Collapse

How Societies Choose to Fail or Survive

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Extract

PROLOGUE

A Tale of Two Farms

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A few summers ago I visited two dairy farms, Huls Farm and Gardar Farm, which despite being located thousands of miles apart were still remarkably similar in their strengths and vulnerabilities. Both were by far the largest, most prosperous, most technologically advanced farms in their respective districts. In particular, each was centered around a magnificent state-of-the-art barn for sheltering and milking cows. Those structures, both neatly divided into opposite-facing rows of cow stalls, dwarfed all other barns in the district. Both farms let their cows graze outdoors in lush pastures during the summer, produced their own hay to harvest in the late summer for feeding the cows through the winter, and increased their production of summer fodder and winter hay by irrigating their fields. The two farms were similar in area (a few square miles) and in barn size, Huls barn holding somewhat more cows than Gardar barn (200 vs. 165 cows, respectively). The owners of both farms were viewed as leaders of their respective societies. Both owners were deeply religious. Both farms were located in gorgeous natural settings that attract tourists from afar, with backdrops of high snow-capped mountains drained by streams teaming with fish, and sloping down to a famous river (below Huls Farm) or fjord (below Gardar Farm).

Those were the shared strengths of the two farms. As for their shared vulnerabilities, both lay in districts economically marginal for dairying, because their high northern latitudes meant a short summer growing season in which to produce pasture grass and hay. Because the climate was thus suboptimal even in good years, compared to dairy farms at lower latitudes, both farms were susceptible to being harmed by climate change, with drought or cold being the main concerns in the districts of Huls Farm or Gardar Farm respectively. Both districts lay far from population centers to which they could market their products, so that transportation costs and

hazards placed them at a competitive disadvantage compared to more centrally located districts. The economies of both farms were hostage to forces beyond their owners' control, such as the changing affluence and tastes of their customers and neighbors. On a larger scale, the economies of the countries in which both farms lay rose and fell with the waxing and waning of threats from distant enemy societies.

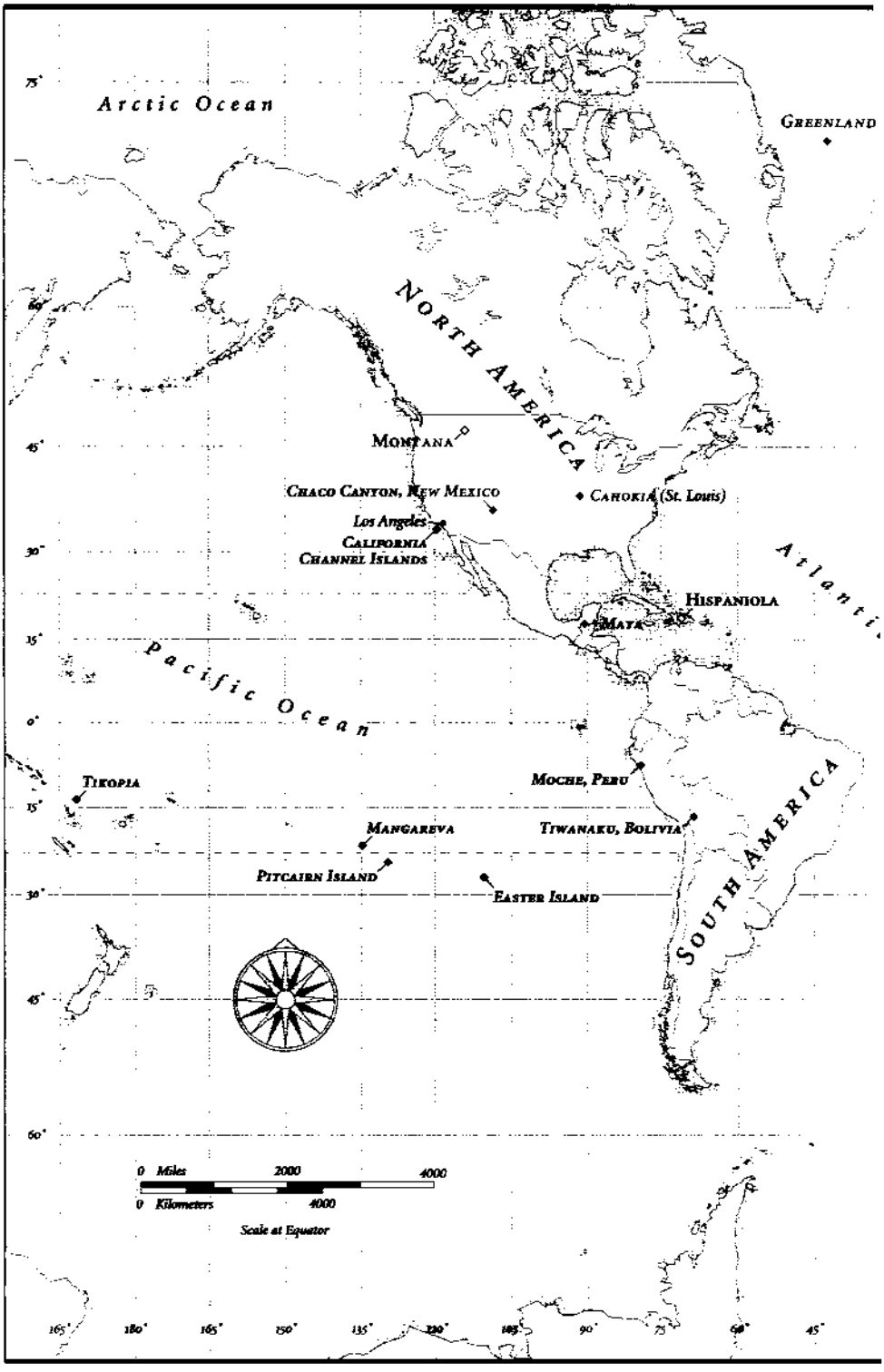
The biggest difference between Huls Farm and Gardar Farm is in their current status. Huls Farm, a family enterprise owned by five siblings and their spouses in the Bitterroot Valley of the western U.S. state of Montana, is currently prospering, while Ravalli County in which Huls Farm lies boasts one of the highest population growth rates of any American county. Tim, Trudy, and Dan Huls, who are among Huls Farm's owners, personally took me on a tour of their high-tech new barn, and patiently explained to me the attractions and vicissitudes of dairy farming in Montana. It is inconceivable that the United States in general, and Huls Farm in particular, will collapse in the foreseeable future. But Gardar Farm, the former manor farm of the Norse bishop of southwestern Greenland, was abandoned over 500 years ago. Greenland Norse society collapsed completely: its thousands of inhabitants starved to death, were killed in civil unrest or in war against an enemy, or emigrated, until nobody remained alive. While the strongly built stone walls of Gardar barn and nearby Gardar Cathedral are still standing, so that I was able to count the individual cow stalls, there is no owner to tell me today of Gardar's former attractions and vicissitudes. Yet when Gardar Farm and Norse Greenland were at their peak, their decline seemed as inconceivable as does the decline of Huls Farm and the U.S. today.

Let me make clear: in drawing these parallels between Huls and Gardar Farms, I am not claiming that Huls Farm and American society are doomed to decline. At present, the truth is quite the opposite: Huls Farm is in the process of expanding, its advanced new technology is being studied for adoption by neighboring farms, and the United States is now the most powerful country in the world. Nor am I claiming that farms or societies in general are prone to collapse: while some have indeed collapsed like Gardar, others have survived uninterruptedly for thousands of years. Instead, my trips to Huls and Gardar Farms, thousands of miles apart but visited during the same summer, vividly brought home to me the conclusion that even the richest, technologically most advanced societies today face growing environmental and economic problems that should not be underestimated. Many of our problems are broadly similar to those that undermined Gardar Farm and Norse Greenland, and that many other past societies also strug-

gled to solve. Some of those past societies failed (like the Greenland Norse), and others succeeded (like the Japanese and Tikopians). The past offers us a rich database from which we can learn, in order that we may keep on succeeding.

Norse Greenland is just one of many past societies that collapsed or vanished, leaving behind monumental ruins such as those that Shelley imagined in his poem "Ozymandias." By collapse, I mean a drastic decrease in human population size and/or political/economic/social complexity, over a considerable area, for an extended time. The phenomenon of collapses is thus an extreme form of several milder types of decline, and it becomes arbitrary to decide how drastic the decline of a society must be before it qualifies to be labeled as a collapse. Some of those milder types of decline include the normal minor rises and falls of fortune, and minor political/economic/social restructurings, of any individual society; one society's conquest by a close neighbor, or its decline linked to the neighbor's rise, without change in the total population size or complexity of the whole region; and the replacement or overthrow of one governing elite by another. By those standards, most people would consider the following past societies to have been famous victims of full-fledged collapses rather than of just minor declines: the Anasazi and Cahokia within the boundaries of the modern U.S., the Maya cities in Central America, Moche and Tiwanaku societies in South America, Mycenean Greece and Minoan Crete in Europe, Great Zimbabwe in Africa, Angkor Wat and the Harappan Indus Valley cities in Asia, and Easter Island in the Pacific Ocean (map, pp. 4–5).

The monumental ruins left behind by those past societies hold a romantic fascination for all of us. We marvel at them when as children we first learn of them through pictures. When we grow up, many of us plan vacations in order to experience them at firsthand as tourists. We feel drawn to their often spectacular and haunting beauty, and also to the mysteries that they pose. The scales of the ruins testify to the former wealth and power of their builders—they boast "Look on my works, ye mighty, and despair!" in Shelley's words. Yet the builders vanished, abandoning the great structures that they had created at such effort. How could a society that was once so mighty end up collapsing? What were the fates of its individual citizens?—did they move away, and (if so) why, or did they die there in some unpleasant way? Lurking behind this romantic mystery is the nagging thought: might such a fate eventually befall our own wealthy society? Will tourists


Arctic Ocean
Greenland
North America
Montana
Chaco Canyon, New Mexico
Cahokia (St. Louis)
Los Angeles
California
Channel Islands
Hispaniola
Maya
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Pacific Ocean
Tikopia
Moche, Peru
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Tiwanaku, Bolivia
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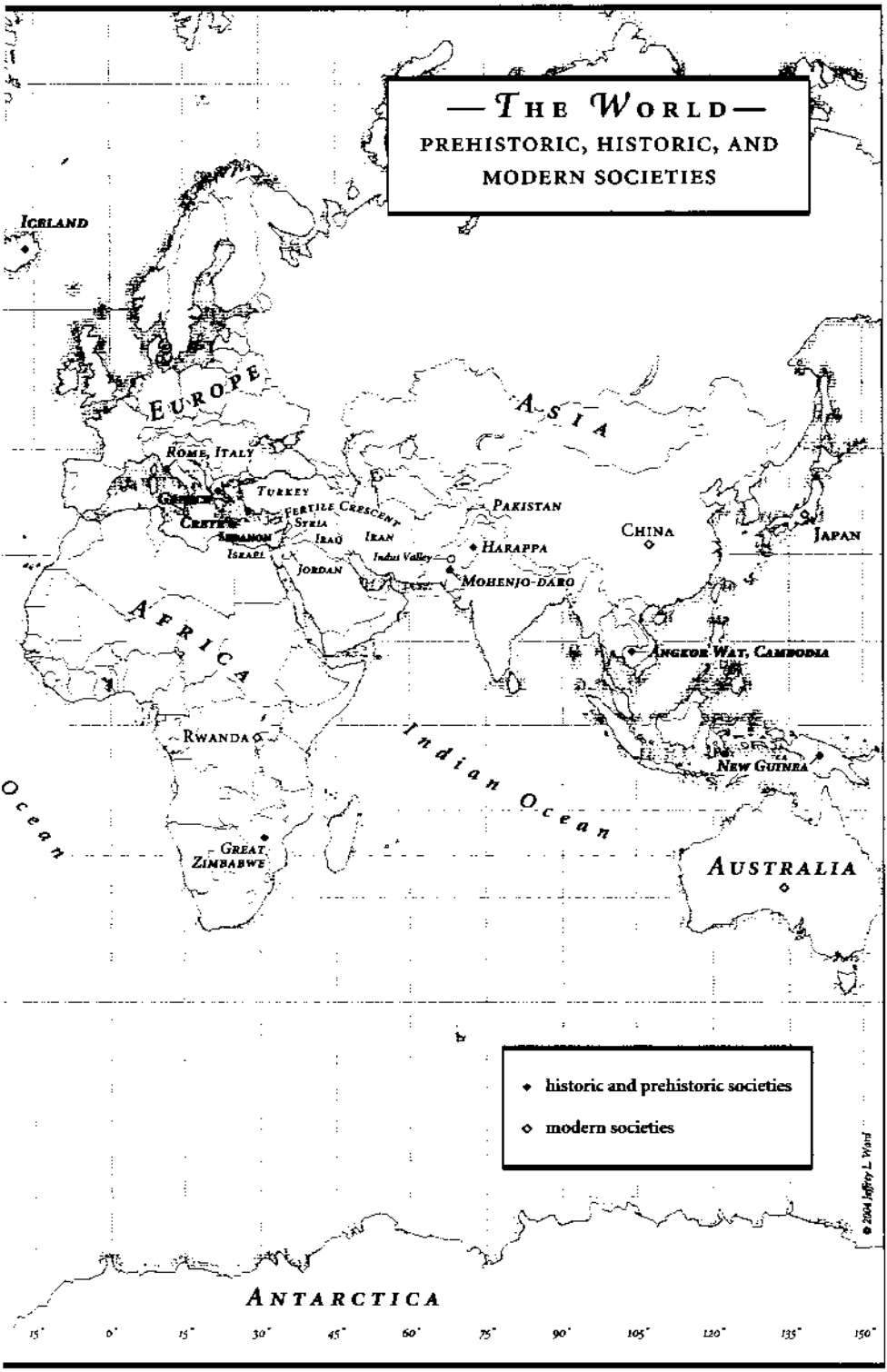
—THE WORLD—
PREHISTORIC, HISTORIC, AND MODERN SOCIETIES
ICELAND
EUROPE
ASIA
ROME, ITALY
GREECE
CRETE
TURKEY
FERTILE CRESCENT
SYRIA
LEBANON
ISRAEL
IRAQ
IRAN
JORDAN
Indus Valley
PAKISTAN
HARAPPA
MOHENJO-DARO
CHINA
JAPAN
AFRICA
ANGKOR WAT, CAMBODIA
RWANDA
Indian Ocean
NEW GUINEA
GREAT ZIMBABWE
AUSTRALIA
historic and prehistoric societies
modern societies
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someday stare mystified at the rusting hulks of New York's skyscrapers, much as we stare today at the jungle-overgrown ruins of Maya cities?

It has long been suspected that many of those mysterious abandonments were at least partly triggered by ecological problems: people inadvertently destroying the environmental resources on which their societies depended. This suspicion of unintended ecological suicide—ecocide—has been confirmed by discoveries made in recent decades by archaeologists, climatologists, historians, paleontologists, and palynologists (pollen scientists). The processes through which past societies have undermined themselves by damaging their environments fall into eight categories, whose relative importance differs from case to case: deforestation and habitat destruction, soil problems (erosion, salinization, and soil fertility losses), water management problems, overhunting, overfishing, effects of introduced species on native species, human population growth, and increased per-capita impact of people.

Those past collapses tended to follow somewhat similar courses constituting variations on a theme. Population growth forced people to adopt intensified means of agricultural production (such as irrigation, double-cropping, or terracing), and to expand farming from the prime lands first chosen onto more marginal land, in order to feed the growing number of hungry mouths. Unsustainable practices led to environmental damage of one or more of the eight types just listed, resulting in agriculturally marginal lands having to be abandoned again. Consequences for society included food shortages, starvation, wars among too many people fighting for too few resources, and overthrows of governing elites by disillusioned masses. Eventually, population decreased through starvation, war, or disease, and society lost some of the political, economic, and cultural complexity that it had developed at its peak. Writers find it tempting to draw analogies between those trajectories of human societies and the trajectories of individual human lives—to talk of a society's birth, growth, peak, senescence, and death—and to assume that the long period of senescence that most of us traverse between our peak years and our deaths also applies to societies. But that metaphor proves erroneous for many past societies (and for the modern Soviet Union): they declined rapidly after reaching peak numbers and power, and those rapid declines must have come as a surprise and shock to their citizens. In the worst cases of complete collapse, everybody in the society emigrated or died. Obviously, though, this grim trajectory is not one that all past societies followed unvaryingly to completion:

different societies collapsed to different degrees and in somewhat different ways, while many societies didn't collapse at all.

The risk of such collapses today is now a matter of increasing concern; indeed, collapses have already materialized for Somalia, Rwanda, and some other Third World countries. Many people fear that ecocide has now come to overshadow nuclear war and emerging diseases as a threat to global civilization. The environmental problems facing us today include the same eight that undermined past societies, plus four new ones: human-caused climate change, buildup of toxic chemicals in the environment, energy shortages, and full human utilization of the Earth's photosynthetic capacity. Most of these 12 threats, it is claimed, will become globally critical within the next few decades: either we solve the problems by then, or the problems will undermine not just Somalia but also First World societies. Much more likely than a doomsday scenario involving human extinction or an apocalyptic collapse of industrial civilization would be "just" a future of significantly lower living standards, chronically higher risks, and the undermining of what we now consider some of our key values. Such a collapse could assume various forms, such as the worldwide spread of diseases or else of wars, triggered ultimately by scarcity of environmental resources. If this reasoning is correct, then our efforts today will determine the state of the world in which the current generation of children and young adults lives out their middle and late years.

But the seriousness of these current environmental problems is vigorously debated. Are the risks greatly exaggerated, or conversely are they underestimated? Does it stand to reason that today's human population of almost seven billion, with our potent modern technology, is causing our environment to crumble globally at a much more rapid rate than a mere few million people with stone and wooden tools already made it crumble locally in the past? Will modern technology solve our problems, or is it creating new problems faster than it solves old ones? When we deplete one resource (e.g., wood, oil, or ocean fish), can we count on being able to substitute some new resource (e.g., plastics, wind and solar energy, or farmed fish)? Isn't the rate of human population growth declining, such that we're already on course for the world's population to level off at some manageable number of people?

All of these questions illustrate why those famous collapses of past civilizations have taken on more meaning than just that of a romantic mystery. Perhaps there are some practical lessons that we could learn from all those

past collapses. We know that some past societies collapsed while others didn't: what made certain societies especially vulnerable? What, exactly, were the processes by which past societies committed ecocide? Why did some past societies fail to see the messes that they were getting into, and that (one would think in retrospect) must have been obvious? Which were the solutions that succeeded in the past? If we could answer these questions, we might be able to identify which societies are now most at risk, and what measures could best help them, without waiting for more Somalia-like collapses.

But there are also differences between the modern world and its problems, and those past societies and their problems. We shouldn't be so naïve as to think that study of the past will yield simple solutions, directly transferable to our societies today. We differ from past societies in some respects that put us at lower risk than them; some of those respects often mentioned include our powerful technology (i.e., its beneficial effects), globalization, modern medicine, and greater knowledge of past societies and of distant modern societies. We also differ from past societies in some respects that put us at greater risk than them: mentioned in that connection are, again, our potent technology (i.e., its unintended destructive effects), globalization (such that now a collapse even in remote Somalia affects the U.S. and Europe), the dependence of millions (and, soon, billions) of us on modern medicine for our survival, and our much larger human population. Perhaps we can still learn from the past, but only if we think carefully about its lessons.

Efforts to understand past collapses have had to confront one major controversy and four complications. The controversy involves resistance to the idea that past peoples (some of them known to be ancestral to peoples currently alive and vocal) did things that contributed to their own decline. We are much more conscious of environmental damage now than we were a mere few decades ago. Even signs in hotel rooms now invoke love of the environment to make us feel guilty if we demand fresh towels or let the water run. To damage the environment today is considered morally culpable.

Not surprisingly, Native Hawaiians and Maoris don't like paleontologists telling them that their ancestors exterminated half of the bird species that had evolved on Hawaii and New Zealand, nor do Native Americans like archaeologists telling them that the Anasazi deforested parts of the southwestern U.S. The supposed discoveries by paleontologists and archaeolo-

gists sound to some listeners like just one more racist pretext advanced by whites for dispossessing indigenous peoples. It's as if scientists were saying, "Your ancestors were bad stewards of their lands, so they deserved to be dispossessed." Some American and Australian whites, resentful of government payments and land retribution to Native Americans and Aboriginal Australians, do indeed seize on the discoveries to advance that argument today. Not only indigenous peoples, but also some anthropologists and archaeologists who study them and identify with them, view the recent supposed discoveries as racist lies.

Some of the indigenous peoples and the anthropologists identifying with them go to the opposite extreme. They insist that past indigenous peoples were (and modern ones still are) gentle and ecologically wise stewards of their environments, intimately knew and respected Nature, innocently lived in a virtual Garden of Eden, and could never have done all those bad things. As a New Guinea hunter once told me, "If one day I succeed in shooting a big pigeon in one direction from our village, I wait a week before hunting pigeons again, and then I go out in the opposite direction from the village." Only those evil modern First World inhabitants are ignorant of Nature, don't respect the environment, and destroy it.

In fact, both extreme sides in this controversy—the racists and the believers in a past Eden—are committing the error of viewing past indigenous peoples as fundamentally different from (whether inferior to or superior to) modern First World peoples. Managing environmental resources sustainably has *always* been difficult, ever since *Homo sapiens* developed modern inventiveness, efficiency, and hunting skills by around 50,000 years ago. Beginning with the first human colonization of the Australian continent around 46,000 years ago, and the subsequent prompt extinction of most of Australia's former giant marsupials and other large animals, every human colonization of a land mass formerly lacking humans—whether of Australia, North America, South America, Madagascar, the Mediterranean islands, or Hawaii and New Zealand and dozens of other Pacific islands—has been followed by a wave of extinction of large animals that had evolved without fear of humans and were easy to kill, or else succumbed to human-associated habitat changes, introduced pest species, and diseases. Any people can fall into the trap of overexploiting environmental resources, because of ubiquitous problems that we shall consider later in this book: that the resources initially seem inexhaustibly abundant; that signs of their incipient depletion become masked by normal fluctuations in resource levels between years or decades; that it's difficult to get people to agree on exercising

restraint in harvesting a shared resource (the so-called tragedy of the commons, to be discussed in later chapters); and that the complexity of ecosystems often makes the consequences of some human-caused perturbation virtually impossible to predict even for a professional ecologist. Environmental problems that are hard to manage today were surely even harder to manage in the past. Especially for past non-literate peoples who couldn't read case studies of societal collapses, ecological damage constituted a tragic, unforeseen, unintended consequence of their best efforts, rather than morally culpable blind or conscious selfishness. The societies that ended up collapsing were (like the Maya) among the most creative and (for a time) advanced and successful of their times, rather than stupid and primitive.

Past peoples were neither ignorant bad managers who deserved to be exterminated or dispossessed, nor all-knowing conscientious environmentalists who solved problems that we can't solve today. They were people like us, facing problems broadly similar to those that we now face. They were prone either to succeed or to fail, depending on circumstances similar to those making us prone to succeed or to fail today. Yes, there are differences between the situation we face today and that faced by past peoples, but there are still enough similarities for us to be able to learn from the past.

Above all, it seems to me wrongheaded and dangerous to invoke historical assumptions about environmental practices of native peoples in order to justify treating them fairly. In many or most cases, historians and archaeologists have been uncovering overwhelming evidence that this assumption (about Eden-like environmentalism) is wrong. By invoking this assumption to justify fair treatment of native peoples, we imply that it would be OK to mistreat them if that assumption could be refuted. In fact, the case against mistreating them isn't based on any historical assumption about their environmental practices: it's based on a moral principle, namely, that it is morally wrong for one people to dispossess, subjugate, or exterminate another people.

That's the controversy about past ecological collapses. As for the complications, of course it's not true that all societies are doomed to collapse because of environmental damage: in the past some societies did while others didn't; the real question is why only some societies proved fragile, and what distinguished those that collapsed from those that didn't. Some societies that I shall discuss, such as the Icelanders and Tikopians, succeeded in solving extremely difficult environmental problems, have thereby been able to persist

for a long time, and are still going strong today. For example, when Norwegian colonists of Iceland first encountered an environment superficially similar to that of Norway but in reality very different, they inadvertently destroyed much of Iceland's topsoil and most of its forests. Iceland for a long time was Europe's poorest and most ecologically ravaged country. However, Icelanders eventually learned from experience, adopted rigorous measures of environmental protection, and now enjoy one of the highest per-capita national average incomes in the world. Tikopia Islanders inhabit a tiny island so far from any neighbors that they were forced to become self-sufficient in almost everything, but they micromanaged their resources and regulated their population size so carefully that their island is still productive after 3,000 years of human occupation. Thus, this book is not an uninterrupted series of depressing stories of failure, but also includes success stories inspiring imitation and optimism.

In addition, I don't know of any case in which a society's collapse can be attributed solely to environmental damage: there are always other contributing factors. When I began to plan this book, I didn't appreciate those complications, and I naïvely thought that the book would just be about environmental damage. Eventually, I arrived at a five-point framework of possible contributing factors that I now consider in trying to understand any putative environmental collapse. Four of those sets of factors—environmental damage, climate change, hostile neighbors, and friendly trade partners—may or may not prove significant for a particular society. The fifth set of factors—the society's responses to its environmental problems—always proves significant. Let's consider these five sets of factors one by one, in a sequence not implying any primacy of cause but just convenience of presentation.

A first set of factors involves damage that people inadvertently inflict on their environment, as already discussed. The extent and reversibility of that damage depend partly on properties of people (e.g., how many trees they cut down per acre per year), and partly on properties of the environment (e.g., properties determining how many seedlings germinate per acre, and how rapidly saplings grow, per year). Those environmental properties are referred to either as fragility (susceptibility to damage) or as resilience (potential for recovery from damage), and one can talk separately of the fragility or resilience of an area's forests, its soils, its fish populations, and so on. Hence the reasons why only certain societies suffered environmental collapses might in principle involve either exceptional imprudence of their people, exceptional fragility of some aspects of their environment, or both.