-shaped rock. This point—37.1511680, –114.3202470—is the northwest apex of the site-specific Earthwork *Las Vegas Piece*, which was created by the artist Walter De Maria (1935–2013) in the late fall of 1969.[1] Stopping and starting, looking up and then out and then down again to high-resolution screens updating our location with GPS, we haltingly but finally found our way there (figs. 1, 2).

When it was new, a half century ago, *Las Vegas Piece* consisted of a series of well-defined lines that had been carved into the desert floor by the six-foot blade of a bulldozer (fig. 3). These lines formed a square measuring a half mile on each side and extended an additional half mile in two directions, each along the cardinal axes of the compass:



FIGURES 1 & 2
The northwest apex of Walter De Maria's *Las Vegas Piece*, 1969, Tule Desert, Nevada
Photographs by Sydney Schmeltz, November 2018

FIGURE 3
Walter De Maria
American, 1935–2013
Las Vegas Piece, 1969
Earthwork, Tule Desert, Nevada
Courtesy of the Estate of Walter De Maria

Finis Dunaway

Seeing Beyond Borders: Grassroots Visual Culture and the Struggle to Protect the Arctic Refuge

In May 1988 Norma Kassi waited with great anticipation. She was with her family at their hunting camp in Crow Flats, a vast wetland complex lying north of Old Crow—the most northern community in the Yukon territory of Canada. They had just killed a caribou, and Kassi expected Lenny Kohm to arrive soon. She wanted the photographer to be there for the spring harvest so that he could see "our caribou always come like clockwork, two times a year." She thought that this experience would help him understand that "if it wasn't for our caribou," the Gwich'in people "would not have survived way up here in the Arctic."[1]

Kassi had met Kohm (1939–2014) the year before in another Gwich'in community—Arctic Village, across the border in Alaska—and invited him to visit Old Crow. Ever since, she had closely followed the work of the Sonoma Coalition for the Arctic Refuge, a grassroots group that Kohm had helped launch in California. The Sonoma Coalition was planning to put together a slide show and then take it on the road to build public support for protecting the Arctic National Wildlife Refuge in Alaska from fossil fuel development. Kassi firmly believed that Kohm's photographs could aid the Gwich'in in their fight against oil drilling. "He's going to help us on the issue," she explained to community leaders. "So we really need to take care of him. We need to look after him. We need to make sure that he gets good photos, because we need these pictures to help us."[2]

Kassi and other Gwich'in leaders in Canada and Alaska were concerned that oil drilling in the Arctic Refuge would endanger the caribou that run through their lands. Every year, the Porcupine caribou herd journeys from its wintering grounds in the boreal forests of Canada and Alaska, crossing over steep mountains and frozen rivers until the animals reach the Arctic Refuge coastal plain, where they give birth to their young. The Gwich'in argue that drilling would violate their rights, jeopardize their food security, and undermine their historic, deeply felt connection to the caribou.[3]

By the time Kohm arrived at the family's camp, the snow was starting to melt, and the caribou were embarking on their long trek toward the coastal plain. He spent two weeks there, learning about Gwich'in culture and their connections to the land and the caribou. While they were in Crow Flats, Kassi's mother started referring to Kohm, in Gwich'in, as "the little white man who never sleeps." It was an apt description, because he always seemed to be roaming around in the bush, relishing the long hours of sunlight, and taking rolls and rolls of pictures. Several of these photographs were included in the Sonoma Coalition's slide show. The scenes Kohm recorded, the plant and animal life he portrayed, the subsistence activities he documented: these were all shown to him by Kassi's family. Without the trust that he built with Kassi and other Gwich'in, he would have never been brought to Crow Flats to witness their life on the land.[4]

After leaving Old Crow, Kohm traveled to eight other Gwich'in communities over the next few months, venturing from the Northwest Territories to Alaska. From his time on the land with the Gwich'in, he learned to appreciate the transnational significance of the Arctic Refuge. He witnessed how the caribou defy arbitrary national borders and how Indigenous communities dotted across northwestern Canada and northeastern Alaska depend on this animal and other species for their cultural survival.[5]

Tucked away in the northeastern corner of Alaska, the Arctic National Wildlife Refuge has been the focus of the longest-running public lands debate in North American history. Initially set aside in 1960 and then doubled in size twenty years later, the refuge provides life-sustaining habitat for caribou, polar bears, birds, and other species. Environmentalists celebrate it as "the Last Great Wilderness," while Indigenous people in Canada and Alaska call it "the Sacred Place Where Life Begins." For decades, though, the fossil fuel industry and powerful politicians have pushed to turn this unique ecosystem into an oil field.[6]

In 1987, at the age of forty-seven, Lenny Kohm's life suddenly became entangled with the refuge struggle. Kohm was an unlikely activist. Born in Seattle, he attended the Berklee College of Music in Boston and then pursued a career as a jazz drummer for fifteen years. In 1977 he determined, with tongue-in-cheek quantitative precision, that he was "probably the 238th best drummer in the world." He decided to abandon his percussion career and move to Sonoma, California. He walked into a drugstore and, in his words, "conned my way into running the photo department." Kohm developed film dropped off by customers and learned photography, he said, "just [by] dealing with people and their snapshots." He soon began dabbling in art photography and photojournalism.[7]

The year 2012 is the Goliath year of climate change, and it is all about the ice. But one fact towers above the rest: the colossal melt of Greenland (fig. 2). In mid-July that year scientists stared at statistics so staggering they thought at first there was some mistake.[9] Satellite images showed that in four days alone, 97 percent of the massive, mountainous ice surface of Greenland had thawed from white to dark.[10] Snow cover, parts of which had been frozen for eighteen million years, had thawed into a colossal sheen of ice water. Scientists were stunned. Ice surface the size of the United States had disappeared. "This is unprecedented," said Jay Zwally, a glaciologist at NASA's Goddard Space Flight Center. To have melt cover the whole of Greenland, he said, is "unknown."[11]

A few days before the Great Melt, an iceberg the size of two Manhattans sheared off the Petermann Glacier and floated out to sea.[12] The fraying edges of Greenland are slipping under water. For the first time in human history, blooms of algae sprout beneath the permafrost as sunlight filters through the blue melt caverns.[13] Icy torrents roar down depthless, sapphire abysses called moulins, unmaking the ice sheets from below.

Panicked polar research teams crunched the numbers and agreed: polar ice melt had caused 20 percent of global sea-level rise since 1992, and most of that melt was from Greenland.[14] The Arctic ice domes had shrunk to their smallest size in recorded history, melting three times faster than anywhere else on earth, seven times faster than in the 1990s. By century's end, Glacier Park will have no glaciers, Iceland may well be named Icelessland, and the snows of Mount Kilimanjaro will be gone.

The ice sheets are our giant mirrors, reflecting the sun's heat (in a process called albedo) and cooling the earth. As humans overheat the planet, the white ice melts faster. As it melts, it darkens and absorbs more heat, and the great thaw speeds into a fateful, self-perpetuating spiral. As ice pours into the oceans, the oceans rise. And as the oceans warm, they expand and they rise. What filled scientists with dread in 2012 was not merely the immensity of the Great Melt, but that something unforeseen and catastrophic had been set in motion that could not now be stopped.

FIGURE 2
The Great Melt of Greenland, July 19, 2012
Photograph by the author

Formidably vast and faraway, Greenland is the largest island in the world. The melting of Greenland has been called the greatest geological change to reshape the planet in human history.[15] Ice sheets and glaciers also serve as the fragile, frigid retainers of the earth's irreplaceable fresh water. Together with the Antarctic, Greenland's ice sheets contain 99 percent of the fresh water on earth.[16] Himalayan glaciers regulate water supply to a quarter of all people.[17]

But the Great Melt is abstract. Scientists tell us the Greenland ice sheet is fifteen hundred miles long, stretching the vertical length of the United States. They tell us the ice is two miles deep at the center. They tell us this massive ice cube contains a dizzying three quadrillion tons of solid water. That is 3,000,000,000,000,000 tons—a 3 with 15 zeros.[18] And they estimate that when all that ice melts it will raise global sea levels by twenty-four feet, unleashing a planetary cataclysm that will drown the coastlines and mega-cities of human civilization that took millennia to make—undoing and reshaping the world.

But this is magical counting. The numbers speed across our eyes like a nightmare ticker tape: too fast to be imagined, too faraway to feel tangible, conceivable, real. The problem is not precision. The problem is perception. Scientists tell us the ice sheets covering Greenland and Antarctica lose 344 billion tons of ice every year.[19] But our imaginations strain against the numbers. We can't see the scale and time of climate threat. The word "glacial" used to mean "slow." Now "glacial" signals the speed and scale of climate catastrophe, moving at a magnitude our minds cannot picture. And if we can't picture it, how can we act to prevent it?

Our senses are tuned to the intimate signs of the years' turnings, the green sunlight of spring, the soft sifting of snow, a hummingbird's wings. We can see the fractal veins in a leaf and its twinned tracery in the palm of our hands, but we can't see the bigger fractal of the Mississippi marshes slipping into a blue abyss every hour. Our tongues can't taste the marshes turned to salt. Our fingertips can't feel the warming oceans bleaching the coral reefs bone white.

Scientists say that nearly all of Greenland's 836,000 square miles of ice surface thawed, and to get the point across they tell us that Greenland is five times the size of California, or, if you prefer, three times the size of Texas.[20] But if we can't imagine the size of Texas, how can we imagine three times that much? Our minds are not suited for picturing the ice caps melting, the tininess of nitrogen change, and billions of people learning to lead amphibious lives.