

# FROM REGIONS TO THE WORLD: GLOBAL CRISES FROM THE THIRD CENTURY TO TODAY

BY STEPHEN DAVIES\*

*Abstract: Crises, defined as a period of acute stress on social systems of all kinds, are a recurrent feature of history. As such, they are best approached and understood from a comparative historical perspective. We can distinguish between those caused or precipitated by an exogenous shock and those that derive from an endogenous process that culminates in the crisis. Crises can be of short or long duration and range from local to global. The most severe are ones that lead to a civilizational collapse or radical simplification process. Historically, severe crises have been localized to specific parts of the planet, even when several occur simultaneously because of global natural phenomena, but in the modern world we have truly global crises. Evidence suggests that such a global crisis is imminent or has already commenced. This raises practical and normative pressing issues.*

KEY WORDS: crisis, collapse, Joseph Tainter, catastrophic risk, complex systems

## I. INTRODUCTION

It is frequently observed that the world is in crisis today. This is not hyperbole and is truer than is often realized. In today's world, a truly global crisis is possible, so we should seriously consider the possibility that we are in or entering one.

The idea of a crisis, which originated in the field of medicine, is widely employed in history, sociology, and political theory. As such, it refers to a period or episode of intense pressure on the set of interconnected systems that make up a political community or society. Sometimes, a condition of crisis can affect not just one political community, but the entire congerie of interconnected societies that we call a civilization. This is rarer but more consequential. A crisis can have several outcomes. It may be resolved or dealt with successfully, in which case it can be seen as an emergency or challenge to the systems that manage to respond to it. Sometimes, the outcome is change or transformation of the systems in order to deal with the crisis, in which case it is a turning point, marking a transition from one historical era or social and economic order to another. Least common but most dramatic are those cases where the crisis is neither resolved nor the occasion for transformative change, but rather, leads to a general systemic collapse, in which the entire set of systems and human relations that constitute a society or even a civilization decompose. This is a process of radical

\* Head of Education, Institute of Economic Affairs, London, [sdavies@iea.org.uk](mailto:sdavies@iea.org.uk). Competing Interests: The author declares none.

simplification, which marks an end to the society or civilization in question; it does not continue even in a transformed guise or the changes are so dramatic that there is little continuity.

This essay does not seek to explore the concept in any depth or to attempt a typology of crises. Rather, it makes a historical argument about crises that leads to a view of our current situation. The essential argument is that episodes or periods of crisis are a frequent and recurring feature of history and that in the modern world this has taken a novel form, which makes it much more threatening and potentially consequential. In studying history, we can sometimes observe crises that were civilizational in scope rather than affecting only one of a civilization's constituent polities or communities. However, none of these was global, for a simple reason. Until relatively recently, the degree of interconnectedness and integration between different parts of the world was limited so there was no global civilization. Instead, there were several contemporaneous civilizations in different parts of the planet, with trade and interaction between them but not to a level that would bring the kind of integration that would combine their systems into a single one. Consequently, one civilization might pass through a crisis while the others remain unaffected. On a few rare occasions, we find near-simultaneous crises in several of the world's civilizations, with a common cause (typically, a natural phenomenon). There is, however, no one crisis of a singular system, but rather, a set of independent ones that occur at roughly the same time.

The modern world, however, has become so united, integrated, and interconnected over the past two-and-a-half centuries that we can speak of a single global civilization or system of systems. That, in turn, means that episodes of crisis are increasingly singular and uniform in nature and we can reasonably speak of a global crisis or the threat of one. The nature of the modern world means that such a true global crisis is less likely to happen than the kind of civilizational crisis the world has seen before. However, it also means that while a general crisis is less probable, should one happen, it would be much more severe in its effects. Moreover, should our world civilization experience one of the major crises that results in systemic collapse and simplification, then recovery or rebirth is unlikely. The obvious question that follows is whether such a global civilizational crisis is possible or even imminent. The alarming conclusion is that, absent certain key innovations, it is.

## II. DEFINITIONS OF CRISIS

The word 'crisis' is originally a Greek one and comes from the field of medicine. There, the crisis was the climactic point of a fever after which the patient either died or recovered. Subsequently, writers drew the analogy between an individual suffering from fever and a society as a whole, so that crisis came to have a much wider referent. A crisis at a society-wide level is

understood here as an episode or process that sees the breakdown or threatened and near-breakdown of a system and its institutions, whether social, economic, or political. It thus affects all of the individuals and smaller groups such as families and local communities that are connected to each other through the network of relationships and exchanges that form the larger system. We can speak of a crisis of just one kind of system (economic or political, for instance), but usually the term refers to the combination of all of these systems at the level of a distinct human society or the wider level of an entire civilization. A crisis may be short or more prolonged; the duration, unlike the severity, is not an essential part of the definition of the term.

A crisis is also distinct from an emergency. An emergency is a sudden event that puts institutions and systems under stress. However, the concept of an emergency does not entail the idea of the possible or actual breakdown of the systems; it is an extreme case of the kinds of event that the systems are supposed to deal with. An emergency may trigger or lead to a crisis, if the institutions prove to be unable to deal with it, but it is not the crisis itself.

This, in turn, is related to another point. Some crises, episodes of threatened or actual systemic breakdown, are caused by an unexpected and unforeseen event, a “bolt from the blue,” we might say. Sometimes, the event in question is not only unforeseen but unforeseeable, because it was not predictable from previous experience. These are the “Black Swans” as discussed by Nassim Nicholas Taleb.<sup>1</sup> Sometimes, it is an event that takes people by surprise but could have been foreseen. In other cases, the crisis is a slowly gestating process of gradually intensifying pressure on systems and consequent increasing dysfunction that suddenly reaches a critical level; this is closest to the original, medical use of the term. The two different causes are often difficult to distinguish because frequently it is a sudden event or emergency that brings the slowly maturing process to a climax. Retrospectively, we then look back at the period before that event and see an inevitability to the unfolding of the crisis—had one event not caused it, something else would have. There are cases, though, where there was no such process underway and the crisis, the near or actual breakdown, would not have happened but for the emergency. There is no end to debates among historians as to which model best fits a particular crisis.

The final point in categorizing crises is their outcome. In some cases, the threatened dissolution or collapse of institutions and systems is averted and the threat is overcome. In others, the threat is ultimately overcome, but in order for this to happen there are radical changes in the systems and institutions, so that the society or civilization is transformed in significant ways. In the third case, there is no effective response or change and the social, economic, and political order breaks down. Human life continues but there is a radical break in continuity. In terms of the medical analogy, the

<sup>1</sup> Nassim Nicholas Taleb, *Antifragile: Things That Gain from Disorder* (London: Penguin, 2012).

crisis leads to either full recovery and convalescence, recovery but with permanent effects, or death.

### III. CRISES IN HISTORY: SUDDEN EVENTS AND LONG PROCESSES

The classic example of a system-ending crisis that was directly caused by an exogenous “bolt from the blue” was the crisis of all indigenous American societies following the arrival of Christopher Columbus and later the conquistadors in the Americas. This was a completely exogenous and unexpected event—for both the unfortunate native Americans and Columbus—but the invasion and the epidemic diseases brought by the Europeans caused a series of terminal crises for societies across the entire continent. In Northern America the major civilization of the Mississippian cultures faced a crisis that ultimately destroyed them, long before Europeans got there, for smallpox and measles preceded them.

Another example of this was the crisis brought about by a massive volcanic eruption in 536 A.D., which was followed soon after by two more eruptions in the next decade. This threw large amounts of dust into the atmosphere and blocked a significant amount of the sun’s rays, leading to a period of almost two years in which, by contemporary accounts, the sun was “pale and without power.” This caused the global temperature to drop by up to 2.7 degrees Celsius in the immediate aftermath and started the Late Antique Little Ice Age, a period of pronounced global cooling that lasted until around 660 A.D. The eruptions were followed some years later by the Plague of Justinian in 541 A.D., which carried off by most estimates around 30–40 percent of the population of the eastern Mediterranean and Middle East regions.<sup>2</sup> This outbreak may well have been triggered by climate change in East Africa that was, in turn, caused by the volcanic eruptions. Both of these were massive shocks that impacted what was still a relatively stable society in those parts of the world. The result was a crisis in both of the major civilizations still extant at that time in that part of the world: the East Roman Empire and the Sassanian Empire.<sup>3</sup> This took the form of a simultaneous economic crisis brought about by disruption to the agricultural economy, a military crisis caused by the sudden resumption of mass migrations, and a structural breakdown of the administrative and political order of both empires. Over the next century this led to the complete collapse of the Sassanians and the near demise of the Byzantine Empire, with both replaced by the Arabs who had surged out of the Arabian Peninsula, so this was also a crisis of long duration.

<sup>2</sup> William Rosen, *Justinian’s Flea: Plague, Empire, and the Birth of Europe* (London: Jonathan Cape, 2007).

<sup>3</sup> Joel Gunn, ed., *The Years without Summer: Tracing A.D. 536 and Its Aftermath* (Oxford: Archaeopress, 2000); David Keys, *Catastrophe: An Investigation into the Origins of the Modern World* (New York: Ballantine Pub, 2000).

In contrast, an example of a crisis that might seem to have a cause of the same kind, but it was in fact a case of a slowly maturing process, was the crisis of the political, social, and economic systems of the Roman Republic during the first century B.C., which led to its transformation into the Roman Empire. Here, the personal qualities and ambitions of people such as Julius Caesar only had the impact they did because of the gradual degeneration of the Republic's political institutions and the progressive decay of its social basis, something we can trace back to at least the time of the Gracchi. Had Julius Caesar not played the part he did, some other ambitious general would have.

Another example was the crisis that built up in Europe during the final years of the thirteenth century and the first two to three decades of the fourteenth century. During these years, there was increasing evidence of land hunger and pressure upon natural resources, such as ever more marginal land being put under the plough. Simultaneously, food shortages, which had been rare during the previous two centuries became steadily more widespread. This reflected the way that European populations, which had grown steadily during that period, were now pushing up against natural, technological, and economic limits, including the fertility and extent of the land and the productivity of the existing ways of carrying on agriculture. The main indicator for this was declining yields for grain, which was the key food product.<sup>4</sup> This all found expression in a slowly intensifying social crisis, with the peasantry coming under steadily rising pressure from the landowning class, as shown by the steady increase in feudal obligations and charges. This was matched by increasingly acute social competition among the elite classes of aristocracy and clergy. This process reached a tipping point in 1315 to 1317, with the Great European Famine.<sup>5</sup> The trigger for this was an unusually wet and cold summer and autumn, but the weather conditions that year, while bad, were not as extraordinary as the ones following the eruption of 536.

The results, though, were dramatic. In the space of three years Europe experienced the worst famine for over two centuries. This was only the start of a series of subsistence crises that both caused and intensified crises in all the social systems of Medieval Europe. The reason why the cooling of the planet that began in the early fourteenth century appeared to have such dramatic results was because European society at that time was already facing pressures that had mounted over the previous sixty years or so. Essentially, there was no slack or margin left in any of the systems, so relatively minor events were enough to trigger the actual crisis. They were not, in this case, the cause but the triggering event, the things that pushed a developing crisis into its full intensity. At that point, though, there was

<sup>4</sup> Teofilo F. Ruiz, *Medieval Europe: Crisis and Renewal* (Chantilly, VA: The Teaching Company, 1996).

<sup>5</sup> William C. Jordan, *The Great Famine* (Princeton, NJ: Princeton University Press, 1996).

another massive exogenous shock that confounded and added to the crisis. This was the Black Death, which arrived in Europe in 1347 and proceeded to kill about 40 percent of the population in the next four years. The period between 1316 and roughly the 1450s was one of sustained crisis in all of the organizing systems of European society across the entire subcontinent. All of them saw significant transformation during what one historian famously called “the waning of the Middle Ages.”<sup>6</sup>

#### IV. CRISIS AND COLLAPSE

The aftermath of the 536 eruption and the turmoil of European society in the fourteenth century were dramatic but not the most extreme kind of systemic crisis. That title is reserved for those cases where an entire civilization collapses as the result of a crisis.<sup>7</sup> The term “collapse” can be misleading, because of the connotations it has in English where it is commonly understood to refer to a sudden and short-lived event—more like an apocalypse. The kinds of crises we are speaking of here—that is, terminal for the civilizations that experienced them—were prolonged affairs that lasted typically for at least seventy years and often as long as two centuries. “Decomposition” is a better term. In that kind of timespan, we can observe a crisis—in the sense of severe stress on all of the major systems—that is not dealt with and that does not lead to a transformation of the systems while the civilization itself survives, which is what happened, for example, in late Medieval Europe. Instead, the crisis steadily degrades the systems, which progressively collapse in a catabolic process that can have a range of stopping points dependent on particular circumstances.<sup>8</sup>

The contemporary idea of a societal or civilization collapse was formulated in a 1988 breakthrough work by Joseph Tainter.<sup>9</sup> His book *The Collapse of Complex Societies* looks at several instances of civilizational collapse and from them derives a general theory or analysis. This has since become a widely accepted model in archaeology in particular and in social history and systems theory more widely.<sup>10</sup> Tainter argues that the phenomena of crisis and collapse are connected by the common element of diminishing returns to social complexity. As the division of labor and extent of trade

<sup>6</sup> Johan Huizinga, *Autumn of the Middle Ages*, trans. Diane Webb (1919; repr., Leiden: Leiden University Press, 2020).

<sup>7</sup> Pablo Servigne and Raphaël Stevens, *How Everything Can Collapse* (Medford, MA, Polity Press, 2020).

<sup>8</sup> John Michael Greer, *The Long Descent: A User's Guide to the End of the Industrial Age* (British Columbia: New Society Publishers, 2008).

<sup>9</sup> Joseph Tainter, *The Collapse of Complex Societies* (Cambridge, UK: Cambridge University Press, 1988).

<sup>10</sup> Norman Yoffee and George L. Cowgill, eds., *The Collapse of Ancient States and Civilizations* (Tucson, AZ: University of Arizona Press, 1988); Ugo Bardi, Sara Falsini, and Ilaria Perissi, “Toward a General Theory of Societal Collapse: A Biophysical Examination of Tainter's Model of the Diminishing Returns of Complexity” (Physics and Society Archive, Cornell University, 2018), <https://arxiv.org/ftp/arxiv/papers/1810/1810.07056.pdf>.

increase and wealth consequently grows, so the social systems of all kinds become more complex. The element Tainter focuses on is the development of ever more elaborate institutions, such as bureaucracy and government, but also their private counterparts, such as corporate organization and management, to deal with challenges or problems or to take advantage of opportunities. Initially, the benefit that derives from this is greater than the costs, but this process of increased complexity is subject to diminishing marginal returns and eventually the return becomes negative. At this point, after a period of increasing difficulty, the crisis arrives. The response in many cases is a simplification of society with a loss of much of the systemic complexity that had developed previously. In other words, the crisis sees the breakdown of the various, by now excessively complex, systems.

Subsequently, Tainter added other elements to his underlying argument, in particular an emphasis on “energy subsidy,” or making more efficient use of energy, as being what makes the earlier investment in complexity productive. Conversely, it is declining returns to energy use and production (a decline in the Energy Return On Energy Invested, or EROEI ratio) that is a key part of the declining return.<sup>11</sup> The point is that the slowly building crisis of several social systems simultaneously is the sign of deeper problems of excessive complexity and is not caused by exogenous shocks, even if these prove to be what pushes it over the edge or exacerbate it.

Tainter argues that by the time the crisis gets under way, many of the people affected by it welcome the simplification process—even though it means a decline in wealth by most measures—and in some ways people are better off for it.<sup>12</sup> If a complex society is in close proximity to other ones of nearly equal complexity that are not as badly affected, then the option of radical simplification may not be there because they will intervene to prevent that process from reaching its maximal conclusion; they will typically invade the collapsing society and keep it going, albeit at a lower level of complexity than before. He also points out that the crisis can be headed off in various ways. The commonest is by getting access to resources that increase the energy subsidy. This can be either the windfall benefits of access to new resources such as new land or it can be the result of innovations. Less often it is headed off by reforms, specifically preemptive simplification that reduces the systemic stress before it reaches a critical level. These are vitally important points, which we shall return to below.

The most widely studied cases of civilizational systemic crisis and collapse are the breakdown of the Classic Mayan civilization and the collapse of the civilizations of the Late Bronze Age in the Eastern Mediterranean and Middle East. The first of these happened at the end of the Classical period of Mayan civilization, in the eighth and ninth centuries A.D. It was preceded by

<sup>11</sup> Joseph Tainter, “Problem Solving: Complexity, History, Sustainability,” *Population and Environment* 22, no. 1 (2000): 3–41.

<sup>12</sup> Tainter, *Collapse*.

a slowly developing crisis of economics (increased pressure upon natural resources, especially land), social and political order (growing tensions between different social classes and monarchs, possibly a problem of elite overproduction), and inter-polity order (increasingly destructive warfare between the various city-states that were the component units of the civilization). The crisis seems to have emerged in the early eighth century; by the time it ended, advanced urban civilization had ended. A less complex successor developed to the North in Yucatan, but the extensive and elaborate civilization of the Classical Mayan period never revived.

The collapse of the Late Bronze age was marked by political chaos and disorder in lands all around the East Mediterranean, associated with large-scale migrations and invasions by the mysterious Sea Peoples. At the same time, the complex system of trade relations that had tied all of these lands and states together unraveled. The process apparently began abruptly and has been given a definite starting date: 1177 B.C.<sup>13</sup> However, most archaeologists believe that the societies in question had been under increasing pressure before the collapse and that the specific events often pointed to as causes were either consequences rather than causes (such as migrations, invasions, and economic disruption) or exacerbating factors that helped to bring on the crisis of 1177 and subsequent years but were not enough to fully cause it (for example, the eruption of Santorini). In the Mayan case, the evidence suggests that there was a clear shift to drier weather with more frequent drought over the period of the collapse, but it is not clear whether this was the single cause or an intensifying and precipitating one.<sup>14</sup>

## V. LOCAL AND MULTIPLE CRISES

A critical point is that these crises and consequent collapses were geographically limited. They affected a single, albeit large, political system or civilization or they affected a distinct and identifiable part of the planet's surface, even if it was very extensive. In that case, as in the Late Bronze Age, for example, what you have is an area sufficiently united by a single trade and economic system and sharing a broadly similar ecology and natural environment that it can be considered a single entity. Another way of putting this is that the area and societies subject to the crisis can be clearly distinguished and marked off from others according to a clear criterion, with the others often not suffering from the same kind of crisis. So, while we can talk of crises that are large-scale and even civilizational in extent, we are not speaking of a single phenomenon that affects the entire planet or all of the settled parts of it.

<sup>13</sup> Eric Cline, *1177 B.C.: The Year Civilization Collapsed*, rev. ed. (Princeton, NJ: Princeton University Press, 2021).

<sup>14</sup> Peter M. J. Douglas et al., "Impacts of Climate Change on the Collapse of Lowland Maya Civilization," *Annual Review of Earth and Planetary Sciences* 44 (2016): 613–45.



However, there is a major objection to this. While some of these events are clearly singular in this way (the Mayan Collapse, for example), that is arguably not true for other cases. Skeptical historians can point to several instances where crises occurred at roughly the same time or even exactly the same time, all over the world or at least in every part that had a reasonably complex civilization. Surely, they claim, if you have a crisis in every part of the world, often underpinned or ultimately caused by a single global phenomenon, then we should speak of a global crisis. This has generated a whole sub-literature concerned with one such episode, the world-spanning “General Crisis” of the seventeenth century, but there are several other candidates (we return below to the idea of a seventeenth-century General Crisis),<sup>15</sup> including the major states across the Eurasian landmass, in the major civilizations of the time.

In the Roman world there was the so-called imperial anarchy of 235 to 284 A.D. This period saw incessant internal warfare, the collapse of the complex internal trade and financial system that had been built up in the first and second centuries, along with serious inflation and debasement of the currency, and major incursions from both Persia and Germany. There was also a devastating epidemic—the Plague of Cyprian in 249–262 A.D.—which carried off a large part of the population of the Eastern provinces. In the Middle East the major rival of Rome, the Parthian Empire, collapsed in 224 A.D. following a series of internal rebellions and economic troubles and was replaced by the neo-Persian dynasty of the Sassanians. China saw as dramatic a series of events as did the Roman Empire, with growing problems of rebellion, popular discontent, economic disorder, and nomad incursions between 189 and 220 A.D., culminating in the final collapse of the Han dynasty and the Chinese state. This was followed by China’s equivalent of the imperial anarchy, the Era of the Three Kingdoms between 220 and 280 A.D. Finally, the last of the major empire/civilizations of antique Eurasia, the Kushan Empire that ruled large parts of India and Central Asia, fell apart at the same time.

In all of these there had been a steady increase in stresses and associated problems in the period before the onset of the actual crisis. The Roman Empire, for example, had faced both a devastating epidemic (the Antonine Plague) and other problems during the reign of Marcus Aurelius and had already suffered a year of acute political crisis in the year of six emperors in 193 A.D. Similarly, Han China had been contending with increasing popular unrest and economic problems for some time before 189 A.D. and also suffered from the same epidemics that caused the Antonine Plague and the Plague of Cyprian, although at a remove of some years due to the slowness of transmission.

<sup>15</sup> Geoffrey Parker, *Europe in Crisis* (London: Fontana, 1979); Geoffrey Parker and Lesley M. Smith, eds., *The General Crisis of the Seventeenth Century* (London: Routledge, 1997).

Another example occurred during the fourteenth century. The Black Death started in China in 1323 and struck that part of the world twice in two outbreaks over the course of the century. At the same time, China suffered from many of the same problems of agricultural economy that Europe had and also suffered (while Europe did not) from a serious case of hyperinflation. Eventually, the Mongol dynasty (the Yuan) that had ruled all of China since 1276 collapsed and the result was a period of civil war and disorder before the emergence of the Ming dynasty in 1368. In Japan the century saw the breakdown of the Minamoto shogunate and its replacement by the much weaker and less centralized Ashikaga one. There was also a complex breakdown of the older social, political, and military orders that eventually transformed Japanese society and led to its effective disintegration into a series of small lordships, so ushering in the Sengoku period that would last until the unification wars of the Momoyama period in the sixteenth century. The Middle East, meanwhile, was having one of the most unhappy periods of its history. As in the third century, there was crisis and associated transformation and collapse across the whole of civilized Eurasia but to an even greater geographical extent.

The seventeenth century has attracted much attention, due to the General Crisis thesis in historiography, ably supported and advocated by some scholars, most notably Geoffrey Parker. Here, there were simultaneous social, economic, and political crises in most parts of the world but particularly in Europe and China.<sup>16</sup> The undoubted climax in Europe was the decade of the 1640s, which saw revolutions or near revolutions in most major European states, along with political crises short of full-blown revolution in several others, and a spate of often massive popular uprisings. The year 1648 can compete with 1848 for the title of “year of revolutions.”<sup>17</sup> For Parker, the crises were united by their having a common cause, namely, the deterioration in the planet’s weather due to the climax of the “Little Ice Age.” This had similar effects on all of the major Old World polities because of their fundamental similarity in being primarily agricultural, which made them highly vulnerable to harmful climactic shifts. Two other factors are alluded to as uniting the various crises of that century. The first was the problem of the transformation of governance by the military revolution brought about by gunpowder and the defensive response to it, which led to a rise in government spending and taxation, and corresponding pressure on all of the tax-paying classes.<sup>18</sup> The second was the way the world had become connected by global trade routes since the middle of the sixteenth century, which had the effect of transmitting economic disruption from one part of the world to another.

<sup>16</sup> Geoffrey Parker, *Global Crisis: War, Climate Change, and Catastrophe in the Seventeenth Century* (New Haven, CT: Yale University Press, 2014).

<sup>17</sup> Parker, *Europe in Crisis*.

<sup>18</sup> Parker and Smith, eds., *General Crisis*.

Historians such as Parker thus argue that we have had crises in the past that were truly and meaningfully global. The argument is that they were global in extent—at least in terms of the parts of the world that had a complex civilization—and were related to each other by an underlying common factor that was planet-wide in extent. This was the climate, with true pandemics coming a close second. The list of candidates begins with the third century, but includes the fifth and sixth centuries, the fourteenth century, and the seventeenth. These points are clearly correct, because there were simultaneous crises all over the world in each of these times and there were global phenomena (such as Little Ice Ages and plague pandemics) that played an important part in all of them.

This, however, is not enough by itself to enable us to speak of a global crisis in any of these times, not even the seventeenth century, which came closest to that. We are dealing here with simultaneity rather than a single event. Several similar yet distinct and free-standing crises were taking place in what were still in a fundamental way separate civilizations, and therefore separate systems. It is correct that this is not a simple matter of coincidence. It was not simple coincidence that led to acute political crisis at the same time in Parthia, the Kushan Empire, the Roman Empire, and Han China. Something affected all of these empires and civilizations at the same time and led to crisis in each one. These were natural phenomena, specifically, climate change and devastating pandemics. There were global natural phenomena that either triggered or caused all of these crises, but the common cause does not make them a single entity. What is lacking is a degree of integration and mutual interconnectivity and thereby reinforcement that would make any of these part of a singular global crisis.

## VI. GLOBAL SYSTEMS AND CRISES

Given that crisis is a state of acute pressure upon systems, it follows almost by definition that for there to be a global crisis there has to be a global system. That means that the world has to be, to some degree, beyond a minimal level, a single and integrated economic unit or system. Communication and travel between different parts of the world has to be sufficiently accessible and low cost, so that one can realistically speak of a global information and cultural system and also a global social order grounded in movement of people around the planet creating and sustaining personal links and connections. Although we have not yet had one coherent global political order such as a world state or world empire, a global world system would have a recognized and increasingly institutionalized system of rules and institutions that govern relations between the different components—anything from city-states to territorial states to empires—of which a global political order is composed.

The idea of a world system has a long pedigree and can be traced back in theoretical form to eighteenth-century thinkers such as Immanuel Kant or

even beyond them to conceptions of empire as a form of theoretically global governance that we can find in different forms in China, Christendom, and the Islamic world. In contemporary academic terms, it is associated with a number of thinkers, but especially Immanuel Wallerstein as well as Andre Gunder Frank and Samir Amin.<sup>19</sup> For Wallerstein and the others, the notion of a world system and the associated world systems theory is part of a critical account of the post-1945 capitalist order and the place of the United States within it, with a strongly Marxist aspect, though Frank later moved beyond that. The critical or polemical part of this theory is not, however, a core or foundational element of it, but rather, what happens when the essential model or theory is combined with a critical view, derived from Karl Marx, of the economic relations currently dominant within the postulated world system. We can take the pure theoretical account, given by Wallerstein in particular, of what a world system is without taking on board the critical account of relations within the system (which is also the weakest part of the model, as friendly critics have noted).<sup>20</sup>

For Wallerstein, the development of the division of labor and trade and the increasing complexity of social relations that these produce leads to the appearance of what he calls "world economies." These are parts of the world that are sufficiently economically integrated through trade and flows of capital and labor that we can think of them as being a single division of labor. The integration can be identified and measured using the kinds of tools used by contemporary economists to evaluate the degree of integration between two different parts of the world. World economies start by being localized and small compared to the planet as a whole, with the term "world" here meaning what is self-contained with little or no contact with the rest of the planet so that they are effectively the economic and social "world" for those involved. The nature of development over time, subject to the limitations of natural shocks, is for these to become more extensive. The expansion is historically both driven and limited by natural phenomena of geography and climate, such as the wind patterns of the Indian Ocean or the nature of the Mediterranean as a large and self-contained area where geographically distant parts of its littoral have easier and more effective communication with each other than with their hinterlands. "World economies," in Wallerstein's account, historically come to occupy the whole of such geographically defined "natural spaces." The key point for him is that while initially part of one economic system and increasingly one social and cultural system, there is no political system; the "world economy" is

<sup>19</sup> Immanuel Wallerstein, *World-Systems Analysis: An Introduction* (Raleigh, NC: Duke University Press, 2004). See also, Andre Gunder Frank, *Dependent Accumulation and Underdevelopment* (London: Macmillan, 1978); Samir Amin, *Accumulation on a World Scale: Critique of the Theory of Underdevelopment* (New York: Monthly Review Press, 1974).

<sup>20</sup> Theda Skocpol, "Review of Wallerstein's Capitalist World System: A Theoretical and Historical Critique," *American Journal of Sociology* 82, no. 5 (1977): 1075–90.

divided between many separate political jurisdictions or systems of power and rule.<sup>21</sup>

Eventually, though, a political system arises coterminous with the economic one. For Wallerstein, this is a “world empire,” a condition in which one state absorbs others until it has become the only political entity within a “world economy.” In this way, the political, economic, social, and cultural systems become coterminous and we can speak of one world system. Examples of this would be the Roman Empire, uniting all of the lands around the Mediterranean, or China from 221 B.C. onward. His argument is that in the modern world (for him, the sixteenth century onward) we have one world system for both politics and economics that is not a world empire, but a formalized system of relations between competing and nominally independent territorial states, with one of these being hegemonic. He argues that this is unusual or even unique, but when we look at the historical record, we can see many examples of this kind of system in places as far removed as the Bronze Age Middle East and Southeast Asia for most of its history. Some places, such as South Asia, alternate for much of history between empire and multistate forms of system that coincide with that “world economy.” A common phenomenon is to have one “world economy” (and an integrated economic system) divided between just two or three empires: the Roman and Sassanian Empires would be examples of this.

The point is that historical evolution tends to produce single systems—in the realms of economic activity and exchange, cultural life in all its forms, human relations of all kinds, and political life—that cover a large part of the planet. The process that produces this has two aspects, both of which can be measured by econometricians, whether their subject is the contemporary world or that of the past. One, which we may call “widening,” is the growth in geographical extent of things such as trade exchanges and relationships, capital flows, movements of people, movements of ideas and intellectual conversations (including religious ones), political relationships between states, and even things such as fashions and cuisines. The extent of these at any time depends on many things, including natural geography and climate, technology, and human action (notably, things such as conquest, exploration, and missionary activity by proselytizing religions).

The second, which we can call “deepening,” is an increase in the proportion of total activity in each of these areas of activity, especially the economic, that is integrated on a scale that corresponds to the geographical extent produced by the “widening” process. In the case of trade and production, for example, we may start with a situation where the entirety of a certain part of the world is one integrated trade system (for example, the Mediterranean), but the great majority of production is done and consumed

<sup>21</sup> Immanuel Wallerstein, *The Modern World-System I: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century* (New York: Academic Press, 1997).

locally with no reference to the wider trade system confined to certain specific sectors or products. Eventually, people responding to the incentives of comparative advantage will integrate an ever-larger part of production and consumption over the full extent of the trade system, so we could, for example, move from a situation where only 5 percent of production and consumption involved goods that were produced and distributed via a large and nonlocal trade system to one where 60 percent of activity was integrated in this way. This is the “deepening” aspect. An example of this is the way that between the first century B.C. and the third century A.D., the lands around the Mediterranean became ever more integrated, to the point where by the early third century the majority of goods consumed in the Roman Empire, including staples such as pottery and olive oil, were not produced and distributed by local systems but by a single integrated one that was coterminous with the Empire.<sup>22</sup>

What we can observe in the modern world is a movement from having several distinct “world economies” in different regions of the world to having a single one. This process was empirically studied by Angus Maddison and can be explored using the large accumulations of data in his various works.<sup>23</sup> This is a true world system inasmuch as it encompasses all of the planet. Once you have this, then you can have a global crisis because you can have a crisis of systems of all kinds that are truly global in extent and penetration, so that instead of simultaneous but separate crises in different parts of the world, you have one global crisis. An important implication is that in such a situation no part of the world will escape the impact of the crisis. Even more important, it will not be possible for any one part to resolve the crisis or deal with it on its own. This is a problem for many observers because, as in Wallerstein’s model, while there is a single world economy or world system, there is no counterpart in the political sphere. That means there is no actor that can take effective action (they think) at the level at which the crisis is happening.

With this in mind, how might we judge the historical episodes mentioned above? They were crises of a localized world system, produced in most cases by the increasing structural problems of excessive complexity and resource constraint that Tainter describes. The big question is whether, given the integration we see in the modern world, we have recently had both a true world system and truly global crises. Alternatively, when did the world become a single system to such a degree that a truly global crisis became possible or happened? We can be confident that we have such a system today, as a whole number of metrics tell us that we have integrating systems that are truly global in both extent and depth, despite resistance and attempts at present to back off from this. We have a global monetary system;

<sup>22</sup> Bryan Ward-Perkins, *The Fall of Rome and the End of Civilization* (Oxford: Oxford University Press, 2006).

<sup>23</sup> Angus Maddison, *The World Economy: Volume I: A Millennial Perspective and Volume II: Historical Statistics* (Geneva: OECD Publications, 2010).

a global trade system and globally integrated system of production and distribution (as its disruption by the COVID-19 pandemic revealed); an increasingly global intellectual and cultural system; and even a global social order brought about by things such as mass travel, tourism, and migration. We also have a global rules-based order, created post-1944, even if it is now under severe strain. The world today is thus definitely one global system and, as such, could suffer a global crisis. How far back, though, does this apply? When did this modern world system come into being? For Wallerstein, it was the sixteenth century; others would go back even further, but does that chronology bear examination?

Almost certainly not. Some scholars argue that the Mongol conquests of the thirteenth century created a single trade and economic system that covered a large enough part of the planet's surface to be a true world system, in terms of the share of the world's population that it encompassed.<sup>24</sup> The size of the Mongol Empire meant that there was close to being a coterminous political order as well. However, by the criteria given, this was not a true world system. The main point is that the level of economic integration was not as large as the level of political; this was an example of the rare phenomenon of political integration outrunning and preceding economic and social integration. The Mongols ruled over several still distinct "world economies," even if their power encouraged trade relations between them; this is one reason why their vast empire fractured into several still large but independent successor states. The best understanding of the economic systems of Eurasia at that time is given in Janet Abu-Lughod's *Before European Hegemony*, which identifies a succession of separate but overlapping trade circuits, each of which corresponds to a "world economy" in Wallerstein's use of that term.<sup>25</sup> We could add several to her list in areas she did not cover but the essential analytical point she makes stands.

The sixteenth and seventeenth centuries provide a stronger case for this. The European "voyages of discovery" led to the creation for the first time of truly global maritime trade routes, with the global circuit being completed by the establishment of the Manila galleons route in the middle of the sixteenth century. The conquest of the New World by the Spanish and Portuguese conquistadors integrated the Americas into world trade for the first time and led to the development of a number of truly global markets in a number of commodities, such as sugar, furs, and, grimly, slaves. Most significantly, the sudden surge of silver from the lodes at Zacatecas and Potosi created for the first time ever something like a global monetary system based on silver and a single unit of account (the maravedi).<sup>26</sup>

However, although this was the point at which a truly global system became possible, the evidence suggests that that potential had not been

<sup>24</sup> Janet Abu-Lughod, *Before European Hegemony: The World System A.D. 1250–1350* (Oxford: Oxford University Press, 1991).

<sup>25</sup> Abu-Lughod, *Before European Hegemony*.

<sup>26</sup> Wallerstein, *Modern World-System*.

realized even as late as the later seventeenth century. Although global trade routes were established, the bulk of trade and exchange was still located in the old established trade systems of the Indian Ocean and the Silk Roads.<sup>27</sup> Most importantly, all of the indications are that the “deepening” process described above still had a long way to go with the great majority of economic activity still happening within local systems. The exceptions were luxury and specialty goods and certain kinds of necessity, notably grain.<sup>28</sup> Although there was something like a global monetary system, there was not a true global payment system and certainly nothing like a global financial system for things like investment. The General Crisis of the seventeenth century, therefore, does not make the cut as a true global crisis, although it was closer to being that than either the fourteenth century or the crises that struck the Late Antique world.

The case for that kind of identification is much closer, however, with the next candidate, which is the end of the eighteenth century. The period between roughly 1770 and 1830, like the earlier episodes, saw serious crises of all systems in every part of the settled globe. Serious political crisis and unrest affected all of the lands around the Atlantic in the so-called “Atlantic Revolution,” with the French and American Revolutions only the best known and most significant.<sup>29</sup> Another aspect of this was major slave revolts across the Caribbean and, slightly later, the revolts in Latin America that brought down most of the Spanish Empire. There was also serious upheaval and unrest in the Ottoman Empire and in China, where there were several large uprisings. Major famines were also widespread in Eurasia at this time and China and India in particular showed signs of a major demographic crisis of population pressure on fertile land. By this point, the level of economic integration was much higher, thanks to both European colonialism and the expansion of non-European empires, above all Qing China.<sup>30</sup> Trade in both directions between Europe, China, the Ottoman Empire, and India had expanded significantly, so far more products were now globally traded.<sup>31</sup> There was still not a true global financial system, but the level of cultural exchange and emulation was at an unprecedented level as the phenomena of *Chinoiserie* and *Turquerie* in Europe, and their counterparts in both China and the Ottoman Empire, reveal.<sup>32</sup>

<sup>27</sup> Andre Gunder Frank, *ReOrient: Global Economy in the Asian Age* (Berkeley, CA: University of California Press, 1998).

<sup>28</sup> Wallerstein, *The Modern World-System*.

<sup>29</sup> Robert R. Palmer, *The Age of the Democratic Revolution: A Political History of Europe and America 1760–1800* (1959; repr., Princeton, NJ: Princeton University Press, 2014).

<sup>30</sup> John Darwin, *After Tamerlane: The Rise and Fall of Global Empires, 1400–2000* (London: Penguin, 2008).

<sup>31</sup> Frank, *ReOrient*.

<sup>32</sup> Hugh Honour, *Chinoiserie: The Vision of Cathay* (London: E. P. Dutton, 1961); Haydn Williams, *Turquerie: An Eighteenth-Century European Fantasy* (London: Thames & Hudson, 2014).



Even so, most would still be doubtful. The later eighteenth and early nineteenth centuries fall on the cusp between the two models of a true global crisis and a simultaneous crisis of the major civilizations with common causes—in this case, overpopulation brought about by the combination of warming weather and new food crops, especially the potato. There can be no doubt, though, about the final candidate prior to our own time: the period from roughly 1900 to 1945. This was undoubtedly a truly global crisis of a global system.

That global system had developed throughout the nineteenth century, but particularly during 1870–1914, the aptly named (for Europeans at least) Belle Époque. Technological innovations such as the railway, the iron-hulled ship and triple expansion steam engine, telegraphy and the telephone, and modern road construction had integrated the world economically to an unprecedented degree and also enabled a migration of people on a scale never seen before. By the 1870s a genuinely global and integrated financial system and capital market had come into being, as can be seen by the first ever truly global financial panic in 1873. This went with a global payment system. There was also something like a worldwide political or international relations system, built around the relations between the European imperial powers, European offshoots such as the United States and Latin American countries, and surviving Asian states and empires such as China and Japan. As John Maynard Keynes observed in 1919, the gentlemanly inhabitants of London in 1914 benefitted from being in a global system of trade and exchange; the same could be said of their counterparts in New York, Paris, Vienna, Berlin, St. Petersburg, and even Peking or Calcutta.<sup>33</sup>

This global system faced a truly global crisis between 1914 and 1945. For obvious reasons, most of the historiography and personal accounts focus on the form this crisis took in Europe and North America, such as the two world wars and the Great Depression, but the crisis was truly global and had even more severe effects in the rest of the world. The Great Depression, for example, affected more severely than even the United States parts of the world—such as China, India, and Africa—that had begun to develop (or recover) economically toward the end of the Belle Époque.<sup>34</sup> The political crises and unrest of those years was as pronounced in Latin America as in any part of Europe. The reality of its being a global crisis meant that an important part of it was the breakdown of several key systems or institutions, especially global monetary and financial ones. Another aspect of this was that no one country was able to resolve the crisis by itself. Most attempted to do so, notably Germany, the United States, and the British Empire. These efforts, which involved partial withdrawal from the global

<sup>33</sup> John Maynard Keynes, *The Economic Consequences of the Peace* (1919; repr., Digireads, 2020).

<sup>34</sup> Dietmar Rothermund, *The Global Impact of the Great Depression 1929–1939* (London: Routledge, 1996).

systems, made the crisis worse, not least through the way they led to wars over key resources, with the policy of Japan being one classic example.

## VII. A GLOBAL CRISIS TODAY?

We can thus trace a historical evolution in which since the later seventeenth century, various world systems that cover parts of the globe's surface have become unified into a single world system. This means that a severe, civilization-ending (or threatening) global crisis is now possible; indeed, it has happened at least once. Why does this matter? The obvious reason is that there could be another global crisis of the kind the world experienced between 1914 and 1945. Many think that we are faced by exactly that prospect and there has been a growing fear since the Global Financial Crisis of 2008 that we have entered such a crisis. Things such as the COVID-19 pandemic, the increasing concern and alarm over climate change, and, most recently, the outbreak of a major war in Europe, have all added to this sentiment. The obvious question is whether the current anxieties are justified and whether we should fear or anticipate a crisis. The answer is that we certainly should. One reason for this is the implications of the historical narrative and analysis just given, with the movement from several world systems to a single all-embracing one and from individual and particular civilizational or societal crises to simultaneous ones to singular global ones.

The first and obvious point is that a global crisis would have much greater impact simply because of its global nature. Following the analysis given above, not only would it affect the entire planet as opposed to a region of it, no matter how large, it would also—because of deepening integration that has produced an actual global system—be far more extensive in terms of the range of social systems that would be disrupted or even degraded and destroyed. It would reach much farther down into the everyday functioning of societies and economic life and not be limited to the world of political and economic elites and specialized long-distance trade. The collapse of the Classic Mayan civilization was a terrible process for those involved, but it had no effect on the rest of the planet. The multiple crises of the third century caused havoc over a large part of the planet, but because the economies and societies of the Roman Empire, Parthia, and Han China were not integrated, the damage to their social systems, while severe, was not irreparable. It was much more severe in the Western part of the Roman Empire than in either the Eastern part or Iran and more severe in both of those than in China. In the fourteenth century, although the effects were if anything even larger in scale, the affected societies proved more resilient and there was not the kind of complete deliquescence of political order that happened earlier in the Roman West. A crisis of the global system now would affect both the whole world and almost every aspect of everyday life in dramatic fashion because of the greater levels of integration. The development of technology and the dependence of modern civilization and ways of living upon it would also

make the results more dramatic if there were to be a significant interruption to or degradation of that.

With sudden events, not much can be done in advance to prevent the shock, even if it is anticipated, and certainly not if it is a true Black Swan event. What can be done is to respond nimbly and effectively when it happens. We need to ensure that the systems and organization of society are not merely robust but resilient, able to cope with and respond to stresses, especially acute ones that rise to a crisis level. We also need to avoid the reverse, namely, brittleness and things that make catastrophic systems collapse more likely in the event of a shock. The ideal is to have systems and institutions that display what Taleb calls “antifragility,” which is the capacity to thrive and flourish under conditions of uncertainty and disorder or stress.<sup>35</sup> This means ignoring much of the advice given to public policy-makers and private corporations over the past four decades. In particular, it means avoiding systemic complexity and rediscovering the virtues of things such as redundancy, while paying less attention to narrowly defined efficiency.

The challenge is that while the movement from local crises or simultaneous ones to a truly global system and possible crises makes the consequences and impact of such a crisis more severe, the incentives at work in the global systems and institutions that we have make effective action much more difficult if we rely upon states and their political process. We can see this clearly in the case of the possible or actual crisis caused by anthropogenic climate change, where the current effective actors—sovereign states and their rulers—face acute prisoners dilemmas with the dominant strategy being to do nothing until it is too late.

The other side of this, though, is that a higher level of integration makes the world as a whole more resilient and less likely to suffer the kind of complete collapse that we can see in the case of the Mayans and many other ancient civilizations. The reason for optimism is that global society is wealthier and more technologically advanced, and so has greater capacity to respond to social challenges and even crises. The most important such resource is not material but institutional and human. This is the combination of human ingenuity and inventiveness with institutions that enable those two qualities to flourish and find expression, particularly in response to challenges that could otherwise escalate to crisis level.<sup>36</sup> History since about 1720 is a case of this, with a succession of serious challenges being successfully resolved by innovation of all kinds, not only technological ones.

There is support for this view in the argument Tainter makes in his earlier work. As mentioned above, Tainter sees collapse or, more accurately, simplification of systems as a rational response to the increasing problems caused by the negative payoffs of increased complexity. He adds, though,

<sup>35</sup> Taleb, *Antifragile*.

<sup>36</sup> Matt Ridley, *How Innovation Works* (London: Fourth Estate, 2021).

that while this is a likely outcome when we are dealing with a relatively isolated civilization or society such as the Maya or Chaco, it is less likely when the society or civilization experiencing the crisis has other, less-affected ones in reasonable proximity. In that case, he argues, the nearby culture is likely to intervene and recuperate the complexity of the affected society or at least prevent the simplification process from spreading fully. The example of this is the way that the Arabs resuscitated the complex societies and systems of the Middle East and Iran following the crisis of the sixth century. Tainter argues further that if the crisis affects a global system or one in which most or all parts of the world are at a sufficiently high level of complexity, then the crisis will not find full resolution in simplification because the parts of the world that are less affected by it will recuperate the rest. The role of the United States in the twentieth century is an example of that. For most people this will be an optimistic conclusion, since it means that even a global crisis of the world system on the scale of 1914 to 1945 is unlikely to be terminal for world civilization as a whole, although it may lead to a major shift in power within that civilization.

However, we might not be so cautiously sanguine. Tainter's own analysis works against the argument just described and he has recognized this more recently.<sup>37</sup> In his analysis, a larger system that contains systemic solutions to a wider range of challenges and problems is going to be more complex. It is therefore more likely to suffer from the problems of diminishing marginal returns to complexity. This means that increasingly, in order to address one problem, because the solution will require more effort and resources (particularly energy) and create greater complexity and costs, the resources to do this will have to be taken from elsewhere in the overall set of systems.<sup>38</sup> Eventually, there will be an acute need for additional investment in multiple areas at the same time and it will not be possible to do this. The current case is the simultaneous need for major investment in urban environment and infrastructure, medical care systems, energy supply and distribution, welfare and social support, and capital plants for production.

Moreover, a point that Tainter does not explore but others have is that increased complexity can lead to increased vulnerability to catastrophic systemic collapse due to cascade failure.<sup>39</sup> Highly complex systems can be more fragile and prone to general breakdown than simpler ones. A case in point is the way health-care systems all over the world failed to cope with the COVID-19 pandemic, leading to lockdowns and other draconian measures, as compared to the more effective response of earlier systems to the

<sup>37</sup> Tainter, "Problem Solving."

<sup>38</sup> Richard Heinberg, *The End of Growth: Adapting to Our New Economic Reality* (West Hoathly, UK: Clairview Books, 2011); Vaclav Smil, *How the World Really Works: A Scientist's Guide to Our Past, Present, and Future* (New York: Viking, 2022).

<sup>39</sup> Oliver Letwin, *Apocalypse How? Technology and the Threat of Disaster* (London: Atlantic Books, 2021).

equally serious challenges of the Far Eastern and Hong Kong flu pandemics in 1957–1958 and 1968–1969.

This means that the greater complexity of a global system cuts both ways. It creates greater inventiveness and resources, but it also creates heightened vulnerability. In addition, the logic of the historical process described above is not only toward greater specialization and integration, but also much greater efficiency, defined as intensification of the process or doing more with less. This is what lies at the base of rising living standards, at least to the degree that we have known it in the modern world. There are limits to the drive to efficiency, however, because it means (among other things) removing buffers and slack from the production, distribution, and administration systems so that they only have and use exactly the amount of resources they require at precisely the time they require them, with those resources being used to the fullest possible extent. The trouble is that this makes them vulnerable and prone to breakdown in the face of relatively minor shocks or disruptions. It also means, when coupled with supply constraints that produce inelastic supply, that there will be sharp price rises or shortages when even marginal increases in demand bump up against the now firm supply-side ceiling, as well as inflation. Whether that causes an immediate cut to living standards or inflation depends on the monetary policy response of governments.

What we can conclude from Tainter's analysis is that a more globally interconnected system or a true global system will be less likely to have a catastrophic collapse than did the earlier, more isolated civilizations, such as Old Kingdom Egypt or the Indus Valley. However, if that low probability comes to pass, the result will be massively catastrophic in its effects and possibly terminal for advanced civilization.<sup>40</sup> We can see this pattern historically in a number of the phenomena that often appear as part of a systemic crisis. Wars, for example, have become less frequent over the past few centuries, but the major wars between great powers of roughly equal technological level that do happen are absolute monsters. Financial panics used to happen every ten years or so but had few persistent effects, whereas they are now much less frequent but far more devastating when they happen. Serious political unrest is less frequent, but when revolutions do happen, they have much wider effects than simply killing political incumbents. The disturbing thought, illustrated by the example of wars, is that if there is a low probability of something (in this case, a serious global crisis) happening in a given period and that probability repeats with each repetition of the interval, then the probability of the event happening given enough repetitions approaches certainty (100 percent), because it is cumulative probability that matters.<sup>41</sup>

<sup>40</sup> Stephen Davies, *Apocalypse Next: The Economics of Global Catastrophic Risk* (London: Institute of Economic Affairs, 2022).

<sup>41</sup> Nassim Nicholas Taleb, *Skin in the Game: Hidden Asymmetries in Daily Life* (London: Penguin, 2019).

## VIII. ARE WE IN A GLOBAL CRISIS?

Are there features of the contemporary world that would indicate we are in or approaching a crisis of the second process-driven type but on a global scale? Many prognostications are certainly alarmist and often innumerate. However, there are unfortunately several processes that are global not only in the sense that they are found all over the world, but in the narrower sense of their affecting and being entailed by the global systems, which point toward the buildup to a serious global crisis in the next two to three decades. It may have already started and been in progress for several years, as many now suspect. One sign is increased evidence of a serious energy supply crunch, going back as far as 2005–2007. This is not a matter of a shortage simpliciter, but rather, of a shortage of supply at a price sustainable for a range of other activities. In simple terms, we can have all of the gas and oil we need if the price is around \$110–120 per barrel, but at that level many activities become uneconomic, or we can have oil at \$40–50 per barrel and all of the activity can happen, but that level is unsustainable, as no new capacity to cope with the depletion of existing supplies will be developed and not enough oil or gas produced because it is not profitable.

This pattern can be seen with a number of raw materials, although it is not as acute in most of them as it is with oil. Unfortunately, the response to increasing cost and supply constraints in areas such as rare earths or specialty metals is to use more energy in the production and refining process—and that comes from fossil fuels. It is not possible to use renewable energy for this because it is not concentrated enough. Additional strong evidence is the increasing tightening of the world food supply, which is starting to approach levels last seen in the early 1970s. Again, this is not a matter of production limits as such. It is a matter of limits to production at a given price level, given the rising cost of inputs along with increasing problems in the supply and distribution system because of hyper complexity and efficiency.<sup>42</sup> Another warning signal is increased social tensions and conflicts. The ones that matter here are intra-elite ones due to elite overproduction, because these are what historically lead to serious political unrest.<sup>43</sup> Finally, the evident fragility of complex systems in areas like trade, finance, and distribution is leading to an increased likelihood of the breakdown of the international system, should there be a shock, such as a major war or another pandemic. All of this amounts to an increasingly alarming prospect.

We should also not discount the chances of a crisis caused by the impact of a massive exogenous shock. The kinds of risk that have been around for all of human existence and that have periodically given rise to such shocks are still with us, including severe natural pandemics (with an annual probability of about 0.3 percent for one as bad as the Black Death), major volcanic

<sup>42</sup> Smil, *How the World Really Works*.

<sup>43</sup> Peter Turchin, *Ages of Discord: A Structural-Demographic Analysis of American History* (Storrs, CT: Beresta Books, 2016).

eruptions, or an asteroid impact. The most serious is climate change, whether natural or caused by human activity. Climate change has played a central part in either causing or exacerbating systemic crisis in the past and it is extremely foolish to think that our civilization is not equally susceptible.

The serious threat here is not of a gradual shift in the climate—which would allow time for adaptation and action that could significantly mitigate the eventual crisis—but of an abrupt reset of the planetary climate system. In that scenario the “thermostat” of the planetary climate system moves to a higher or lower temperature setting, with consequent major changes in the weather across the globe. This typically happens over the course of no more than two decades, often less, and it has happened several times in the historical past and many times, often dramatically, in the geological past.<sup>44</sup> That scenario would be much worse because of the near impossibility of adapting to it. Many of these natural catastrophic risks are becoming more likely than they were in the past because of various kinds of human actions and the increased fragility of complex industrial civilization. Another example of systemic fragility is the way that contemporary livestock farming, when combined with things such as modern travel technology, makes the chances of a devastating natural pandemic much higher.

The biggest reason why we should be concerned about a civilizational crisis is that, because of its global nature, it would almost certainly have permanent results. That is, if the crisis was severe enough to bring about a general or widespread simplification episode (a civilizational collapse), then the results are likely to be long lasting or even permanent, in the sense that while civilization would almost certainly revive, a technologically advanced one like ours almost certainly would not. Harrison Brown identifies the reason for this.<sup>45</sup> Our civilization depends upon access to energy and other natural resources. All of the easily accessible and high-grade resources have been used up (or converted into something less ordered). This does not matter right now because we have moved on to lower-grade and less-accessible ones through technological advances and greater energy use. If, however, we were to lose that technology and the energy systems that enable it, we would find that we could no longer sustain a high-energy civilization with advanced technology, because to do that would require lots of energy and advanced technology that, by definition, we would no longer have. We would be in the position of someone who climbs up a ladder while breaking each rung as they ascend only to fall off and then find that they can no longer resume their ascent because all of the lower rungs are gone. The global nature of a crisis—and therefore of systemic collapse—would mean that no part of the world would retain advanced technology or be able to restore a high-energy civilization elsewhere.

<sup>44</sup> John Cox, *Climate Crash: Abrupt Climate Change and What It Means for Our Future* (Washington, DC: Joseph Henry Press, 2005).

<sup>45</sup> Harrison Brown, *The Challenge of Man's Future* (New York: Viking, 1954).

If a civilizational crisis of a global magnitude is possible or likely, then how can we avoid it? The work of Tainter and others suggests that the key thing is to increase what Tainter calls the “energy subsidy,” the quantity of energy available that is greater than the amount needed to keep existing systems going.<sup>46</sup> The good news is that this has been done several times in the past few centuries. The history of the modern world can be understood in one sense as being a succession of sixty-to-seventy-year periods, each of them defined by a long economic cycle that, in turn, is driven by a suite of technologies and innovations that arise in response to a challenge. Each suite emerges at the point that the payoffs of the previous suite are close to exhaustion and a crisis is developing, so that the early years of the new suite are marked by working out of that crisis. Without going into the details, we can identify the cycles as being 1680–1750, 1750–1820, 1820–1890, 1890–1960, and 1960 to roughly 2030. Over the past nearly three hundred years, human ingenuity has come up with a series of responses to the kinds of crisis that bedeviled and even brought down earlier civilizations.

The bad news is that in three of these cycles, a key element was the extensive development and utilization of an energy source combined with other innovations that sharply increased productivity—1750–1820 with water power, 1820–1880 with coal and steam, and 1890–1960 with oil and electricity—while neither of those has thus far happened in the most recent one soon coming to an end. Nuclear energy did not make the kind of large, novel contribution to energy surplus that oil and coal had done previously, and so the world remains dependent on depleting supplies of legacy sources. There were other innovations—in computing and communications technology—but these have not had the same productivity impact as did earlier suites of innovation. The conclusion is that we face another serious and global crisis; however, this can be resolved and overcome, if a specific set of technological and social innovations happen, above all a means of storing and compressing energy. If not, then our descendants are in for a seriously interesting ride.

What if a global crisis does happen or, as people increasingly suspect, has already started? One of the problems with a global crisis of a systemic kind is that because the systems are global, no one actor such as a state or government, no matter how large and powerful, can control the entirety of the system. Evidence from the previous world crisis is that, consequently, no one government can resolve the crisis or take effective action to deal with it. The seemingly obvious answer to this is that there has to be close cooperation between different states through the creation of a set of rules and institutions that bind all of them to an agreed course of action or at least limits the kinds and ranges of actions that they can take. This was the

<sup>46</sup> Joseph Tainter, “Complexity, Problem Solving, and Sustainable Societies,” in *Getting Down to Earth: Practical Applications of Ecological Economics*, ed. Robert Costanza, Olman Segura, and Juan Martinez-Alier (Washington, DC: Island Press, 1996).



conclusion arrived at by the Western Allied powers at the end of World War II and, since then, there has been a serious effort to create such a system. The difficulty is that this will not work unless there is unanimity or consensus, which is vanishingly unlikely for all kinds of reasons. This reflects the reality that the world of competing sovereign states creates incentives that produce an acute prisoner's dilemma, that is, a situation in which actors following their rational self-interest (ruling elites of sovereign states, in this case) are led to act in ways that produce an overall outcome that is worse than the alternatives for everyone. Each ruling group will benefit most if it free-rides while all of the other actors follow rules or exercise restraint. In addition, there is no effective mechanism to penalize free-riders or defectors from agreements. This means that it is difficult to see how the current system can act collectively through politics to deliver effective action to address a process-driven crisis until the costs of not acting become unsupportable, at which point the crisis has arrived, is peaking, and by then it is too late. Some conclude that we need one world state or a coherent world-ruling oligarchy.<sup>47</sup>

This last conclusion is seriously mistaken. Even if we set aside the enormous concerns and risks that this would pose, another fatal objection is that a comprehensive set of global rules—and even more, one unified world political order—would make it more, not less, difficult to deal with a world crisis. The problem is that this scenario would prevent the kind of experimentation, exploration, and consequent discovery process that is needed to produce the technological, social, and political innovations to deal with a global crisis. The history of past civilization-wide crises is that having one authority coterminous with the civilization made the problem worse in many cases; the history of Rome and China illustrates this. This does not mean that a divided civilization is immune to this problem, as the Late Bronze Age and the Maya demonstrate, but it means that a decentralized and pluralistic global or civilizational system is more nimble and more resilient, and so would be more likely to respond creatively and successfully to a crisis. The work of Vincent Ostrom, Elinor Ostrom, and others suggests that decentralized local groups can act effectively to resolve prisoners dilemmas at a local level and that such local initiatives and experiments can coalesce to form networks that act effectively at the macro level—a case of order and action emerging from a bottom-up process.<sup>48</sup> We may also

<sup>47</sup> Jens Martens, "The Role of Public and Private Actors and Means in Implementing the SDGs: Reclaiming the Public Policy Space for Sustainable Development and Human Rights," in *Sustainable Development Goals and Human Rights*, ed. Markus Kaltenborn, Markus Krajewski, and Heike Kuhn (Cham: Springer, 2020), 207–20; George Monbiot, *The Age of Consent: A Manifesto for a New World Order* (London: Flamingo, 2003).

<sup>48</sup> Vincent Ostrom, *The Quest to Understand Human Affairs, Volume I: Natural Resources Policy and Essays on Community and Collective Choice*, ed. Barbara Allen (Lexington, MA: Lexington Books, 2011); Erik Nordman, *The Uncommon Knowledge of Elinor Ostrom: Essential Lessons for Collective Action* (Washington, DC: Island Press, 2021); Elinor Ostrom, *The Future of the Commons: Beyond Market Failure and Government Regulations* (London: Institute of Economic Affairs, 2012).

radically conclude that the problem is that our existing political systems and units are already too large and inflexible, so they get in the way of forming the decentralized network that we need. What we thus need is simultaneously more integration in some ways, but a greater degree of decentralization and institutional pluralism in others.

## IX. CONCLUSION

Social crises of all of the systems that together make up complex civilization are a recurring feature of human history from the Old Kingdom of Egypt, Sumer, and the Indus Valley civilization onward. In many cases, these crises led to the collapse of the civilization in question through a radical simplification process involving the collapse of complex systems and institutions of all kinds. Eventually there was recovery, but this often took a long time and sometimes did not happen at all. In the Ancient world and Pre-Columbian Americas, such collapses were relatively frequent, but as time passed general systemic crises became less frequent. In addition, although in some ways more devastating in their effects, they were less likely to produce a general collapse or simplification of civilization, because of the greater interconnectivity of the world. The other side of that is that the interconnectivity has gradually moved us from simultaneous and related but still local crises to truly global ones; a severe one of those would cause a global civilization's simplification and collapse. In that case, the consequences would be unprecedentedly severe and probably permanent.

A global crisis that ends civilization is a tail-end probability, but that does not mean that it cannot happen. A global crisis of a global economic society and political order was not possible until recently. This, however, had the benefit that no crisis would affect all of the world to the same degree, so significant parts would be less affected or even entirely untouched and thus able to recuperate the stricken parts. Over the past two millennia, the degree of interconnection; interrelatedness; and economic, social, and political integration of the settled world has gradually increased in terms of both the proportion of the planet included and the penetration of that integration into everyday life. The result is the gradual emergence and strengthening of a truly global system that brings great benefits, but also makes a global crisis of that global society possible in a way that it was not before.

Over the past two thousand years, there have been a number of candidates for the title of "global crisis," but the first few are instances of simultaneous separate crises, brought about by common patterns of development and a shared factor such as changes in the planet's climate. The first truly world society came about in the second half of the nineteenth century and the first truly global crisis happened during 1914–1945. The global society has continued to develop since then and it now faces the prospect of a second such crisis. The potential costs of such an episode leading to a civilizational collapse are greater than they have ever been before, given

what the consequences would be, but there are also greater reserves of ingenuity and inventiveness to draw on. What we should not do is expect formal political institutions such as government to take the lead in heading off or dealing with such a crisis. It is precisely their fragility and excessive complexity that make a crisis on a global scale more likely. What is needed is greater reliance on decentralized networks, emulative exploration, and discovery of solutions to the systemic breakdowns or threatened breakdowns. Ordinary people, their ingenuity, and the connections between them offer our greatest hope.

*Head of Education, Institute of Economic Affairs*