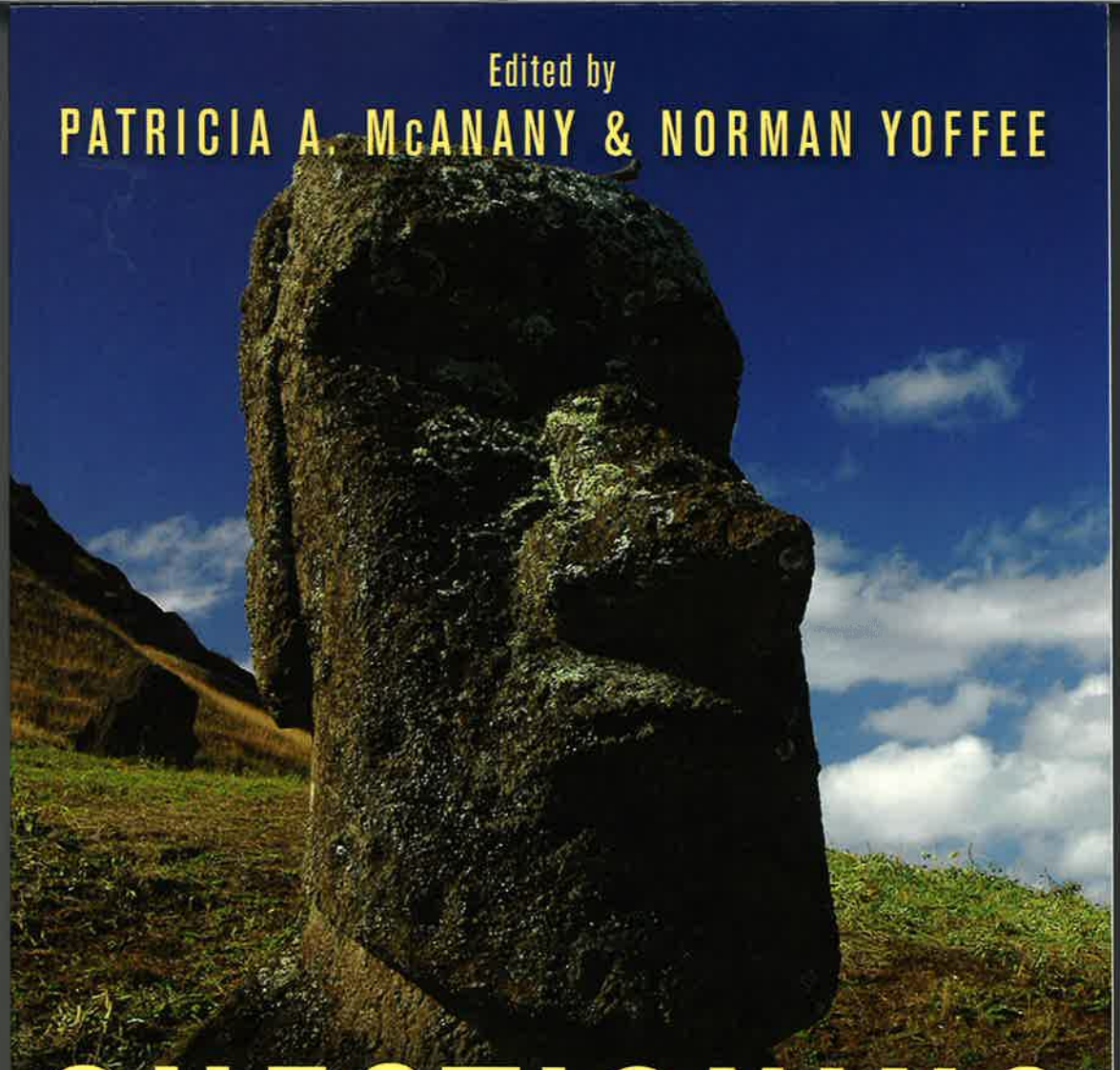
Edited by

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QUESTIONING COLLAPSE

HUMAN RESILIENCE, ECOLOGICAL VULNERABILITY,

1

Why We Question Collapse and Study Human Resilience, Ecological Vulnerability, and the Aftermath of Empire

Patricia A. McAnany and Norman Yoffee

Scholars – especially historians, archaeologists, and social anthropologists, the authors of these chapters – are strange animals. Historians spend lots of time toiling in dusty archives, and archaeologists excavate in the ground to discover clues to what happened in the past. Sociocultural anthropologists often live among peoples whose languages, food, houses, clothes, and beliefs are very different from our own. Wouldn't it be easier and much more lucrative to become a doctor or lawyer?

Although we are not psychologists, it seems that one reason why we dedicate ourselves to figuring out how societies got along in the past, or how such a rich diversity of peoples continues to exist today despite the homogenizing forces of globalization, is that we like to tell stories. We also like puzzles, how one finds pieces of information (data) and from the pieces constructs a picture (in prose) that will convince other puzzle players that our story has "hit the nail on the head." This is an ancient and distinctly human desire, to tell a story and to tell it well. As scholars, we also want our stories to make a larger point about how our fellow humans lived in the past and about the variety of human experiences in reference to environmental interaction. We believe optimistically that an examination of the lives of others may lead to better understanding of how we might live today.

But along the way we face the fact that our stories are not easy to construct and even harder to narrate to a public that is interested in what we do. Information collected may even (and often does)

lead scholars to conflicting conclusions. Scholars' prose can become tortured – full of scholarly references to other researchers' efforts and couched in conditional phrases such as "could have" or "possibly" in order to express the uncertainty in understanding peoples and cultures remote in time or space – or perhaps both – from us. Also, the best scholars, who excel in the practice of research and writing, tend to write for a small peer group of similar researchers. Specialization may advance a field of study, but it creates distance from interested laypersons and inquisitive students. This book is an effort to shorten that distance.

HOW THIS BOOK CAME TO BE

We begin by telling the story about how this book came about. One of us, Patricia McAnany, who is a Maya archaeologist, was approached by the Archaeology Division of the American Anthropological Association (AAA) to organize a panel at the annual meeting of the AAA that would address the issues swirling around the popular writings of Jared Diamond, especially the 2005 publication of *Collapse: How Societies Choose to Fail or Succeed* and his earlier *Guns, Germs, and Steel: The Fates of Human Societies*. Tricia asked Norman Yoffee, a historian and archaeologist of Mesopotamia, to co-organize the session and lend his expertise on the subject of societal change. In this way the organizers could represent the Americas as well as the ancient Near East and could cast a wider net in identifying appropriate examples and scholars who know a great deal about them.

The panel took place in San Jose, California, in November 2006. Before the first paper was to be read, at 8 A.M., as we were setting up our computers and PowerPoint presentations, we were approached by representatives of the Anthropology and Education section of the AAA. They asked whether they could record the papers and make them available on the Web for high school teachers. Because Diamond's books are used by high school teachers and many college and university professors, the AAA representatives wanted to provide additional source materials that would balance Diamond's perspective. Surprised by this request, we hurriedly polled our participants, all of whom agreed to be recorded. After the session numerous colleagues came forward and urged us to revise and publish the papers



FIGURE 1.1 Areas of the world, past and present, discussed in the chapters of this book. (Map prepared by Satoru Murata)

because they wanted to use the research we had presented in their classes. Over a long lunch we decided not just to publish most of the existing papers, but also to add other case studies. We realized that we also needed to gather participants together one more time to figure out how each study could form part of a larger narrative. John Ware, the executive director of the Amerind Foundation, agreed to host our group at the foundation's headquarters in Dragoon, Arizona – one of the most beautiful places imaginable. The Amerind Foundation is a nonprofit organization dedicated to furthering anthropological research and public outreach education. And so we gathered in the high Sonoran desert of southern Arizona in October 2007 for an advanced seminar.

Each of the fifteen scholars who contribute to this book is a world-renowned specialist on the society, topic, or time period about which he or she writes and thus provides an insider's point of view. (Brief, personalized autobiographies for each author can be found in the notes for each of the following chapters.) Each is deeply concerned about the inaccuracies of popular portrayals and feels that students and laypersons alike deserve to read a better story – one that is more deeply contextualized and perhaps more complicated but in the end more interesting. Participants committed themselves to setting aside abstruse academic prose

and cumbersome in-text references in favor of a more user-friendly text. Also attending the seminar were representatives of the *New York Times, Archaeology* magazine,[1] and Cambridge University Press. The first two later told their own stories about the seminar, and the third agreed to publish the papers, further revised after our discussions. You see the final results before you.

WHAT'S THE BEEF BETWEEN SCHOLARS AND POPULAR WRITERS?

Among the issues we wanted to explore in our AAA symposium and in our subsequent seminar were the reasons for the incredible success of Jared Diamond's books. After all, Diamond is a Professor of Geography at UCLA, not an anthropologist, archaeologist, or historian. He obviously reads prolifically the obscure (to most laypersons and students) publications of historians, archaeologists, and sociocultural anthropologists and can present their research with verve and clarity and as important knowledge for a larger public. In *Guns, Germs, and Steel,* Diamond confronts racist views of the past that claim that Western superiority is due to the genes and genius of Westerners. In *Collapse* he warns of real and potential environmental destruction in the present by arguing that past societies and cultures collapsed because they damaged their environments. His successful writing style of distilling simple points from complex issues is a remarkable gift; it is no wonder that his books win prizes and are used in classrooms.

Diamond's *Collapse* has found resonance in many recent books, some almost as popular as his: Elizabeth Kolbert's *Field Notes from a Catastrophe,* Tim Flannery's *The Weather Makers: How Man Is Changing the Climate and What It Means for Life on Earth,* and Eugene Linden's *The Winds of Change: Climate, Weather and the Destruction of Civilizations.*[2] Al Gore shared a Nobel Prize for his work on the perils of mismanaging our environment. Diamond is probably the best-known writer of anthropology even though he is not an anthropologist!

In this book most of the chapters are critical of Diamond's stories. This is why the AAA session was organized in the first place. Whereas we are indebted to Diamond for drawing together so much material from our own fields of research and for emphasizing how important

anthropological and historical knowledge is for the modern world, as scholars we want to get things right. We also want to write in such a way that the public can grasp not only the significance of research findings but also how we do research and why we think that some stories are right, whereas others are not as right or incomplete and still others are dead wrong.

Thanks to Diamond's provoking inquiries and more generally those of the popular media, we focus this book on several questions: (1) Why do we portray ancient societies – especially those with indigenous descendants – as successes or failures, both in scholarship and in the popular media? We want to get the stories of social change right, and descendants of the ancient societies we study demand it. (2) How do we characterize people who live today in the aftermath of empires? Today's world is the product of past worlds, and the consequences of the past cannot be ignored. (3) How are urgent climatic and environmental issues today similar to those faced by our ancestors? Can we learn from the past?

As a point of departure, we start with the question of societal collapse and then discuss the notion of choice. We consider the concept of resilience and its usefulness for understanding change both past and present, and how different ecologies are more or less vulnerable to profound perturbation. Finally, we ponder why and how history and context matter in our rapidly changing postcolonial time.

THE QUESTION OF SOCIETAL COLLAPSE

Over two decades ago the sociologist Shmuel Eisenstadt wrote that societal collapse seldom occurs if collapse is taken to mean "the complete end of those political systems and their accompanying civilizational framework."[3] Indeed, studying collapse is like viewing a low-resolution digital photograph: it's fine when small, compact, and viewed at a distance but dissolves into disconnected parts when examined up close. More recently Joseph Tainter, after a search for archaeological evidence of societal "overshoot" and collapse, arrived at a conclusion similar to Eisenstadt's: there wasn't any.[4] When closely examined, the overriding human story is one of survival and regeneration. Certainly crises existed, political forms changed, and landscapes were altered, but rarely did societies collapse in an absolute

and apocalyptic sense. Even the examples of societal collapse often touted in the media – Rapa Nui (Easter Island), Norse Greenland, Puebloan U.S. Southwest, and the Maya Lowlands – are also cases of societal resilience when examined carefully, as authors do in the chapters in this book. Popular writers' tendency to approach the past in terms of a series of societal failures or collapses – while understandable in terms of providing drama and mystery – falls apart in light of the information and fresh perspectives presented in this book.

Abandoned ruins – the words themselves evoke a romantic sense of failure and loss to which even archaeologists – most of whom are reared in the Western tradition – are not immune. But why is it that when we visit Stonehenge we don't feel a twinge of cultural loss, but simply a sense that things were very different 5,000 years ago? Is it because Stonehenge is somehow part of *our* civilization? On the other hand, the Great Houses of Chaco Canyon, the soaring pyramids of ancestral Maya cities, and the fallen colossal heads of Rapa Nui tend to invoke a sense of mysterious loss and cultural failure, and a notion that something must have gone terribly wrong environmentally. For many of us these places and people are not part of the Western experience. Moreover, descendant communities – in all three cases – live marginalized on the edge of nation-states without the resources and connections to worldwide media that are needed to tell their own story, at least to an English-speaking public. Might these abandoned places, in many cases, be just as accurately viewed as part of a successful strategy of survival, part of human resilience? Michael Wilcox makes this point in Chapter 5 about the abandonment of Chaco Canyon by the ancestors of contemporary U.S. Puebloan peoples. Joel Berglund in Chapter 3 does too, in discussing the Norse colony on Greenland, which lasted for 500 years. Abandonment also can be read as indicative of opportunity elsewhere and of the societal flexibility to seize that opportunity; Patricia McAnany and Tomás Gallareta Negrón stress this in Chapter 6 in their discussion of eighth-to-ninth-century Maya society, during which time parts of the Maya region were dramatically depopulated while others became much more densely peopled.

Although it would be wonderful to feel that scholarly understanding of abandonment stood outside contemporary societal concerns, it is pretty clear that today's worries about the future make their way into our explanations of the past. Times of political turmoil and chronic warfare

beget interest in turmoil of the past, and times of environmental woes beget theories of past environmental troubles. Historians and archaeologists, who are not immune to seeing the past through modern lenses, try to test the relevance of their ideas by looking for multiple lines of evidence that point to the same conclusion.

In our chapters we hold interpretations of past environmental abuse up to critical scrutiny for two reasons. First, because the fit between ideas and evidence is never straightforward. Methods and measures are constantly under refinement, and innovations in scientific method often change interpretations dramatically. To give an archaeological example, if a column of sediment from a lake bed contains evidence of a decrease in tree pollen from the bottom to the top, does that mean that – over time – the region around the lake was deforested, replaced with trees that yielded fewer grains of pollen, or that a mosaic of forest and fields was created with none of the forested areas located near the lake? All might be plausible, but one might be more plausible if another line of supporting evidence – such as an increase in plant remains of a food crop such as corn – can be mustered in favor of one interpretation. Scholars are and must be cautious: a good story is not necessarily the one that incorporates all of the data at hand. Some "good stories" are simply wrong.

Second (and for better or worse), humans have a long history of both interacting assertively with their environments as well as coalescing into fragile political groups that fission easily. Archaeologists such as Sander van der Leeuw have shown that landscape alteration has occurred in human societies since the end of the Pleistocene (Ice Age), 10,000 years ago.[5] It is not difficult to find evidence of preindustrial landscape alteration – particularly in heavily populated environments such as the Maya Lowlands – but it is another matter altogether to link that evidence in a convincing and rigorous fashion to site abandonment or changes in political forms. The notion that the present recapitulates the past is not necessarily true. We ask how long human societies have possessed the technological ability to profoundly change and destroy their environment and bring down their societies.

In concluding comments to this book and elsewhere, J. R. McNeill amasses a formidable body of evidence suggesting that the human ability to impact environment on a global scale is newfound and

cannot be pushed back beyond the Industrial Revolution of the 1800s.[6] So, in the apocalyptic sense that appeals to fatality in the human imagination – and writers such as Arnold Toynbee and Oswald Spengler preceded Diamond in this – the end may be in sight, but it hasn't been for very long. Understanding what happened in the past – both politically and environmentally – is not irrelevant to contemporary and future societal challenges, particularly environmental ones, as we discuss later in this chapter and throughout the book. Adopting a well-informed long view of how humans have lived on this biosphere we call Earth can promote decision making and policy development that results in human survival and resilience rather than the reverse.

CHOICE AND GEOGRAPHIC DETERMINISM

In his book on societal collapse, Jared Diamond proposes that societies choose to succeed or fail. On the other hand, in *Guns, Germs, and Steel* there was no choice: today's inequalities among modern nation-states are argued to be the result of geographic determinism.[7] In the first scenario, societies (or power brokers within societies) make the decisions that result in long-term success or failure. In societies that fail, leaders are selfish and advance schemes that endanger the ecological well-being of their community, polity, or island. At the root of this thesis is the modern neoliberal theory of self-interested motivation as well as the assumption of unconstrained and rational choice. A scalar sleight of hand occurs when methodological individualism – an economic theory designed explicitly to model individual behavior and motivation – is applied wholesale to "societies" – past and present – in which many conflicting agendas and contra-motivations tend to be negotiated before any decision or action. Many economists view the motivational assumptions of self-interest and rational choice theory as lacking explanatory power, even when applied to Western societies.[8] When applied globally and into deep time, this theory has particular difficulties, as revealed by case studies in this book. For example, Frederick Errington and Deborah Gewertz, who work in Papua New Guinea, argue that Papuan worldviews are not grounded in Western ideas of rational self-interest.[9] Furthermore, there is no necessary linkage between a selfish decision made in the short term and adverse long-term consequences. Kenneth Pomeranz observes that the much-cherished wooded glens of England

are the result, for the most part, of the selfish desires of a postmedieval aristocracy to maintain fox-hunting preserves. About the same time in China – where horse culture and fox hunting were not part of aristocratic behavior – the transformation of forest to farmland was tolerated and even encouraged to provide a livelihood for an expanding population.[10] So today people of China are surrounded by fields rather than forest, while environmentalists in England chain themselves to old-growth trees to protest road construction projects. But this difference is not due to selfless long-sightedness in the one case and lack of it in the other.

If we are to understand global events today, we must perceive that the basis of intentionality and motivation can differ profoundly across the globe. This is the message of Christopher Taylor (Chapter 9), who objects to a Malthusian explanation (too many people on too little land) for the tragedy of the Rwandan genocide, and Drexel Woodson (Chapter 10), who writes of the struggles of Haitian people against the backdrop of the legacies of French colonial and post-independence policies (not a ruthless geography), and Errington and Gewertz (Chapter 12), who discuss the troublesome ease with which Indonesian (and other) logging firms secure permits to despoil the hardwood forests of Papua New Guinea.

For those of us studying early states, archaeologists and historians alike, it isn't easy to discern intentions and their effects in the remote past. Nevertheless, both Norman Yoffee, in the case of ancient Assyrians of the first millennium B.C.E., and Kenneth Pomeranz, who studies China in the eighteenth and nineteenth centuries, argue that decision makers, however powerful – and they certainly were – were not so powerful as to engineer their own environmental ruin.

Many current global inequalities indisputably are the product of historical colonialism and their enduring legacy. This is not simply an academic issue, as Tim Murray notes in Chapter 11. Australians are engaged in making a new Australia where Aborigines have not only rights but a history as well, which should be the history of all Australians. Discussing the persistent fragility of empires, David Cahill (Chapter 8) points out that the Inca empire that stretched across the South American Andean mountain chain did not simply fall to the gun- and germ-bearing Spaniards but was vulnerable because of the presence of internal factions that inevitably exist within empires

that tend to be held together by force of arms. Spaniards found and adroitly used willing allies among indigenous groups – such as the Cañaris people – who already were resisting Inca domination. In general, considerable variation took place in the "encounters" between Europeans and peoples of the Americas, South and East Asia, Africa, and Oceania; neither guns nor germs nor steel played a prominent role *initially* in colonial incursions in the Americas. In the long run, Europeans succeeded because of the persistent inflow of immigrants along with new disease vectors and weaponry.[11]

If one takes a long view, as archaeologists and historians are wont to do, then the situation in the year 2009 seems less the manifestation of a geographic destiny than it is a temporary state of affairs. Can anyone say that the present balance of economic and political power will be the same in 2500 as it is today? For example, in the year 1500 some of the most powerful and largest cities in the world existed in China, India, and Turkey. In the year 1000, many of the mightiest cities were located in Peru, Iraq, and Central Asia. In the year 500 they could be found in central Mexico, Italy, and China. In 2500 B.C.E. the most formidable rulers lived in Iraq, Egypt, and Pakistan. What geographic determinism can account for this? Is history a report card of success or failure?

RESILIENCE AND SOCIAL CHANGE

An important part of the "science of the long view"[12] is the concept of resilience, or "the ability of a system to absorb disturbance and still retain its basic function and structure," albeit in altered form.[13] This statement is not very different from that of Eisenstadt quoted above regarding the rarity of civilizational collapse. Yes, things change and they change profoundly, but more often elements of a society (including belief systems and ways of making a living) retain their basic structure and function within longer cycles of change. Resilience means that some kinds of change, especially political change, can be quick and episodic, whereas other kinds of change, for example, changes in kinship structures and belief systems, can be slower moving. Also, both kinds and different paces of change can coexist.[14]

The notion of resilience, instead of collapse, is relevant to the chapters of this book because, on close inspection of archaeological evidence, documentary records, or both, it becomes clear that human resilience is the rule rather than the exception. For instance, Rapa Nui society – before European incursions – remained populous and vital despite deforestation of their island from the introduction of exotic species (in this case, the Polynesian rat) and land clearance for farming (Hunt and Lipo, Chapter 2). Medieval Norse colonists (who originally came from Iceland) migrated to other parts of their world when climatic conditions worsened and no bishop could be persuaded to come to Greenland (Berglund, Chapter 3). Chinese farmers and bureaucrats alike weathered the economic and political crises of the nineteenth to mid-twentieth centuries to live in one of the most dynamic economies on the planet today and perhaps also one of the most polluted environments (Pomeranz, Chapter 4). Native Americans of the Southwest abandoned settlements and founded others in a successful long-cycle strategy of coping with a harsh environment and hostile neighbors (Wilcox, Chapter 5). Although the term "Maya collapse" is ingrained in both popular and scholarly literature, Maya people lived on after the supposed collapse and into Postclassic times in populous cities and kingdoms. Today seven million people still speak a Mayan language and struggle to make a living in southern Mexico and northern Central America (McAnany and Gallareta Negrón, Chapter 6). Norman Yoffee (Chapter 7) shows how Mesopotamia presents a classic case of resilience, as structures of authority and identity endured through several cycles of change.

Although change is inevitable, and living through some kinds of change is difficult, painful, or even catastrophic, "collapse" – in the sense of the *end* of a social order and its people – is a rare occurrence. Resilience is a more accurate term to describe the human response to extreme problems. As archaeologists, anthropologists, and historians, we are not fortune tellers or prophets, but the historical lessons of resilience may help us chart a course for the future.

ECOLOGICAL VULNERABILITIES

Environmental challenges (and crises) have posed risks to societies since humans began to domesticate their landscape shortly after the close of the last Ice Age about 10,000 years ago, and perhaps even earlier. Today we are profoundly concerned about the fragility of

our ecosystem and wonder whether we are poised on the brink of an ecological calamity on a global scale. How can information from the past guide us through these perilous times?

The human footprint on the earth is a deep one, and it has been that way since humans domesticated plants and animals and began actively to transform the surface of this planet into fields, pastures, and managed forests.[15] The concentration of humans into villages and then into urban settlements has clearly accelerated this environmental transformation because cities are insatiable consumers of food and energy.[16] Our case studies in this book show that societies modify their practices in response to perceived crises. But it is possible that investments made in response to recurrent crises of short duration may leave us vulnerable to unknown longer-term cycles of risk that ultimately bring into play a cascade of unwelcome changes.[17] The resilience of the larger social collective – be it a modern nation or a ninth-century Maya polity – is endangered by such crises, which can originate from a host of sources, including climate change and political decision making. In any case, understanding ecological vulnerabilities – past and present – leads us to ask the right questions and take needed actions. Here we are very much in agreement with Jared Diamond, but not because we suspect that rulers of the past – alleged to have been shortsighted – ruined their environments and failed. Rather, it is because we know that past societies (and their leaders as well as the opponents of leaders) experienced a variety of crises and responded to circumstances as best they could.

Prominent among past societies that have been labeled ecocidal failures are the ancestors of the contemporary people of Rapa Nui (Easter Island). For reasons of scale and historical isolation, islands are particularly vulnerable to rapid and profound ecological transformation with the arrival of humans. As Terry Hunt and Carl Lipo (Chapter 2) narrate, the island of Rapa Nui is no exception. The island ecosystem, having evolved in isolation with a limited set of tree species and no co-evolution between tree-seed reproduction and rodent predation, was dramatically altered by the introduction of Polynesian rats. Rats arrived on Rapa Nui as a transported food source or as stowaways in the large, ocean-going outrigger canoes used to colonize the Pacific. The rats, which multiplied quickly into the millions, found an accessible and protein-rich food source in the soft-shelled nuts of

palm trees. The consequent loss of tree species on Rapa Nui certainly was not a good thing, but there was little population fall-off on Rapa Nui until Europeans landed on the island. The grasslands of today's Rapa Nui are the result of a historical sequence that included the introduction of a rat species by Polynesians, introduction of European diseases, population reduction from colonial slave raiding, and colonial transformation of an agricultural landscape into pastureland.

Of course, we tend to see transformations that are closer to home more benignly than those in distant locations. After pilgrims landed at Plymouth Rock on the coast of what today is called Massachusetts, they proceeded to reduce dramatically the hardwood forests of New England to transform the landscape into an agricultural and stock-grazing one. Although biodiversity was lost and drainage features permanently altered,[18] no one has labeled this behavior as ecocidal, as far as we know, although the term genocidal has been employed in reference to the catastrophic Colonial Era reduction in indigenous peoples of the Americas. Under colonization, indigenous societies had limited choices in reference to environmental management and limited opportunities to tell their side of the story. T-shirts, sold at the Mashantucket Pequot Museum located next door to the successful Foxwoods Casino in southern Connecticut, allude to the colonial process and subsequent nonrecognition of the first colonizers of the Americas by the U.S. Bureau of Indian Affairs with the logo "Piquot Nation – first to greet, last to be recognized." In Chapter 5 of this volume, Michael Wilcox, of Yuman and Choctaw ancestry, writes of the survival of Native Americans as a success story of those who against all odds survived near-holocaust policies, a resilient people who look to the triumphs of their history so as to plan a brighter future.

THE AFTERMATH OF EMPIRE: WHY HISTORY AND CONTEXT MATTER

The term "postcolonial" has become popular in academic prose, an acknowledgment of the fact that the far-flung empires of the late nineteenth and early twentieth centuries – choreographed from European capitals – largely have been dismantled. Currently the United Nations seats 192 autonomous countries in its assembly hall, and the number is growing. Although some are the product of expedient

political decisions by colonial powers, others formed from resistance to those very decisions, and still others represent ethnic amalgams of considerable antiquity. In February 2008 the prime minister of Australia formally apologized to indigenous Australian peoples for the harsh antifamily and anticultural survival policies imposed by the state and only rescinded beginning in the 1970s. It would appear that we are entering a new era, living in the aftermath of empire. On the other hand, the legacy of colonialism does not fade so quickly. There are gross inequities in the distribution of resources in the world, access to education, and opportunities to make a livelihood. Some of these inequities are the result of historical realities within a nation, such as the era of slavery within the United States, which still haunts and frustrates both black and white populations.

How is this relevant to understanding the abandonment of Chaco Canyon in the American Southwest? As our authors repeatedly state, history is not a win–lose game for the subjects of colonialism; victors have reason to be cautious when assigning labels such as "success" or "failure." As Wilcox (Chapter 5) and Errington and Gewertz (Chapter 12) point out, the inequities of colonialism are an ongoing process played out internally in terms of access to education and political voice as well as internationally in the arenas of resource distribution and political clout. For Wilcox, the notion that the great architectural achievements of Chaco Canyon can be labeled a societal failure constitutes an example of "reverse engineering," meaning the assignation of past failure to contemporary people who have been economically and politically disenfranchised as a direct result of colonial expansion of a European-derived population.

The experience of many indigenous peoples and inheritors of the colonial legacy has been one of dispossession and cultural survival, rather than collapse. When viewed in this historical context, are the people of Haiti, for example, free to choose success or failure? Woodson (Chapter 10) explores the historical circumstances behind the label of "failed state" and considers now what must be done. In Chapter 9 Taylor discusses why the Rwandan genocide cannot be analyzed as an environmental or demographic problem. Errington and Gewertz (Chapter 12) refuse to "blame the have-nots." Only by understanding history and culture can something like genocide and economic underdevelopment be understood.

FINAL THOUGHT

In 1990 – nearly two decades ago – a group of scholars met at the School of American Research for an advanced seminar on historical ecology and ended by drafting the "Santa Fe Accord" to express their alarm over the current peril to humanity and the biosphere.[19] Since that time there has been a general awakening to the perilous situation that confronts our biosphere and humanity. This book does not seek to minimize this peril but to understand it more deeply, more historically, and more contextually. We leave the reader with a closing thought that is further developed in the case studies in this book.

Our past and the resilience of human populations form the basis on which twenty-first-century humans attempt to understand life. We have inherited daunting environmental and social challenges and added more of our own making, but we also can appreciate the long centuries of humans who have solved problems in the past and thus still survive today. But, to use our knowledge of the past, we must see how the past was both similar to as well as different from today. For example, we suggest that the choices of past rulers, elites, and power brokers were constrained by limitations of technology and communication that generally do not exist today. The challenges ahead are profound and require inspired problem solving and human resilience. Fortunately, these are attributes that human societies have long displayed.

Notes

1. George Johnson, "A Question of Blame When Societies Fall," *New York Times,* December 25, 2007, http://www.nytimes.com/2007/12/25/science/25diam.html; Eric Powell, "Do Civilizations Really Collapse?" *Archaeology* (March/April 2008): 18, 20, 56.
2. Kolbert 2006; Flannery 2005; Linden 2006.
3. Eisenstadt 1988: 242.
4. Tainter 2006: 71–72.
5. van der Leeuw and the ARCHAEOMEDES Team 2000; van der Leeuw and Redman 2002.
6. McNeill 2000, 2005.
7. Diamond 2005 and 1999, respectively.
8. Levitt and Dubner 2005 explore these limitations in their popular book *Freakonomics.*
9. For another example of the interlacing of ritual practice and economic process, see Wells and McAnany 2008.

10. Ken Pomeranz, personal communication, October 2008; see also Pomeranz, Chapter 4 in this volume.
11. Raudenz 2001.
12. Gunderson and Folke 2003.
13. Walker and Salt 2006 is a highly accessible presentation of "*resilience thinking*." A series of case studies that employ resilience thinking are presented in *Panarchy* (2002), which is edited by conservation ecologists Lance Gunderson and C. S. Holling. Also see Redman (2005) for application of resilience thinking to archaeology.
14. Walker and Salt 2006.
15. Although highly controversial, Shepard Krech (1999) presents a convincing case that even in North America – where many conceive of the pre-European landscape as pristine – significant landscape engineering had occurred via burning and planting.
16. See Montoya et al. 2006: 262.
17. Dearing et al. 2007: 64.
18. See Cronon 2003 on the impact of Europeans on New England landscapes and how it differed from Native American landscape engineering.
19. This Accord is printed in the front matter of Crumley 1994.

Bibliography

Crumley, C. L. Editor. 1994. *Historical Ecology: Cultural Knowledge and Changing Landscapes.* Santa Fe, NM: School of American Research Press.

Dearing, J. A., L. J. Graumlich, R. Grove, A. Grübler, H. Haberl, F. Hole, C. Pfister, and S. E. van der Leeuw. 2007. "Group Report: Integrating Socio-environmental Interactions over Centennial Timescales," in *Sustainability or Collapse? Integrated History and Future of People on Earth.* Edited by R. Costanza, L. J. Graumlich, and W. Steffen, pp. 37–69. Cambridge, MA: MIT Press.

Diamond, J. 1999. *Guns, Germs, and Steel: The Fates of Human Societies.* New York: W. W. Norton.

Diamond, J. 2005. *Collapse: How Societies Choose to Fail or Succeed.* New York: Viking.

Eisenstadt, S. N. 1988. "Beyond Collapse," in *The Collapse of Ancient States and Civilizations.* Edited by N. Yoffee and G. L. Cowgill, pp. 236–243. Tucson: University of Arizona Press.

Flannery, T. 2005 *The Weather Makers: How Man Is Changing the Climate and What It Means for Life on Earth.* New York: Atlantic Monthly Press.

Gunderson, L., and C. Folke. 2003. "Toward a 'Science of the Long View.'" *Conservation Ecology* **7**:15. Available at http://www.consecol.org/vol7/iss1/art15.

Gunderson, L., and C. S. Holling. 2002. *Panarchy: Understanding Transformations in Human and Natural Systems.* Washington, DC: Island Press.

Kolbert, E. 2006. *Field Notes from a Catastrophe.* New York: Bloomsbury.

Krech, S. 1999. *The Ecological Indian: Myth and History.* New York: W. W. Norton.

Levitt, S. D., and S. J. Dubner. 2005. *Freakonomics: A Rogue Economist Explores the Hidden Side of Everything.* New York: William Morrow.

Linden, E. 2006. *The Winds of Change: Climate, Weather and the Destruction of Civilizations.* New York: Simon & Schuster.

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

McNeill, J. R. 2005. "Diamond in the Rough: Is There a Genuine Environmental Threat to Security?" *International Security* **30**:178–195.

Montoya, J. M., S. L. Pimm, and R. V. Solé. 2006. "Ecological Networks and Their Fragility." *Nature* **442** (July 20):259–264.

Raudzens, G. Editor. 2001. *Technology, Disease, and Colonial Conquests, Sixteenth to Eighteenth Centuries: Essays Reappraising the Guns and Germs Theories.* Leiden, the Netherlands: Brill.

Redman, C. L. 2005. "Resilience Theory in Archaeology." *American Anthropologist* **107**:70–77.

Tainter, J. A. 2006. "Archaeology of Overshoot and Collapse." *Annual Review of Anthropology* **35**:59–74.

van der Leeuw, S. E., and the ARCHAEOMEDES Team. 2000. "Land Degradation as a Socionatural Process," in *The Way the Wind Blows: Climate, History, and Human Action.* Edited by R. J. McIntosh, J. A. Tainter, and S. K. McIntosh, pp. 357–383. New York: Columbia University Press.

van der Leeuw, S. E., and C. L. Redman. 2002. "Placing Archaeology in the Center of Socio-natural Studies." *American Antiquity* **67**:597–605.

Walker, B., and D. Salt. 2006. *Resilience Thinking: Sustaining Ecosystems and People in a Changing World.* Washington, DC: Island Press.

Wells, E. C., and P. A. McAnany. Editors. 2008. *Dimensions of Ritual Economy. Research in Economic Anthropology* 27. Bingley, U.K.: JAI Press.