

AHR Conversation: Environmental Historians and Environmental Crisis

PARTICIPANTS:

RICHARD C. HOFFMANN, NANCY LANGSTON, JAMES C. McCANN,
PETER C. PERDUE, and LISE SEDREZ

Environmental history is no longer new. Neither, of course, is the notion of environmental crisis. But they are bound together. It might be said, in fact, that historians' interest in the environment as a legitimate and urgent subject for historical study only crystallized as a field when the deteriorating state of the environment became an issue of public concern in the 1970s. Thus, if environmental historians are not solely interested in dramatic and often cataclysmic change, they surely have been alert to the ways in which human history has been marked, often disastrously, by profound alterations in our natural world.

The topic of this year's *AHR* Conversation is "Environmental Historians and Environmental Crisis." We were obviously moved to choose this topic by present-day concerns with the environment, but the discussion itself provides a historical perspective on the problem, something that is usually missing from contemporary discussion. It also stresses the methodological issues and challenges of doing environmental history, providing, we hope, readers with a snapshot of the field in its present state.

The five participants represent a global and chronological mix of perspectives. Richard C. Hoffmann is an early modern and medieval historian at York University, Toronto; Nancy Langston is a U.S. historian at the University of Wisconsin-Madison; James C. McCann is an African historian at Boston University; Peter C. Perdue is a specialist in China at Yale University; and Lise Sedrez is a Latin American historian at California State University, Long Beach. The Conversation was moderated by the *AHR* Editor.

AHR Editor: Before we launch into the discussion of our particular topic, I think it would be interesting, maybe even crucial, to spend some time talking about how the field of environmental history has changed over the last generation. I hope most historians have an appreciation of the importance and historiographical impact of the field; indeed, a book like William Cronon's *Changes in the Land* is a perennial staple on undergraduate and graduate reading lists, and is, I would venture, one of

the handful of monographs that virtually every practicing historian has read.¹ But I would also guess that these same historians remain unaware of how the field has changed—to what degree methodological sophistication, interdisciplinarity, sensitivity to regional and temporal differences, political engagement, as well as deep and, to most historians, unfamiliar thinking about the problematic role of humans—both as subjects and objects—in the study of the environment, especially over very long stretches of time, continue to transform the field. So my question is: From your different perspectives, both regional and chronological, what new methods, approaches, questions, or other factors have changed the study of environmental history? And if possible, I would like you to comment on how the field considers the nature of time—how environmental history’s sense of a very much enlarged expanse of time makes its approach to chronology, development, or “history” very different from that of most historians.

Lise Sedrez: This first question reminds me of some very classic “reviews of the field,” such as the roundtable with Don Worster, Richard White, Carolyn Merchant, William Cronon, Stephen Pyne, and Al Crosby in 1990, and the two pieces by Richard White in the *Pacific Historical Review* in 1985 and 2001.² Or so I flatter myself. The first and most obvious change, in my point of view, is the expansion of environmental history to non-U.S. areas—and somehow, the composition of this Conversation, in contrast with that 1990 roundtable, is representative of this change. Maybe “expansion” is not really a good word, since investigations on nature and society are quite traditional in the Latin American historiography—as well as in African and Asian history—and predate the formal establishment of the discipline of environmental history (see, for instance, *Rebellion in the Backlands* by Euclides da Cunha, or *Visions of Paradise* by Sérgio Buarque de Holanda).³ What I have seen in the last decade is a reinterpretation of classic debates on nature and nation, nature and society, nature and frontier, and others in the Latin American historiography, within a new framework of questions, methodologies, and references provided by the new discipline.⁴

A second characteristic of environmental history in the twenty-first century is that it seems to be—slowly—leaving its niche; that is, it is no longer the exclusive domain of “environmental historians.” I recall an article by Al Crosby in the *AHR* in 1995

¹ William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York, 1983).

² See Alfred W. Crosby, Jr., “The Past and Present of Environmental History,” *American Historical Review* 100, no. 4 (October 1995): 1177–1190; Donald Worster et al., “A Round Table: Environmental History,” *Journal of American History* 76, no. 4 (March 1990): 1111–1146; Richard White, “Historiographical Essay, American Environmental History: The Development of a New Field,” *Pacific Historical Review* 54 (1985): 297–335; White, “Environmental History: Watching a Historical Field Mature,” *Pacific Historical Review* 70 (2001): 103–111.

³ Euclides da Cunha, *Os Sertões* (Rio de Janeiro, 1911); Sérgio Buarque de Holanda, *Visão do paraíso: Os motivos edênicos no descobrimento e na colonização do Brasil* (São Paulo, 1985).

⁴ As, for example, in José Augusto Pádua, *Um sopro de destruição: Pensamento político e crítica ambiental no Brasil escravista, 1786–1888* (Rio de Janeiro, 2002), which revisits well-known Brazilian authors of the nineteenth century; or Reinaldo Funes Monzonte, *From Rainforest to Cane Field in Cuba: An Environmental History since 1492*, trans. Alex Martin (Chapel Hill, N.C., 2008), an environmental history approach to the sugar economy in Cuba.

in which he describes how environmental historians, in the time-honored tradition of American outsiders, had founded “their own sect, the American Society for Environmental History, with its own journal.”⁵ I have always read this particular sentence as a warning against the risks of isolation of the field. I believe, however, that the last ten years have shown exactly the opposite movement, that is, an active inclusion of environmental history’s concerns and debates by “mainstream historians”—whatever this label means. (Incidentally, in the same article, Crosby wrote that “the last ten years of the *AHR* includes more pages on film than on environmental history. Environmental history exists as an independent subdivision of the discipline, but it remains a minor one.”⁶ I didn’t check, but I doubt this claim would hold today.)

The second part of the *AHR* Editor’s question, regarding the nature of time, is an old favorite of mine. I have long maintained that all environmental historians owe a debt of gratitude to Fernand Braudel (a geographer) and his three movements of historical time—individual time, social time, and geographical time—even if this debt requires them to challenge his formulation in that wonderful masterpiece.⁷ (I admit, I am a big Braudel’s fan; sue me.) In environmental history, there is a bit of the total history proposed by Braudel, in which historians must address these three ideas of time—but not in the way Braudel suggested. So when Linda Lear writes a beautiful biography on Rachel Carson, individual, social, and geographical times are mixed together; the same is true of the new book by Chuck Walker on the 1746 earthquake-tsunami in Lima, Peru.⁸ Nature, society, and individuals are taken together; *long durée* and *histoire événementielle* are not opposed but interlocked narratives.

Richard C. Hoffmann: My first response differs, though only in degree, from Lise’s, perhaps because I came only some twenty years ago to see myself as doing environmental history, though I had for the previous twenty thought myself an historian. Deep into the 1980s, self-conscious environmental history was largely an affair of Americanists and a few modernists in other fields. Even a pioneer of the long-term and broad vision, Al Crosby, in his 1995 *AHR* overview of environmental history still assumed that state records, scientific reports, policy debates, and other attributes of modernity were essential to research in it. We others did economic history, agrarian history, history of technology, historical geography, some aspects of medical, social, or intellectual history, etc., but environmental history, unknowingly, we did only in retrospect.

The change came with rapidly diffusing recognition that the reciprocal relationship between humans and the rest of nature was not circumscribed by the topics and periods of the pioneers, but integrated many formerly separate historical issues and problems. The new awareness resulted in an explosion of diversity in the times and

⁵ Crosby, “The Past and Present of Environmental History,” 1188.

⁶ *Ibid.*

⁷ Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II* (New York, 1972).

⁸ Linda J. Lear, *Rachel Carson: Witness for Nature* (New York, 1997); Charles F. Walker, *Shaky Colonialism: The 1746 Earthquake-Tsunami in Lima, Peru, and Its Long Aftermath* (Durham, N.C., 2008).

spaces that are now objects of self-defined environmental history scholarship, and, I believe, in knowledge of the human and planetary past. Exploring other parts of the world with more deeply documented pasts forced environmental historians to transcend the North American preoccupation with wilderness, declensionism, recent politics, and determinism. More complex stories had to be told. Studies of the colonial Americas, Africa, South and East Asia, and Europe let historians see evolving relationships in the long term. In a place like the medieval and early modern Netherlands, we can watch people respond to a succession of environmental problems, some of which were themselves unintended consequences of previous human adaptations. In the process, both stability and change had to be historicized. Environmental history puts traditional political, institutional, and ideological chronologies to the test. I am, for instance, grappling with the efficacy of the traditional Middle Ages as a period for European environmental history; some of the grounds I would now offer refer to aspects of fifteenth- and sixteenth-century Europe previously little noted by historians.

At the same time, at least in fields with which I am familiar, environmental history has enjoyed a great upswing in interdisciplinary collaboration, especially with paleoscientists. Ancient DNA, dendrochronology, trace element analysis, paleoclimatology, soil science, archaeozoology, paleobotany, sediment studies, etc., open new windows on the historical past and call for traditional historians' skills to find and link the verbal record and to synthesize the results. Given mutual respect for different disciplinary purposes and cultures, interdisciplinary criticisms and corroborations enable deeper and more complete reconstruction of both probable and implausible past human environments. Systematic environmental archaeology undertaken before new high-speed rail lines were built in the lower Rhone valley, for example, has reconfigured understanding of social and cultural changes from late antiquity to the early Middle Ages. We can now start to grasp how individual households and whole regional societies handled multigenerational shifts in weather patterns and local security conditions that together kept recalibrating appropriate subsistence strategies.⁹ Meanwhile, methods that Swiss historian Christian Pfister devised for systematic critical use of traditional written records have made possible

⁹ Jean-François Berger and Jacques-Léopold Brochier, "Paysages et climats en moyenne vallée du Rhône: Apports de la géo-archéologie," in Odile Maufras, ed., *Habitats, necropoles et paysages dans la moyenne et la basse vallée du Rhône (VIIe–XVe s.): Contribution des travaux du TGV-Méditerranée à l'étude des sociétés rurales médiévales* (Paris, 2006), 163–208; Mireille Provansal et al., "Paléohydrologie holocène dans la basse vallée du Rhône, d'Orange à la mere," in Jean-Paul Bravard and Michel Magny, eds., *Les fleuves ont une histoire: Paléo-environnement des rivières et des lacs français depuis 15 000 ans* (Paris, 2002), 251–258. A slightly earlier parallel study is summarized in Sander van der Leeuw, François Favory, and Jean-Jacques Girardot, "The Archaeological Study of Environmental Degradation: An Example from Southeastern France," in Charles L. Redman, S. R. James, P. R. Fish, and J. D. Rogers, eds., *The Archaeology of Global Change: The Impact of Humans on Their Environment* (Washington, D.C., 2004), 112–129, and reported in great detail in Sander E. van der Leeuw, ed., *The Archaeomedes Project: Understanding the Natural and Anthropogenic Causes of Land Degradation and Desertification in the Mediterranean Basin* (Luxembourg, 1998), and Sander E. van der Leeuw, François Favory, and Jean-Luc Fiche, eds., *Archéologie et systèmes socio-environnementaux: Études multiscalaires sur la vallée du Rhône dans le programme Archaeomedes* (Paris, 2003). For a historian's attempt to integrate traditional evidence and new climatological data in this area, see Frederic L. Cheyette, "The Disappearance of the Ancient Landscape and the Climatic Anomaly of the Early Middle Ages: A Question to Be Pursued," *Early Medieval Europe* 16 (2008): 127–165.

the season-by-season, even week-to-week, reconstruction of early modern weather events.¹⁰ Extended to the scale of the European subcontinent and anchored to GIS, the results are so precise, they serve both to test atmospheric scientists' theories of long-term planetary circulation and to show cultural historians what triggered certain specific local persecutions for witchcraft.¹¹

Great expansion in time, space, data collection, and range of theories enables today's environmental history to inform present-day issues from a far wider base of past human experience than was available a generation ago.

Jim McCann: I write from my hotel balcony in a provincial town in Ethiopia (Jimma) from where I go daily to a much smaller market town and thence to a community of farmers whose experience with malaria and settlement of a water-logged valley is the basis of my research project. Their lives and their local landscape are the backdrop of what I seek to narrate, along with the local mosquito, and futile attempts to control it. It is landscape ecology as a changing historical canvas that I seek. The story I have in mind is a counterpoint to modernist optimism about the silver bullet of a malaria vaccine.

I am writing this note on a laptop but face the dangers of downloading the note to a flash drive and taking it to a small Internet connection across the (now) muddy street and across a small bridge made of eucalyptus sticks. The danger is not the mud, but the prospect of my flash drive coming back with 10–100 of the local viruses that circulate here. The analogy of computer viruses here is remarkably similar to a bio-medical phenomenon of infection and contagion. There are few McAfee upgrades around, and the rate of new infections from the Internet follows the patterns of an epidemic. I'll take a chance and send this off (and then throw away the flash drive like a used hypodermic). Ironically, the most infections from a single download have been from a connection to the World Health Organization's computer files in Addis Ababa.

¹⁰ Pfister's methods are described in Werner Schwarz-Zanetti, Christian Pfister, Gabriela Schwarz-Zanetti, and Hannes Schüle, "The EURO-CLIMHIST Data Base: A Tool for Reconstructing the Climate of Europe in the Pre-instrumental Period from High Resolution Proxy Data," in Burkhard Frenzel, ed., *European Climate Reconstructed from Documentary Data: Methods and Results* (Stuttgart, 1992), 193–210, and more fully in Christian Pfister, *Das Klima der Schweiz von 1525–1860 und seine Bedeutung in der Geschichte von Bevölkerung und Landwirtschaft*, 2nd ed. 2 vols. (Bern, 1985). For a broader recent overview, see Rudolf Brázdil, Christian Pfister, et al., "Historical Climatology in Europe: The State of the Art," *Climatic Change* 70 (2005): 363–430. Some representative applications include Rüdiger Glaser, *Klimageschichte Mitteleuropas: 1000 Jahre Wetter, Klima, Katastrophen* (Darmstadt, 2001), notably 93–180; Christian Pfister and Rudolf Brázdil, "Social Vulnerability to Climate in the 'Little Ice Age': An Example from Central Europe in the Early 1770s," *Climate of the Past* 2 (2006): 115–129; and Nazzareno Diodato, "A 425-Year Precipitation History from Documentary Weather Anomalies and Climate Records at Palermo, Italy," *PAGES News* 14, no. 1 (April 2006): 34–35.

¹¹ Wolfgang Behringer, "Weather, Hunger and Fear: Origins of the European Witch-Hunts in Climate, Society and Mentality," *German History* 13 (1995): 1–27; Behringer, "Climatic Change and Witch-Hunting: The Impact of the Little Ice Age on Mentalities," *Climatic Change* 43, no. 1 (September 1999): 335–351; Emily Oster, "Witchcraft, Weather and Economic Growth in Renaissance Europe," *Journal of Economic Perspectives* 18 (2004): 215–228; Christian Pfister, "Climatic Extremes, Recurrent Crises and Witch Hunts: Strategies of European Societies in Coping with Exogenous Shocks in the Late Sixteenth and Early Seventeenth Centuries," *Medieval History Journal* 10, no. 1–2 (2007): 33–73.

Our moderator has asked us to write on two issues: one is to assess the nature of change in the field of environmental history in the past couple of decades, and the other is the nature of time as a conceptual framework in our geographic or thematic subfield (in my case Africa). The question strikes me as deserving of a single answer that encompasses both questions. He leads by citing the ubiquitous nature of Bill Cronon's *Changes in the Land*. I agree that that work is the single most read monograph in environmental history. I once saw a fellow passenger on Boston's Red Line underground standing and reading a marked-up galley proof of the book around fifteen years after its original publication.

What was remarkable about Cronon's book, and what has sustained it, is its narrative power that reaches several audiences. Much of that appeal comes from its engagement with a familiar landscape (New England) and its multiple narrations (colonial settlers, native Americans, and the landscape itself). One of our questions might be whether we as historians of other times, other themes, and other places can achieve that level of narrative. I am now attempting to do that by combining the bioscience of malarial transmission with the agro-ecology of a particular place, and the life narratives of the people who found themselves there. How it will work is not quite clear to me yet, but I have in mind the blending of science with human place that has worked in contexts of social history (Ginzburg or Demos, for example).

It seems to me that the other disciplines that we share with environmental themes (geography, anthropology, natural sciences) do not use historians' tools of sources and human narrative. Telling the story is one of the things we should do best (although those skills are still rare even among historians). We can each think of a few historians who have displayed those skills and still maintain strong links to the sciences of ecology, geology, epidemiology, etc.

Peter C. Perdue: I would echo what Lise Sedrez says about changes in the field of environmental history. From my perspective, the biggest change has been the extension of environmental history to the non-Western world. In the 1980s, when I applied to the Chinese archives in Beijing to study floods in one Chinese province, the authorities would not give me an affiliation because they claimed that "this was not a historical topic." They suggested that I should go to the hydroelectric ministry instead. (In fact, China's hydroelectric ministry had compiled extensive quantitative data about the historical incidence of floods and droughts, but they omitted the political and institutional documents. I wonder if the U.S. Department of the Interior does the same?) Fortunately, I eventually did get into the archives, which proved to have extremely rich source material on agrarian production and famines. Now, of course, studies of China's environment have exploded, and every year there are major conferences on disasters, pollution, and sustainability. Historians still play only a small role in this discussion, but crises do tend to focus attention on a subject. China, like Latin America, has also had a long tradition of study of historical geography, into which environmental study fits well.

Despite these encouraging signs, we have to recognize that environmental history is still only tangential to the mainstream of the fields of history or Asian studies. The program of the upcoming AHA meeting lists only 4 panels out of 220 with “environment” as a topic (they cover national parks, urban environments, marine environments, and the culture of nature). There are a lot of other panels on food and global themes, but they mainly seem to concern the eating, drinking, buying, and selling of commodities, not their connection to nature. Of the twenty-odd books submitted for the Association of Asian Studies prize for best work on China before 1900, only one—Lillian Li’s study of famine—addresses an environmental topic.¹² Unfortunately, environmental history has not transformed the institutional and public face of these fields, despite its promise. Is there more we could do? We haven’t yet convinced most of our colleagues of its potential, but its perspectives have trickled into many related studies. Environmental history has provided fresh inspiration for comparative communication between historians of different regions. This is particularly important for historians of East Asia, each of whom tends to view his or her country of choice as unique.

The two foundational traditions of the Annales school and the American frontier school have both contributed to environmental history in Asia, in different ways. Scholars of East Asia, however, had to modify these Western perspectives to make them useful for analyzing imperial China. The Bloch-Braudel tradition of attention to agrarian structures, the *longue durée*, and constraints of nature inspired me and others to use local gazetteers and official sources to reconstruct long-term agrarian change in the early modern period. But the Annales tradition emphasized the limits of human activity faced with natural phenomena, and the relative unimportance of great political events. Early modern states, in the Annales program, did not matter much to the peasant. (To be fair, only the programmatic manifestos of the Annales school really promoted the extreme denigration of politics; the actual work of Braudel and others had much to say about early modern state formation.) In China, we could not kick the state out. The power of the Chinese imperial state to transform the natural and human environment constantly reappears in our work. I would go so far as to say that the bureaucratic states of China have shaped the natural environment for a longer period and more profoundly than the ancient or early modern states of Europe.¹³

The American tradition stresses much more the transformative power of capitalism and frontier settlement, in its agrarian (early Cronon) and industrial (later Cronon, Worster, etc.) modes.¹⁴ Unexpectedly, I found this perspective more useful than the Annales for my second book, on Chinese imperial expansion. The aggressive de-

¹² Lillian M. Li, *Fighting Famine in North China: State, Market, and Environmental Decline, 1690s–1990s* (Stanford, Calif., 2007).

¹³ Mark Elvin and Liu Ts’ui-jung, eds., *Sediments of Time: Environment and Society in Chinese History* (Cambridge, 1995); Philip C. C. Huang, *The Peasant Economy and Social Change in North China* (Stanford, Calif., 1985); Peter C. Perdue, *Exhausting the Earth: State and Peasant in Hunan, 1500–1850* (Cambridge, Mass., 1987); R. Keith Schoppa, *Xiang Lake: Nine Centuries of Chinese Life* (New Haven, Conn., 1989); Schoppa, *Song Full of Tears: Nine Centuries of Chinese Life around Xiang Lake* (Boulder, Colo., 2002).

¹⁴ Cronon, *Changes in the Land*; Cronon, *Nature’s Metropolis: Chicago and the Great West* (New York,

velopmental role of the Chinese state and the settler populations it ruled, even in a pre-industrial situation, has striking analogies with American frontier settlement. (To be sure, China historians have unfortunately drawn inspiration almost entirely from the U.S. experience, ignoring Latin American or Canadian analogies.)

Both approaches have generated new ways of looking at temporal divisions in China. The main goal is to replace classic divisions by dynasty with broader units like “early modern” (ca. 1500–1800) that are more comparable with the rest of Eurasia. Nature’s cycles differ from human ones: how to combine the natural and human rhythms is a major challenge for all of us. Geological deep time does not intersect human time very well, and efforts to root human activity in 100,000-year periods, like Diamond’s, do not work. But shorter rhythms, like the Little Ice Age or ENSO phenomena, do affect human action significantly, and we can document the effects.¹⁵

Jim McCann’s comments on settlement of malarial regions also indicate a different approach to time. Chinese have moved south into malarial and plague-ridden regions at least since the twelfth century C.E. For a long time, the disease barrier of the south protected indigenous peoples and limited Han settlement, but active military and official pressure for expansion encouraged penetration by Han settlers, who gradually developed immunities and pushed out the local population. By the end of the eighteenth century, they had taken over all of the core of China as far as Yunnan, despite local resistance.¹⁶ This example shows that environments constrain but do not determine settlement. State policies over the long term can conquer disease regimes, natural limitations, and indigenous resistance. Today, the Chinese still believe this, like most Americans, and they have intensified pressures for ecological devastation and ethnic assimilation driven by a modernist vision. But is this war on nature and indigenous peoples sustainable much longer? What time scale matters most: millennia of steadily increasing pressure, or the immediacy of current disasters? Environmental historians can ask these inconvenient questions with evidence and nuance.

Lise Sedrez: A brief side comment: Peter, in 1998 I was finishing my M.S. in environmental policy studies and about to begin my Ph.D. work in history. I went to a conference in Florence, Italy, held by the International Union of Forestry Research Organizations, and before I could re-enter the USA, I had to obtain a new J-1 visa at the American Embassy. It took me some time to convince the American officer at the embassy that someone *could* enter a doctoral program in history with a background in environmental studies, and no, it was not just a weak plot to remain in the U.S. illegally.

1991); Donald Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West* (New York, 1985).

¹⁵ Mike Davis, *Late Victorian Holocausts: El Niño Famines and the Making of the Third World* (New York, 2001); Jared M. Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (New York, 1997); Jean M. Grove, *Little Ice Ages: Ancient and Modern*, 2nd ed. (London, 2004).

¹⁶ David Bello, “To Go Where No Han Could Go for Long: Malaria and the Qing Construction of Ethnic Administrative Space in Frontier Yunnan,” *Modern China* 31, no. 3 (July 2005): 283–317.

More on topic, I agree with Peter that most comparative studies on Latin American environmental history have focused on the U.S. experience, but there have recently been some efforts to establish parallels with Africa and Asia, particularly the colonial experiences in South Africa and India. I am looking forward to seeing the publications of these efforts.¹⁷

Nancy Langston: I agree that as the field has matured, we have broadened our perspectives from American wilderness history to global analyses. A turn to cultural history has also marked the past decade, and historians of gender, class, and race have brought important perspectives into the field as well.

Yet for all the changes, it's worth noting certain continuities. Jim stresses the importance of narrative to environmental history, and I would argue that it is one key feature that distinguishes our work from that of our colleagues in landscape ecology, rural sociology, and medical epidemiology. I work with a group of ecologists who use many of the same sources historians are familiar with, but the kinds of questions the ecologists ask of those sources are quite different. Working across disciplinary borders while retaining the importance of narrative in our analyses is something that environmental historians have done since the beginning of the field.

I love Peter's ending question about what time scale matters the most. This seems to strike at the heart of what many environmental historians are now trying to do, and what distinguishes us from other fields of history: while paying attention to the human time scales that matter to traditional history, many of us are also attempting to incorporate much longer time spans into our analyses. Edmund Russell's call for an evolutionary environmental history is emblematic of some of the new directions in environmental history that seem particularly promising.¹⁸

Richard C. Hoffmann: On the distinctive role of storytelling as historian's art, we have all concurred, but we ought not oversell the efficacy or exclusiveness of this mode of discourse as our contribution to understanding. Stories relate change very well, less so its absence. If you think, as I do, that punctuated equilibria are a significant aspect of our interactive cultural and natural pasts, historians need also to explain or depict stability across the temporal scale. This bears directly on present-day environmental concern with sustainability and resilience. Nor are historians the only storytellers: as distinct from literary fiction or cultural myth, our stories assert some connection to an empirical "truth" resting on our sources. Third, historical training and critical method equip us to find, contextualize, and assess source materials that are inaccessible and opaque to paleoscientists and both present-day environmental activists and their opponents. Much that is alleged about past as compared to present environmental conditions needs to be put to the test. This, too, is

¹⁷ One example is the now-classic Ramachandra Guha and Juan Martínez-Alier, *Varieties of Environmentalism: Essays North and South* (London, 1997). Ravi Rajan and José Padua, however, have been working together on a larger comparative project, not yet published.

¹⁸ Edmund Russell, "Evolutionary History: Prospectus for a New Field," *Environmental History* 8 (2003): 204–228.

a task well-suited to historical scholarship, as witness that of Shepard Krech III, Joachim Radkau, or Sam Cohn, Jr.¹⁹

Jim McCann: Thanks to all of you for your recent contributions. Sorry for my silence. I am now almost totally cut off, since power cuts in Addis make it almost impossible to find a working Internet cafe. And the landlord of the place where I am staying tried to double the rent. When shown the contract, he then cut off the water and the phone. So much for the Internet. But this is an overall phenomenon here, as grain prices have trebled and famine conditions in the east ripple through the national economy. Lots of food in the shops, but Amartya Sen's entitlement thesis explaining famine is fully in place here.

I much agree with Richard's note on the particular vision of historical training to read sources that are opaque to other disciplines. (But Shep Krech is an anthropologist, no? It's just a matter of his coming over to the right side, as some anthropologists do.) In many ways I think that Peter's earlier statement about the way environmental history opens new time frames for disease, climate, hydrology, etc., offers really challenging ways to address time sequence and causation. Yes, it is Annaliste, but more than that.

AHR Editor: I would like to pursue a bit more this question of time and join it with the issue of periodization. Several of you have noted that environmental history is no longer marginalized as it once was but in many cases manages now to find its way into larger historical analysis and narratives. Indeed, Jim McCann specifically points to the need for fashioning historical narratives while still deriving analytical power from disciplines that are discursively non-narrative. But some of you acknowledge the ways environmental history stands apart from most historical approaches: specifically in the capacious sense of time it can encompass, and the challenge it offers to the traditional boundaries and categories of historical periodization (something noted by both Rich Hoffman and Peter Perdue). Is there a contradiction here? And this might offer an opportunity for us to segue into the question of crisis. The subjective human perception of crisis is usually bounded by a short-term perspective: it is something that happens to "us." Even historians tend to see crisis within the chronological context of years or decades, or occasionally centuries. Does environmental history, with its much deeper sense of time, force us to rethink our chronological appreciation of crisis?

Nancy Langston: I would argue: probably not. Speaking as a former evolutionary ecologist, I actually think that the largest crisis we now face—global warming—is really a humanistic tragedy in historical time, not an environmental tragedy in evolutionary time. It's not the earth that's going to be devastated by climate change. Mass extinctions in evolutionary history are typically followed by mass speciations. New species will evolve to fill the niches vacated by the extinctions piling up in ever

¹⁹ Shepard Krech III, *The Ecological Indian: Myth and History* (New York, 1999); Joachim Radkau, "Zur angeblichen Energiekrise des 18. Jahrhunderts: Revisionistische Betrachtungen über die 'Holznot,'" *Vierteljahrsschrift für Sozial und Wirtschaftsgeschichte* 73 (1986): 1–37; Samuel K. Cohn, Jr., "The Black Death: End of a Paradigm," *American Historical Review* 107, no. 3 (June 2002): 703–738.

greater numbers. The earth will persist—different, surely, but that’s the way things go in evolutionary time, over thousands of generations. The crisis of global warming—massive fires, floods, famines, with refugees in the millions fleeing too much water in Bangladesh, too little water in the Sudan—these are problems people will contend with over decades or centuries, not evolutionary problems over millennia.

What’s threatened by global warming is not the earth but ourselves. What won’t persist is our sense of place and time—our own human histories on this earth. It’s the places we love, the relationships we cherish, the connections and patterns and birdsongs in spring, that help to make us human. As Wallace Stegner reminded us, we see the world through our “own human eyes,” and it’s that human vision of the world that is under threat.²⁰

Lise Sedrez: I concur with Nancy’s comments. I would also argue that what our moderator calls a “deeper sense of time” is associated more closely with the very traditional “natural history” than with “environmental history.” In fact, one of the many differences between these two disciplines is the emphasis on “historical time”—which is not exactly “a shorter time,” but a time that is connected to societies, to communities, to individuals, over centuries, decades, years, or months. Yes, it is true that environmental historians must be attuned to a “natural time.” I believe it was Cronon who said once that “environmental history must make ecological sense,” and thus we must understand the time for reproduction of disease vectors, the time for El Niño, the time for ecological successions, the time for seasonal variations—but most likely we are still within “the chronological context of years or decades” or centuries.²¹

Recently, for instance, some research has been done regarding the return of dengue/yellow fever mosquitoes to coastal cities in Brazil. They had been virtually eliminated from Rio de Janeiro in 1904, in a well-studied sanitary campaign. Less than a century later, dengue mosquitoes are again dangerously active in Rio, a process we can connect to the urbanization trends of the twentieth century, and which is expected to increase in the longer summers of the twenty-first century.²² There are many interesting questions that environmental historians may ask in this crisis—about state policies, about sanitation, about urban inequality, and about the evolution/adaptation of mosquitoes in this new context of global warming. But do these questions really offer “a much deeper sense of time” than, for example, studies on religion in the Middle Ages or gender relations in ancient Greece? I am not convinced that “a deeper sense of time” is the contribution of environmental history to the study of

²⁰ Wallace Stegner, “The Sense of Place,” in Stegner, *Where the Bluebird Sings to the Lemonade Springs: Living and Writing in the West* (1992; repr., New York, 2002), 199–206.

²¹ The citation is in J. Donald Hughes, *What Is Environmental History?* (Cambridge, 2006), 1; originally in William Cronon, “A Place for Stories: Nature, History and Narrative,” *Journal of American History* 78, no. 4 (1992): 1347–1376.

²² See in particular the work in progress by Dilene Raimundo do Nascimento, from the Fundação Casa Oswaldo Cruz, on the history of dengue epidemics in Brazil. Some of the initial findings are in Dilene Raimundo Nascimento and Anny Jackeline Torres Silveira, “A doença revelando a história: Uma historiografia das doenças,” in Dilene Raimundo do Nascimento and Diana Maul de Carvalho, eds., *Uma história brasileira das doenças*, vol. 1 (Brasília, 2004), 13–30.

crisis. Rather, environmental history could offer a deeper sense of how our natural environment may change dramatically within historical time (in floods, droughts, pollution, animal and human migration, mass extinctions, or epidemics).

Richard C. Hoffmann: Two points from Nancy's remarks did catch my eye. While I strongly concur with her emphasis on the natural importance of change, I think it legitimate to draw distinctions of scale between changes arising from natural processes, slow or abrupt, and those arising from present-day human impacts. I have worked hard to show human cultures affecting the natural world in premodern times—much of Europe was cleared for agricultural use in about the same 200-to-300-year span of time during which North America went through a similar process; still, I would go along with John McNeill's *Something New under the Sun* to consider whether contemporary fossil-fuel civilization is not having historically unprecedented effects, whether consciously or not.²³ Whether we assess such changes as threats or opportunities, we still need to be able to describe and compare the processes. Second, the issue of seeing the world through human eyes: I thought one of the contributions of environmental history was at least to raise the possibility of imagining other points of view—as implicit in Lise's Brazilian mosquitoes. Anthropocentrism may be an epistemologically inescapable position and numerically dominant stance among environmental historians, but I doubt that all who practice in the field think this necessary or sufficient to grasp the relevant issues. Diversity of perspective is a valued, if challenging, quality of environmental history.

Peter C. Perdue: Our moderator asks if there is a contradiction between the ambitions of environmental history to explore deeper senses of time and also contribute to conventional historical narratives. I agree that there is such a contradiction, or maybe creative tension, which we have not solved, but which we should work on. It is not a fundamentally different challenge from that facing all historians who want to do original work but also be accessible, but it has special features because of the deep time scale and the engagement of environmental history with the non-human world.

Parenthetically, I recently attended the annual meeting of the Social Science History Association, whose theme for this year was "It's About Time: Temporality and Interdisciplinary Research." Social scientists of many persuasions have realized that introducing temporal scales into their research challenges many received paradigms. Historians have always had a lot to say about time, though in rather unsystematic ways compared to other social science disciplines. What was interesting about the conference for our discussion was the large number of panels and papers that raised environmental themes. Note that the SSHA is organized into sixteen networks, none of which specifically includes the environment. Networks like health/medicine/body, historical geography, rural, and macro-historical dynamics, however, naturally include some environmental themes. In a simple content search on terms like "nature," "disease," "health," "agrarian," "ecology," or "food," for example, I found 15 out of

²³ J. R. McNeill, *Something New under the Sun: An Environmental History of the Twentieth-Century World* (New York, 2000).

160 panels with some environmental content. Ten percent is not huge, but it is twice the presence of environment in the AHA. Dialogue with social scientists over the importance of time can be a useful way to introduce environmental themes.

Let's consider three environmental scales of time and how they might fit together (analogous to the three levels in Braudel's *Mediterranean*). First, geological and biological, covering millennia; second, structural and conjunctural, mainly a few centuries; and third, political, event-centered, in decades, years, or days. Humans and nature act on all three scales. For ancient civilizations like China or the Middle East, we have records going back millennia, and clear evidence of human impact on land and water over the long term: deforestation, settlement, direction of rivers, erosion, and species extinction all combine human and natural action on a very long time scale. We can tell this story as one transcending the boundaries of particular states or political changes, linking the persistence or disappearance of certain forms of human ecology with natural change. (Braudel's "structures" were in fact not static constructions, but also included human and natural dynamics.) On the second scale, familiar as the *longue durée*, historians join economic changes with social changes to look at the rise and fall of dynasties and *ancien régimes*, especially as seen in food provisioning, economic activity in trade and production, and land settlement on frontiers. See, for example, John Richards's *The Unending Frontier*, which covers three centuries.²⁴ This is familiar territory for the social historian, although it is usually not the best-seller audience. The third scale is the most popular, limited to short-term crises, usually in recent times. Journalists, political historians, and social scientists overlap in the focus on particular natural disasters in comparative perspective. Environmental activists expect academic research to justify immediate solutions for contemporary crises. They may be disappointed to find out that the same crises have occurred in the past, and don't have obvious solutions, or that the reigning mythologies used to motivate action in the modern world (wilderness myths or static equilibria, for example) have little historical or scientific backing.

It may not be possible to unite all these scales in a single narrative. Braudel divided his great book up into three large sections, and critics have charged that it has no unity. I think that there is a unity to *The Mediterranean*, but it does not fit conventional narrative models. But global climate change is a good example of environmental history that spans many time scales, from millennial cycles to immediate disasters, and deserves integrated treatment. The main contribution of environmental history is to offset the overwhelming focus on the immediate present by pointing to larger perspectives on major social and natural changes, and to replace conventional periodization, for example by dynasty in the case of China, with more naturally appropriate, globally comparative divisions (e.g., "early modern" or "organic energy society").²⁵ Although it's true that we are mainly interested in what happens to "us" or our children in the short term, the current crisis has deep roots not only in in-

²⁴ John F. Richards, *The Unending Frontier: An Environmental History of the Early Modern World* (Berkeley, Calif., 2003).

²⁵ Victor Lieberman, "The Qing Dynasty and Its Neighbors: Early Modern China in World History," *Social Science History* 32, no. 2 (2008): 281–304; Sanjay Subrahmanyam, "Connected Histories: Notes toward a Reconfiguration of Early Modern Eurasia," *Modern Asian Studies* 31, no. 3 (1997): 735–762.

dustrial civilization of the past two hundred years, but also in agrarian civilization of the past five millennia. The history of food, in short, is a very long-term one. We have to change basic features of both in order to solve the crisis, so we need to know their historical tracks. John McNeill may be right that something new under the sun has happened in the twentieth century because of the global impact of technological developments, but as Richard Hoffmann notes, humans had shaped the environment at local or larger scales for many millennia before that.²⁶ We ought to address directly the question of when and how changes in rates and scales of variation become sharp enough to count as new periods of world history—when does quantity change into quality, as the dialecticians put it?

Re-viewing the past, as Richard Hoffmann notes, also means seeing it through the eyes of other species: the elephants' and tigers' view of China, the wolves' view of Japan, or the positions of cats and other domestic animals in England.²⁷ These are really studies of human views of animals more than the other way around (can the subaltern really bark?), but they do bring in more of the emotional force of nature than do studies of rocks and trees.

I might add that we need to change the training of future historians so that they can learn to think beyond conventional boundaries of time and space. Too many historians fear numbers and science. Quantitative reasoning and engagement with the natural sciences should be expected. Even more important, following natural phenomena across political boundaries generally means learning quite a few foreign languages. Likewise, GIS techniques and other mapping approaches should broaden our spatial and temporal visions.

Jim McCann: Peter Perdue's last missive addressed the *AHR* Editor's question about inherent tensions between historians engaging longer-term time frames, geographic scope, and the needs of coherent narrative history. He uses Braudel's *Mediterranean* as an example of the dangers of losing narrative coherence for the sake of the need to broaden scale. I think one of the failures of the *Annales* (though I have always been a fan) has been the difficulty faced by their innovative use of mundane sources, including climate records. But there are other ways to build narrative pizzazz into longer-term/wider-scope reconstructions of the past. This past summer I read Steven Saylor's epic historical novel *Roma*.²⁸ In it he covers the history of Roman political culture, geographic scale, and historical persona in a single volume that pulls the reader along. Yes, he is a novelist, but his approach is to follow his-

²⁶ McNeill, *Something New under the Sun*; Geoff Wade, Zheng Yangwen, and Asia Research Institute, "Asian Expansions: The Historical Processes of Polity Expansion in Asia" (paper presented at the Workshop on Asian Expansions: The Historical Processes of Polity Expansion in Asia, Singapore, 2006).

²⁷ Mark Elvin, *The Retreat of the Elephants: An Environmental History of China* (New Haven, Conn., 2004); Robert B Marks, *Tigers, Rice, Silk, and Silt: Environment and Economy in Late Imperial South China* (Cambridge, 1998); Marks, "Asian Tigers: The Real, the Symbolic, the Commodity," *Nature and Culture* 1, no. 1 (Spring 2006): 63–87; Gregory M. Pflugfelder and Brett L. Walker, eds., *JAPANimals: History and Culture in Japan's Animal Life* (Ann Arbor, Mich., 2005); Harriet Ritvo, *The Animal Estate: The English and Other Creatures* (Cambridge, Mass., 1987); Brett L. Walker, *The Lost Wolves of Japan* (Seattle, 2005).

²⁸ Steven Saylor, *Roma: The Novel of Ancient Rome* (New York, 2007).

torical evidence on a particular known landscape (the seven hills), its generations of human occupants (who became Romans), and broader forces of economic change (regional trade, water management) from the first salt traders on Isola Tiberina (the island in mid-Tiber near the Forum) to Caesar's assassination. That is more than half a millennium. Saylor's novel is not environmental history, but that scope that will attract a wide readership might well be useful in telling history on a grand scale. Couldn't one do that in using records of the Harvard forest and local archives to do a regional/community study? A landscape itself could be a central motif that parallels human generations through a millennium. Cronon's *Nature's Metropolis* sort of does that, but without such a strong human narration.

One could argue that choosing only well-known landscapes panders to a general audience at the expense of focus on ecological processes (species extinction, deforestation, suburbanization, etc.) that have a role in public education. Yet the use of the environmental historian's skills in archival research, GIS, botanical evidence, or crop plant morphology could be an essential ingredient of human stories. I imagine that our group could think of a few examples of that. Peter Perdue's citations of writing from the perspective of different species (dogs, wolves, mosquitoes, etc.) all have possibilities or examples already in place.

Environmental history as a self-conscious subfield is still young. The new generation of Ph.D. students (and undergraduate majors) is just now in the process of building skills and databases from which they will eventually draw evidence for writing landscape and ecological narratives with a broad public audience as one of the goals. Cartoons and Pixar films are already building strong (some might say overly so) environmental messages into their techno-methods (think of Wall-E and Happy Feet). Saturday morning superheroes are already environmentally conscious, although usually in a politically simplistic way. And of course cable television is full of archaeology, nature programs, *National Geographic* specials, etc. (still often quite half-baked).

My point here is that environmental history as a subfield combines the historian's skill at finding evidence of change in archives and in science. Raising new questions that seem esoteric and assembling narratives for a broader audience are two parts of the same enterprise. Making new graduate students and undergraduate classes aware of these two lines of development is an important task for both our research and our teaching.

Richard C. Hoffmann: Like Peter and Jim, I came back home and to our conversation from experiences in unfamiliar and visibly historic landscapes that encourage reflection on what it is we environmental historians do or at least think we hope to do. Yet I confess that my unruly thoughts run at a tangent or across the grain of the Editor's still-live question. Apologies if these meanderings fail to engage your imaginations.

Northern England is not, of course, all that exotic, but it was new to me and stimulating to think how thousands of men labored for five to eight years to construct Hadrian's Wall, a landscape feature still recognizably anthropogenic, but also for well more than a millennium itself a "natural" resource actively mined to build new churches, castles, cottages, pigsties, railway bridges, etc. Where Anglian monks had once found refuge in a devastated land for their holy patron Cuthbert, later Normans constructed Durham Cathedral to anchor and display their power in a long-ambiguous border landscape. War, we now acknowledge, is also a parameter for environmental history. During the more than two recent centuries when coal pits pockmarked the surrounding terrain, Durham was acknowledged as "the miners' cathedral." The last colliery in County Durham shut down in 1983, so a once-stereotypical landscape must now be reconstructed as "heritage." Romans, Christians, Normans, and industrialization brought successive ecological revolutions to the landscape and were then absorbed into what it had become. Continuity and change intertwine.

Jim and Peter rightly conclude that new kinds of questions and broader audiences for environmental history call for innovative training on the part of historians, new or mid-career. I wish my outlook were more optimistic, but I am mindful of the once-"new" quantitative, interpretive, and comparative economic and social history (I do stress history, not economics or sociology) in which I was trained and where I worked for half my professional career as a medievalist. With a few exceptions whom I treasure, North American students take history because they would avoid numbers, concepts, and science, which they fear. North American audiences want to hear stories, not analyses. They want simple clarity and have a low tolerance for critical doubt, ambiguity, and the good scientific provisional hypothesis. We professors can beat our brains out trying to teach critical thinking or the evidence-based leap to a level of understanding for past human conditions. We succeed with some students. But how to now transfer that to the broader audience that needs the deeper perspectives and the interactive relationship of the natural and cultural that environmental history provides?

I am wary of a search for narrative unity lest it become easy reductionism. When I look across even the small terrain of medieval Christendom with its common surface of clerical Latin literacy, I see so many nuances, so many locally different adaptations to soils, water, relief, or just different cultural toolkits or values. Unity and diversity: there is no single story, though some stories are more numerous or resonant than others. Consider Horden and Purcell's *The Corrupting Sea*, explicitly aiming to present a counter-Braudelian Mediterranean with a very long counterpoint of diversity and unity.²⁹

How, then, do we draw present-day audiences or students into the deeper past and the local and regional particularities it contains when they are intensely urban participants in a mass and homogenized virtual culture? There sunny days are always

²⁹ Peregrine Horden and Nicholas Purcell, *The Corrupting Sea: A Study of Mediterranean History* (Oxford, 2000).

good, rain bad; today's indispensable style or truth is tomorrow's stale error and next week's oblivion; everything outside the city is unimportant and undifferentiated. In most of Western and Central Europe, you can still go fifty kilometers, perhaps less, and the place looks a bit different, feels a bit different, is probably known by a distinctive name, and may retain relics from a distinctive way of life. The Sauerland is not the Siegerland; Yorkshire dales are not Tyneside. Historians, especially environmental historians, must try to reconstruct and communicate those differences, then show how larger unities arise as generalizations from some of the particulars. So I am more partial to small-scale narratives: a waterfall is shaped to power a grain mill that becomes a fulling mill that becomes a textile factory that, abandoned, becomes, once again, a waterfall—until state subsidies give someone the idea to make a run-of-the river generating station. Each such use of this natural element implied the presence of and connected to different parts of a surrounding cultural milieu. It has finally dawned on me why I read fourteenth-century financial accounts kept on parchment rolls in England but on folded paper sheets in Burgundy or Silesia. Complexity and connectivity: the past was as messy as the present even though each set of pieces fit roughly together—until some big natural or human event, often exogenous to the local/regional system, turned the kaleidoscope again. We can learn from the patterns of difference and from human experiences that went well or awry. Neither Norse Greenlanders nor Norse Icelanders can be held responsible for the climate-related stresses that hit them in the fourteenth and fifteenth centuries, but the former seemingly failed to find a viable response, while the latter (barely) did; Hollanders, on the other hand, we now think in the long run at least partly responsible for their own simultaneous difficulties, but certainly also as the makers of a long-successful new kind of adaptation. Seen against a larger backdrop with a different temporal scale, those, too, make good, but not universal, stories in environmental history.³⁰

³⁰ Astrid E. G. Ogilvie, "Climatic Changes in Iceland A.D. ca. 865 to 1598," *Acta Archaeologica* 61 (1990): 233–251; J. Eiriksson, K. I. Knudsen, H. Hafliðason, and J. Heinemeier, "Chronology of Late Holocene Climatic Events in the Northern North Atlantic Based on AMS C-14 Dates and Tephra Markers from the Volcano Hekla, Iceland," *Journal of Quaternary Science* 15 (2000): 573–580; A. G. K. Dawson, K. Hickey, P. A. Mayewski, and A. Nesja, "Greenland (GISP2) Ice Core and Historical Indicators of Complex North Atlantic Climate Changes during the Fourteenth Century," *The Holocene* 17, no. 4 (2007): 427–434. For consequences, see Thomas H. McGovern et al., "Northern Islands, Human Error, and Environmental Degradation: A View of Social and Ecological Change in the Medieval North Atlantic," *Human Ecology* 16 (1988): 225–270; P. C. Buckland et al., "Bioarchaeological and Climatological Evidence for the Fate of the Norse Farmers in Medieval Greenland," *Antiquity* 70 (1996): 88–96; Thomas H. McGovern, "The Demise of Norse Greenland," in William W. Fitzhugh and Elizabeth. Ward, eds., *Vikings: The North Atlantic Saga* (Washington, D.C., 2000), 327–339; Astrid E. J. Ogilvie and Thomas H. McGovern, "Sagas and Science: Climate and Human Impacts in the North Atlantic," *ibid.*, 385–393. Kirsten Hastrup explored cultural perspectives in *Nature and Policy in Iceland, 1400–1800: An Anthropological Analysis of History and Mentality* (Oxford, 1990). For the late medieval and early modern Netherlands, an awareness of challenge, response, and consequences both planned and unintended arises from the interplay of issues in William TeBrake, "Taming the Waterwolf: Hydraulic Engineering and Water Management in the Netherlands during the Middle Ages," *Technology and Culture* 43 (2002): 475–499; Petra J. E. M. van Dam, "Sinking Peat Bogs: Environmental Change in Holland, 1350–1550," *Environmental History* 6 (2001): 32–45; Charles Cornelisse, "The Economy of Peat and Its Environmental Consequences in Holland during the Late Middle Ages," in Hilde Greefs and Marjolien 't Hart, eds., *Water Management, Communities, and Environment: The Low Countries in Comparative Perspective, c. 1000–c. 1800* (Gent, 2006), 95–121; Richard Unger, "Energy Sources for the Dutch Golden Age: Peat, Wind and Coal," *Research in Economic History* 9 (1984): 221–253; Petra J. E. M. van Dam, "Ecological Challenges, Technological Innovations: The Modernization of Sluice Building in Holland, 1300–1600,"

AHR Editor: Several of you have already mentioned “global warming”; and I’m pretty sure that if we asked people on the street what comes to mind when “environmental crisis” is mentioned, they would refer to this looming reality. I suspect as well, however, that most of you would resist framing it as the prototypical environmental crisis. At the risk of getting hung up in semantics, it is certainly appropriate to discuss what we mean by environmental crises, as opposed to others that historians deal with; or perhaps it would be more useful to think of different categories of crisis, so as not to get locked into simplistic, generic, or simply presentist understandings of the term. When historians (and others) use “crisis,” often, though not always, they mean more than just hard times, terrible circumstances, and the like, but rather a conjuncture of phenomena that indicates problems, blockages, dislocations, or threats of a structural or systemic nature. For environmental historians, this would seem to be implicit in their very understanding of history—to see it in systemic or structural terms. Indeed, in a profession in which structural analysis has for the most part gone out of fashion, environmental historians might be seen as singularly energetic promoters of this approach. So my question has to do with what environmental historians bring to the study of historical crisis. Can environmental historians make this concept meaningful in ways that other historians have not? What counts as an “environmental crisis” and why?

Jim McCann: The *AHR* Editor has asked us to comment on the issue of the nature of crisis (or, I guess, the crises of nature)—that is, whether environmental history has a particular and distinctive contribution to understanding a phenomenon like global warming. My first response is the knee-jerk one that sees the current political debate as not fundamentally historical or even empiricist. The opposing narratives are more theological, in the sense that they are about belief, not so much systematic skepticism. Historians might help frame a debate of facts about the past, but hard science types have more relevant information. Or Thomas Friedman on today’s *New York Times* op-ed page has a keener sense of the public debate (he’s in Greenland at the moment).

So I might reframe the Editor’s question to us. How does environmental history as a subdiscipline differ in its approach to understanding a crisis such as, say, global warming, or the outbreak of a vector-borne disease (West Nile virus, dengue fever, or kalazar), or urban settlement sprawl? I think, in fact, that an environmental historian would approach these problems of nature/human interactions in fundamentally different ways from scholars whose questions and methods derive from the history of science or the history of medicine. In the latter two cases, there is a dom-

Technology and Culture 43 (2002): 500–520; van Dam, “Harnessing the Wind: The History of Windmills in Holland, 1300–1600,” in Paola Galetti and Pierre Racine, eds., *I mulini nell’Europa medievale: Atti del Convegno di San Quirino d’Orcia, 21–23 settembre 2000* (Bologna, 2003), 37–53; Milja van Tielhof and Petra van Dam, “Losing land, Gaining Water: Ecological and Financial Aspects of Regional Water Management in Rijnland, 1200–1800,” in Greefs and Hart, *Water Management, Communities, and Environment*, 63–93; and Tielhof and van Dam, *Waterstaat in stedenland: Het hoogheemraadschap van Rijnland voor 1857* (Utrecht, 2006), especially when seen as a counterpoint to Jan de Vries and Ad van de Woud, *The First Modern Economy: Success, Failure, and Perseverance of the Dutch Economy, 1500–1815* (Cambridge, 1997).

inant narrative of modernism—in other words, the implicit belief that scientific method and empiricism will eventually understand and then solve the problem (or crisis) at hand. Those approaches to history implicitly in their narratives offer an eternal optimism about infectious and chronic disease, hunger, energy shortages, or air pollution. This optimism in those fields has its roots in a kind of faith in scientific method, but also in the temptations of research grant narrative that needs to promise solutions in some sort of short- to medium-term time horizon. Few NSF or NIH grants (or Sachs initiatives) channel funding toward work that points out the futility of laboratory science or pharmacology to solve particular diseases. The history of malaria is a good example of the contrasts between history of medicine and an environmental history approach. The same dynamic operates in terms of how environmental historians approach the idea of crisis, both in defining what a crisis is and whether or not a particular policy has value. The explanation for the current flood of funding toward a malaria vaccine is much more an issue of the narrative of a cure than it is a realistic and considered assessment that humans co-evolve with disease and conditions of nature. I think that environmental historians have analysis and understanding as a goal, far more than solutions to crises that stimulate political policy debates.

Nancy Langston: Jim suggested that historians of science still have faith in a dominant narrative of modernism, but I'm not sure this is true. My colleagues here in history of science seem even more dubious than environmental historians about the possibility of solving "crises," however we define them, with the scientific method. But perhaps Jim is right that narratives of progress become more appealing when NSF and NIH grants are a possibility.

Ecologists seem to be far less hopeful about science's ability to solve a crisis than most historians. But still they plug on, in the face of what they perceive to be looming ecological disaster. For example, colleagues in my forest ecology department are watching the collapse of northern conifer forests they spent their careers immersed in learning about, and then in learning to love. Things that to the rest of us seem trivial, or even sweet—a family camping trip with a load of firewood from home, a fishing trip with a can of earthworms for bait—spell disaster to them, because they know something the rest of us don't know about the history of community collapse. They know that a stick of firewood may well contain several emerald ash borers, and if just a few of those insects get out of the firewood and into the surrounding forest, that could mean 95 percent of our ash trees will be dead within five years. So much for a key component of the forest (and so much for the cultural associations local Menominee women have with ash trees, which are important for basket-making). The ecologists know that wriggling worms don't all get impaled on fishing hooks. A few squirm free, and havoc results in the hemlock forests, because non-native earthworms transform nitrogen cycling on the forest floor. If you walk with an ecologist in the Sylvania Wilderness Area, essentially the last old-growth hemlock forest left in the Great Lakes states, you can trace what the ecologists call a "killing wave" of earthworm activity. The combined stresses may mean that the forests we now know and love are unlikely to persist, and under current climate models, are unlikely to return in the future.

My point here is not that ecologists know more about crisis than the rest of us, but that we only perceive a crisis when we have first learned to observe, and then to value, a particular set of relationships that are about to be destroyed. That's as true for human relationships as for ecological relationships. I'm willing to bet that few of the early Anglo settlers perceived the loss of Ojibwe community relationships along Lake Superior as a crisis in the nineteenth century.

So what can environmental historians do that scientists and social historians might have a hard time doing in the face of rapid, irreversible ecological and social transformations? I hope we can do some translation: speak to the ecologists of cultural changes, and speak to other historians of ecological changes, in a language that helps both communities understand that complex relationships are being unraveled. What value we place on that unraveling is up to the individual: It's not our job to say "This is bad." But it is our job to say "This has happened."

How does a sense of human history change our perception of crises? An example from my own work may be suggestive. In the early 1990s, when I was doing graduate work in zoology, I spent a year studying Laysan and Black-footed albatrosses. These enormous birds breed on the leeward Hawaiian islands and feed in the north Pacific Ocean, a place as remote from industrial civilization as any spot on earth. We examined the stomachs of hundreds of albatrosses trapped as "bycatch" in squid drift nets. Much to our surprise, nearly every albatross we dissected contained plastic fragments in its stomach. These same albatrosses had incomplete molt patterns, which led to reduced ability to breed, along with heavy parasite loads in their esophagi (indicative of reduced immunity). At the time, we published a series of papers theorizing about the evolutionary history of these deleterious traits, but we never imagined that they might also be related to the chemicals leaching out of the plastics in their guts.

When we believed incomplete molt, heavy parasite loads, and breeding failures to be part of the sweep of evolutionary history, we didn't get angry or depressed about it. We simply thought we were witnessing interesting processes that would eventually lead to change—perhaps extinction of one of the albatross species, but more likely transformed molt and breeding patterns. We thought it was pretty cool, to be honest. Evolution in action!

But several years ago, when I began working on a history of endocrine-disrupting synthetic chemicals, I realized that all those bits of plastic we were finding in the birds' stomachs may have been leaching toxins which led to reproductive failure. Maybe our fascinating molt patterns were not shaped by evolutionary responses to the environmental constraints of the cold north Pacific Ocean. Maybe instead they were caused by a toxic sponge of trash gumming up their reproductive systems. This possibility leads to a particular anger that evolutionary processes would be unlikely to evoke. If system collapse happens over millennia, fine. If system collapse happens in three decades because people don't bother to clean up after themselves, and don't even know what they're destroying when they toss out plastic bags, the response is

very different. A sense of human history changes the ways scientists analyze the meanings of albatross breeding patterns. More importantly, perhaps, it changes the ways people interpret the meaning and value of those changes. I expect that many ecologists would share my sense of normative values here.

Richard C. Hoffmann: The Editor's question about "environmental crisis" as seen by environmental historians pulls a medievalist back to Lynn White, Jr.'s now-classic statement of hypothesis, "The Historical Roots of Our Ecologic Crisis," first published in *Science* in 1967 (likely the first time a medieval historian wrote of his or her subject in that journal).³¹ Note that the subsequent and continuing discourse over the environmental impact of religious ideas has commonly referred to "ecological" (White's "ecologic" was idiosyncratic) rather than environmental crisis without, in my view, materially changing the subject. More vexed is the question of whether White and others conceive of the ecological crisis as a complex and historically rooted phenomenon of the present or grant the term generic quality as an historical concept. I've not canvassed the historiography of the subdiscipline but would pose specific questions and refer to certain large cases to encourage our thinking more clearly about patterns in the interaction of humans and nature. What may usefully be classed as an environmental crisis and why?

Start simply: Jim McCann has said he has rabbits with a taste for tomatoes, I've had deer enjoying lily buds; do we face environmental crises or environmental risks to suburban gardening? Then come Nancy's deceived and debilitated albatrosses, which in her telling achieved crisis standing only after their retrospective re-diagnosis as victims of abrupt human sleaze, not slow evolutionary processes.

Get larger. Have communities from New Bedford to Newfoundland been experiencing environmental crisis from destruction of fish stocks? Was this only in the late twentieth century, or did it occur in the nineteenth as well? Or ought they better be thought crises of the cod and of the whales? Was the Indian Ocean earthquake and tsunami of December 26, 2004, an environmental crisis—or must an event go beyond human fatalities to bring about changes in societies' response measures and land use? What, then, of the massive volcanic eruptions of Mt. Pelée on Martinique in 1902 or Laki in Iceland in 1783–1784? Both killed many humans and other living things, had serious effects on weather patterns, and changed landscapes in ways still visible today.

Environmental historians of early modern Europe debate the dimensions of widespread wood shortages as a "crisis" met in some regions by rationing consumption, social discipline, and scientific woodland management, etc., and in others by the ecological revolution of fossil fuels.³² Both structural causes for concern and the different responses twined deeply into linked cultural and environmental processes.

³¹ Lynn White, Jr., "The Historical Roots of Our Ecologic Crisis," *Science*, n.s. 155, no. 3767 (March 10, 1967): 1203–1207, reprinted in White, *Dynamo and Virgin Reconsidered: Essays in the Dynamism of Western Culture* (Cambridge, Mass., 1968), 75–94.

³² Compare, for starters, E. A. Wrigley, "Meeting Human Energy Needs: Constraints, Opportunities, and Effects," in Paul Slack, ed., *Environments and Historical Change: The Linacre Lectures, 1998* (Oxford,

I think the early modern population collapse of New World native peoples after the introduction of Eurasian diseases—not, by and large, vector-borne—is generally acknowledged as an environmental event of high magnitude. With subsequent European settlement and exploitation of a very different man-land ratio and landscape than would otherwise have prevailed, this involved a vast array of human and non-human, living and non-living participants and parameters. Was it also an environmental crisis? Might perspective matter in that diagnosis?

In a near-classic 1980 essay, Charles Bowlus labeled an “ecological crisis” the first half of the fourteenth century in Europe.³³ Crop failures triggered by runs of bad weather turned into large-scale famines when food entitlements broke down during 1315–1318 in northwestern Europe and the late 1330s–early 1340s in the Mediterranean. These events occurred under conditions indicative of human overpopulation: land cleared and plowed beyond earlier and later limits of arable use; shrinking farm size; labor intensification and falling real wages; declining yields; fuel shortages. Then Europeans experienced in 1347–1351 a sudden and devastating epidemic, which we call the Black Death. This killed a third, a half, or more of the population. The disease is, however, difficult to connect to nutritional failures, as contemporary witnesses agree that it slew people of all social ranks. If it was what modern medicine calls bubonic plague (caused by the bacterium *Yersinia pestis*), only tenuous speculation about shipments of grain and textiles concealing infected rats and their attendant fleas would explain its rapid spread across the European subcontinent.³⁴ But faced with criticism, the retrospective diagnosis fails credible proof, and much in the epidemiology of the Black Death accords poorly with the model of a rodent-borne disease that bubonic plague researchers in Asia established at the start of the twentieth century.³⁵ Whatever the identities of the pathogens at work in fourteenth-century Europe and the sixteenth-century Americas, those organisms experienced no environmental crisis, but rather a pioneer discovery of whole new host populations. Bowlus’s term, then, means to catch the complexity and difficulties of the human situation in a world of natural and cultural change.

J. Donald Hughes has written carefully about environmental “problems” of classical Greece and Rome.³⁶ Deforestation, soil erosion and depletion, overgrazing, and loss of biodiversity can surely be classified as important sustainability issues, but if I read

1999), 76–95; and Rolf P. Sieferle, *The Subterranean Forest: Energy Systems and the Industrial Revolution* (Cambridge, 2001).

³³ Charles Bowlus, “Ecological Crisis in Fourteenth Century Europe,” in Lester J. Bilsky, ed., *Historical Ecology: Essays on Environment and Social Change* (Port Washington, N.Y., 1980), 86–99.

³⁴ For a hard-line and detailed narrative of the bubonic plague diagnosis, see Ole J. Benedictow, *The Black Death, 1346–1353: The Complete History* (Rochester, N.Y., 2004).

³⁵ Cohn, “Black Death”; and more recently Samuel K. Cohn, Jr., “Households and Plague in Early Modern Italy,” *Journal of Interdisciplinary History* 38 (2007): 177–205; and G. Christakos, R. A. Olea, and H. L. Yu, “Recent Results on the Spatiotemporal Modelling and Comparative Analysis of Black Death and Bubonic Plague Epidemics,” *Public Health* 121, no. 9 (September 2007): 700–720, both of which contain numerous further references.

³⁶ J. Donald Hughes, *Pan’s Travail: Environmental Problems of the Ancient Greeks and Romans* (Baltimore, 1994); and more recently his “Ripples in Clio’s Pond: Social Structure and Environmental Impact in the Roman Empire,” *Capitalism Nature Socialism* 15 (September 2004): 29–35, and “Environmental Impacts of the Roman Economy and Social Structure: Augustus to Diocletian,” in Alf Hornborg, J. R.

Hughes correctly, they eventually blocked revival more than they drove the destructive “decline and fall” of ancient Mediterranean civilization. Disease, invasion, and political insecurity in a context of great depopulation make late antiquity as somber and complex an ecological mix as the early modern Americas. So was this an environmental crisis (too)?

What, then, are the defining parameters of historic environmental crises? Is it destruction of an ecosystem or just its destabilizing? Must the phenomenon meet some threshold values of speed or scale? Need causes (structural or precipitant) and/or effects be located on only one or necessarily both sides of the human-nature interaction? Does point of view matter, making crisis for one opportunity for another? I would contrast this ambiguity with the relative precision of Carolyn Merchant’s 1987 introduction of “ecological revolution,” a concept genuinely useful for historians to distinguish a particular and deep-going type of induced ecological change.³⁷ Environmental hazard (risk), cultural perceptions of landscape, and social metabolism are other ideas helpful for historical analysis. Against this standard, “environmental crisis” may have meaning only in the post-1960s cultural context as undesirable phenomena perceived at the nexus of nature and culture, especially as defined in present-day political terms as calling for some collective response.

Indeed, we may now be unable to imagine any but the purest political or cultural crisis (a disputed election, the breakup of a famous band) as lacking environmental aspects and significance. This may, however, be no bad thing if it helps alert anthropocentric and ethnocentric developed society, including many good practicing historians, to the inescapable webbing of their interests with the natural world. No doubt the vast majority of environmental historians do share Jim McCann’s goals of analysis and understanding human relations within nature. The concept of “environmental crisis” at this point serves more to raise present-day awareness than to deepen this historical understanding.

Peter C. Perdue: Journalists use the term “crisis” so often these days that it has become practically meaningless. I think that we should try to use it sparingly: not every disaster is a crisis, else imperial China would have had thousands of them, given all its droughts and floods. Environmental historians may be able to contribute to public understanding by distinguishing different temporal and spatial scales of change. Some disasters (earthquakes, tsunami) are immediate, unpredictable, short-term, and relatively localized; others develop more slowly, over larger scales, with more advance warning (droughts and floods, global warming, energy shortages). But both kinds have natural and human causes, long- and short-term. Environmental historians can share approaches with scientists in distinguishing the scale and seriousness of long- and short-term environmental change. I agree with the moderator’s general description of “conjunctures . . . of a systemic nature” as the essence

McNeill, and Joan Martinez-Alier, eds., *Rethinking Environmental History: World-System History and Global Environmental Change* (Lanham, Md., 2007), 27–40.

³⁷ Carolyn Merchant, “The Theoretical Structure of Ecological Revolutions,” *Environmental Review* 11 (1987): 265–274.

of crisis. But we can certainly debate exactly when, where, and how serious these crises were: All of Eurasia in the seventeenth century? Or only parts of Western Europe, Russia (briefly), and China (for half a century)?

From 1991 to 1995, we had a series of workshops at MIT discussing how humanists could contribute to the understanding of contemporary environmental crises, and Jill Conway, Ken Keniston, and Leo Marx published some of the essays, with an introduction, in 1999.³⁸ Our main point was that most people thought that scientists and engineers had the main responsibility for studying and solving environmental problems, but in fact humanistic and social scientific analysis had a lot to offer. There is a strong belief in a quick technological fix to many problems, not just in the U.S. but also in China, and much public discussion rules out or marginalizes the “human factor.” (In one of the MIT models of Global Climate Change, this variable was added in at the last minute in the bottom corner of a big, complex diagram filled with physical forces.) But many of the basic divisions among environmentalists, like those between anthropocentrists and ecocentrists, apocalyptic visionaries and practical reformers, those who stress aesthetic and cultural values vs. those who stress material factors, or those who promote regulation vs. those who promote the market, all derive from historically rooted debates over social structures and political change. That seemed obvious to us in the 1990s. Not that many people noticed.

It’s interesting to look back at this volume now, since even after fifteen years, a number of crucial issues have changed. Global warming hardly appears in the 1998 volume, and the editors say about it that “present knowledge is limited, and existing models do not enable us to predict catastrophe,” so they recommend “prudent gradualism,” not so different from the Bush administration. Now we know more, and catastrophe seems closer. There was a lot of talk back then about “modernity” and “postmodernity,” but no one discussed the history of oil or energy supplies, not to mention terrorism or violence in failed states. No one (including me) brought up China’s environmental impact.³⁹ “Crisis” is a moving target: current concerns shift so fast that we shouldn’t tailor our research to fit the latest, most heavily funded fad. Environmental historians should at least try to look behind the immediate issues to longer-term structural and cultural changes. Environmental history has been more predominantly material and structural than other subfields of history; on the other hand, perhaps it has not put enough stress on particular disasters. Recently, quite a few Asian scholars, for obvious reasons, have begun to look at specific disasters in broader historical perspective.⁴⁰

We do have common cause with a number of scientists, but their vocabulary is different. I am struck by Nancy Langston’s comment that ecologists love their trees, or feel anger at the collapse of ecosystems. Do physicists love their quarks, or biologists

³⁸ Jill K. Conway, Kenneth Keniston, and Leo Marx, *Earth, Air, Fire, Water: Humanistic Studies of the Environment* (Amherst, Mass., 1999).

³⁹ But see Vaclav Smil, *China’s Environmental Crisis: An Inquiry into the Limits of National Development* (Armonk, N.Y., 1993).

⁴⁰ Conference on Natural Disaster in Asian History, Culture, and Memory, Asian Research Institute, Singapore, August 26–28, 2005.

love their genomes, in the same way? Ecology, with its heritage in natural history, has a stronger emotional and moral charge for many people than the reductionist sciences. But there are odd changes in the meaning of terms. We can blame “non-native” worms for causing chaos in forests, but don’t try to blame “non-native” human migrants for disrupting human societies. Is there still a lingering preference for equilibrium and distrust of outsiders causing change in ecology? Disruption and external impact is normal in human societies; why not in nature? Translation questions here are quite fascinating, and important.

One common thread emerges from the Conway et al. volume, William Cronon’s notorious essay “Getting Back to the Wrong Nature,” and my former MIT colleague in political science, the late Steve Meyer’s *The End of the Wild*: there is no more wilderness left.⁴¹ Humans affect every species and every zone on the planet, and only the “weedy species,” those adapted to the human presence, will survive in any significant numbers. This fact strengthens the case for humanistic history: if there is no independent nature to act as a counter-model, we have met the enemy and he is us.

Lise Sedrez: The question has changed quite a bit since its initial formulation. From “what environmental historians bring to the study of historical crisis” to “How does environmental history as a subdiscipline differ in its approach to understanding a crisis such as, say, global warming, or the outbreak of a vector-borne disease (West Nile virus, dengue fever, or kalazar), or urban settlement sprawl?” And then to earthworms, emotions and responsibilities, plastic in albatrosses’ stomachs, and Merchant’s concept of “ecological revolutions.” Uff! There is a lot packed into one question.

So instead of adding yet another concept to the conversation, I would like to highlight some of the ideas already brought to the debate. Nancy suggested that environmental historians are responsible for some necessary translation between ecologists and other historians. It touches that commitment to interdisciplinarity, which, as mentioned earlier, is at the foundation of the subdiscipline. This “disciplinary translation” (and the dialogue we hope to foster) is not only for content (such as arguing with historians on the life cycle of the mosquitoes and with ecologists on the life cycle of Latin American bureaucratic policies), but also for the translation of the concept of crisis itself.

Which brings me to Peter’s comments that “crisis” is a moving target. If it is so (and I partially agree), environmental historians must contribute to understanding the “history of environmental crises”—how global warming displaced the ozone layer or ocean pollution as the top priority in an international agenda, or how the water pollution budget surpassed yellow fever funding in postwar Brazil. At the same time, when Peter states that environmental historians should “try to look behind the immediate issues to longer-term structural and cultural changes,” he is correctly suggesting that these several environmental crises (water pollution *and* yellow fever) are in fact interconnected in the relationship between societies and the environment. In

⁴¹ Stephen M. Meyer, *The End of the Wild* (Somerville, Mass., 2006).

other words, it is not so much the target (the crisis) that is moving but the bull's-eye (the agendas, or the particular events), and environmental historians can't afford to lose track of either.

Paraphrasing David Brower's "Think global, act local," maybe environmental history has the task (and hopefully the ability) to "study local, write global." Shifting the scales in time and in place is no small feat, but it is something that environmental history, with its necessary interdisciplinary character, is well poised to do.

AHR Editor: I am struck by Richard's comment "The concept of 'environmental crisis' at this point serves more to raise present-day awareness than to deepen this historical understanding." I don't want to assume that all of you would endorse this statement, but skepticism about the appropriateness or usefulness or correctness of the concept has been voiced more than once in this Conversation. Likewise, a contributor to an *AHR* Forum on "The General Crisis of the Seventeenth Century Revisited," which appeared in the October 2008 issue, argues that historians' understanding of "crisis" has usually been unthinkingly associated with medical meanings of the concept and ought rather to be considered in rhetorical terms. Nancy has spoken about environmental historians' passion and, specifically, anger when they witness the ravages and permanent damage of nature from human behavior. And she has wondered "why many ecologists would share my sense of normative values here." My question, then, has to do with your own understandings of how you frame the systematic, often irreversible, but in any case profound changes you witness, either in the present day or in the remote past: Is there a place for you to embrace, with all its ambiguity and imprecision, the notion of "crisis" for rhetorical reasons—to underscore the urgency of nature's plight and people's past or potential suffering, and perhaps, accordingly, to spur people to greater sensitivity, even action? The question, too, I suppose, abuts the issue of the politics and "normative values" of environmental history: Does the field render its practitioners more engaged than other historians?

Richard C. Hoffmann: Wary of seeming to steer our conversation, I had hoped first to hear others' take on the Editor's double-barreled query about the rhetorical value of "environmental crisis" and the activism of environmental historians. But as other matters compete for space on my September desk and mind, let me set forth some possibly incompatible observations and thoughts.

On the conceptual side, I stubbornly remain convinced that more clarity and consensus is needed to make (the? an?) "environmental crisis" a useful analytical and, to a lesser degree, rhetorical tool for historians.

Rhetorically the idea of crisis may well serve to incite social awareness that all cannot simply continue as people erroneously think it now is and long has. It may generally sum up phenomena of change in relations between humankind and planetary systems or between specific cultural groups and their material surroundings. It might help people acknowledge the ecological principle, as put by Charles Darwin, that "we are

all netted together.”⁴² But then the particulars of the net and the changes we experience call for a different kind of awareness, understanding, and response than crisis seems to elicit. This line of thought evolves in my response to the Editor’s primary question: Does the practice of environmental history make participants more engaged (viz. in environmental discourse and action) than other historians?

In some ways, environmental history is certainly more able than some other historical subdisciplines to be engaged in current public discourse. Joachim Radkau treated one side of this in his 2000 general history now Englished as *Nature and Power: A Global History of the Environment*.⁴³ Environmental history provides information and perspective essential to those who now hold power because the state needs (a) to anticipate and prevent predictable natural disasters and (b) to acknowledge the likelihood of unpredictable and complex change. The lesson: prepare but stay nimble. And to learn the lesson, the realities of past disasters and the predictability of present risks are (ought to be) potent arguments and advice.

Environmental history, perhaps more than other kinds of history, is a valuable source of comparative exempla for attentive citizens and their leaders, informing about things that worked and things that did not in human relations with the natural world. I argue that it necessarily introduces or reminds about the longer run. Historians can demonstrate similarities and differences between current and former conditions and document the processes that moved from one to the other. We can learn from past human experience about sustainable resource use, effective responses to disaster, and effective responses to change, whether catastrophic or gradual on the human scale. The historical record (including, of course, material and paleoscientific evidence) further offers cases of unsustainable practice, of unintended consequences, of failed responses, and of the limits to human agency. Some of the latter certainly involved “environmental crises” in the sense of damaging breakdowns in human relations with their non-human surroundings. But many of the former involve human adaptations that occurred at temporal and quantitative scales where the crisis concept (or metaphor) plays no useful role.

But does the practice of environmental history itself bring environmental historians to greater personal engagement than other kinds of historical scholars? In my own experience, some social historians and practitioners of women’s history are much more single-mindedly dedicated to using their historical scholarship as a tool of change than are practicing environmental historians. My personal connection works in the reverse: I was actively engaged in conservation work and activism for rivers and wildlife *before* I understood that these issues pertained, too, to my historical profession and that historical research could inform present assessments, practice, and action. Thereafter, I also realized that my previous professional work on past

⁴² Howard E. Gruber and Paul H. Barrett, *Darwin on Man: A Psychological Study of Scientific Creativity, Together with Darwin’s Early and Unpublished Notebooks* (London, 1974), 447, excerpting from the B notebook, p. 232, compiled by Darwin in autumn 1837.

⁴³ Joachim Radkau, *Natur und Macht: Eine Weltgeschichte der Umwelt* (Munich, 2000); translated into English as *Nature and Power: A Global History of the Environment*, trans. Thomas Dunlap (New York, 2008).

agrarian societies itself pertained to an environmental history which successfully encompassed economic, social, and cultural histories (and other disciplines, too).

But a result of historical knowledge can be disconcerting to elements of the environmental movement, namely that both natural forces and human actions have been driving environmental change (including ecosystem destruction) since time immemorial. Only some aspects of the present situation are unique. The environmental movement ought surely to have learned and corrected as a result of environmental history almost as much as should those who then and now deny environmental concerns and values. In the North American setting, Bill Cronon rightly identified this by asking which nature we preserve or restore (and was for his pains roundly criticized by some).⁴⁴ A better understanding of historical issues and of the “story” may dampen rather than foster enthusiasm for action. Working with small rivers, for example, our group of scientists, managers, and volunteers came to accept that the natural dynamic means constant destruction and re-creation of aquatic habitat, so much even well-intended human intervention is useless, even damaging. What, then, constitutes ecological “restoration” in a larger world of change? To what extent do we aim to maximize sustainable relations with functioning ecosystems (where I think historians have much to offer), or rather put resources into bringing something to a “pristine” state while neglecting other serious stresses arising from human relations with the natural sphere? Different situations call for different and difficult choices.

Peter C. Perdue: As summer fades ineluctably into fall, the chilling weather reminds us of inevitable cycles of natural change. You don’t need to be a historian to be aware of seasonal change, or even to think about the effects of environments on political change, but change of weather reminds us that months matter. In temperate countries, spring and summer are good times for demonstrations (May Days, July Days, Tiananmen), but October has also been a good time for revolutions (China 1911, Russia 1917).

The moderator asks if environmental historians are especially prone to engaging in activism. Actually, labor historians, women’s historians, rural historians, etc., generally have just as much, if not more, commitment to acting on behalf of their subjects of study. They also have the advantage of identifying a clear group of people to represent, and a set of social theories and techniques to guide inquiry and action. Environmental history doesn’t fit this type of social history very well, so its relationship to political action is somewhat different. We could see it as a type of historical materialism, extending the scope of factors of change beyond economic and technological structures to natural forces. But extending the scope to the non-human makes it hard to decide exactly which human structures are the most important ones to target. If the enemy of human sustainability is all of us, we have no legs to stand on. And should we also agitate on behalf of wolves, trees, and fish as well as humans? The constituency of environmentalism is almost impossibly broad.

⁴⁴ William Cronon, “The Trouble with Wilderness; or, Getting Back to the Wrong Nature,” appeared almost simultaneously in *Environmental History* 1 (1996): 7–28 and in his *Uncommon Ground: Rethinking the Human Place in Nature* (New York, 1995; reprinted in 1996 as *Uncommon Ground: Toward Reinventing Nature*), 69–90.

On the other hand, critics have charged that most environmental movements actually represent primarily the interests of middle and upper classes. Historically, this has generally been true, as in the form of big game hunters like Teddy Roosevelt preserving national parks or Chinese literati struggling to protect the aesthetic charms of a lake against encroachment by developers.⁴⁵ Some environmentalists have often embraced a form of romantic pastoralism opposed to all technological development. We could respond that nearly all modern collective movements for some form of justice have had middle- or higher-class leadership at least at the outset (anti-slavery, women's rights, etc.), and intellectuals have repeatedly led revolutions on behalf of other classes.

But more recently, cross-class coalitions have formed to focus on industrial toxicity in working-class or minority regions. The motivations of urban literate classes and rural and working classes may be different, but they have sometimes found common ground in protecting healthy environments against breakneck development. Environmental movements in Taiwan, for example, have united believers in popular religion defending sacred sites with "modern" environmentalists arguing for protected wilderness areas.⁴⁶ Environmentalism might avoid the historical traps of organizers who polarize one class against another, precisely because of its potentially broad appeal.

So is Green the new Marxism? It's interesting that the *Radical History Review* is now calling for contributors to a special issue on environmental crises. (So for once, the *AHR* got there first!) It is striking that at least incipient environmental consciousness has grown rapidly among a broad span of people even in developing countries, and the older arguments of developmental elites for the primacy of GNP growth at all costs have lost conviction. Even the PRC government now endorses "sustainable development" and has moved away from Mao's notions of an all-out War on Nature. Children in Chinese elementary schools quickly pick up ideas of ecosystems, the interrelatedness of humans and nature, and the beauty of animals and plants that were inconceivable a decade ago. Now the widespread poisoning of infants by milk additives because of unregulated industrial growth is driving the point home to their parents, too. This is the Chinese equivalent of our financial crisis: the state must respond to preserve its legitimacy, but the abandonment of serious regulatory control over its industrial interests is the primary cause. The Chinese state has tried to suppress independent critiques of its disastrous environmental record—for example, by shutting down lawsuits over shoddily built schools in the earthquake zone outside Chengdu. But these repeated scandals might well generate new collective movements and cause a transformation in Chinese citizens' views of their government. In the past, it was the inadequacy of the Qing empire, or the Republican government, in defending the welfare of its people against foreign invasion, natural disaster, or internal upheaval that mobilized citizens to demand new institutions of civil society; this could just happen again today in regard to environmental damage. China does

⁴⁵ Schoppa, *Song Full of Tears*.

⁴⁶ Robert P. Weller, *Discovering Nature: Globalization and Environmental Culture in China and Taiwan* (Cambridge, 2006).

face a real environmental crisis today, and the only solution, in my view, is for the state to allow the development of a genuinely open discussion among its citizenry. The United States could play a helpful role here, too. Orville Schell has made a strong argument for U.S.-Chinese cooperation on reducing CO₂ emissions as a key element in the bilateral relationship.⁴⁷

Historians have an ambivalent relationship with these kinds of events. We can always say “This has happened before,” and hope that people will learn lessons from the past. I would like to be as optimistic as Richard Hoffmann on the potential for using the historical record to provide useful cases and comparative examples. But we also know that humans often forget or deliberately suppress the most valuable collective experiences, or distort them into simple stereotypes. Most managerial, engineering, and political elites embrace a quick-fix philosophy that deliberately avoids treading into deeper structural waters. Governing elites resist looking too closely into historical roots of current crises; they suppress evidence and manipulate historical narratives to legitimate themselves. The fact that financial crises, or environmental crises, have reoccurred repeatedly even in recent memory doesn’t guarantee that anyone will really want to address the fundamental causes. Historians have to recognize, and tell their readers, that impulses to denial, willful blindness, and ideological distortion are just as powerful as rational analysis in causing social change.

But the role of an impotent Cassandra, who sees the inevitable tragedy but can do nothing to stop it, is not congenial to me. Better to be a wild Jeremiah, emotional and all, than a totally detached observer of the self-willed destruction of a species. So the idea of “crisis,” I think, does have some value. We can try to make it more intellectually respectable by specifying particular kinds of threats and underlying causes. By highlighting the neglected role of natural forces in the past, we may be able to call attention to the critical impact of environmental change today, and hope against hope that somebody listens.

Jim McCann: Our group now owes a considerable debt to Richard in Canada and to Peter in New Haven for keeping our momentum as the seasons change. Our academic seasons push us to think about research proposals, student funding deadlines, and classes. I have been for the past two weeks working through a proposal on malaria to the Gates Foundation for their new initiative that has revived the emphasis on “eradication” of that disease via new approaches and technologies. Here is a valuable case in point about how society (public health philanthropy in this case) has identified a long-standing environmental problem in the form of a historically ubiquitous disease. Al Crosby, William McNeill, and others have now made a point of the ways in which disease has been an undercurrent of human history that is fundamentally an issue of environmental causation (or at least context). After all, malaria is at its core an unintended consequence of human and vector agro-ecological interactions that emerged in Africa but became a global phenomenon. Malaria is a topic grounded in environmental interactions over time, though few of the major

⁴⁷ Orville Schell, “The U.S. and China: Common Ground on Climate,” *Yale Environment* 360, August 18, 2008, <http://e360.yale.edu/content/print.msp?id=2043> (accessed November 14, 2008).

initiatives to deal with it have much to say about how the study of its history helps deal with it. Multilateral agencies have given broad and visible attention to malaria's persistence as a "crisis," though they have not quite placed it in the same category as climatic episodic shocks like Katrina, the 2004 tsunami, or global warming as a deeper transformative factor.

Does it help to have historians involved in competing with lab entomology or genetic modification of mosquitoes or parasites for funding? In that regard, environmental history differs substantially, and substantively, from an ideology like Marxism, as Peter suggests. Environmental ideology, like the Green Belt movement in Kenya, was politically significant. Its intent and its impact (Nobel Prize and all that) was not so much a foundation of research or visionary resource management as it was a way to mobilize popular political sentiment against an entrenched political elite. The movement's potential as a threat to political power was the issue, not so much its environmental observations. Many of Kenya's landscapes were actually greener in the 1970s than they were in the 1930s or in the nineteenth century. Bless his soul, Al Gore has been wrong about forest history in Africa, albeit with good intent. But the Green Belt movement did not use or need environmental history to address its deeper goals of local-level political movements. The trees they advocated were more symbols than pieces of local ecology chosen to recognize historical varieties. Tree planting was a political act as much as a farmer's economic choice. Both sides in Kenya knew it and acted accordingly. We can all be grateful for Wangari Maathai's focus on afforestation, but the basic assumptions about historical vegetation in the Rift Valley or the highlands were not always empirically well founded. Really, that was not the point.

Political struggles and environmental history can have and have had overlapping venues and goals. In that way, environmental history as a topic for research has much in common with social history (whether it's *Annales* or "New Social History" of the American sort). New questions that draw historical methods of inquiry emerge and then recede. They may leave behind momentum for social or political change, or they may bring on a response that entrenches structures of power. The presence of environmental crises on the political horizon may well sustain public interest as the global political economy moves along; it is a different question whether environmental history's merging of natural science, historical method, and public policy directions makes it "sustainable" as a subfield within the historian's craft.

Nancy Langston: I do think the concept of crisis has analytical value in environmental history scholarship, just as it has value in other fields of history. But I agree with Richard that for the concept of crisis to be useful, we need to be clearer about our definitions. Whether we define a crisis in medical terms (as a sudden change in the course of an illness, which can be either positive or negative, leading to either recovery or death) or in political terms (as an unstable condition that precedes abrupt change), the concept has the potential to help us think more clearly about when, where, and why decisive changes have come about.

Analytically, ecological concepts of resilience and disturbance might be more useful than medical concepts of crisis if we want to understand how and why decisive change came about in the past. For ecologists, disturbances are integral to ecosystems. Change happens; stability is an illusion. Yet some ecosystems are more resilient to disturbances than others, which means that they are able to respond to a disturbance (such as fire, disease, wind, or climate change) without completely collapsing. Ecological communities and climate systems can typically absorb a certain amount of perturbation and continue to function. But after a certain point, additional disturbances can push the system into a new set of relationships. Add enough energy to a system, and a tipping point (the ecologist's usual term for crisis) might be reached, followed by irreversible changes. In their research, scientists typically avoid assigning normative values to these changes. Use of the term "tipping point" rather than "crisis" is just one example; "positive feedback loop" is another. (When ecologists or climatologists move into the policy realm, they do assign value to these changes, and then they speak in the language of crisis. Those are social values, not purely scholarly values.)

An example might be the Wall Street financial chaos we're witnessing this fall. No single factor is the cause of the myriad economic changes that are now happening in global markets. What seems to many pundits like a sudden change is more likely the result of systems that have been subject to a host of disturbances over the past decade. After years of deregulation and what seems like the utter abdication of regulatory oversight responsibilities, we've reached an unstable situation followed by abrupt change. Many analysts insisted that financial systems were resilient, able to absorb whatever was tossed at them—yet now we're witnessing decisive change. Is this a crisis? It all depends on who you're talking to. Simply calling the current financial situation a crisis is not as helpful as asking some questions: What kinds of economic, political, and cultural transformations led to the unstable condition that preceded the change? How did various groups interpret those transformations, and respond to them or fail to respond to them? Why were so many powerful groups able to ignore or reinterpret the growing signs of instability and stress in financial systems?

I couldn't agree more with Peter when he writes: "Governing elites resist looking too closely into historical roots of current crises; they suppress evidence and manipulate historical narratives to legitimate themselves. The fact that financial crises, or environmental crises, have reoccurred repeatedly even in recent memory doesn't guarantee that anyone will really want to address the fundamental causes. Historians have to recognize, and tell their readers, that impulses to denial, willful blindness, and ideological distortion are just as powerful as rational analysis in causing social change." I do believe that historians have exactly this role to play. We're not going to stop the powerful from willfully manipulating historical narratives to keep themselves in power. But we can and should provide counter-narratives that push back against these manipulations. At times of perceived crisis, perhaps more people are listening.

Lise Sedrez: The Editor asks us whether environmental history renders its practitioners more engaged than other historians. It could also be that historians attracted to the field of environmental history tend to have a personal trajectory of engagement in environmental activism, and from purely anecdotal evidence, that has been my experience. Maybe it is not so different from other historical subdisciplines connected to the so-called “new social movements,” as Peter reminds us of the activism of labor historians, women’s historians, rural historians, etc. But if, as he pointed out, they “have the advantage of identifying a clear group of people to represent,” and the constituency of environmentalism is “almost impossibly broad,” environmental history is also encouraging, urgently inclusive in its subject of study. Environmentalists don’t agitate only on behalf of wolves, trees, fish, and humans. They also agitate on behalf of ecosystems, biomes, the planet. This “inclusiveness” does not ignore the competing interests or the contradictions of class, gender, and race. On the contrary, the growing literature on environmental justice and “environmentalism of the poor” (to use the concept of Ramachandra Guha and Juan Martínez-Alier) has been fundamental for the development of environmental history in Latin America and India, for instance.⁴⁸ Yet, at the same time, this inclusiveness brings to life old Braudelian dreams of “total history,” and also touches even older Marxian hopes of social criticism and transformation of a world in crisis—which would bring us to the Editor’s other question.⁴⁹

“Crisis” is for sure a useful concept. The problem is how we use it, and how we frame it. We have repeated several times in this Conversation how interdisciplinary environmental history should be. In fact, John McNeill said once that environmental history is “as interdisciplinary as it gets.”⁵⁰ And I have pointed out above its “inclusiveness,” following Peter’s remarks on how almost impossibly broad is the constituency of environmentalism. So if crisis is already a complex concept for any historian, environmental crisis in history is even trickier to nail down. Historians must walk a fine line in adopting a concept of crisis that is manageable and meaningful and yet retains all the complexity that is intrinsic to environmental studies. That is why I like Peter’s image of a “moving target.” It conveys both the need of focus and the continuous change, necessities for a useful study of environmental crisis in history.⁵¹

⁴⁸ Guha and Martínez-Alier, *Varieties of Environmentalism*, 230.

⁴⁹ I am not so ready to say that environmental history is the new Marxism, but only that it echoes historical traditions of full-fledged engagement, both intellectual and social, as relevant for the discipline of history as the “noble dream” of objective scholarship.

⁵⁰ J. R. McNeill, “Observations on the Nature and Culture of Environmental History,” *History and Theory* 42, no. 4 (December 2003): 9.

⁵¹ As I edit my part in this Conversation, I have in my hands the recent report on consumption patterns and sustainability released by the World Wildlife Foundation, *Living Planet Report 2008*, October 30, 2008, http://assets.panda.org/downloads/living_planet_report_2008.pdf (accessed November 14, 2008). According to the report, the current demands on the planet, increasing at the same rate, would require by the mid-2030s the equivalent of two planets to maintain modern lifestyles. It then occurred to me, maybe a bit too late for this Conversation, that if environmental history must make ecological sense, so should our definitions for environmental crises. That is, environmental crises are connected to an understanding of “unsustainability,” for the lack of a better term, or to the concrete limits of ecological resources in a certain “mode of consumption.” Environmental historians do have a role in identifying the historical roots of environmental crises; but more than ever, they must rely on an in-

Going back to the previous discussion on “engaged historians,” I admit I may have a different perspective compared to my colleagues in this conversation. Latin American historians have a tradition of engagement with political causes—and unapologetically so. The foundational document for the Sociedad Latinoamericana y Caribeña de Historia Ambiental states clearly that one of the society’s goals is “to contribute to a diverse and in-depth understanding of the links between environmental problems of the past and of the present, allowing us to identify actions that favor the construction of more sustainable societies in Latin America and the Caribbean.”⁵² Thus environmental historians in Latin America not only identify a connection between past and present environmental problems, but they also believe they have the duty to address these problems. I’d argue that this engagement has been seen by Latin American historians as a necessary condition for the “Latin Americanization” of the discipline, a point Guillermo Castro Herrera implies in his text “Environmental History (Made) in Latin America.”⁵³

AHR Editor: I want to thank you all for your stimulating and wide-ranging remarks. Clearly, we have only made forays into a vast territory of issues which are as timely and varied as they are historical in nature, as we have been repeatedly reminded. But two things strike me as I consider our exchanges. First is how environmental history, despite its relative infancy as a subfield, joins up with older approaches to history, approaches which in recent years seem to have somewhat fallen out of fashion. “Green” might not be the new Marxism, but environmental history certainly harks back to the examples of social history, structural history, interdisciplinary history, quantitative history, and more. I am struck by the mention of Fernand Braudel several times in the course of this conversation, a historian who has, I fear, dropped off the lists of many graduate programs. Second, I think it is obvious from what has been said that whatever the gravity of the environmental crises that confront us today, these are phenomena that have histories, and these histories have something to teach us. And I think that each of you, in somewhat different ways, has demonstrated that thinking historically, and paying scrupulous attention to the historical record, in no way militates against your concern for the present state of the environment and your engagement with the issues. While most of us are reluctant to extract lessons for the present from the past, it is, I think, pretty certain that we allow ourselves to remain ignorant of the history of environmental change and crisis at our considerable and collective peril.

terdisciplinary community to understand the ecological constraints that characterize the concept of crisis, its implications for biodiversity conservation, for social inequality, and for global biocapacity.

⁵² Guillermo Castro-Herrera and Reinaldo Funes Monzote, “SOLCHA—Boletim Informativo 1,” January 2007, http://www.fafich.ufmg.br/solcha/arquivos/Boletim_1_SOLCHA_2007.pdf (accessed November 14, 2008).

⁵³ Guillermo Castro Herrera, “Environmental History (Made) in Latin America,” H-Environment, <http://www.h-net.org/~environ/historiography/latinam.htm> (accessed June 23, 2006).

Richard C. Hoffmann has professed medieval and early modern history at York University in Toronto since 1971 and published widely on how medieval Europeans lived with one another in their natural world. His transition in 2009 to the status of Professor Emeritus and Senior Scholar promises more time with students pursuing exciting projects in environmental history and for his long-delayed books about medieval fisheries and medieval environmental relations in general.

Nancy Langston, current President of the American Society for Environmental History, is Professor at the University of Wisconsin–Madison. She is the author of *Forest Dreams, Forest Nightmares: The Paradox of Old Growth in the Inland West* (University of Washington Press, 1995), *Where Land and Water Meet: A Western Landscape Transformed* (University of Washington Press, 1995), and the forthcoming *Toxic Bodies: Endocrine Disruptors and the Lessons of History* (Yale University Press).

James C. McCann is Professor of History and Director *ad interim* of the African Studies Center at Boston University. He is author of the book *Maize and Grace: A History of Africa's Encounter with a New World Crop, 1500–2000* (Harvard University Press, 2005), which won the George Perkins Marsh Prize of the American Society for Environmental History, and *Green Land, Brown Land, Black Land: An Environmental History of Africa, 1800–1990* (Heinemann, 1999).

Peter C. Perdue is Professor of History at Yale University. He has taught courses on East Asian history and civilization, Chinese social and economic history, the Silk Road, and historical methodology. His first book, *Exhausting the Earth: State and Peasant in Hunan, 1500–1850 A.D.* (Harvard University Press, 1987), examined long-term agricultural change in one Chinese province. His most recent book, *China Marches West: The Qing Conquest of Central Eurasia* (Harvard University Press, 2005), discusses environmental change, ethnicity, long-term economic change, and military conquest in an integrated account of the Chinese, Mongolian, and Russian contention over Siberia and Central Eurasia during the seventeenth and eighteenth centuries. He is a coeditor of two books on empires: *Imperial Formations* (SAR Press, 2007) and *Shared Histories of Modernity* (Routledge, 2008). He is now beginning a new project of comparative research on Chinese frontiers.

Lise Sedrez is Assistant Professor in the History Department at California State University, Long Beach. She holds an M.S. in Environmental Policy Studies from NJIT, and a Ph.D. in History from Stanford University. Her research interests include environmental history of Latin America, urban history, history of science, and the history of Brazil. She is currently writing a book on the environmental history of Guanabara Bay, in Rio de Janeiro, Brazil, in the twentieth century.