

# The World with Us: The State of American Environmental History

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In a now-classic round table discussion among a group of noted historians in 1990, the *Journal of American History* introduced its readers to the then-new discipline of environmental history. The field had its roots in several venerable scholarly enterprises—including the historiography of the American frontier, traditional American studies, the Annales school, historical geography, cultural ecology, and the political history of conservation—but it coalesced with the rise of the environmental movement in the 1960s and 1970s, catalyzed by a growing sense that solving national and global environmental problems required a historical perspective. The logic of social history had an equally important formative influence on the rise of environmental history; where social historians argued for extending historical consideration to the less powerful and those whose voices were difficult to find in archives, environmental historians suggested that scholars jump the humanistic divide to account for what Donald Worster, in his lead essay, called “the role and place of nature in human life.” Like social historians, environmental historians argued for bringing new sources and methods into the practice of history, usually drawing from ecology and other environmental sciences. And as social historians had done with their subjects of study, environmental historians sought to extend moral consideration to the natural world.<sup>1</sup>

The 1990 *Journal of American History* round table functioned as the culmination of the first generation of environmental history scholarship and a springboard for a second generation of scholars. Worster explained that environmental history sought to give voice to a set of “autonomous, independent energies that do not derive from the drives and intentions of any culture,” and he urged environmental historians to utilize the “wisdom of

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<sup>1</sup> Donald Worster, “Transformations of the Earth: Toward an Agroecological Perspective in History,” *Journal of American History*, 76 (March 1990), 1087–1106, esp. 1089. Other articles in the *Journal of American History* round table discussion are Alfred W. Crosby, “An Enthusiastic Second,” *ibid.*, 1107–10; Richard White, “Environmental History, Ecology, and Meaning,” *ibid.*, 1111–16; Carolyn Merchant, “Gender and Environmental History,” *ibid.*, 1117–21; William Cronon, “Modes of Prophecy and Production: Placing Nature in History,” *ibid.*, 1122–31; Stephen J. Pyne, “Firestick History,” *ibid.*, 1132–41; and Donald Worster, “Seeing beyond Culture,” *ibid.*, 1142–47. On the role of history in solving global environmental problems, see Alfred W. Crosby, “The Past and Present of Environmental History,” *American Historical Review*, 100 (Oct. 1995), 1177–89. On extending moral considerations into the natural world, see Stephen Mosley, “Common Ground: Integrating Social and Environmental History,” *Journal of Social History*, 39 (Spring 2006), 915–33.

nature” to assess human-induced environmental change. He focused on “the concept of modes of production” to understand how humans had altered ecosystems to serve their ends, and he made the rise of capitalism the central drama of environmental history. The respondents—Alfred Crosby, Richard White, Carolyn Merchant, William Cronon, and Stephen Pyne—found much to applaud in Worster’s ambitious vision, but they also noted the tensions between his definition of nature as an ordered nonhuman realm with its own inherent values, and nature as a realm necessarily constructed through culture. Some cautioned that the science of ecology depicted nature as stochastic and without normative lessons, and that students of the natural world increasingly found it difficult to locate a nature independent of human influence. Others worried that the voices that environmental historians gave to nature in their narratives would always be riddled with personal assumptions and values. Still others suggested that environmental conflicts masked social power struggles and that environmental historians needed to attend carefully to categories of social difference. Nature, they suggested, was not a settled category but was contested terrain. Worster was not naïve about these challenges, but he worried that dwelling on nature as a product of culture or as a realm within which to situate social conflict was to give up on the most important ambitions of the field: to find in the natural world not only a forceful historical presence but also a set of values to reshape a narrative approach to the past. Worster advocated bold, lesson-driven environmental histories; many of his respondents wanted scholarship built upon a more critical approach to nature as the central category of analysis.<sup>2</sup>

Since that 1990 round table, the field of environmental history has grown like kudzu on a hot July day. Environmental history has come out of the wilderness and found its way into almost every American landscape. Although American environmental historians retain a foundational interest in the power of capitalism to transform the natural world, they have focused in new ways on the state as a force for environmental change. They have begun to utilize innovative approaches to health, disease, and the body; have renewed their interest in agriculture; and have become much more comfortable in the human-built world. They have engaged race, ethnicity, class, gender, sexuality, and other categories of analysis; have moved with American historiography in transnational directions; have made the environmental sciences proper subjects of inquiry as well as methodological informants; and have explored the rich cultural dimensions of human-environmental interactions. The work of American environmental historians has appeared with increasing frequency in the most prominent history journals, and their articles and books have won major prizes, suggesting that laments about the field’s marginality may have lost their legitimacy. As notably, the practice of environmental history outside of the United States has exploded in the last two decades, requiring American environmental historians to become worldlier in their questions and concerns. By almost any measure environmental history is one of the most vital subfields within American history and one of the fastest-growing approaches to the study of the past within the larger profession.<sup>3</sup>

<sup>2</sup> Worster, “Transformations of the Earth,” 1089, 1096, 1090.

<sup>3</sup> For overviews of the field of environmental history, see Douglas Cazaux Sackman, ed., *A Companion to American Environmental History* (Malden, 2010); and Sarah T. Phillips, “Environmental History,” in *American History Now*, ed. Eric Foner and Lisa McGirr (Philadelphia, 2011), 285–313. For two different approaches to American environmental history surveys, compare Ted Steinberg, *Down to Earth: Nature’s Role in American History* (New York, 2002); and Mark Fiege, *The Republic of Nature: An Environmental History of the United States* (Seattle, 2012).

As a third generation of specialists enters the field, many of the methodological and analytical tensions laid bare in the 1990 round table persist. On balance, the second generation of American environmental historiography has proceeded along the more self-conscious and critical path urged by Worster's respondents, and one of its most important achievements has been the thorough troubling of "nature" as a category of analysis. This is most clearly seen in the field's embrace of hybridity: trading out the polar categories of nature and culture—and the simple but powerful moral narratives that such bifurcation facilitated—for approaches that see all environments as interweaving the natural and the cultural in complex ways. If I had to tersely sum up the drift of American environmental historiography since 1990, I would say, simply, that all environments are hybrid. Where the first generation of American environmental historians might have seen a dam thrown across a river in the western United States as an act of domination, of human artifice destroying a natural system, the second generation has been more likely to characterize such an intervention as creating a "second nature" of the river, or, to use Richard White's phrase, an "organic machine." There is considerable virtue in hybridity as a corrective to the analytical challenges laid out in the 1990 round table. By focusing on hybrid environments, the field has largely given up on a pristine, ahistorical nature as a baseline against which to measure human-induced change. The hybrid turn has not only been a cultural shift, however; hybridity also implies that human history and culture cannot be easily isolated from environmental forces and circumstances. Hybridity not only allows environmental historians to find cultural traces in what they thought was the natural but also to find the natural thriving in places swamped by human activity. In that sense, hybridity has helped loosen what Daniel Lord Smail has called, in a different context, the "grip of sacred history." Environmental historians have replaced Edenic ideals—in many ways particular to American environmental thinking—with a commitment to seeing environments as necessarily historical, produced by forces of change, human or not, over time. They have rejected the notion that environments transformed by human activity are sullied and fallen. In doing so, they have mirrored trends in the environmental sciences, and they have moved closer to the sensibilities of many non-U.S. environmental historiographies, which are quicker to assume that most landscapes have deep human histories. As Richard White has noted, "there is hope in hybrid landscapes," born of the realization that the natural can persist, and sometimes thrive, in humanized settings. Hybridity has allowed American environmental historians to slough off lapsarian tendencies and to replace a fortified border between nature and culture with an increasingly expansive borderland.<sup>4</sup>

Environmental history's commitment to hybridity, however productive, also feels transitional. While hybridity has effectively troubled older plot lines of prehuman nature receding under the harsh hand of human domination, it has not always offered analytical or normative clarity. If all environments are hybrid, what are the useful distinctions to be

<sup>4</sup> On troubling the category of nature, see William Cronon, ed., *Uncommon Ground: Rethinking the Human Place in Nature* (New York, 1996). On hybridity, see Richard White, "From Wilderness to Hybrid Landscapes: The Cultural Turn in Environmental History," *Historian*, 66 (Fall 2004), 557–64. The classic study of dams as domination is Donald Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West* (New York, 1986). For the response from the second generation of environmental historians, see Richard White, *The Organic Machine: The Remaking of the Columbia River* (New York, 1995); and Mark Fiege, *Irrigated Eden: The Making of an Agricultural Landscape in the American West* (Seattle, 1999). Daniel Lord Smail, "In the Grip of Sacred History," *American Historical Review*, 110 (Dec. 2005), 1337–61. On non-U.S. environmental historiography, see, for example, Curt Meine, "It's about Time: Conservation Biology and History," *Conservation Biology*, 13 (Feb. 1999), 1–3. White, "From Wilderness to Hybrid Landscapes," 563.

made within that category? What counts as damage in hybrid environments? Are some hybridities better than others? If so, what makes them better? How do we value the hybrid without simply falling back on the pure strains of nature or culture? How do we make sense of environmental causation in a hybrid world? Hybridity has challenged declensionist narratives and pushed American environmental historians into new terrain, but those scholars have found this world, without Eden or sin—without a pure nature or universal human transgression against it—a disorienting place. Hybridity may be a source of hope, but at this moment of unprecedented human influence over the global environment—what many call the Anthropocene—environmental historians must better contend with and communicate the cultural, material, and moral complexity implicated in the term.<sup>5</sup>

Revisiting environmental history's two core tasks reveals the strengths and the limitations of the hybrid turn. The first task has been to bring environmental causation into historical narration. Environmental historians have long argued that nature matters to the course of human affairs; indeed, some speak of "nature" as having "agency." During the reign of the hybrid, however, environmental historians have grown rightly uneasy with such a formulation, and the salutary results of moving away from it are becoming clear. Part of the problem is the way that "nature" lumps together a diverse set of environmental entities and forces; here, environmental historians have profited by breaking down nature into more supple causal taxonomies and models of hybrid causation. One of the most important realizations that I came to in preparing this essay is that environmental history has been experiencing a period of fragmentation and reconstitution best seen in its connections to and implications for such new fields as deep history, big history, spatial history, sensory history, environmental justice, envirotech, energy history, animal history, climate history, industrial ecology, disaster history, and evolutionary history. All of this cleaving and calving is surely a sign of success, as environmental history's approaches and concerns proliferate into new areas of inquiry, but these new fields also seem diagnostic of environmental history's troubled categories of analysis—not only the freighted and now thoroughly problematized "nature," but also the encompassing and surprisingly undertheorized "environment." As a result, many are finding it more precise and satisfying to talk about animals, energy, climate, evolution, or specific human-environmental interfaces without necessarily invoking an overarching nature that acts in history. Continuing to break apart nature may allow scholars to give more satisfying causal force to those "autonomous, independent energies" that Worster described as central to environmental history. A number of the works that I highlight later in this essay have done this to good effect.<sup>6</sup>

As environmental historians have dissected nature, so have they rethought agency and, in doing so, have been part of a growing impulse within the historical profession. "Agency" often has functioned for environmental historians as an attention-getting metaphor, a gesture at their affinity for the expansive logic of social history. But use of the concept has

<sup>5</sup> On the growing sense of Anthropocene crisis, see Will Steffen, Paul J. Crutzen, and John R. McNeil, "The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?," *Ambio: A Journal of the Human Environment*, 36 (Dec. 2007), 614–21; and Dipesh Chakrabarty, "The Climate of History: Four Theses," *Critical Inquiry*, 35 (Winter 2009), 197–222.

<sup>6</sup> On the breaking of "nature" into taxonomies, see Linda Nash, "The Agency of Nature or the Nature of Agency?," *Environmental History*, 10 (Jan. 2005), 67–69; and Paul S. Sutter, "Nature's Agents or Agents of Empire? Entomological Workers and Environmental Change during the Construction of the Panama Canal," *Isis*, 98 (Dec. 2007), 724–54. Worster, "Transformations of the Earth," 1089.

also stunted efforts to show the diverse qualities of nonhuman forces at play in history as well as the difficulties that arise in conceptually separating the human from the nonhuman. Let me explain. The presence of coal seams or fertile soils in particular places has certainly mattered to human history, but to talk of coal or soils as having agency seems a stretch. The same can be said of geophysical influences such as geography and climate, which shape history (and are increasingly artifacts of it) but do not act within history in ways that most historians associate with agency. Physical events such as hurricanes, floods, earthquakes, volcanic eruptions, fires, and tsunamis have a different kind of causal force—punctuated power to deflect the course of events—but *agency* seems the wrong term for them too. What happens when analysis moves from the geophysical to the organic? Is agency something that can be discussed in more satisfying ways in relation to living organisms? Do plants, microbes, or insects have qualities that make them particular kinds of actors in history? How is it possible to define the roles of animals—creatures that might be recognized as having a will—in producing change over time? What happens when these different kinds of environmental entities and forces connect and combine with human actions to produce complex historical phenomena: a disease such as malaria, for example, that may have something to do with almost every type of entity and force already mentioned? Where can agency be located in such an assemblage? Just as the term *nature* crudely lumps these diverse forces together, *agency* suggests a kind of causal equivalence among them that environmental historians must move beyond.<sup>7</sup>

*Agency* is a strange term for environmental historians to be employing precisely because it is a quality that historians have used to separate human actors from the world of non-human force and action. If, as Worster urged, environmental history does reject the notion that humans are “a separate and uniquely special species,” then environmental historians must recognize that agency has been an important concept in sustaining that notion. Instead of insisting on nature’s agency, then, environmental historians should be—and many already are—engaging with other historians in a critical reconsideration of agency itself. As Linda Nash has written, “environmental historians are uniquely positioned to contribute to this rethinking and rewriting of agency because we study the interaction of humans and the non-human world in such detail.” To do so will, to borrow Walter Johnson’s concept, challenge the ideal of the human agent as the universal subject of history, an ideal that has roots not only in liberal universalism but also in the modernist hubris that humans have achieved environmental mastery. Environmental history offers approaches to historical causation that not only disaggregate the grand category of nature but that also break down distinctions between human action and the larger material world in which humans operate. Such approaches are beginning to produce “post-insistent” environmental histories: studies that push beyond simple claims that nature matters to better integrate environmental historians’ causal approaches and concerns with those of other historians. Environmental history raises fundamental questions about how all historians should think

<sup>7</sup> Some prefer to think of environmental forces as structures, though that distinction reinforces agency as a particular kind of causal force in ways that work against the causal ambitions of environmental history. See Ted Steinberg, “Down to Earth: Nature, Agency, and Power in History,” *American Historical Review*, 107 (June 2002), 798–820; William H. Sewell Jr., “Nature, Agency, and Anthropocentrism,” Sept. 2–23, 2002, online postings, *American Historical Review* digital discussion, originally (but no longer) available online at *History Cooperative*. I have been influenced in my thinking on environmental causation by Timothy Mitchell, “Can the Mosquito Speak?,” in *Rule of Experts: Egypt, Techno-Politics, Modernity* by Timothy Mitchell (Berkeley, 2002), 19–53.

about agency and should narrate change over time, and there are strong signs that historians are increasingly open to these questions.<sup>8</sup>

Explicating environmental causation is only part of what environmental historians do. Another central task has been to document the environmental consequences of historical change in descriptive and normative ways, but the hybrid current has often produced as much turbidity as clarity. Chastened by the collective realization that the environmental sciences do not reveal a normative nature that can anchor narratives and by an understanding that past efforts to speak for nature have masked social and cultural agendas and often structured or reinforced social inequalities, the second generation of American environmental historians became reticent about narrative moralizing—they were more interested in exposing the constructedness of traditional environmental ideals than in constructing new ones. In using history to plumb their environmental commitments, many environmental historians came to distrust such commitments. To a degree, this is evidence of healthy maturation, of a subfield born in advocacy achieving a critical distance from advocacy. Behind the hybrid turn has also been a crisis of faith that is beginning to spur a new engagement with advocacy among environmental historians. If, as William Cronon has intimated, the field began by “getting back to the wrong nature”—a world without humans that science would define—it now faces the challenge, to use another of Cronon’s formulations, of “saving nature in time” by reengaging morally with a natural world rendered fundamentally historical. For environmental historians there can be no “world without us” (to invoke Alan Weisman’s provocative thought experiment about the environmental dynamics of an earth suddenly devoid of humanity), but that does not mean that “we are the world.” The terrain of environmental history is the world with us in all of its causal and moral complexity.<sup>9</sup>

I want to turn to that world to examine several vital areas of American environmental history scholarship. What follows is a selective tour, a series of transects rather than a broad survey. As such, it neglects or gives brief treatment to important topics, trends, and books that others might have privileged. I only briefly discuss Native American historiography, even though that scholarship has integrated environmental history in exciting ways and holds the promise of developing a deeper temporal framework for American environmental history—one of the field’s most important current challenges. My writing also shows a bias toward the modern. While I might have done more to correct this, it is also the case, as Peter Mancall has noted, that work in early American environmental history lags behind modern scholarship. My work here also has a terrestrial bias and largely ignores a growing body of exciting marine and oceanic environmental history. I also say less than I wanted to about the increasingly fruitful intersections between environmental history and fields such as the history of science, military history, and the history of American foreign

<sup>8</sup> Worster, “Transformations of the Earth,” 1088. Nash, “Agency of Nature or the Nature of Agency?,” 68. On nature and agency, see also John Herron, “Because Antelope Can’t Talk: Natural Agency and Social Politics in American Environmental History,” *Historical Reflections*, 36 (Spring 2010), 33–52. Walter Johnson, “On Agency,” *Journal of Social History*, 37 (Fall 2003), 113–24, esp. 115.

<sup>9</sup> William Cronon, “The Trouble with Wilderness; or, Getting Back to the Wrong Nature,” in *Uncommon Ground*, ed. Cronon, 69–90; William Cronon, *Saving Nature in Time: The Environmental Past and the Human Future* (New York, forthcoming). Alan Weisman, *The World without Us* (New York, 2007). Dipesh Chakrabarty’s use of Alan Weisman’s book partly inspired my use of it. See Chakrabarty, “Climate of History.” I also appropriate Louis A. Pérez’s critique of transnational history for environmental purposes. Louis A. Pérez Jr., “We Are the World: Internationalizing the National, Nationalizing the International,” *Journal of American History*, 89 (Sept. 2002), 558–66.

relations. These are several lacunae of which I am aware. Writing this essay required choices; I have made many, and they are my own.<sup>10</sup>

### The Environmental-Management State

A signature achievement of second-generation American environmental historiography has been an increasingly detailed portrait of what Adam Rome has called the “environmental-management state.” Rome’s conceptualization is important for several reasons. First, it insists that environmental management be seen as a formative arena of state building, equivalent to social welfare and national security. The political historian Bruce Schulman has recently concurred, suggesting that the “resource management state” was “much more extensive than the rudimentary welfare state” in the early twentieth century, and that it served as “a template for modern American governance.” Second, environmental management expands attention beyond conservation, preservation, and environmental regulation to include a broader array of statist activities in areas such as agriculture, science and engineering, public health, internal improvement, warfare and national defense, and international relations. Third, extending a sense of the state’s environmental-management activities has led to the rediscovery of alternative environmental traditions that the field’s early focus on conservation and preservation obscured. American environmental historiography has moved away from whiggish histories of the rise of an environmentalist sensibility and toward explorations of the varieties of environmental knowledge. Fourth, a focus on the environmental-management state has moved American environmental historians beyond national exceptionalism to recognize that environmental management was an international and transnational development, that American environmental managers have been a cosmopolitan bunch, and that environmental management has been central to American expansion from early federal land policy to the management of extracontinental imperial holdings to Cold War–era development efforts around the world. Finally, attending to the environmental-management state has provided opportunities to see environmental forces “speaking back.”<sup>11</sup>

<sup>10</sup> On the development of a deeper temporal framework for American environmental history, see, for example, Richard White, *The Roots of Dependency: Subsistence, Environment, and Social Change among the Choctaws, Pawnees, and Navajos* (Lincoln, 1983); Andrew C. Isenberg, *The Destruction of the Bison: An Environmental History, 1750–1920* (New York, 2000); Shepard Krech III, *The Ecological Indian: Myth and History* (New York, 1999); Elliott West, *The Contested Plains: Indians, Goldseekers, and the Rush to Colorado* (Lawrence, 1998); Pekka Hämäläinen, *The Comanche Empire* (New Haven, 2008); Paul Kelton, *Epidemics and Enslavement: Biological Catastrophe in the Native Southeast, 1492–1715* (Lincoln, 2007); Jared Farmer, *On Zion’s Mount: Mormons, Indians, and the American Landscape* (Cambridge, Mass., 2008); and Elizabeth A. Fenn, *Encounters at the Heart of the World: A History of the Mandan People* (New York, forthcoming). Peter Mancall, “Pigs for Historians: Changes in the Land and Beyond,” *William and Mary Quarterly*, 67 (April 2010), 347–75. On oceanic environmental history, see David Iglar, “Diseased Goods: Global Exchanges in the Eastern Pacific Basin, 1770–1850,” *American Historical Review*, 109 (June 2004), 693–719; W. Jeffrey Bolster, “Putting the Ocean in Atlantic History: Maritime Communities and Marine Ecology in the Northwest Atlantic, 1500–1800,” *ibid.*, 113 (Feb. 2008), 19–47; and Helen M. Rozwadowski, “Oceans: Fusing the History of Science and Technology with Environmental History,” in *Companion to American Environmental History*, ed. Sackman, 442–61.

<sup>11</sup> Adam Rome, “What Really Matters in History: Environmental Perspectives on Modern America,” *Environmental History*, 7 (April 2002), 303–18, esp. 304. Bruce J. Schulman, “Governing Nature, Nurturing Government: Resource Management and the Development of the American State, 1900–1912,” *Journal of Policy History*, 17 (Oct. 2005), 375–403, esp. 376. The scholarship of Roderick Nash and Samuel Hays did much to define the conservation-preservation split. See Roderick Frazier Nash, *Wilderness and the American Mind* (New Haven, 1967); Samuel P. Hays, *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890–1920* (Cambridge, Mass., 1959); and Samuel P. Hays, *Beauty, Health, and Permanence: Environmental Politics in the United States*,

The most revisionist aspect of the scholarship on the environmental-management state examines its social and cultural politics. Countering earlier interpretations of conservation and preservation as progressive responses to the transformative forces of capitalism, scholars have analyzed how federal and state conservation policies and practices often served elite interests rather than protecting the broad public interest. Environmental historians have shown, for instance, how the creation of national parks dispossessed native peoples; how national forests enclosed commons resources and displaced farming communities; how state and federal policies to protect fisheries and wildlife privileged recreational hunters and fishers and functioned to control immigrants, African Americans, Native Americans, and others with marginal access to state power; and how federal efforts to manage agricultural pests and modernize agriculture met with substantial agrarian protest. In other words, this scholarship demonstrates that statist environmental-management efforts contained racial, ethnic, class, gender, and consumer ideologies, and that they were often contested

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1955–1985 (New York, 1986). For a challenge to the conservation-preservation split, see Paul S. Sutter, *Driven Wild: How the Fight against Automobiles Launched the Modern Wilderness Movement* (Seattle, 2002). Scholarship on western water was the exception to the conservation-preservation obsession and represented the field's most sophisticated early grappling with the environmental-management state. See Worster, *Rivers of Empire*; Donald J. Pisani, *To Reclaim a Divided West: Water, Law, and Public Policy, 1848–1902* (Albuquerque, 1992); and Donald J. Pisani, *Water and American Government: The Reclamation Bureau, National Water Policy, and the West, 1902–1935* (Berkeley, 2002). A study that brings together the agricultural and national defense aspects of the environmental-management state is Edmund Russell, *War and Nature: Fighting Human and Insect Enemies from World War I to Silent Spring* (New York, 2001). There has been a flurry of scholarship on Alexander von Humboldt's nineteenth-century influence on the field of environmental history. See Aaron Sachs, *The Humboldt Current: Nineteenth-Century Exploration and the Roots of American Environmentalism* (New York, 2006); and Laura Dassow Walls, *The Passage to Cosmos: Alexander von Humboldt and the Shaping of America* (Chicago, 2009). There has also been a strong focus on agrarian traditions of environmental knowledge and reform. See Steven Stoll, *Larding the Lean Earth: Soil and Society in Nineteenth-Century America* (New York, 2002); and Philip J. Pauly, *Fruits and Plains: The Horticultural Transformation of America* (Cambridge, Mass., 2007). There has also been renewed attention to naturalist traditions in America. See Robert E. Kohler, *All Creatures: Naturalists, Collectors, and Biodiversity, 1850–1950* (Princeton, 2006); and Richard W. Judd, *The Untilled Garden: Natural History and the Spirit of Conservation in America, 1740–1840* (New York, 2009). Environmental historians have produced richer portraits of canonical environmental figures and formative environmental episodes. See Donald Worster, *A Passion for Nature: The Life of John Muir* (New York, 2008); Char Miller, *Gifford Pinchot and the Making of Modern Environmentalism* (Washington, 2001); and Robert W. Righter, *The Battle over Hetch Hetchy: America's Most Controversial Dam and the Birth of Modern Environmentalism* (New York, 2005). On international and transnational environmental history, see Paul Sutter, "Reflections: What Can U.S. Historians Learn from Non-U.S. Environmental Historiography?," *Environmental History*, 8 (Jan. 2003), 109–29; Marcus Hall, *Earth Repair: A Transatlantic History of Environmental Restoration* (Charlottesville, 2005); Ramachandra Guha, *Environmentalism: A Global History* (New York, 2000); Ian R. Tyrrell, *True Gardens of the Gods: Californian-Australian Environmental Reform, 1860–1930* (Berkeley, 1999); Thomas R. Dunlap, *Nature and the English Diaspora: Environment and History in the United States, Canada, Australia, and New Zealand* (New York, 1999); Richard P. Tucker, *Insatiable Appetite: The United States and the Ecological Degradation of the Tropical World* (Berkeley, 2000); Jessica B. Teisch, *Engineering Nature: Water, Development, and the Global Spread of American Environmental Expertise* (Chapel Hill, 2011); Gregory A. Barton, *Empire Forestry and the Origins of Environmentalism* (New York, 2002); Sarah T. Phillips, *This Land, This Nation: Conservation, Rural America, and the New Deal* (New York, 2007); Philip J. Pauly, "The Beauty and Menace of Japanese Cherry Trees: Conflicting Visions of American Ecological Independence," *Isis*, 87 (March 1996), 51–73; Kurk Dorsey, "Dealing with the Dinosaur (and Its Swamp): Putting the Environment in Diplomatic History," *Diplomatic History*, 29 (Sept. 2005), 573–87; Kurkpatrick Dorsey, *The Dawn of Conservation Diplomacy: U.S.-Canadian Wildlife Protection Treaties in the Progressive Era* (Seattle, 1998); Matthew Connelly, *Fatal Misconception: The Struggle to Control World Population* (Cambridge, 2008); Thomas Robertson, *The Malthusian Moment: Global Population Growth and the Birth of American Environmentalism* (New Brunswick, 2012); Nick Cullather, *The Hungry World: America's Cold War Battle against Poverty in Asia* (Cambridge, Mass., 2010); and Michael L. Lewis, *Inventing Global Ecology: Tracking the Biodiversity Ideal in India, 1947–1997* (Athens, Ohio, 2004). I borrow the phrase "speaking back" from Richard White, "Discovering Nature in North America," *Journal of American History*, 79 (Dec. 1992), 874–91, esp. 876. Two important books that examine nature "speaking back" are Nancy Langston, *Forest Dreams, Forest Nightmares: The Paradox of Old Growth in the Inland Northwest* (Seattle, 1995); and Fiege, *Irrigated Eden*.

from below. Such critical narratives have transformed the field, but they often privilege the social and the cultural at the expense of the environmental. Some recent scholarship is bringing the environment back in.<sup>12</sup>

Native Americans have felt the power of the environmental-management state with particular poignancy, and Marsha Weisiger's *Dreaming of Sheep in Navajo Country* examines one chapter in that larger story: the grazing controversy on the Navajo lands during the 1930s, when the Bureau of Indian Affairs and a cadre of soil and range conservationists carried out dramatic—and, for the Navajo/Diné people, traumatic—reductions of their sheep, goat, and horse herds. Federal experts insisted that these nonnative animals had overgrazed the range and that stock reductions were needed to protect rangeland resources. Weisiger argues that New Dealers—who believed that the land had a “natural” carrying capacity, that the erosion the officials saw was human-induced, and that the Diné could not manage their own lands—worked with a flawed environmental narrative and were blind to the cultural importance of grazing animals to the Diné. The New Dealers' environmental imaginary was also a gendered imaginary that entirely missed the central role of Diné women in the tribe's livestock economy. The result was a series of state-imposed livestock reductions that impoverished the Diné, undermined their gendered grazing economy, disregarded their culture, and did little to improve the range. Diné memories of these federal livestock reductions have been so powerful that subsequent partnerships with federal environmental managers have been difficult to sustain. Many Diné blame federal conservationists not only for their economic dependence on the federal government but also for the degradation of the range itself. “Conserving the range,” Weisiger concludes, “was not simply an ecological problem; it was a cultural one, too.”<sup>13</sup>

Weisiger might have been content to show that state conservation was not a heroic intervention on behalf of nature but rather a flawed and imperious project that did social, economic, and cultural damage to native peoples. She goes further, however, putting the flawed New Deal narrative into conversation with a Diné narrative that she also finds lacking. Most Diné believed that sheep and goats had always been integral to their culture, that stock kept the range healthy and in balance, and that drought alone explained the decline of the range during the 1930s. These views were not as unscientific or ahistorical as the New Dealers believed them to be; Weisiger suggests these Diné beliefs were similar to those of the New Dealers in their combination of empiricism and faith. Even so, just as the New Deal narrative rested upon inaccurate notions of a prehuman natural equilibrium upset by human activity and of a timeless native culture upset by the adoption of exotic livestock, so too did the dominant Diné narrative prevent most Diné people from seeing

<sup>12</sup> Examples of studies that examine the social and cultural politics of American environmental management include Louis S. Warren, *The Hunter's Game: Poachers and Conservationists in Twentieth-Century America* (New Haven, 1997); Karl Jacoby, *Crimes against Nature: Squatters, Poachers, Thieves, and the Hidden History of American Conservation* (Berkeley, 2001); Mark David Spence, *Dispossessing the Wilderness: Indian Removal and the Making of the National Parks* (New York, 1999); Scott Giltner, *Hunting and Fishing in the New South: Black Labor and White Leisure after the Civil War* (Baltimore, 2008); Sara M. Gregg, *Managing the Mountains: Land Use Planning, the New Deal, and the Creation of a Federal Landscape in Appalachia* (New Haven, 2010); Kathryn Newfont, *Blue Ridge Commons: Environmental Activism and Forest History in Western North Carolina* (Athens, Ga., 2011); Claire Strom, *Making Catfish Bait out of Government Boys: The Fight against Cattle Ticks and the Transformation of the Yeoman South* (Athens, Ga., 2010); Arthur F. McEvoy, *The Fisherman's Problem: Ecology and Law in the California Fisheries, 1850–1980* (New York, 1986); Joseph E. Taylor III, *Making Salmon: An Environmental History of the Northwest Fisheries Crisis* (Seattle, 1999); Isenberg, *The Destruction of the Bison*; Jennifer Price, *Flight Maps: Adventures with Nature in Modern America* (New York, 1999); and Steinberg, “Down to Earth.”

<sup>13</sup> Marsha L. Weisiger, *Dreaming of Sheep in Navajo Country* (Seattle, 2009), 11.

that they *were* degrading the range and that their practices *were* unsustainable. While the Diné had legitimate grievances against the conservation state, they also held some responsibility to consider whether their narrative adequately described the environment that sustained them. The tragedy, then, was not that the New Dealers were wrong and the Diné were right; it was that the unilateral hubris of the New Dealers thwarted meaningful cross-cultural communication—particularly between those Diné who recognized the range crisis and attempted to broker culturally sensitive solutions, and the few New Dealers who sensed the cultural stakes involved in stock reduction. To square these two narratives, Weisiger must speak for the range, even as she recognizes the “instability of our own knowledge” of the natural world. To do so, she focuses on process rather than world view, raising the possibility that effective cross-cultural communication might have allowed these two groups to see that neither of their narratives mapped perfectly onto observable ecological history. It is unlikely that such an interchange would have produced an objective or stable knowledge of nature that dictated a single best-management approach. In fact, Weisiger’s analysis warns about such reductive managerial ideals. Nonetheless, reversing her earlier logic, she insists that conserving the range was not simply a cultural problem but was also an ecological problem, and that justice, in this case, cannot be comprehended without a sincere effort to understand the environmental dynamics with which it was entangled.<sup>14</sup>

Another innovative study of the environmental-management state is Robert Wilson’s *Seeking Refuge*, which uses the Pacific flyway, a major north-south route for migratory birds in North America, to examine how one U.S. governmental bureau, the Fish and Wildlife Service (FWS), sought to protect migratory birdlife while another agency, the Bureau of Reclamation, facilitated the agricultural transformations that threatened such migrations. Wilson shows that migrating birds occupy a complex transnational geography that has not meshed well with the western agricultural grid, one of the founding simplifications of the environmental-management state. As a result, a few nodes of critical habitat became so necessary to birds that refuge managers turned to water manipulation techniques to maintain the areas as consistent havens—techniques they learned from the reclamation engineers who created their predicament in the first place. Wilson shows that refuges on the Pacific flyway are not pockets of pristine nature surrounded by agriculture; rather, they are novel ecosystems, engineered habitats designed and managed to sustain a supply of wild birds. Regardless, migrating birds found these necessary refuges insufficient and refused to stay within the spaces zoned for them, instead finding adjoining grain fields to be ideal places to feed. When neighboring farmers demanded that the FWS keep birds within refuge bounds, the FWS responded first by trying to herd them back into their assigned spaces with airplanes and explosives, and then by planting portions of their refuges in grain, thus making the refuges even more like the transformed agricultural landscapes for which they were ostensibly designed to substitute. Refuge managers even became profligate users of pesticides to control the weeds and insects that thrived in these managed landscapes of bird provisioning. Under Wilson’s examining eye, the ironies multiplied with every attempt to contain the birds of the Pacific flyway.<sup>15</sup>

<sup>14</sup> White, *Roots of Dependency*, 212–314. Weisiger, *Dreaming of Sheep in Navajo Country*, 11.

<sup>15</sup> Robert M. Wilson, *Seeking Refuge: Birds and Landscapes of the Pacific Flyway* (Seattle, 2010). Use of the term *novel ecosystems* has increased among ecologists and conservation biologists. See Richard J. Hobbs et al., “Novel Ecosystems: Theoretical and Management Aspects of the New Ecological World Order,” *Global Ecology and Biogeography*, 15 (Jan. 2006), 1–7.

But Wilson is after more than irony. By paying careful attention to the birds—which seem unconcerned with irony or with the distinctions between what is and is not natural—Wilson shows that, as a particular kind of “mobile nature,” they have a causal power to be found in the continually evolving managerial responses to their perceived needs and behaviors. In Wilson’s analysis, not only do people try to contain birds geographically and culturally but birds also upset the categories we impose on them and their world; the birds act in history as informants about the qualities of the engineered environments upon which they increasingly rely, teaching environmental managers (and historians) to see these habitats differently and to rethink their ideals and practices. Thus, while Wilson avidly participates in unsettling the nature-culture divide—a major impulse of second-generation environmental historiography—he also brings us back to these watery lands and their organisms not only as actors but also as essential subjects of conservation concern. Birds, carefully attended to, are not just productive of irony, then, but also productive of evolving managerial knowledge.<sup>16</sup>

*Seeking Refuge* gives us a portrait of an environmental-management state that is fractured, confused, and evolving. In Wilson’s case study, the state is not an abstract monolith with a Sauron-like gaze but is a set of competing agencies with divergent agendas. Wilson and Weisiger suggest that we need to assess not only how states *see* environmental-management problems but also how they *learn* from them. When environmental historians focus on “learning like a state” in the realm of environmental management, they find not a single moment of simplified envisioning but rather a series of interventions over time that are shaped by competing political interests, counternarratives internal and external to the state, and environmental counterforce. Recent environmental historiography has been appropriately critical of how environmental experts constructed natural ideals that privileged their own social and cultural values, but the scholarship also must better attend to how environmental managers often reformed their ideals and approaches in response to criticisms and challenges, both from other people and from the environmental entities and forces with which they were in dialogue. Some of the most powerful environmental voices in modern American history—Aldo Leopold, Rachel Carson, or Bob Marshall (an unlikely hero in Weisiger’s narrative)—emerged as dissidents from within the environmental-management state. My invocation of state learning is not meant to reintroduce whiggishness into narratives of environmental management; rather, it is to insist that environmental historians attend to the shifting ideologies and practices of statist environmental management and that they appreciate that they are in constant dialogue with the material environment.<sup>17</sup>

<sup>16</sup> Robert M. Wilson borrows the notion of mobile nature from Mark Fiege, “The Weedy West: Mobile Nature, Boundaries, and Common Space in the Montana Landscape,” *Western Historical Quarterly*, 36 (Spring 2005), 22–47. Wilson, *Seeking Refuge*.

<sup>17</sup> “Learning like a state” is a useful corrective to James C. Scott’s concept of “seeing like a state.” See James C. Scott, *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven, 1998). Wilson’s idea of a fractured state has similarities to scholarship in western-water history. See, for example, Pisani, *To Reclaim a Divided West*. An example of scholarship placing environmental managers in dialogue with criticisms and challenges is Theodore Catton, *Inhabited Wilderness: Indians, Eskimos, and National Parks in Alaska* (Albuquerque, 1997). On dissidents from the environmental-management state, see Sutter, *Driven Wild*; Linda Lear, *Rachel Carson: Witness for Nature* (New York, 1997); and Weisiger, *Dreaming of Sheep in Navajo Country*, 181–84. Adam Rome has noted the importance of federal environmental managers to environmental critiques of suburbia. See Adam Rome, *The Bulldozer in the Countryside: Suburban Sprawl and the Rise of American Environmentalism* (New York, 2001).

My brief discussion of the environmental-management state leaves many aspects of environmental politics and governance sidelined. First, environmental historians should attend to how environmental management worked prior to the rise of the modern state. There is also the environmental movement itself and how it has articulated with the state. Historians have given us only a partial portrait of postwar environmentalism *as a movement*, and environmental historians are just beginning to contend with the complicated relationship between the environmental-management state and conservatism. Third, scholars need to recognize that the environmental-management state, like the welfare state, involved the development of a new set of citizenship claims, and that it also has produced gradations of environmental citizenship. The environmental justice movement is one result. Fourth, a number of scholars working around the edges of environmental history assert the need to “see beyond the state” and pay attention to environmental management on private lands; to the increasing power of local, national, and international environmental nongovernmental organizations; and to the migration of environmental-management expertise between governmental and nongovernmental realms. Finally, in this move to critically examine the environmental-management state, environmental historians must not forget about the power of corporations, capital, and markets to transform landscapes and lives, often in conjunction with statist management. This foundational insight is sometimes dropped from state-centered analyses.<sup>18</sup>

### Agroenvironmental History

In the 1990 round table Worster laid out a vision for environmental history with agroecology at its center, and Cronon agreed that “environmental history without agricultural history is inconceivable.” Not surprisingly, Worster’s *Dust Bowl* and Cronon’s *Changes in the Land*, two of the most important first-generation environmental histories, focused on capitalist agricultural transformations. Agroenvironmental history was slow to catch on in the wake of Worster’s and Cronon’s formidable models, but recently—influenced by a

<sup>18</sup> There is still no satisfying synthetic history of postwar environmentalism as a movement. Studies of the origins and growth of national environmental politics include Hays, *Beauty, Health, and Permanence*; Rome, *Bulldozer in the Countryside*; Andrew Hurley, *Environmental Inequalities: Class, Race, and Industrial Pollution in Gary, Indiana, 1945–1980* (Chapel Hill, 1995); Christopher C. Sellers, *Crabgrass Crucible: Suburban Nature and the Rise of Environmentalism in Twentieth-Century America* (Chapel Hill, 2012); Elizabeth D. Blum, *Love Canal Revisited: Race, Class, and Gender in Environmental Activism* (Lawrence, 2008); James Morton Turner, *The Promise of Wilderness: American Environmental Politics since 1964* (Seattle, 2012); and Adam Rome, *The Genius of Earth Day: How a 1970 Teach-In Unexpectedly Made the First Green Generation* (New York, forthcoming). Studies that examine the relationship between the state and the rise of postwar environmentalism include Neil M. Maher, *Nature’s New Deal: The Civilian Conservation Corps and the Roots of the American Environmental Movement* (New York, 2008); and Paul Charles Milazzo, *Unlikely Environmentalists: Congress and Clean Water, 1945–1972* (Lawrence, 2006). On environmentalism and conservatism, see James Morton Turner, “‘The Specter of Environmentalism’: Wilderness, Environmental Politics, and the Evolution of the New Right,” *Journal of American History*, 96 (June 2009), 123–48; J. Brooks Flippin, *Conservative Conservationist: Russell E. Train and the Emergence of American Environmentalism* (Baton Rouge, 2006); and Brian Allen Drake, *The Unnatural State: Conservatives, Libertarians, and the Postwar Environmental Movement* (Seattle, forthcoming). Literature on environmental justice, much of it outside the discipline of history, includes Robert Gottlieb, *Forcing the Spring: The Transformation of the American Environmental Movement* (Washington, 1993); Eileen Maura McGurty, *Transforming Environmentalism: Warren County, PCBs, and the Origins of Environmental Justice* (New Brunswick, 2007); Robert D. Bullard, *Dumping in Dixie: Race, Class, and Environmental Quality* (Boulder, 1990); Laura Pulido, *Environmentalism and Economic Justice: Two Chicano Struggles in the Southwest* (Tucson, 1996); Julie Sze, *Noxious New York: The Racial Politics of Urban Health and Environmental Justice* (Cambridge, Mass., 2007); and David N. Pellow, *Garbage Wars: The Struggle for Environmental Justice in Chicago* (Cambridge, Mass., 2002). Matthew Connelly, “Seeing beyond the State: The Population Control Movement and the Problem of Sovereignty,” *Past and Present*, 193 (Nov. 2006), 197–233.

cresting critique of industrial agriculture and by a reinvigoration of agricultural history—the field has returned farming to the center of concern—a move that has pulled environmental historians into neglected geographical and analytical regions such as the American South, transnational commodity studies, microanalyses of farming practices and their ecological contexts, novel explorations of environmental knowledge and perception, and innovative models of environmental causation.<sup>19</sup>

Environmental histories of early American agriculture have been scarce, although several scholars have revised Cronon's narrative for the period. Perhaps the most impressive agroenvironmental history of early America is Brian Donahue's *The Great Meadow*. By combining deep archival research, Geographic Information Systems mapping techniques, and his experience as a farmer and forester, Donahue reconstructs two centuries of agricultural land use in colonial Concord, Massachusetts. Like Cronon, Donahue has little use for the wilderness narrative that originated in colonial New England. "In Concord," Donahue notes (in what could be a bumper sticker slogan for the field), "there was no land before history." This not only suggests that colonial agriculture was built upon a landscape transformed by native peoples but also that deeper historical forces such as glaciation shaped settlers' land-use decisions. Rather than using this insight to argue for a more complicated trajectory of environmental decline, as Cronon did in *Changes in the Land*, Donahue shows that Concord's farmers achieved a remarkable measure of agroecological sustainability. He argues that Concord's farmers did not degrade their agricultural lands but lived within the limits of their capacity to reproduce soil fertility by creating diverse and ecologically sophisticated patterns of land use. Only in the early republic did a market-driven cycle of unsustainable agricultural expansion, specialization, and abandonment occur. Donahue's close agroecological history banishes the "wilderness lost" narrative so powerfully associated with New England's colonial and early national history (a narrative that Cronon seriously wounded but left alive) and replaces it with a story of sustainable human-environmental interaction and adaptation that has important prescriptive implications. Donahue is one of a number of environmental historians turning to the farms and working forests of the past to rethink the environmental ideals of the present, and his work is a strong example of what is to be gained by rooting sustainable land-use advocacy in careful environmental history.<sup>20</sup>

Environmental history was slow to gain footing in the American South, but the agrarian turn has worked in the region's favor. In particular, the historiography of North American plantation slavery has been resistant to arguments for nature's agency, for they seemed to echo older determinist arguments that race slavery was a natural response to southern

<sup>19</sup> Worster, "Transformations of the Earth"; Cronon, "Modes of Prophecy and Production," 1129. Donald Worster, *Dust Bowl: The Southern Plains in the 1930s* (New York, 1979). A revision of *Dust Bowl* is Geoff Cunfer, *On the Great Plains: Agriculture and Environment* (College Station, 2005). William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York, 1983). Other books that also focus on capitalist agricultural transformations include Carolyn Merchant, *Ecological Revolutions: Nature, Gender, and Science in New England* (Chapel Hill, 1989); and Richard White, *Land Use, Environment, and Social Change: The Shaping of Island County, Washington* (Seattle, 1991).

<sup>20</sup> Brian Donahue, *The Great Meadow: Farmers and Land in Colonial Concord* (New Haven, 2004), esp. 24. See also Brian Donahue, *Reclaiming the Commons: Community Farms and Forests in a New England Town* (New Haven, 1999); and Brian Donahue's contributions to the Web site *Wildlands and Woodlands: A Vision for the New England Landscape*, <http://www.wildlandsandwoodlands.org/>. Mancall, "Pigs for Historians." On early American environmental history, see, for example, Virginia DeJohn Anderson, *Creatures of Empire: How Domestic Animals Transformed Early America* (New York, 2004).

environmental conditions. Yet this literature, focused as it has been on human agency, stands to profit extensively from adopting causal arguments that integrate the social and the environmental. The literature on rice provides the most developed example here. Scholars of slavery and plantation agriculture have long recognized that rice growing shaped a particular plantation system, but Mart Stewart's history of tidal-flow rice culture along the Georgia coast was the first to bring a self-consciously environmental approach to the subject. Environmental actors and forces take many forms in Stewart's study, from the power of the tides that planters and slaves harnessed to the forces of disorder such as hurricanes, freshets, weeds, and bobolinks that threatened to undo rice culture. There is no unitary "nature" in Stewart's analysis, but many discrete human and nonhuman actors arrayed in and around a tenuous system of production defined by energy flows. Stewart's book is also an important model for conceptualizing the relationship between environmental knowledge and power in a slave society, both for masters who used bonded human labor to order the energies of this agroenvironmental system and for slaves whose knowledge of rice production and the landscapes around its margins lent them a modicum of control over their lives. Stewart shows how much is to be gained by putting slavery and the plantation in its environmental context.<sup>21</sup>

Recent debates over the "black rice thesis" also make clear the importance of such contextualization. Judith Carney's *Black Rice*, which argues that New World *riziculture* (rice culture) was an African innovation, a transfer not only of plants but also of a suite of technologies and gendered cultural practices, triggered much of the debate. Carney's book is the most forceful repudiation to date of an older position that saw white planters as innovators and African slaves as brute labor. Carney argues that knowledge and skills in *riziculture* gave slaves power and undermined planters' racialized claims to superiority based in their supposedly singular capacity to master agroenvironments. She intimates that environmental mastery long functioned as the quiet rhetorical partner of human mastery in proslavery narratives, and that together they obscured the links between African environmental knowledge and agency in the New World. Tellingly, Carney's critics also deploy environmental arguments to temper her insistence on slave agency, suggesting that New World environments required adaptations that made rice culture a Creole enterprise in which African agency was limited. This argument over the "black rice thesis," which has pulled in African and American historians, demonstrates how environmental analysis can reshape debates over the relative power of masters and slaves in the making of New World slavery. The "black rice" debate makes clear that the social relations of slavery took place within complex agroecosystems, and master-slave relations were constantly reinvented and recalibrated

<sup>21</sup> Mart A. Stewart, "If John Muir Had Been an Agrarian: Environmental History West and South," *Environment and History*, 11 (May 2005), 139–62. On southern environmental history and historiography, see also Christopher Morris, "A More Southern Environmental History," *Journal of Southern History*, 75 (Aug. 2009), 581–98; Christopher J. Manganiello and Paul Sutter, eds., *Environmental History and the American South: A Reader* (Athens, Ga., 2009); Paul S. Sutter, "What Gullies Mean: Georgia's 'Little Grand Canyon' and Southern Environmental History," *Journal of Southern History*, 76 (Aug. 2010), 579–616; and Jack Temple Kirby, *Mockingbird Song: Ecological Landscapes of the South* (Chapel Hill, 2006). Two earlier exceptions to the rule of neglect (environmental historians ignoring the South) are Albert E. Cowdrey, *This Land, This South: An Environmental History* (Lexington, Ky., 1983); and Timothy Silver, *A New Face on the Countryside: Indians, Colonists, and Slaves in South Atlantic Forests, 1500–1800* (New York, 1990). On environmental history and slavery, see Mart A. Stewart, "'Let Us Begin with the Weather?': Climate, Race, and Cultural Distinctiveness in the American South," in *Nature and Society in Historical Context*, ed. Mikuláš Teich, Roy Porter, and Bo Gustafsson (Cambridge, Eng., 1997), 240–56. Mart A. Stewart, *What Nature Suffers to Groe: Life, Labor, and Landscape on the Georgia Coast, 1680–1920* (Athens, Ga., 1996).

in relation to those systems—systems with contingencies and instabilities that illustrate the folly of arguments for unfettered agency or absolute mastery. As S. Max Edelson has pointed out in his contributions to the debate, scholars need to triangulate master-slave relations with the agroenvironmental entities and forces with which both groups worked. The low-country rice plantation was not an institution of total power erasing African cultural inheritance, but it was also not a place defined solely by the ethnocultural transfer of empowering environmental knowledge. It was precisely the kind of complex assemblage upon which historians ought to be converging to rethink human agency and environmental causation.<sup>22</sup>

There have been several other excellent environmental histories of southern agriculture, but one stands out because of its refreshing approach to causation. It has long been a commonplace that the Mexican boll weevil was a powerful force in undoing southern cotton culture, but in *Boll Weevil Blues*, James Giesen turns the received narrative on its head. Giesen shows that the boll weevil had an unusual *cultural* potency that transformed southern agriculture well beyond the insect's power to consume cotton. Anticipation of the boll weevil's arrival set tenants in motion, led farmers to diversify their crops (if only briefly), emboldened federal policy makers to intervene in the region, and encouraged entrepreneurs to specialize in expertise and services to combat the boll weevil threat. Even before it invaded their fields, the boll weevil invaded people's stories and songs, spreading rumors of its potency and creating powerful new opportunities and forces for change. The boll weevil did transform southern agricultural landscapes in material ways, but the changes that its march across the region triggered cannot be reduced to a simple material agency. In undoing the South's cotton economy, the boll weevil's more powerful causal role was in how it acted through culture.<sup>23</sup>

Agroenvironmental history has also been an area of transnational research; one commendable example is John Soluri's *Banana Cultures*. Soluri expertly links the growing North American appetite for bananas—now “the most frequently consumed fresh fruit” in the United States and one of several tropical commodities that have achieved consumer ubiquity—with the social and environmental changes produced in their tropical places of

<sup>22</sup> Judith A. Carney, *Black Rice: The African Origins of Rice Cultivation in the Americas* (Cambridge, Mass., 2001). Judith A. Carney's work built on Peter Wood, *Black Majority: Negroes in Colonial South Carolina from 1670 through the Stono Rebellion* (New York, 1974); and Daniel Littlefield, *Rice and Slaves: Ethnicity and the Slave Trade in Colonial South Carolina* (Baton Rouge, 1981). The most influential rebuttal of Carney's thesis is David Eltis, Philip Morgan, and David Richardson, “Agency and Diaspora in Atlantic History: Reassessing the African Contribution to Rice Cultivation in the Americas,” *American Historical Review*, 112 (Dec. 2007), 1329–58. See also S. Max Edelson, “Beyond ‘Black Rice’: Reconstructing Material and Cultural Contexts for Early Plantation Agriculture,” *ibid.*, 115 (Feb. 2010), 125–35; Gwendolyn Midlo Hall, “Africa and Africans in the African Diaspora: The Uses of Relational Databases,” *ibid.*, 136–50; Walter Hawthorne, “From ‘Black Rice’ to ‘Brown’: Rethinking the History of Risculture in the Seventeenth- and Eighteenth-Century Atlantic,” *ibid.*, 151–63; and David Eltis, Philip Morgan, and David Richardson, “Black, Brown, or White: Color-Coding American Commercial Rice Cultivation with Slave Labor,” *ibid.*, 164–71. S. Max Edelson, *Plantation Enterprise in Colonial South Carolina* (Cambridge, Mass., 2006).

<sup>23</sup> James C. Giesen, *Boll Weevil Blues: Cotton, Myth, and Power in the American South* (Chicago, 2011). For other environmental histories of southern agriculture, see Stoll, *Larding the Lean Earth*; Joshua Blu Buhls, *The Fire Ant Wars: Nature, Science, and Public Policy in Twentieth-Century America* (Chicago, 2004); Lynn A. Nelson, *Pharsalia: An Environmental Biography of an American Plantation, 1780–1880* (Athens, Ga., 2007); Christine Keiner, *The Oyster Question: Scientists, Watermen, and the Maryland Chesapeake Bay since 1880* (Athens, Ga., 2009); Benjamin R. Cohen, *Notes from the Ground: Science, Soil, and Society in the American Countryside* (New Haven, 2009); Albert G. Way, *Conserving Southern Longleaf: Herbert Stoddard and the Rise of Ecological Land Management* (Athens, Ga., 2011); Mark D. Hersey, *My Work Is That of Conservation: An Environmental Biography of George Washington Carver* (Athens, Ga., 2011); and John D. Majewski, *Modernizing a Slave Economy: The Economic Vision of the Confederate Nation* (Chapel Hill, 2009).

origin. Soluri examines the rise of corporate agribusiness and its articulation with U.S. power as well as the influence of U.S. consumer habits on distant laborers and landscapes, but his story has environmental vicissitudes as a main motive force. Specifically, plant diseases required growers to make adjustments constantly. They cleared fresh lands, used pesticides intensively, experimented with different varieties, and altered land tenure and labor regimes in an effort to limit the damage done by these diseases. Behind the seeming constancy of the banana as a consumer commodity, then, has been a remarkable scramble to control and keep pace with agroecological instabilities. Once environmental historians appreciate these instabilities, Soluri suggests, they see the geopolitical, economic, labor, and consumer histories of the banana as necessarily more contingent than can be contained by grand theoretical frameworks. They see what he calls a “web of agroecological relationships that constrained, resisted, and confounded the power of the fruit companies and their allies.” This “entangled agency of people, plants, and pathogens,” has, in its various configurations, been one of the most important lessons of the new agroenvironmental historiography.<sup>24</sup>

Agroenvironmental historians have also engaged with modern industrial agriculture. In particular they have turned to the plants and animals produced by and for industrial processes, and, in doing so, they have reversed a critical gradient in environmental historical assessment. Industrial agriculture has traditionally been seen as a mechanical invasion of the world of the biological—as the machine moving into the garden and the factory into the field—but these scholars are more inclined to see the biological invading and reshaping the technological, or perhaps even challenging the distinctions between the two. Here the new field of evolutionary history is critical. Evolutionary history shows not only how humans have steered the evolution of other species through breeding, hybridization, and direct genetic manipulation but also how human actions have produced unintended evolutionary consequences, such as pesticide resistance, and meaningful coevolution of humans and other species. The evolutionary-history approach to modern agriculture thus replaces what Edmund Russell has called the “master breeder narrative”—that breeding has been an imposition of human will on inert biological material—with a “bidirectional view” that emphasizes how culture and biology influence each other through evolutionary processes. Russell posits that evolutionary history “opens the possibility that organisms domesticated humans as well as vice versa.” By employing one of the most historical of sciences and by breaking down distinctions between natural and cultural selection, evolutionary history offers a provocative new model for seeing humans and other species acting together over time.<sup>25</sup>

<sup>24</sup> John Soluri, *Banana Cultures: Agriculture, Consumption, and Environmental Change in Honduras and the United States* (Austin, 2005), esp. 217. John Soluri, “Empire’s Footprint: The Ecological Dimensions of a Consumer’s Republic,” *OAH Magazine of History*, 25 (Oct. 2011), 15–20. Other important transnational studies are Tyrrell, *True Gardens of the Gods*; Tucker, *Insatiable Appetite*; and Sterling Evans, *Bound in Twine: The History and Ecology of the Henequen-Wheat Complex for Mexico and the American and Canadian Plains, 1880–1950* (College Station, 2007).

<sup>25</sup> On the rise of the industrial ideal in modern American agriculture, see Deborah Fitzgerald, *Every Farm a Factory: The Industrial Ideal in American Agriculture* (Cambridge, Mass., 2003); and David Iglar, *Industrial Cowboys: Miller & Lux and the Transformation of the Far West, 1850–1920* (Berkeley, 2001). On “industrial organisms,” see Philip Scranton and Susan R. Schrepfer, eds., *Industrializing Organisms: Introducing Evolutionary History* (New York, 2004). On evolutionary history, industrial organisms, and animal breeding, see Ann Norton Greene, *Horses at Work: Harnessing Power in Industrial America* (Cambridge, Mass., 2008); William Boyd, “Making Meat: Science, Technology, and American Poultry Production,” *Technology and Culture*, 42 (Oct. 2001), 631–64; Sam White, “From Globalized Pig Breeds to Capitalist Pigs: A Study in Animal Cultures and Evolutionary History,” *Environmental History*, 16 (Jan. 2011), 94–120; and Neil Prendergast, “Raising the Thanksgiving Turkey: Agroecology, Gender, and the

## The Environmental History of Disease and Health

Disease and health have long been central to environmental history. First-generation scholars such as Alfred Crosby argued that disease agents were powerful causal forces in history. John McNeill's masterly *Mosquito Empires* continues in that tradition, though with closer attention to what he calls the "creole ecologies" of yellow fever and malaria in the greater Caribbean. Another group of scholars has examined how urban and industrial pollution have impacted human health and led to environmental awareness. These areas continue to be vital ones in American environmental historiography. Even so, some of the most important recent work in the environmental history of disease and health has departed from the "microbe as environmental actor" model and has complicated the environmentalist narrative that nature was healthy and pure before humans began polluting it. This new literature has rediscovered past medicoenvironmental traditions of thinking about bodies and places. In the antebellum Missouri and Arkansas Territories, Conevery Bolton Valencius has found a discourse on the "health of the country" in which settlers assessed new lands not only in terms of their fertility and resource richness but also in relation to how settler bodies responded to their air, water, soil, and vegetation. Valencius depicts western settlement less as conquest than as the anxious adjustment of settler bodies to strange environments. Linda Nash examines the history of environmental health in California's Central Valley. She also finds a pre-germ theory discourse that linked the health of landscapes and bodies, but she traces that history into the present, with toxic chemicals saturating the Central Valley and creating health problems that reductive medical and sanitary approaches cannot decipher intellectually or epidemiologically. Other scholars have pulled these insights out to U.S. imperial spaces or to the indoor ecologies of our homes and workplaces. Critiquing modern medicine's efforts to contain disease and health within the body, these scholars argue for the continuing material and perceptual porosity between bodies and environments.<sup>26</sup>

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Knowledge of Nature," *ibid.*, 16 (Oct. 2011), 651–77. Edmund Russell, *Evolutionary History: Uniting History and Biology to Understand Life on Earth* (New York, 2001), esp. 69. Edmund Russell is the major proponent of evolutionary history as an independent field. On evolution's place in environmental history, see Donald Worster, "Historians and Nature," *American Scholar*, 79 (Spring 2010), <http://theamericanscholar.org/historians-and-nature/>.

<sup>26</sup> Alfred W. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900–1900* (New York, 1986); William H. McNeill, *Plagues and Peoples* (New York, 1976). J. R. McNeill, *Mosquito Empires: Ecology and War in the Greater Caribbean, 1620–1914* (New York, 2010), esp. 30. On urban environmental history, see, for example, Christopher C. Sellers, *Hazards of the Job: From Industrial Disease to Environmental Health Science* (Chapel Hill, 1997); Gottlieb, *Forcing the Spring*; David Rosner and Gerald Markowitz, *Deceit and Denial: The Deadly Politics of Industrial Pollution* (Berkeley, 2002); Christian Warren, *Brush with Death: A Social History of Lead Poisoning* (Baltimore, 2000); Suellen Hoy, *Chasing Dirt: The American Pursuit of Cleanliness* (New York, 1995); David Stradling, *Smokestacks and Progressives: Environmentalists, Engineers, and Air Quality in America, 1881–1951* (Baltimore, 1999); and Pete Daniel, *Toxic Drift: Pesticides and Health in the Post-World War II South* (Baton Rouge, 2007). Literature that moves away from the microbe-as-environmental-actor model includes Gregg Mitman, "In Search of Health: Landscape and Disease in American Environmental History," *Environmental History*, 10 (April 2005), 184–210; and Gregg Mitman, Michelle Murphy, and Christopher Sellers, eds., *Landscapes of Exposure: Knowledge and Illness in Modern Environments* (Chicago, 2004). Conevery Bolton Valencius, *The Health of the Country: How American Settlers Understood Themselves and Their Land* (New York, 2002); Linda Nash, *Inescapable Ecologies: A History of Environment, Disease, and Knowledge* (Berkeley, 2006). For another study that looks at the body-environment connection, see Joyce E. Chaplin, *Subject Matter: Technology, the Body, and Science on the Anglo-American Frontier, 1500–1676* (Cambridge, Mass., 2001). For studies that look at imperial settings, see Warwick Anderson, *Colonial Pathologies: American Tropical Medicine, Race, and Hygiene in the Philippines* (Durham, N.C., 2006); and Sutter, "Nature's Agents or Agents of Empire?" For studies that look at indoor ecologies, see Michelle Murphy, *Sick Building Syndrome and the Problem of Uncertainty: Environmental Politics, Technoscience, and Women Workers* (Durham, N.C., 2006);

*Breathing Space*, Gregg Mitman's environmental history of allergy and asthma, is a case in point. Allergy, Mitman argues, emerged in the nineteenth century as a novel medical condition that resulted from a remarkable historical conjuncture: humans' immune systems, conditioned to fight off all sorts of germs and parasites, became bored from inactivity in sanitary environments and began attacking themselves while, at the same time, American agricultural and urban expansion opened vast portions of the landscape to colonization by early successional plants that produced huge amounts of airborne pollen. The result was a growing tribe of hay-fever sufferers who perceived themselves to be distinctively sensitive to the world around them and who, using their bodies as barometers, searched for environments in which their symptoms subsided. Mitman shows that many of America's premier resort areas, such as New Hampshire's White Mountains, began as hay-fever retreats, and that the conservation movement had strong connections to these health claims. In the late nineteenth century, the "wilderness cure" was more than a metaphor. While the rise of modern medicine revealed the fallacies of older environmental understandings of disease and refocused medical thinking on discrete germs acting within human bodies, hay fever did not prove amenable to such reductionism. Medical scientists redefined hay fever in the early twentieth century as an allergic reaction to environmental agents and identified asthma as an allied condition. But clinical treatment still relied on ecological research to chart the geography of allergens, and seasonal migration—increasingly to the arid West—continued to be an important prescription for relief. After World War II, as asthma grew as a public health problem, medical attention refocused on urban and domestic ecologies. In cities, asthma was prevalent in low-income areas subject to air pollution and substandard housing, and epidemics of urban asthma became important foci for environmental-justice activism. Among the affluent, migrating to the favorable geographies of allergy and asthma resorts declined as a therapeutic response, to be replaced by pharmaceutical interventions and climate-controlled environments. The retreat to the great indoors produced its own problems, however, as chemicals in building materials and household products degraded indoor air quality and clinical ecologists discovered micro-environments teeming with dust mites. Allergy and asthma—and newer syndromes such as multiple chemical sensitivity—continue to link bodily experiences of health to particular historical ecologies, now often those of the built environment. Mitman concludes by insisting that we see allergy "not as a thing but as a relation," as a series of bodily reactions produced by and diagnostic of our diverse environmental histories.<sup>27</sup>

Environmental histories of health have also engaged gender and sexuality in provocative ways, from Michelle Murphy's study of office workers and sick-building syndrome to Gabriela Soto Laveaga's transnational examination of the Mexican peasants who gathered barbasco, a wild yam that yielded the critical chemical component in oral contraceptives and steroidal hormones. Nancy Langston's *Toxic Bodies*, a history of diethylstilbestrol (DES) and other endocrine disruptors, uses environmental history to destabilize those very categories. At its core, *Toxic Bodies* is a study of the failure of environmental regulation to protect us from a particular class of toxins—a failure rooted in scientific and cultural categories

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and Janet Ore, "Mobile Home Syndrome: Engineered Woods and the Making of a New Domestic Ecology in the Post-World War II Era," *Technology and Culture*, 52 (April 2011), 260–86.

<sup>27</sup> On the "wilderness cure," see Gregg Mitman, *Breathing Space: How Allergies Shape Our Lives and Landscapes* (New Haven, 2007), 6. On allergy "not as a thing but as a relation," see *ibid.*, 252.

that have been unable to capture these toxins' ecological complexity. DES emerged in the 1940s as an estrogenic treatment for menopause, and soon doctors began prescribing it to pregnant women to minimize miscarriages and premature births. As Langston shows, gendered notions of the disorderly female body facilitated these early uses. DES was then widely adopted in the cattle and poultry industries to increase the production of milk and meat, with workers and consumers exposed to the residues. Such treatments seemed harmless to many because DES augmented "natural" levels of hormones such as estrogen, but scientists soon found carcinogenic effects in lab animals and began to worry that DES exposure affected human sexual development. DES and other endocrine disruptors such as Bisphenol-A (BPA, found in many plastics) were difficult to regulate because they did not behave as other toxics did. Because smaller exposures to such substances often had greater human impacts than larger ones, the toxics did not fit the "dose makes the poison" rule of toxicology. Because their impacts were delayed—the effects of fetal exposure to DES might not appear until sexual maturity—it was difficult to prove direct negative impacts. And because researchers worked with a rigid distinction between genetic and environmental influences on health, they were slow to recognize that endocrine disruptors might influence gene expression. In the meantime, the humans and animals treated with or exposed to these chemicals excreted substantial quantities of them back into the environment. Human bodies not only absorbed toxics from polluted environments and suffered the consequences but they also became nonpoint sources of pollution, conduits in a novel industrial ecology.<sup>28</sup>

From a human health standpoint, many of the results that Langston links to chemical exposure are easily conceptualized as harm: increasing cancer rates, growing incidences of reproductive tract abnormalities, sterility, and impotence. Langston echoes the Asian environmental historian Brett Walker, who argues that physical pain is a poignant material manifestation of how toxins connect bodies with industrial environments. Beyond producing pain, endocrine disruptors may be materially changing vertebrate biology, as evidenced in growing rates of intersex conditions among amphibians, fishes, and humans. Whether these changes constitute harm is a fraught question that runs headlong into arguments that intersex conditions are part of a broad range of normal sexual development. Some cultural theorists have dismissed environmental concerns about endocrine disruptors because they see essentialist notions of normative sexuality dangerously driving the discourse on harm, while some in the intersex community worry that these epidemiological connections risk branding their bodies as mutant products of polluted environments. Thus, Langston arrives at questions that have lately stymied environmental historians: How are scholars to assess the environmental consequences of human-induced changes, in this case changes to sexual development and gene expression, without resorting to cultural notions of normativity that are often naturalized in biology? How are they to make moral sense of compounds, which humans have introduced into the world, that may be shifting the range of what is biologically normal?<sup>29</sup>

Langston's study is innovative in its skillful elucidation of one of the central themes of this new literature on the environmental history of health—that bodies and environments

<sup>28</sup> Murphy, *Sick Building Syndrome*; Gabriela Soto Laveaga, *Jungle Laboratories: Mexican Peasants, National Projects, and the Making of the Pill* (Durham, N.C., 2009). Nancy Langston, *Toxic Bodies: Endocrine Disruptors and the Legacy of DES* (New Haven, 2010), esp. xii.

<sup>29</sup> Brett Walker, *Toxic Archipelago: A History of Industrial Disease in Japan* (Seattle, 2010).

are deeply interconnected in ways that modern medicine has tended to underplay—and in how it builds upon work in epigenetics—a field that studies how environmental influences can steer genetic expression—to construct an argument for cultural and environmental contingency rather than genetic determinism. As importantly, in its attention to how endocrine disruptors operate in bodies and environments, the study pulls sex and gender into the conversation about moving beyond stark bifurcations between nature and culture. While scholars usually understand gender as a cultural category discrete from the materiality of biological sex, Langston's study suggests that cultural interventions informed by gendered notions of the natural and normal have, over time, *materially changed human and other vertebrate biology*. The issue is not merely that humans have become saturated with artificial toxicity and thus have polluted the natural state of their bodies and environments; it is that, in the process of trying to master nature, they have contributed to the biological transformation of bodies and ecological systems in ways that cannot be described as either natural or artificial/cultural. In that sense, *Toxic Bodies* is one of the richest examples of hybridity as a causal framework and as a description of the environmental state of things. Langston responds to these categorical instabilities and epidemiological uncertainties by prescribing robust principles of precaution—the notion that when human actions might cause human or environmental harm, precautionary measures should be taken even in the absence of clear causal connections between those actions and harm. Precaution is a particularly useful concept for environmental historians to think with today, for it is an imperative for protective action in cases of limited or unstable knowledge of the environment. And if one of the critical lessons of the second generation of environmental history has been that knowledge of the natural world is unstable and culturally inflected, one of the most important future tasks will be to chart paths of action that are sensitive to these realities but not hobbled by them.

### The Human-Built World

One facet of the young field of environmental history that the 1990 round table neglected was the urban. Despite formative work in the 1970s and 1980s by scholars such as Joel Tarr and Martin Melosi, urban environmental history had struggled to find a central place in the field. A distinction that Worster made in his round table definition of environmental history—between the natural environment, where “we encounter autonomous, independent energies that do not derive from the drives and inventions of any culture,” and the built environment, a world “wholly expressive of culture”—suggested one reason why. While Worster did not intend for environmental historians to ignore the impacts of urbanization on the natural environment, he intimated that the built environment was largely the province of urban, architectural, technological, social, and cultural historians. When, several years later, a frustrated Melosi tried to rewrite Worster's definition by insisting that environmental history should be “about the role and place of the *physical environment* in human life,” he did so by abandoning nature altogether. Thus, the second generation of environmental historians inherited a built-environment problem.<sup>30</sup>

<sup>30</sup> Joel A. Tarr, *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective* (Akron, 1996); Martin V. Melosi, *Garbage in the Cities: Refuse, Reform, and the Environment* (College Station, 1981); Martin V. Melosi, ed., *Pollution and Reform in American Cities, 1870–1930* (Austin, 1980); Martin V. Melosi, *The Sanitary City: Urban Infrastructure in America from Colonial Times to the Present* (Baltimore, 2000); Joel A. Tarr and Clay McShane, *The*

In the last two decades, environmental historians of the human-built world have solved this problem by arguing, first, that environmental entities and forces *have* been present in various forms in the built environment, and, second, that reigning environmentalist notions about the exurban location of “nature” have often prevented scholars from seeing these entities and forces at work. Much of this scholarship has focused on how urbanites and suburbanites chose to define nature as the city’s opposite: they made urbanization into a process of environmental mastery, replacing premodern organic cities with modern sanitary ones; they designed parks to interject “nature” into the built environment and then pulled these spaces and sensibilities out into suburbs and beyond; they built systems and networks that distanced production from consumption and obscured the environmental dependencies and impacts of urban living; and they came to romanticize wild spaces and creatures, projecting those ideals out onto hinterland landscapes and their inhabitants. As Chris Sellers has aptly put it, “cities have proven incubators for the most abstract and absolute distinctions between what is ‘nature’ and what is ‘culture.’” One key to resolving the built-environment problem, then, has been to historicize what the city did to environmental thinking.<sup>31</sup>

A second impulse has been to breach the material divide separating city and country. William Cronon’s *Nature’s Metropolis* set this agenda by shifting the analytical focus from the discrete city to an expansive urban geography of natural resource, capital, and commodity flows. In Cronon’s telling, nineteenth-century Chicago performed a kind of environmental alchemy, transmuting hinterland resources into commodities and urban forms with environmental origins that were difficult to discern or morally engage. Cronon referred to the results as “second nature,” an early variant on hybridity that he promiscuously applied to many things, from railroads and reengineered rivers to industrially milled lumber and packaged meat. The virtue of the concept was how it kept the environmental origins of seemingly cultural forms front and center even as it highlighted the forces that had obscured those origins. The weakness, however, was in the capaciousness of “second nature,” which cried out for useful distinctions within the category. Nonetheless, *Nature’s Metropolis* brilliantly showed how the intellectual distance between nature and culture produced by urbanization was itself a product of the city’s expansive material reach. Moreover, Cronon insisted that the built environment could be an incubator for thinking not in abstract and absolute distinctions between nature and culture but in terms of connections, paths, and interpenetrations.<sup>32</sup>

A third crucial insight of recent metropolitan environmental history springs from a weakness in the first two—cities are not populated by an undifferentiated humanity who think uniformly about “nature,” and scholars cannot talk about cities as abstract ecologies or embodiments of the logic of capital without doing violence to their economic, social,

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*Horse in the City: Living Machines in the Nineteenth Century* (Baltimore, 2007). Worster, “Transformations of the Earth,” 1089. Martin V. Melosi, “The Place of the City in Environmental History,” *Environmental History Review*, 17 (Spring 1993), 1–23, esp. 5. Emphasis in original.

<sup>31</sup> Chris Sellers, “Cities and Suburbs,” in *Companion to American Environmental History*, ed. Sackman, 462–81, esp. 477. On the impact of the city on environmental thinking, see Michael Rawson, *Eden on the Charles: The Making of Boston* (Cambridge, Mass., 2010).

<sup>32</sup> William Cronon, *Nature’s Metropolis: Chicago and the Great West* (New York, 1992), 56. On breaching the city-country divide, see also William Cronon, “Kennecott Journey: The Paths Out of Town,” in *Under an Open Sky: Rethinking America’s Western Past*, ed. William Cronon, George Miles, and Jay Gitlin (New York, 1992), 28–51.

and cultural diversity. As a result, metropolitan environmental historians have been key proponents of a social turn in environmental history, and many have made the metropolis a primary focus of environmental justice scholarship. *Environmental Inequalities*, Andrew Hurley's study of Gary, Indiana, was an early model. Hurley not only demonstrated that race and class affected how Gary's residents experienced urban-industrial environments but he also showed how the spatial reorganization of the city that came with postwar suburbanization and the spatial reorganization of pollution that resulted from landmark environmental legislation worked together to exacerbate environmental inequalities demarcated by race and class. Hurley's most compelling argument is that "the age of ecology was also an age of environmental inequality": attempts to protect "the public" from the environmental problems of the built environment resulted in newly differentiated social experiences of environmental degradation in the late twentieth century. Seeing and attending to those diverse experiences has been an important achievement of the field.<sup>33</sup>

Recent metropolitan environmental history has shown that the built-environment problem of two decades ago was, in fact, a failure of urban environmental literacy. If one group of environmental historians has been busy teaching us to read human historical traces in landscapes that seem essentially wild, another group, led by scholar-activists such as Jennifer Price, has been instructing us in how to appreciate that the city is *not* wholly expressive of culture. A particularly effective manifesto for urban environmental literacy is Matthew Klinge's *Emerald City*, a history of Seattle concerned precisely with the intricate ways landscape transformations and human social relations have shaped each other through time. Klinge finds environmental forces coursing through Seattle's built environment, and, borrowing a phrase from the historian of technology Thomas Hughes, he prefers to think of the city as an "ecotechnological system." Klinge's analytical foil is Seattle's public image as a city in harmony with its natural setting. That superficial sense of place, which his title cleverly mocks, curtains off a contested history of landscape manipulation, and its inadequacies have continually reproduced environmental inequalities by keeping facets of the city's environmental history illegible to much of its population. Klinge uses the city's accreted history in the service of what he calls a new "ethic of place": a civic environmentalism that knits social and environmental concerns together. *Emerald City*, then, is a historical lesson in urban environmental literacy, and it makes the urban environment the starting point for a reformed environmentalist sensibility.<sup>34</sup>

<sup>33</sup> Hurley, *Environmental Inequalities*, xiii.

<sup>34</sup> On urban environmental history, see, for example, Kathleen A. Brosnan, *Uniting Mountain and Plain: Cities, Law, and Environmental Change along the Front Range* (Albuquerque, 2002); Connie Y. Chiang, *Shaping the Shoreline: Fisheries and Tourism on the Monterey Coast* (Seattle, 2008); Craig E. Colten, *An Unnatural Metropolis: Wrestling New Orleans from Nature* (Baton Rouge, 2006); Lawrence Culver, *The Frontier of Leisure: Southern California and the Shaping of Modern America* (New York, 2010); Mike Davis, *Ecology of Fear: Los Angeles and the Imagination of Disaster* (New York, 1998); Sarah S. Elkind, *How Local Politics Shape Federal Policy: Business, Power, and the Environment in Twentieth-Century Los Angeles* (Chapel Hill, 2011); Matthew Gandy, *Concrete and Clay: Reworking Nature in New York City* (Cambridge, Mass., 2003); Ari Kelman, *A River and Its City: The Nature of Landscape in New Orleans* (Berkeley, 2006); Jared Orsi, *Hazardous Metropolis: Flooding and Urban Ecology in Los Angeles* (Berkeley, 2004); Howard L. Platt, *Shock Cities: The Environmental Transformation and Reform of Manchester and Chicago* (Chicago, 2005); Jeffrey Craig Sanders, *Seattle and the Roots of Urban Sustainability: Inventing Ecotopia* (Pittsburgh, 2010); Daniel Schneider, *Hybrid Nature: Sewage Treatment and the Contradictions of the Industrial Ecosystem*, (Cambridge, Mass., 2011); David Stradling, *Making Mountains: New York City and the Catskills* (Seattle, 2007); and Coll Thrush, *Native Seattle: Histories from the Crossing-Over Place* (Seattle, 2007). On suburban environmental history, see Rome, *Bulldozer in the Countryside*; and Sellers, *Crabgrass Crucible*. A provocative manifesto on finding nature in the city is Jennifer Price, "Thirteen Ways of Seeing Nature in L.A. Part 1: The First Six Ways and a Trip to the River," *The Believer*, April 2006, [http://www.believermag.com/issues/200604/?read=article\\_price](http://www.believermag.com/issues/200604/?read=article_price); and Jennifer Price, "Thirteen

Environmental historians also have turned their attention to built environments beyond the city; one of the richest has been the mine. Mining had suffered its own variant on the built-environment problem, illustrated by Lewis Mumford's famous contention that the mine was "the first completely inorganic environment to be created and lived in by man," a "manufactured environment" where, even more than the modern city, nature seemed absent. For Mumford, the mine environment was a metaphor for modern technological dominance. In recent years, however, environmental historians have breathed new life into these seemingly dead spaces. Timothy LeCain's *Mass Destruction* examines the history of open-pit copper mining, a process that produced large quantities of low-grade ore but that also created massive scars and dead zones on the earth's surface. Contra Mumford, LeCain argues that we cannot so easily separate the technological from the ecological, and that we need to see the scars produced by copper mining and smelting as part of an "envirotechnological system" in which copper has connected the lives of urban consumers to distant landscapes of extraction and production. Mines, he writes, are "inseparably linked to these terrestrial worlds, just as a city is linked to countryside." More than that, LeCain sees "mass destruction"—defined as "the use of crude but powerful hydrocarbon-fueled machines to rapidly and efficiently chew up entire swaths of the world and to subsequently extract only that small portion of it that was valued as a nature resource"—as an ethos and set of practices that have been as powerful in modern history as mass production and mass consumption.<sup>35</sup>

When environmental historians have looked at mining, they have tended to focus on its environmental consequences. In *Killing for Coal*, Thomas Andrews is interested in coal mining's environmental qualities and how they help historians rethink labor history and the history of the American West. Eschewing narratives that have treated the 1914 Ludlow massacre as a punctuated event in which the striking miners and their families killed by the Colorado National Guard were either victims of brutal corporate repression or a dangerous force for social disorder, Andrews provides a deeper history of the Colorado coalfield war that convincingly integrates environmental with other causal forces. He begins by placing the Colorado coalfield war in the context of a momentous energy transition—the shift from organic to fossil fuels. Environmental historians have long understood the importance of this transition, and more are turning their attention to explicating its intricacies, but few have woven it so masterly into the fabric of social history. Coal might be

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Ways of Seeing Nature in L.A. Part 2: Another Seven Ways and an Arrival at the Confluence," *ibid.*, May 2006, [http://www.believermag.com/issues/200605/?read=article\\_price](http://www.believermag.com/issues/200605/?read=article_price). See also Price, *Flight Maps*. The Los Angeles Urban Rangers have redeployed the iconic figure of the ranger-naturalist for the purposes of urban environmental literacy. See *Los Angeles Urban Rangers*, <http://laurbanrangers.org/site/>. Matthew Klinge, *Emerald City: An Environmental History of Seattle* (New Haven, 2007), 5. Thomas P. Hughes, *Human-Built World: How to Think about Technology and Culture* (Chicago, 2004), esp. 153–74.

<sup>35</sup> Lewis Mumford quoted in Rosalind Williams, *Notes on the Underground: An Essay on Technology, Society, and the Imagination* (1990; Cambridge, Mass., 2008), 5. Timothy J. LeCain, *Mass Destruction: The Men and Giant Mines That Wired America and Scarred the Planet* (New Brunswick, 2009), 21, 217. Important environmental histories of mining include Kathryn Morse, *The Nature of Gold: An Environmental History of the Klondike Gold Rush* (Seattle, 2003); Andrew C. Isenberg, *Mining California: An Ecological History* (New York, 2005); Samuel Truett, *Fugitive Landscapes: The Forgotten History of the U.S.-Mexico Borderlands* (New Haven, 2006); and Chad Montrie, *To Save the Land and People: A History of Opposition to Surface Coal Mining in America* (Chapel Hill, 2003). For a historiographical overview of mining, see Katherine G. Morrissey, "Rich Crevices of Inquiry: Mining and Environmental History," in *Companion to American Environmental History*, ed. Sackman, 394–409. On the mine environment as metaphor for modern technological dominance, see Williams, *Notes on the Underground*, 4–5.

dead, an inert natural resource, but Andrews shows that it is the product of past life, a paleoecological artifact of the earth's deep history. Andrews also demonstrates how central coal was to the socioeconomic transformation of Colorado from a "stagnant frontier" defined by aridity, low biological productivity, poor transport, and an absence of organic fuels to a thriving urban-industrial region. Coal also fueled the global migration of labor, as mineral-intensive industrialization set people in motion. For Andrews, the Colorado coal region was a polyglot node in a world pulled together by the power of coal.<sup>36</sup>

Having established that coal mattered in myriad ways to the larger context of the Colorado coalfield war, Andrews asks a critical question that leads him into another kind of environmental analysis: How did a diverse assemblage of peoples come together in a remarkable moment of labor solidarity? One set of answers, he suggests, comes "from hidden histories made deep underground." Andrews conceptualizes the coal mines as "worksapes": spaces where human labor met environmental processes in dynamic interaction. These mining worksapes were decidedly *not* the pure technological spaces that Mumford assumed them to be. Even as coal fueled industrial mechanization, the coal mine was a redoubt of organic labor, a place where humans and animals toiled together. Mules—few creatures better embody the hybrid—were ideal for work in tight mine spaces, though they had wills of their own. "Horses, donkeys, and people made mules," Andrews notes, "but mules made their own decisions." As miners worked with mules, the animals became powerful metaphors for miners, analogues of their own predicament. Rodents too enlivened the mines, and because rodents are "preternaturally sensitive to danger," the miners learned to anticipate the instabilities of mine environments in rodent behavior. Colorado's coal mines, then, were rich fields of human-animal interaction. Andrews also shows that the mines seemed alive in elemental ways. Miners had to know the rock and its structural qualities intimately; they had to carefully attend to the air in the mines and to a diverse variety of "damps"; they had to deal with groundwater and its potential to destabilize the earth and flood underground spaces; and, in these spaces lit by flame, they had to be vigilant about fire. Thus, mine work involved "a close, complex, and sometimes fatal relationship with a capricious environment" in which miners depended upon how well others read the environmental dynamics of the worksape for their safety. Miners developed what Andrews calls a "worksape militancy" that surfaced in "America's deadliest labor war."<sup>37</sup>

*Killing for Coal* is the book that has come closest to my inchoate vision for a critical rethinking of nature and agency in environmental history. Andrews's story is not one in which an abstract and singular nature has agency, but one in which "mules and molten steel, arid climates and Irish potato plots, explosive gases and, most of all, a humble rock that burns all have roles to play"—roles that are inseparable from human labor and power. More than that, it is not just environmental history but also encompasses deep history,

<sup>36</sup> Thomas G. Andrews, *Killing for Coal: America's Deadliest Labor War* (Cambridge, Mass., 2008), 42. On energy transitions and the shift to fossil fuels, see Brian Black, *Petrolia: The Landscape of America's First Oil Boom* (Baltimore, 2000); David E. Nye, *Consuming Power: A Social History of American Energies* (Cambridge, Mass., 1997); Paul Sabin, *Crude Politics: The California Oil Market, 1900–1940* (Berkeley, 2004); and Alfred W. Crosby, *Children of the Sun: A History of Humanity's Unappeasable Appetite for Energy* (New York, 2006). On the implications of suburbanization for energy use, see Rome, *Bulldozer in the Countryside*. On the history of energy and energy usage, see J. R. McNeill, *Something New under the Sun: An Environmental History of the Twentieth-Century World* (New York, 2000); and Brian Black, "Energy and Transportation," in *Companion to American Environmental History*, ed. Sackman, 482–504.

<sup>37</sup> Andrews, *Killing for Coal*, 123, 133, 130, 135.

energy history, animal studies, sensory history, envirotech, environmental justice, and other facets of the fruitfully fragmenting field. Andrews's complex causal taxonomy, then, is a model for other environmental historians to follow. Indeed, *Killing for Coal* is exemplary environmental history precisely because it is not always environmental history—and yet Andrews convincingly argues that it is impossible to understand the Colorado coalfield war without taking into account its environmental components. *Killing for Coal* is a powerful reminder of the far-reaching consequences of past energy transitions.<sup>38</sup>

## Conclusion

As a new field of study in the 1960s and 1970s, environmental history emerged with two presumptive narratives: first, to quote the nineteenth-century conservationist George Perkins Marsh, that humanity has been “everywhere a disturbing agent” and has, with accelerating power, degraded the natural world in dangerous ways; and, second, that humans have progressively moved from shallow to deeper understandings and valuations of the natural world, how it works, and what is required to protect it. Over the past several decades, American environmental historians have unsettled both of those narratives in fruitful ways. They no longer automatically correlate the passage of time with environmental decline, and the social and cultural turn within the field has challenged the notion that environmental thought and action have always become progressively more enlightened. In the process of complicating these narratives, environmental historians have amassed an arsenal of concepts that have moved the field beyond stark divisions between nature and culture. Environmental history scholars now routinely speak of “second nature,” “organic machines,” “ecotechnological systems,” “worksapes,” “industrial organisms,” “creole ecologies,” and “novel ecosystems”—all concepts that embody the hybrid world. Scholars also recognize that humans have sometimes overestimated their capacity for environmental mastery, and that environmental systems can be resilient in the face of their transformative powers. As a result, the stories environmental historians tell are more complex, contingent, and counterintuitive. In many ways, they offer truer and more satisfying renditions of the human-environmental past.<sup>39</sup>

If the defining tendency of recent scholarship in American environmental history has been to home in on entanglement, hybridity, messiness, and contingency—words littered about the entire landscape of historical practice today—the field also risks getting locked into what Worster, in his 1990 round table rejoinder, presciently called a “‘particularist’ squint.” Environmental historians risk turning the field into, in Patty Limerick’s humorous but apt phrase, “Hybridity and Complexity Studies.” Historians are beholden to rendering that complexity, but by engaging in concerted efforts to complicate the two presumptive narratives of the field, they have also strayed from their scope and ambition in ways that require course correction. Therefore, let me conclude with two brief provocations that deserve follow-up essays of their own. First, while American environmental historians have unsettled the narrative of environmental enlightenment, they continue to believe in it, and that is a good thing. Although few would have the field return to writing triumphal

<sup>38</sup> *Ibid.*, 19. On the power of another fossil-fuel resource to shape American and global history, see “Oil in American History: A Special Issue,” *Journal of American History*, 99 (June 2012).

<sup>39</sup> George Perkins Marsh, *Man and Nature: Or, Physical Geography as Modified by Human Action* (1864; Seattle, 2003), 36.

environmentalist histories, and few would dispute that past environmentalist interventions have often been less than progressive, neither are they willing to give up on environmental prescription. Indeed, as I wrote my way through this essay, worried that all the attention given to complexity and hybridity was creating a haze of moral relativism, I came to realize that many of the works I most admired were openly reaching for innovative ways to re-engage and improve environmental advocacy in a hybrid world. There is much work to be done here, but this is a trend that should continue. Second, American environmental historians must look up from their tight focus on complexity and hybridity and return some of their attention to arguably the most radical historical point that environmental history allows them to make: over a relatively short period of time humans have spread across the planet and transformed it to serve their ends to an extent that is difficult to fathom. Despite all of the ways American environmental historians have found the grand narrative of environmental decline to be lacking, the narrative remains, in its general outlines, both compelling and in need of substantially more historical attention across different temporal and spatial scales. It is time environmental historians applied the lessons of their hybrid histories to this larger story, and with some urgency.<sup>40</sup>

<sup>40</sup> Worster, "Seeing beyond Culture," 1143; Patty Limerick, "Everything *and* the Kitchen Sink: Enriching the U.S. History Course with Environmental History," *OAH Magazine of History*, 25 (Oct. 2011), 9–13, esp. 10. Environmental historians might follow the lead of world historians, who have made environmental history a central organizing theme of their developing field. See, for example, McNeill, *Something New under the Sun*.