
THE LAST AMERICANS

Environmental collapse and the end of civilization

By Jared Diamond

*I met a traveler from an antique land
Who said: Two vast and trunkless legs of stone
Stand in the desert... Near them, on the sand,
Half sunk, a shattered visage lies, whose frown,
And wrinkled lip, and sneer of cold command,
Tell that its sculptor well those passions read
Which yet survive, stamped on these lifeless
things,
The hand that mocked them, and the heart
that fed:
And on the pedestal these words appear:
"My name is Ozymandias, king of kings:
Look on my works, ye Mighty, and despair!"
Nothing beside remains. Round the decay
Of that colossal wreck, boundless and bare
The lone and level sands stretch far away.
—"Ozymandias," Percy Bysshe Shelley*

One of the disturbing facts of history is that so many civilizations collapse. Few people, however, least of all our politicians, realize that a primary cause of the collapse of those societies has been the destruction of the environmental resources on which they depended. Fewer still appreciate that many of those civilizations share a sharp curve of decline. Indeed, a society's demise may begin only a decade or two after it reaches its peak population, wealth, and power.

Recent archaeological discoveries have revealed similar courses of collapse in such otherwise dissimilar ancient societies as the Maya in the Yucatán, the Anasazi in the American Southwest, the Cahokia mound builders outside St. Louis, the Greenland Norse, the statue builders of Easter Island, ancient Mesopotamia in the Fertile Crescent, Great Zimbabwe in Africa, and Angkor Wat in Cambodia. These civilizations, and many others, succumbed to various combinations of environmental degra-

ation and climate change, aggression from enemies taking advantage of their resulting weakness, and declining trade with neighbors who faced their own environmental problems. Because peak population, wealth, resource consumption, and waste production are accompanied by peak environmental impact—approaching the limit at which impact outstrips resources—we can now understand why declines of societies tend to follow swiftly on their peaks.

These combinations of undermining factors were compounded by cultural attitudes preventing those in power from perceiving or resolving the crisis. That's a familiar problem today. Some of us are inclined to dismiss the importance of a healthy environment, or at least to suggest that it's just one of many problems facing us—an "issue." That dismissal is based on three dangerous misconceptions.

Foremost among these misconceptions is that we must balance the environment against human needs. That reasoning is exactly upside-down. Human needs and a healthy environment are not opposing claims that must be balanced; instead, they are inexorably linked by chains of cause and effect. We need a healthy environment because we need clean water, clean air, wood, and food from the ocean, plus soil and sunlight to grow crops. We need functioning natural ecosystems, with their native species of earthworms, bees, plants, and microbes, to generate and aerate our soils, pollinate our crops, decompose our wastes, and produce our oxygen. We need to prevent toxic substances from accumulating in our water and air and soil. We need to prevent weeds, germs, and other pest species from becoming established in places where they aren't native and where they cause economic damage. Our strongest arguments for a healthy environment are selfish: we want it for ourselves, not for threatened species like snail darters, spotted owls, and Furbish louseworts.

Another popular misconception is that we can trust in technology to solve our problems. Whatever environmental problem you name, you can also name some hoped-for technological solution under discussion. Some of us have faith that we shall solve our dependence on fossil fuels by developing new technologies for hydrogen engines, wind energy, or solar energy. Some of us have faith that we shall solve our food problems with new or soon-to-be-developed genetically modified crops. Some of us have faith that new technologies will succeed in cleaning up the toxic materials in our air, water, soil, and foods without the horrendous cleanup expenses that we now incur.

BEHOLD, SAY THE OPTIMISTS: WE ARE MORE PROSPEROUS THAN EVER BEFORE, AND THAT'S THE FINAL PROOF THAT OUR SYSTEM WORKS

Those with such faith assume that the new technologies will ultimately succeed, but in fact some of them may succeed and others may not. They assume that the new technologies will succeed quickly enough to make a big difference soon, but all of these major technological changes will actually take five to thirty years to develop and implement—if they catch on at all. Most of all, those with faith assume that new technology won't cause any new problems. In fact, technology merely constitutes increased power, which produces changes that can be either for the better or for the worse. All of our current environmental problems are unanticipated harmful consequences of our existing technology. There is no basis for believing that technology will miraculously stop causing new and unanticipated problems while it is solving the problems that it previously produced.

The final misconception holds that environmentalists are fear-mongering, overreacting extremists whose predictions of impending disaster have been proved wrong before and will be proved wrong again. Behold, say the optimists: water still flows from our faucets, the grass is still green, and the supermarkets are full of food. We are more prosperous than ever before, and that's the final proof that our system works.

Well, for a few billion of the world's people who are causing us increasing trouble, there isn't any clean water, there is less and less green grass, and there are no supermarkets full of food. To appreciate what the environmental problems of those billions of people mean for us Americans, compare the following two lists of countries. First ask some ivory-tower academic ecologist who knows a lot about the environment but never reads a newspaper and has no interest in politics to list the overseas countries facing some of the worst problems of environmental stress, overpopulation, or both. The ecologist would answer, "That's a no-brainer, it's obvious. Your list of environmen-

tally stressed or overpopulated countries should surely include Afghanistan, Bangladesh, Burundi, Haiti, Indonesia, Iraq, Nepal, Pakistan, the Philippines, Rwanda, the Solomon Islands, and Somalia, plus others." Then ask a First World politician who knows nothing, and cares less, about the environment and population problems to list the world's worst trouble spots: countries where state government has already been overwhelmed and has collapsed, or is now at risk of collapsing, or has been wracked by recent civil wars; and countries that, as a result of their problems, are also creating problems for us rich First World countries, which may be deluged by illegal immigrants, or have to provide foreign aid to those countries, or may decide to provide them with military assistance to deal with rebellions and terrorists, or may even (God forbid) have to send in our own troops. The politician would answer, "That's a no-brainer, it's obvious. Your list of political trouble spots should surely include Afghanistan, Bangladesh, Burundi, Haiti, Indonesia, Iraq, Nepal, Pakistan, the Philippines, Rwanda, the Solomon Islands, and Somalia, plus others."

The connection between the two lists is transparent. Today, just as in the past, countries that are environmentally stressed, overpopulated, or both are at risk of becoming politically stressed, and of seeing their governments collapse. When people are desperate and undernourished, they blame their government, which they see as responsible for failing to solve their problems. They try to emigrate at any cost. They start civil wars. They kill one another. They figure that they have nothing to lose, so they become terrorists, or they support or tolerate terrorism. The results are genocides such as the ones that already have exploded in Burundi, Indonesia, and Rwanda; civil wars, as in Afghanistan, Indonesia, Nepal, the Philippines, and the Solomon Islands; calls for the dispatch of First World troops, as to Afghanistan, Indonesia, Iraq, the Philippines, Rwanda, the Solomon Islands, and Somalia; the collapse of central government, as has already happened in Somalia; and overwhelming poverty, as in all of the countries on these lists.

But what about the United States? Some might argue that the environmental collapse of ancient societies is relevant to the modern decline of weak, far-off, overpopulated Rwanda and environmentally devastated Somalia, but isn't it ridiculous to suggest any possible relevance to the fate of our own society? After all, we might reason, those ancients didn't enjoy the wonders of modern environment-friendly technologies. Those ancients had the misfortune to suffer from the effects of climate change. They behaved stupidly and ruined their own environment by doing obviously dumb things, like cutting down their forests, watching their topsoil erode, and building cities in dry areas likely to run short of water. They had foolish leaders who didn't have books and so couldn't learn from history, and who embroiled them in destabilizing wars and didn't pay attention to problems at home. They were overwhelmed by desperate immigrants, as one society after another collapsed, sending floods of economic refugees to tax the resources of the societies that

weren't collapsing. In all those respects, we modern Americans are fundamentally different from those primitive ancients, and there is nothing that we could learn from them.

Or so the argument goes. It's an argument so ingrained both in our subconscious and in public discourse that it has assumed the status of objective reality. We think we are different. In fact, of course, all of those powerful societies of the past thought that they too were unique, right up to the moment of their collapse. It's sobering to consider the swift decline of the ancient Maya, who 1,200 years ago were themselves the most advanced society in the Western Hemisphere, and who, like us now, were then at the apex of their own power and numbers. Two excellent recent books, David Webster's *The Fall of the Ancient Maya* and Richardson Gill's *The Great Maya Droughts*, help bring the trajectory of Maya civilization back to life for us. Their studies illustrate how even sophisticated societies like that of the Maya (and ours) can be undermined by details of rainfall, fanning methods, and motives of leaders.

By now, millions of modern Americans have visited Maya ruins. To do so, one need only take a direct flight from the United States to the Yucatán capital of Mérida, jump into a rental car or minibus, and drive an hour on a paved highway. Most Maya ruins, with their great temples and monuments, lie surrounded by jungles (seasonal tropical forests), far from current human settlement. They are "pure" archaeological sites. That is, their locations became depopulated, so they were not covered up by later buildings as were so many other ancient cities, like the Aztec capital of Tenochtitlán—now buried under modern Mexico City—and Rome.

One of the reasons few people live there now is that the Maya homeland poses serious environmental challenges to would-be farmers. Although it has a somewhat unpredictable rainy season from May to October, it also has a dry season from January through April. Indeed, if one focuses on the dry months, one could describe the Yucatán as a "seasonal desert."

Complicating things, from a farmer's perspective, is that the part of the Yucatán with the most rain, the south, is also the part at the highest elevation above the water table. Most of the Yucatán consists of karst—a porous, spongelike, limestone terrain—and so rain runs straight into the ground, leaving little or no surface water. The Maya in the lower-elevation regions of the north were able to reach the water table by way of deep sinkholes called cenotes, and the Maya in low coastal areas without sinkholes could reach it by digging wells up to 75 feet deep. Most Maya, however, lived in the south. How did they deal with their resulting water problem?

Technology provided an answer. The Maya plugged up leaks on karst promontories by plastering the bottoms of depressions to create reservoirs, which collected rain

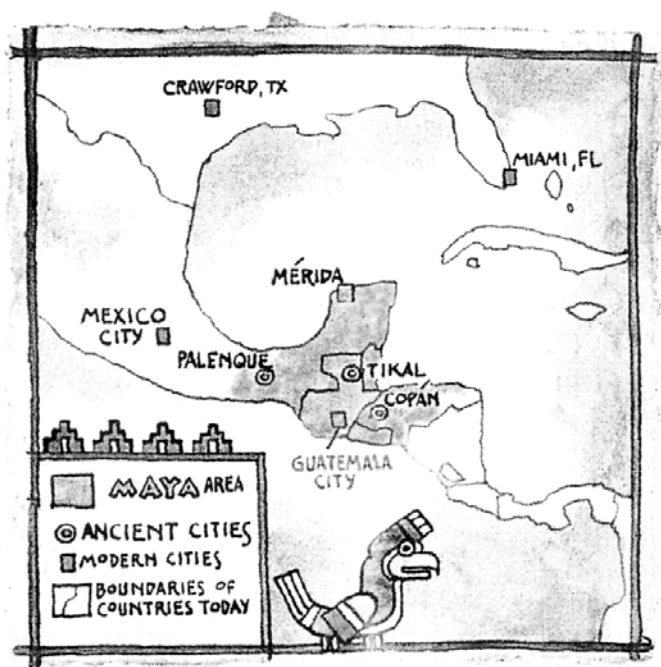


Illustration by Sam Fellows

and stored it for use in the dry season. The reservoirs at the Maya city of Tikal, for example, held enough water to meet the needs of about 10,000 people for eighteen months. If a drought lasted longer than that, though, the inhabitants of Tikal were in deep trouble.

Maya farmers grew mostly corn, which constituted the astonishingly high proportion of about 70 percent of their diet, as deduced from isotope analyses of ancient Maya skeletons. They grew corn by means of a modified version of swidden slash-and-burn agriculture, in which forest is cleared, crops are grown in the resulting clearing for a few years until the soil is exhausted, and then the field is abandoned for fifteen to twenty years until regrowth of wild vegetation restores the soil's fertility. Because most of the land under a swidden agricultural system is fallow at any given time, it can support only modest population densities. Thus, it was a surprise for archaeologists to discover that ancient Maya population densities, judging from numbers of stone foundations of farmhouses, were often far higher than what unmodified swidden agriculture could support: often 250 to 750 people per square mile. The Maya probably achieved those high populations by such means as shortening the fallow period and tilling the soil to restore soil fertility, or omitting the fallow period entirely and growing crops every year, or, in especially moist areas, growing two crops per year.

Socially stratified societies, ours included, consist of farmers who produce food, plus non-farmers such as bureaucrats and soldiers who do not produce food and are in effect parasites on farmers. The farmers must grow enough food to meet not only their own needs but also those of everybody else. The number of non-producing consumers who can be supported depends on the soci-

ety's agricultural productivity. In the United States today, with its highly efficient agriculture, farmers make up only 2 percent of our population, and each farmer can feed, on the average, 129 other people. Ancient Egyptian agriculture was efficient enough for an Egyptian peasant to produce five times the food required for himself and his family. But a Maya peasant could produce only twice the needs of himself and his family.

Fully 80 percent of Maya society consisted of peasants. Their inability to support many non-farmers resulted from several limitations of their agriculture. It produced little protein, because corn has a much lower protein content than wheat, and because the few edible domestic animals kept by the Maya (turkeys, ducks, and dogs) included no large animals like our cows and sheep. There was little use of terracing or irrigation to increase production. In the Maya area's humid climate, stored corn would rot or become infested after a year, so the Maya couldn't get through a longer drought by eating surplus corn accumulated in good years. And unlike Old World peoples with their horses, oxen, donkeys, and camels, the Maya had no animal-powered transport. Indeed, the Maya lacked not only pack animals and animal-drawn plows but also metal tools, wheels, and boats with sails. All of those great Maya temples were built by stone and wooden tools and human muscle power alone, and all overland transport went on the backs of human porters.

Those limitations on food supply and food transport may in part explain why Maya society remained politically organized in small kingdoms that were perpetually at war with one another and that never became unified into large empires like the Aztec empire of the Valley of Mexico (fed by highly productive agriculture) or the Inca empire of the Andes (fed by diverse crops carried on llamas). Maya armies were small and unable to mount lengthy campaigns over long distances. The typical Maya kingdom held a population of only up to 50,000 people, within a radius of two or three days' walk from the king's palace. From the top of the temple of some Maya kingdoms, one could see the tops of the temples of other kingdoms.

Presiding over the temple was the king himself, who functioned both as head priest and as political leader. It was his responsibility to pray to the gods, to perform astronomical and calendrical rituals, to ensure the timely arrival of the rains on which agriculture depended, and thereby to bring prosperity. The king claimed to have the supernatural power to deliver those good things because of his asserted family relationship to the gods. Of course, that exposed him to the risk that his subjects would become disillusioned if he couldn't fulfill his boast of being able to deliver rains and prosperity.

Those are the basic outlines of Classic Maya society, which for all its limitations lasted more than 500 years. Indeed, the Maya themselves believed that it had lasted for much longer. Their remarkable Long Count calendar had

its starting date (analogous to January 1, A.D. 1 of our calendar) backdated into the remote preliterate past, at August 11, 3114 B.C. The first physical evidence of civilization within the Maya area, in the form of villagers and pottery, appeared around 1400 B.C., substantial buildings around 500 B.C., and writing around 400 B.C. The so-called Classic period of Maya history arose around A.D. 250, when evidence for the first kings and dynasties emerged. From then, the Maya population increased almost exponentially, to reach peak numbers in the eighth century A.D. The largest monuments were erected toward the end of that century. All the indicators of a complex society declined throughout the ninth century, until the last date on any monument was A.D. 909. This decline of Maya population and architecture constitutes what is known as the Classic Maya collapse.

What happened? Let's consider in more detail a city whose ruins now lie in western Honduras at the world-famous site of Copán. The most fertile ground in the Copán area consists of five pockets of flat land along a river valley with a total area of only one square mile; the largest of those five pockets, known as the Copán pocket, has an area of half a square mile. Much of the land around Copán consists of steep hills with poor soil. Today, corn yields from valley-bottom fields are two or three times those of fields on hill slopes, which suffer rapid erosion and lose most of their productivity within a decade of farming.

To judge by the number of house sites, population growth in the Copán valley rose steeply from the fifth century up to a peak estimated at around 27,000 people between A.D. 750 and 900. Construction of royal monuments glorifying kings became especially massive from A.D. 650 onward. After A.D. 700, nobles other than kings got into the act and began erecting their own palaces, increasing the burden that the king and his own court already imposed on the peasants. The last big buildings at Copán were put up around A.D. 800; the last date on an incomplete altar possibly bearing a king's name is A.D. 822.

MAYA SOCIETY WAS POLITICALLY ORGANIZED IN SMALL KINGDOMS THAT WERE PERPETUALLY AT WAR WITH ONE ANOTHER

Archaeological surveys of different types of habitats in the Copán valley show that they were occupied in a regular sequence. The first area farmed was the large Copán pocket of bottomland, followed by occupation of the other four bottomland pockets. During that time the human population was growing, but the hills remained uninhabited. Hence that increased population must have been accommodated by intensifying production in the bottomland pockets: probably some combination of shorter fallow periods and double-cropping. By A.D. 500,

people had started to settle the hill slopes, but those sites were occupied only briefly. The percentage of Copán's total population that was in the hills, rather than in the valleys, peaked in the year 575 and then declined, as the population again became concentrated in the pockets.

What caused that pullback of population from the hills? From excavation of building foundations on the valley floor we know that they became covered with sediment during the eighth century, meaning that the hill slopes were becoming eroded and probably also leached of nutrients. The acidic hill soils being carried down into the valley would have reduced agricultural yields. The reason for that erosion of the hillsides is clear: the forests that formerly covered them and protected their soil were being cut down. Dated pollen samples show that the pine forests originally covering the hilltops were eventually all cleared, to be burned for fuel. Besides causing sediment accumulation in the valleys and depriving valley inhabitants of wood supplies, that deforestation may have begun to cause a "man-made drought" in the valley bottom, because forests play a major role in water cycling, such that massive deforestation tends to result in lowered rainfall.

Hundreds of skeletons recovered from Copán archaeological sites have been studied for signs of disease and poor nutrition, such as porous bones and stress lines in the teeth. Those skeletal signs show that the health of Copán's inhabitants deteriorated from A.D. 650 to 850, among both the elite and commoners, though the health of commoners was worse.

Recall that Copán's population was growing rapidly while the hills were being occupied. The subsequent abandonment of all of those hill fields meant that the burden of feeding the extra population formerly dependent on the hills now fell increasingly on the valley floor, and that more and more people were competing for the food grown on that one square mile of bottomland. That would have led to fighting among the farmers themselves for the best land, or for any land, just as in modern Rwanda. Because the king was failing to deliver on his promises of rain and prosperity, he would have been the scapegoat for this agricultural failure, which explains why the last that we hear of any king is A.D. 822, and why the royal palace was burned around A.D. 850.

LIMITATIONS OF FOOD SUPPLY AND TRANSPORTATION MADE IT IMPOSSIBLE FOR MAYA KINGDOMS TO UNITE INTO AN EMPIRE

Datable pieces of obsidian, the sharp rock from which the Maya made their stone tools, suggest that Copán's total population decreased more gradually than did its signs of kings and nobles. The estimated population in the year A.D. 950 was still around 15,000, or 55 percent of the peak population of 27,000. That population continued

to dwindle, until there are few signs of anyone in the Copán valley after around A.D. 1235. The reappearance of pollen from forest trees thereafter provides independent evidence that the valley became virtually empty of people.

The Maya history that I have just related, and Copán's history in particular, illustrate why we talk about "the Maya collapse." But the story grows more complicated, for at least five reasons. There was not only that enormous Classic collapse but also at least two smaller pre-Classic collapses, around A.D. 150 and 600, as well as some post-Classic collapses. The Classic collapse was obviously not complete, because hundreds of thousands of Maya survived, in areas with stable water supplies, to meet and fight the Spaniards. The collapse of population (as gauged by numbers of house sites and of obsidian tools) was in some cases much slower than the decline in numbers of Long Count dates. Many apparent collapses of cities were nothing more than "power cycling"; i.e., particular cities becoming more powerful at the expense of neighboring cities, then declining or getting conquered by neighbors, without changes in the whole population. Finally, cities in different parts of the Maya area rose and fell on different trajectories.

Some archaeologists focus on these complications and don't want to recognize a Classic Maya collapse at all. But this overlooks the obvious fact that cries out for explanation: the disappearance of between 90 and 99 percent of the Maya population after A.D. 800, and of the institution of the kingship, Long Count calendars, and other complex political and cultural institutions. Before we can understand those disappearances, however, we need first to understand the roles of warfare and of drought.

Archaeologists for a long time believed the ancient Maya to be gentle and peaceful people. We now know that Maya warfare was intense, chronic, and unresolvable, because limitations of food supply and transportation made it impossible for any Maya principality to unite the whole region in an empire. The archaeological record shows that wars became more intense and frequent toward the time of the Classic collapse. That evidence comes from discoveries of several types since the Second World War: archaeological excavations of massive fortifications surrounding many Maya sites; vivid depictions of warfare and captives on stone monuments and on the famous painted murals discovered in 1946 at Bonampak; and the decipherment of Maya writing, much of which proved to consist of royal inscriptions boasting of conquests. Maya kings fought to capture and torture one another; an unfortunate loser was a Copán king with the to us unforgettable name of King 18 Rabbit.

Maya warfare involved well-documented types of violence: wars among separate kingdoms; attempts of cities within a kingdom to secede by revolting against the capital; and civil wars resulting from frequent violent at-

tempts by would-be kings to usurp the throne. All of these events were described or depicted on monuments, because they involved kings and nobles. Not considered worthy of description, but probably even more frequent, were fights between commoners over land, as overpopulation became excessive and land became scarce.

The other phenomenon important to understanding all of these collapses is the repeated occurrence of droughts, as inferred by climatologists from evidence of lake evaporation preserved in lake sediments, and as summarized by Gill in *The Great Maya Droughts*. The rise of Maya civilization may have been facilitated by a rainy period beginning around 250 B.C. until a temporary drought after A.D. 125 was associated with a pre-Classic collapse at some sites. That collapse was followed by the resumption of rainy conditions and the buildup of Classic Maya cities, briefly interrupted by another drought around 600 corresponding to a decline at Tikal and some other sites. Finally, around A.D. 750 there began the worst drought in the past 7,000 years, peaking around the year A.D. 800, and suspiciously associated with the Classic collapse.

The area most affected by the Classic collapse was the southern highlands, probably for the two reasons already mentioned: it was the area with the densest population, and it also had the most severe water problems because it lay too high above the water table for cenotes or wells to provide water. The southern highlands lost more than 99 percent of its population in the course of the Classic collapse. When Cortés and his Spanish army marched in 1524 and 1525 through an area formerly inhabited by millions of Maya, he nearly starved because he encountered so few villagers from whom to acquire corn. The Spaniards passed within only a few miles of the abandoned ruins of the great Classic cities of Tikal and Palenque, but still they heard or saw nothing of them.

We can identify increasingly familiar strands in the Classic Maya collapse. One consisted of population growth outstripping available resources: the dilemma foreseen by Thomas Malthus in 1798. As Webster succinctly puts it in *The Fall of the Ancient Maya*, "Too many farmers grew too many crops on too much of the landscape." While population was increasing, the area of usable farmland paradoxically was decreasing from the effects of deforestation and hillside erosion.

The next strand consisted of increased fighting as more and more people fought over fewer resources. Maya warfare, already endemic, peaked just before the collapse. That is not surprising when one reflects that at least 5 million people, most of them farmers, were crammed into an area smaller than the state of Colorado. That's a high population by the standards of ancient farming societies, even if it wouldn't strike modern Manhattan-dwellers as crowded.

Bringing matters to a head was a drought that, although not the first one the Maya had been through, was

the most severe. At the time of previous droughts, there were still uninhabited parts of the Maya landscape, and people in a drought area or dust bowl could save themselves by moving to another site. By the time of the Classic collapse, however, there was no useful unoccupied land in the vicinity on which to begin anew, and the whole population could not be accommodated in the few areas that continued to have reliable water supplies.

The final strand is political. Why did the kings and nobles not recognize and solve these problems? A major reason was that their attention was evidently focused on the short-term concerns of enriching themselves, waging wars, erecting monuments, competing with one another, and extracting enough food from the peasants to support all those activities. Like most leaders throughout human history, the Maya kings and nobles did not have the leisure to focus on long-term problems, insofar as they perceived them.

What about those same strands today? The United States is also at the peak of its power, and it is also suffering from many environmental problems. Most of us have become aware of more crowding and stress. Most of us living in large American cities are encountering increased commuting delays, because the number of people and hence of cars is increasing faster than the number of freeway lanes. I know plenty of people who in the abstract doubt that the world has a population problem, but almost all of those same people complain to me about crowding, space issues, and traffic experienced in their personal lives.

Many parts of the United States face locally severe problems of water restriction (especially southern California, Arizona, the Everglades, and, increasingly, the Northeast); forest fires resulting from logging and forest-management practices throughout the intermontane West; and losses of farmlands to salinization, drought, and climate change in the northern Great Plains. Many of us frequently experience problems of air quality, and some of us also experience problems of water quality and taste. We are losing economically valuable natural resources. We have already lost American chestnut trees, the Grand Banks cod fishery, and the Monterey sardine fishery; we are in the process of losing swordfish and tuna and Chesapeake Bay oysters and elm trees; and we are losing topsoil.

The list goes on: All of us are experiencing personal consequences of our national dependence on imported energy, which affects us not only through higher gas prices but also through the current contraction of the national economy, itself the partial result of political problems associated with our oil dependence. We are saddled with expensive toxic cleanups at many locations, most notoriously near Montana mines, on the Hudson River, and in the Chesapeake Bay. We also face expensive eradication problems resulting from hundreds of introduced

pest species—including zebra mussels, Mediterranean fruit flies, Asian longhorn beetles, water hyacinth, and spotted knapweed—that now affect our agriculture, forests, waterways, and pastures.

These particular environmental problems, and many others, are enormously expensive in terms of resources lost, cleanup and restoration costs, and the cost of finding substitutes for lost resources: a billion dollars here, 10 billion there, in dozens and dozens of cases. Some of the problems, especially those of air quality and toxic substances, also exact health costs that are large, whether measured in dollars or in lost years or in quality of life. The cost of our homegrown environmental problems adds up to a large fraction of our gross national product, even without mentioning the costs that we incur from environmental problems overseas, such as the military operations that they inspire. Even the mildest of bad scenarios for our future include a gradual economic decline, as happened to the Roman and British empires. Actually, in case you didn't notice it, our economic decline is already well under way. Just check the numbers for our national debt, yearly government budget deficit, unemployment statistics, and the value of your investment and pensions funds.

The environmental problems of the United States are still modest compared with those of the rest of the world. But the problems of environmentally devastated, overpopulated, distant countries are now our problems as well. We are accustomed to thinking of globalization in terms of us rich, advanced First Worlders sending our good things, such as the Internet and Coca-Cola, to those poor backward Third Worlders. Globalization, however, means nothing more than improved worldwide communication and transportation, which can convey many things in either direction; it is not restricted to good things carried only from the First to the Third World. They in the Third World can now, intentionally or unintentionally, send us their bad things: terrorists; diseases such as AIDS, SARS, cholera, and West Nile fever, carried inadvertently by passengers on transcontinental airplanes; unstoppable numbers of immigrants, both legal and illegal, arriving by boat, truck, train, plane, and on foot; and other consequences of their Third World problems. We in the United States are no longer the isolated Fortress America to which some of us aspired in the 1930s; instead, we are tightly and irreversibly connected to overseas countries. The United States is the world's leading importer, and it is also the world's leading exporter. Our own society opted long ago to become interlocked with the rest of the world.

That's why political stability anywhere in the world now affects us, our trade routes, and our overseas markets and suppliers. We are so dependent on the rest of the world that if a decade ago you had asked a politician to name the countries most geopolitically irrelevant to U.S.

interests because of their being so remote, poor, and weak, the list would have begun with Afghanistan and Somalia, yet these countries were subsequently considered important enough to warrant our dispatching U.S. troops. The Maya were "globalized" only within the Yucatán: the southern Yucatán Maya affected the northern Yucatán Maya and may have had some effects on the Valley of Mexico, but they had no contact with Somalia. That's because Maya transportation was slow, short-distance, on foot or else in canoes, and had low cargo capacity. Our transport today is much more rapid and has much higher cargo capacity. The Maya lived in a globalized Yucatán; we live in a globalized world.

If all of this reasoning seems straightforward when expressed so bluntly, one has to wonder: Why don't those in power today get the message? Why didn't the leaders of the Maya, Anasazi, and those other societies also recognize and solve their problems? What were the Maya thinking while they watched loggers clearing the last pine forests on the hills above Copán? Here, the past really is a useful guide to the present. It turns out that there are at least a dozen reasons why past societies failed to *anticipate* some problems before they developed, or failed to *perceive* problems that had already developed, or failed even to try to solve problems that they did perceive. All of those dozen reasons still can be seen operating today. Let me mention just three of them.

First, it's difficult to recognize a slow trend in some quantity that fluctuates widely up and down anyway, such as seasonal temperature, annual rainfall, or economic indicators. That's surely why the Maya didn't recognize the oncoming drought until it was too late, given that rainfall in the Yucatán varies several-fold from year to year. Natural fluctuations also explain why it's only within the last few years that all climatologists have become convinced of the reality of climate change, and why our president still isn't convinced but thinks that we need more research to test for it.

Second, when a problem *is* recognized, those in power may not attempt to solve it because of a clash between their short-term interests and the interests of the rest of us. Pumping that oil, cutting down those trees, and catching those fish may benefit the elite by bringing them money or prestige and yet be bad for society as a whole (including the children of the elite) in the long run. Maya kings were consumed by immediate concerns for their prestige (requiring more and bigger temples) and their success in the next war (requiring more followers), rather than for the happiness of commoners or of the next generation. Those people with the greatest power to make decisions in our own society today regularly make money from activities that may be bad for society as a whole and for their own children; those decision-makers include Enron executives, many land developers, and advocates of tax cuts for the rich.

Finally, it's difficult for us to acknowledge the wisdom of policies that clash with strongly held values. For example, a belief in individual freedom and a distrust of big government are deeply ingrained in Americans, and they make sense under some circumstances and up to a certain point. But they also make it hard for us to accept big government's legitimate role in ensuring that each individual's freedom to maximize the value of his or her land holdings doesn't decrease the value of the collective land of all Americans.

Not all societies make fatal mistakes. There are parts of the world where societies have unfolded for thousands of years without any collapse, such as Java, Tonga, and (until 1945) Japan. Today, Germany and Japan are successfully managing their forests, which are even expanding in area rather than shrinking. The Alaskan salmon fishery and the Australian lobster fishery are being managed sustainably. The Dominican Republic, hardly a rich country, nevertheless has set aside a comprehensive system of protected areas encompassing most of the country's natural habitats.

Is there any secret to explain why some societies acquire good environmental sense while others don't? Naturally, part of the answer depends on accidents of individual leaders' wisdom (or lack thereof). But part also depends upon whether a society is organized so as to minimize built-in clashes of interest between its decision-making elites and its masses. Given how our society is organized, the executives of Enron, Tyco, and Adelphi correctly calculated that their own interests would be best promoted by looting the company coffers, and that they would probably get away with most of their loot. A good example of a society that minimizes such clashes of interest is the Netherlands, whose citizens have perhaps the world's highest level of environmental awareness and of membership in environmental organizations. I never understood why, until on a recent trip to the Netherlands I posed the question to three of my Dutch friends while driving through their countryside.

Just look around you, they said. All of this farmland that you see lies below sea level. One fifth of the total area of the Netherlands is below sea level, as much as 22 feet below, because it used to be shallow bays, and we reclaimed it from the sea by surrounding the bays with dikes and then gradually pumping out the water. We call these reclaimed lands "polders." We began draining our polders nearly a thousand years ago. Today, we still have to keep pumping out the water that gradually seeps in. That's what our windmills used to be for, to drive the pumps to pump out the polders. Now we use steam, diesel, and electric pumps instead. In each polder there are lines of them, starting with those farthest from the sea, pumping the water in sequence until the last pump finally deposits it into a river or the ocean. And all of us, rich or poor, live down in the polders. It's not the case that rich people live safely up on top of the dikes while poor people live in the polder bottoms below sea level. If the dikes and pumps fail, we'll all drown together.

Throughout human history, all peoples have been connected to some other peoples, living together in virtual polders. For the ancient Maya, their polder consisted of most of the Yucatán and neighboring areas. When the Classic Maya cities collapsed in the southern Yucatán, refugees may have reached the northern Yucatán, but probably not the Valley of Mexico, and certainly not Florida. Today, our whole world has become one polder, such that events in even Afghanistan and Somalia affect Americans. We do indeed differ from the Maya, but not in ways we might like: we have a much larger population, we have more potent destructive technology, and we face the risk of a worldwide rather than a local decline. Fortunately, we also differ from the Maya in that we know their fate, and they did not. Perhaps we can learn.

Jared Diamond is a professor of geography and of environmental health sciences at UCLA. His book Guns, Germs, and Steel: the Fates of Human Societies won a 1998 Pulitzer Prize.