

## Sustainable Survival

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## DEFINITIONS, DURATIONS, AND DISPLACEMENTS

In *Collapse: How Societies Choose to Fail or Succeed*, Jared Diamond attempted to write a hopeful book about environmental and Malthusian calamities. His definition of collapse is as follows:

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 society must be before it qualifies to be labeled as a collapse.<sup>1</sup>

This is a flexible definition, as judgment calls are required with words such as “drastic,” “considerable,” and “extended.” A reduction in human numbers or in the complexity of human social organization, of an unspecified and arbitrary quantity, constitutes a collapse – provided it happens over a “considerable area” and for an “extended” length of time. The collapse of France in 1940 or that of the Soviet Union in 1991 is not a collapse in this sense, nor is any merely political collapse.<sup>2</sup> The biological and cultural elimination of indigenous Tasmanians in the nineteenth century, which Diamond writes about in *Guns, Germs, and Steel* (1997), is not a collapse either, because Tasmania quickly acquired more population and more social complexity than it ever had had before, albeit of a completely different sort, Anglo-Irish immigrants. The near-total replacement

of Algonquin speakers by (mainly) English colonists in southern New England ca. 1620–1720 probably would not qualify as a collapse, because human numbers and social complexity increased in that area within a century – assuming that an “extended” period of time is longer than a century. The extinction of several peoples and cultures in the long, slow expansion of China since the Han Dynasty would not qualify. Indeed, over the past 5,000 years or so, thousands of peoples and cultures have been obliterated, either biologically driven to extinction by violence and epidemics, or culturally and biologically assimilated into a larger and more powerful polity and culture. None of these were collapses, by Diamond’s definition, because they did not involve drastic declines in numbers or complexity; they involved drastic cultural and political changes.

On the other hand, episodes in which cultures survived but people moved would qualify, provided either numbers or complexity declined drastically. So when the Mongols overran Baghdad in 1258, destroyed its irrigation and agricultural systems, and killed many people, driving others to emigrate, this was a collapse in Mesopotamia. Numbers and complexity did decline, although whether drastically or not is a matter of definition. The Mongols did their best to reshape the landscape to suit their preferences for steppes and ponies rather than fields and grain. When climatic patterns shifted so that people migrated away from a region and did not return for several centuries, as happened from time to time on the southern edges of the Sahara, or perhaps happened in fifteenth-century Greenland (according to Joel Berglund’s interpretation), this too would be a collapse. Diamond, of course, is free to define his terms as he sees fit. I merely wish to point out some of the implications of choosing population and complexity as one’s criteria, especially how arbitrary and difficult the required distinctions and judgments can be.

The Greenland Norse are a fine case for illustrating one further conundrum in the concept of collapse: duration. The Norse lasted in Greenland for roughly 450 years before failing and collapsing. This is longer than any of the “modern societies” that Diamond uses to illustrate the notion of societies choosing to fail or succeed in the modern world. Diamond’s friends and neighbors in Montana (Chapter 1) are part of a society that has existed in Montana for perhaps 140 years at the most.

The other “modern societies” appear in chapters 10–13 of *Collapse*. First is Rwanda, presented as a Malthusian tragedy. The Rwandan state is not quite forty years old. Its colonial predecessor was formed roughly 100 years ago, counting both Belgian and German rule. The cohabitation of Hutu and Tutsi (in any case not firm categories) dates back perhaps 300 years, although no one can know for sure.

Next come Haiti and the Dominican Republic, the former deemed a failure and the latter a success. Together they make up the island of Hispaniola. Haiti has existed as such since 1804; the slave plantation society that preceded the independent republic took shape in the early and mid-eighteenth century. French political control, very loose at first, dates to 1697, and the first French settlers (pirates) took root around 1659. The Dominican Republic has existed as a (usually) independent state since the 1880s. Before that it was sometimes controlled by Haiti, sometimes by Spain, sometimes by France, and often by nobody at all. Diamond counts it as a modern success because its environmental problems are much less severe than those of Haiti; its environmental legislation dates back to 1901. But most of what qualifies the Dominican Republic as a success is legislation undertaken since the rise to power of Joaquín Balaguer in 1966. Balaguer enacted several conservation and forest protection laws, but whether his legacy in this respect will endure is much too early to tell.

China, Diamond’s next modern case, is reckoned a failure in the making (chapter 12). Of course, China as a geopolitical entity in one form or another extends back about 3,700 years. But this is not the China with which Diamond is concerned. His story of environmental degradation and ineffective regulation is mainly from the 1980s and 1990s, with brief mentions of trends extending as far back as the 1950s. Only in passing, in connection with China’s political unity, which is attributed to geographical reasons as in *Guns, Germs, and Steel* (chapter 20), does Diamond mention the country’s longevity. Diamond is quite right to emphasize the environmental catastrophes of contemporary China. But can a quarter century of recent experience, divorced from the preceding thirty-five centuries, serve as the basis for conclusions about a society choosing to fail or succeed?

Last among the modern societies comes Australia (chapter 13), which is a tale of environmental woe leavened by some rays of hope for the future. Most of the story concerns recent decades, although

Diamond does reach back to the foundation of colonial Australia in 1788 and mentions the prior millennia of aboriginal occupation. But the heart of his story is at most 220 years long. He ends by saying that “[m]any readers of this book are young enough, and will live long enough, to see the outcome.”<sup>3</sup> Thus Australia’s status, as a society that chooses to fail or succeed, will reach its conclusion within 300 years of its start.

The timelines adopted in these chapters about modern societies vary in length, but none of them is as long as the time the Greenland Norse lasted. Had their society been examined on its 300th birthday (around 1280 C.E.), to take the outer limit of the Australian example, it would have been found intact and presumably therefore judged a success. Simply put, none of the cases of modern societies judged successes endured as long as the Greenland Norse, judged a failure.

Diamond also judges Tokugawa Japan a success story, because the Tokugawa Shogunate (1603–1867) found a way out of an “environmental and population crisis” after the mid-seventeenth century, the chief symptom of which was deforestation and a timber shortage. The Tokugawa managed to impose forest conservation. Ordinary Japanese found ways to lower birth rates and achieve population stability (via delayed marriage, abortion, and infanticide). And both state and society took the opportunity presented by a militarily weak population in Hokkaido, the Ainu, to expand their resource base considerably through conquest, expropriation, and near-genocide. The Japanese success came at a considerable price, to the Ainu, to young Japanese unable to marry, and to still younger Japanese who fell victim to infanticide. Indeed, if seen from the point of view of the Ainu, the whole episode might appear something other than a success. But, in any case, the success lasted only from the mid-seventeenth century to the late nineteenth century, about 200 years. By the 1890s Japanese society seemed to its leaders desperately short of resources, in need of new lands for its growing population, which put it on a course of imperial expansion into Korea, Taiwan, and soon Manchuria, China, and the Pacific. That led it into a disastrous war with the United States, during which the home islands of Japan were stripped of timber and almost all other resources in an all-out war effort. If seen from the vantage point of 1850, at roughly age 200,

the Japanese experiment may seem a success (except to the Ainu), but if seen from 1900 or 1945, at age 250 or 300, it would not. Thus, in the case of Tokugawa Japan, as well as of those modern societies having (as Diamond sees it) chosen success, they have a ways to go before they will have endured as long as the Greenland Norse. The chronological vantage point, as well as the cultural one, makes all the difference in whether or not a given case may plausibly be represented as a success or failure.

I dwell on Diamond’s definition and its implications because I think this explains part of the disagreements between him and some of the anthropologists writing in this volume. If a people, a language, and a culture survive, as among the Maya, the Norse, or the Anasazi, is this a collapse? To Diamond it is, because either human numbers or societal complexity declined drastically. To others it is not, because something central survived, and the people involved made a prudent adjustment to changing circumstances, in effect migrating to avoid the worst. For Diamond numbers and complexity are all; for others, especially anthropologists perhaps, cultural survival in such forms as language, religion, or foodways trumps Diamond’s chosen variables. And I dwell on Diamond’s timelines because for historians – at least this one – time and duration matter. Diamond’s flexible timelines, by which some societies are judged successes and others failures, seem unsatisfying, in the same way that a footrace would seem pointless if different runners were awarded prizes at different distances along the course.

The Tokugawa case illustrates one further issue that clouds the notion of societies choosing to succeed or fail, that of the geographic displacement of environmental problems. Tokugawa Japan had the military power to help itself to the land and resources of Hokkaido.<sup>4</sup> Such frontier expansion is routine in world history and has helped many a society postpone reckoning with unsustainable ecological arrangements. It has also led to the marginalization or extirpation of thousands of peoples, cultures, and languages, many of which vanished into the mists of history, leaving no trace.

The displacement of environmental problems, of course, continues to this day, although usually in different forms. Diamond overlooks this in his quest for stories of success. At the end of the book, where Diamond includes a section specifically designed to inspire

hope that humankind can choose sustainable survival, he offers the contemporary Netherlands as a society that has recognized its common interests because most of the country lies below sea level, and without cooperation among all ranks of society, the Dutch could not keep the sea at bay. Thus the Dutch minimize clashes of self-interest, cooperate politically, and have unusually high levels of environmental awareness. But the Dutch case must be understood in the context of the Dutch position in the wider world. The Dutch do not have to fight bitterly self-interested battles over land and resource use within the Netherlands because they are near the top among countries in per capita timber imports, most of it tropical hardwood from Southeast Asia. The Dutch can raise 13 million pigs and 100 million chickens in a small country by importing fodder, notably soya from Brazil. They can lead the world in the exports of cocoa products because they lead the world in cocoa imports, mainly from West Africa. Thus the Dutch do not suffer the deforestation and other environmental ills associated with the production of timber, soya, and cocoa – these are felt in Indonesia, Brazilian Amazonia, and West Africa.<sup>5</sup>

Judgments of success or failure, survival or collapse, are often more difficult to make than we might wish. Perspective and context matter. Can a society that survived a century be counted a success whereas one that lasted 450 years count as a failure? Can one that responds to environmental stresses by migration be judged a failure whereas one that responds by conquering neighboring lands, or enlisting resources from other continents, be judged a success?

Simplicity has its virtues, especially when trying to stir an audience to action. In *Collapse*, Diamond appears motivated by a deep concern for the environmental state of the earth. I find this prudent, appropriate, and laudable. Many environmentalists face choices between what is most intellectually rigorous (which usually involves admitting to legions of uncertainties) and what is most likely to rally people to action (which usually involves skating over uncertainties). Different authors will make different choices when confronted with this dilemma, and careful readers will be interested in them. Diamond many times acknowledges uncertainties, especially with archeological evidence. But he nevertheless has chosen to rally readers as best he can even when it leads him into intellectual difficulties.

#### SUSTAINED SURVIVAL

Diamond's laudable concern for the avoidance of collapse, for sustained survival, raises the question of what that might mean. To Diamond it apparently means the maintenance of levels of population and social complexity in a given place. But there are other ways to see it. One, which is of particular interest to many anthropologists, is the maintenance of a culture. In this view survival consists of the maintenance of whatever the preferred markers of a culture may be, such as language or religion. Whether a million people share this culture or only a few thousand is less important, so long as the culture survives. Whether those sharing this culture live in cities, with complex social hierarchies, or in villages, is less important. Whether those sharing this culture live where their ancestors did, or have migrated elsewhere, is less important. What is important is that the culture survives. This is also often important to bearers of a given culture, especially if they are migrants, not just to anthropologists. The indefinite survival of Chinese culture means a lot to many Chinese, whether they live in China or in California. As chapters in this book emphasize, the same is true for some cultural (and biological) descendants of the ancient Maya and Anasazi today.

Another way to look at sustained survival is through a political lens. For some people what matters most is the survival of a specific polity, rather than a culture, or certain levels of population and complexity. This is especially true in times and places where people identify, via nationalism or some other mechanism, with their state. One thousand or 3,000 years ago almost no one aside from royalty cared about the survival of a given state. But royalty and their allies went to great lengths to try to perpetuate their own states, not least by doing all within their power to encourage ethnic, tribal, nationalist, or religious identification of the population with the state. More recently broader segments of societies have identified with their states and often have made great efforts, through voluntary military service, for example, to advance the interests of their states.

The boundary between cultural survival and political survival is, of course, often permeable. Sometimes it seems that the best way to perpetuate one's preferred culture is through the perpetuation of the state that most embodies it. Many Jews presumably feel

this way about Israel, Finns about Finland, and Vietnamese about Vietnam.

In the end, of course, no culture or polity lasts forever. Survival is provisional. None of the states in existence 1,500 years ago exist today. Only with the most flexible of definitions could one say that any of the cultures in existence 1,500 years ago exist today. But for most people, this does not matter. Political or cultural survival in the short term is often worth, for most people, considerable sacrifice, even if, when seen in the long run, it is all in vain.

A third way to look at sustained survival is through an ecological lens. Diamond does this himself, emphasizing environmental factors in his analyses of various collapses. But are there any enduring ecological success stories, any cases of sustainable survival that lasted longer than the Tokugawa regime or the Dominican Republic? The answer, I think, is that there are, but they are not many, and none of them are of much use as a direct example to help us resolve the problems of today.

The most enduring ecologically sustainable societies in human history have been those that did not practice agriculture. For the great majority of the human time on earth, our ancestors foraged for food and other materials they needed. They had local environmental impacts, often unhelpful from the point of view of ensuring their own survival. But because they were few in number and the earth large, they could always walk somewhere else and find more of what they needed. The key was mobility and sparse population. It was probably a demanding life in several respects, but it was ecologically sustainable.

With the emergence of agriculture, which happened several times in several places but for the first time probably around 11,000 years ago, sustainability became a potential problem. All farming is a struggle against the depletion of soil nutrients. Crops absorb nutrients; these are eaten by people or animals; then they spend shorter or longer periods of time in human or animal bodies, before returning to the soil. If these nutrients in one manner or another return to farmers' fields, then a nutrient cycle can last indefinitely. If they do not, then those fields gradually lose nutrients and over time produce less and less food – unless some intervention such as fertilizer counteracts nutrient loss. In most farming systems, some nutrients were

returned to farmers' fields as manure, "night soil," or ashes, but some was lost. In systems of shifting agriculture, where farmers raise a crop for a few years and then abandon plots for a decade or more, nutrient loss is checked. But in farming systems that supplied cities, many more nutrients were lost, because they were exported, as food, to distant places and never returned as night soil or manure. In places where soils were deep and rich, the nutrient problem might safely be ignored for centuries. But not forever.

In a few important situations, farming societies overcame this fundamental nutrient problem. Perhaps the most durable, the gold-medal winner for ecological sustainability, was Egypt. For 7,500 years people have been farming in Egypt. Until 1971 they did so in an ecologically sustainable manner. The source of Egypt's success and ecological continuity is not that elites chose to succeed in recognition of their broader interests. Rather, it is, or was, the silt carried by the Nile flood. Every year, except in the worst droughts, the Nile flooded and deposited on its banks and throughout its delta a nutrient-rich silt from the volcanic highlands of Ethiopia. In effect, Ethiopia's erosion subsidized Egyptian farmers, allowing them to sidestep problems of nutrient loss and sustainability. The annual flood also carried plenty of organic matter from the wetlands of southern Sudan (the Sudd), further enriching the silt that settled on Egyptian fields. This happy situation came to an end only when the Aswan High Dam was completed in 1971, and the Nile's silt began to accumulate in the dam's reservoir instead of spreading over farmers' fields. Nowadays Egypt is one of the world's greatest importers of artificial fertilizers – and of food – and is as far from ecological sustainability as a society can be.

Between the introduction of farming in Egypt and 1971 tremendous changes took place. One political regime followed another. The culture of the earliest Egyptians disappeared under layers of Pharaonic Egyptian, Greek, Roman, Byzantine, and Arab cultures, marbled with numerous other influences. Through it all, farmers won their daily bread from the banks of the Nile by combining seed and silt with the sweat of their brows.

Southern China and Medieval Europe also developed more or less sustainable agricultural systems as long as 1,000 to 1,500 years ago. In China it involved an interlocking system of paddy rice, fish ponds, and mulberry trees (for silkworm cultivation), which kept

nutrients cycling within an almost closed system. Medieval European agriculture, if not supporting cities, was also very nearly sustainable, as livestock browsed in woodlands and in "outfields" and brought their manure to "infields," thereby constantly topping up the nutrient supply. As one sixteenth-century Polish nobleman put it, "manure is worth more than a man with a doctorate."<sup>6</sup>

Like Egypt, these systems were ecologically successful over long periods of time, far longer than any of the successes offered by Diamond. States, rulers, and – in Europe if not in China – cultures came and went, but these farming systems endured. As in Egypt, their success did not result from wise leadership, but instead from centuries of trial and error and some favorable circumstances. This means that they cannot serve Diamond's hortatory purposes. He could scarcely offer them as hopeful examples for humankind today, even if they proved far more durable than, say, the ecological systems of the twentieth-century Dominican Republic or Tokugawa Japan.

Sustained survival can come in different forms, depending on what one most values. If it is ecological sustainability one prizes above other forms of continuity, then Egypt before 1971 deserves the highest marks. But it is well to remember Egypt was a unique case, the gift of the Nile.

#### THE CONTEMPORARY WORLD AND SURVIVAL

The environmental problems that bedevil the world today are, for better or for worse, vastly different from those that beset Tokugawa Japan or Easter Island. They are different in scale, as Diamond recognizes. They do not, for the most part, readily lend themselves to solution via wise decisions by enlightened leaders, because they are all complicated, and many of them derive in large measure from the energy system that has gradually come to prevail over the past 200 years: a fossil fuel energy system.

Fossil fuels function as an Ethiopian highlands for the modern world: they represent an enormous subsidy, not from a distant place, but from a distant time, the carboniferous era. They make it possible for 6.5 billion people to eat. Fossil fuels are the fertilizer of modern agriculture. They pump up groundwater and power tractors. They

serve as the feedstocks for pesticides and herbicides. They make nitrogenous fertilizers practical. And they power the vehicles that move crops to kitchens. They sustain us.

But they also make us unsustainable. First and most obviously, they exist in limited supply. Predictions of the imminent exhaustion of coal and oil go back at least to the 1860s and have always proved wrong so far. But they are not fundamentally wrong. A time will come when all that is left is too difficult to extract at reasonable cost. For oil this might be ten years off or 100. For coal it will be longer. But it will come – unless we abandon fossil fuels first. Second, fossil fuels make our global society unsustainable because of climate change. Roughly three-quarters of the carbon dioxide emitted into the atmosphere derives from the combustion of fossil fuels (most of the rest comes from the burning of biomass and destruction of forests). This has been warming the earth's atmosphere for at least the last few decades, and probably the last 150 years. If we were to use fossil fuels for the next 200 years as we have used them for the last 200, we are likely to raise temperature and sea level (through thermal expansion) to levels not experienced on earth at any time in the human career, indeed, not in many millions of years.

Our ways are radically unsustainable. Diamond is right to be concerned by that. He is right to prefer hope to despair, and admirable in that he has used his fame to draw attention to issues of sustainability. But he is, as often as not, wrong in his judgments about successes and failures among societies of the past.

#### Notes

\* I was born and raised in Chicago and remain passionately devoted to the professional sports teams of the Windy City. I earned, or at any rate was awarded, a B.A. from Swarthmore College and a Ph.D. from Duke University. Since 1985 I have cheerfully served two masters, as a faculty member of the School of Foreign Service and History Department at Georgetown University. From 2003 until 2006 I held the Cinco Hermanos Chair in Environmental and International Affairs, until my appointment as University Professor.

I teach world history, environmental history, and international history at Georgetown and write books and direct Ph.D. students, mainly in environmental history. I live an agreeably harried existence with my triathlete wife and our four exuberant children.

My environmental history books include *The Mountains of the Mediterranean World* (1992); *Something New under the Sun: An Environmental History of the 20th-Century World* (2000); and *Epidemics and Geopolitics in the Greater Caribbean, 1600–1920* (2009).

I conduct research mainly in archives and libraries, as is true of most historians, although for the Mediterranean book I visited dozens of mountain villages. Unlike most historians, I have no real geographic specialization, and prefer – like Jared Diamond – to hunt for large patterns in the human past.

1. Diamond 2005: 3.
2. On p. 509, however, Diamond does use the word “collapse” in reference to the end of the Soviet Union.
3. Diamond 2005: 416.
4. Walker 2001.
5. Netherlands data are taken from the Netherlands Committee for the IUCN (World Conservation Union): <http://www.nciucn.nl>.
6. Gostomski 1588.

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