

The meaning of collapse from past to present

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ABSTRACT

Civilizations don't just fall overnight—they unravel through complex, layered processes. This essay explores what it really means for a civilization to “collapse,” challenging simplified ideas by looking at resource depletion, institutional breakdown, and cultural disintegration. Using examples like the Roman Empire, the Maya Civilization, Easter Island, and the Qing Dynasty, the paper shows that no single theory fully explains collapse. Instead, it argues that the disequilibrium theory—where imbalance between societal needs and available resources (economic, political, and cultural) leads to breakdown—offers a more complete lens. It also looks at the role of technology, often seen as a solution, but increasingly revealed as a double-edged sword that can't indefinitely prevent collapse. Through historical evidence and theoretical analysis, the essay questions whether our modern society, too, is approaching its own kind of tipping point. But rather than viewing collapse as an end, it considers the idea of “phase shift”—a reorganization rather than destruction. By tracing patterns from the past and applying them to the present, the essay highlights the importance of equilibrium, adaptability, and innovation in navigating what lies ahead.

Keywords: *societal collapse, disequilibrium theory, resource depletion, institutional failure, cultural disintegration, technological limits, historical empires, environmental stress, feedback loops*

INTRODUCTION

Throughout history, civilizations have risen and collapsed, leaving legacies ranging from tremendous accomplishments to cautionary tales. The answer to why civilizations fail is multifaceted, ranging from overpopulation (Malthus, 1798) to environmental change (Diamond, 2005). The subject of civilization collapse is not new to mankind. We have seen various examples of societies collapsing over the course of history: from the collapse of Easter Island's once thriving culture to the Roman Empire's eventual collapse and the Mongol Empire's overextension. When faced with major political or economic changes, many scholars and experts debate whether our civilization is in danger of facing a similar fate as the once-great societies in history. While "collapse" is a term that is often used to inspire a sense of urgency and gravity, it is too often used as an abstract concept that is only relevant in historical discussions. Collapse is not just a concept that is useful in keeping track of human history, but was a social reality that many people lived and experienced. Civilization collapse is not just a historical event; it is deeply and directly connected to our current lives and raises questions about our own survival.

In an era of climate crisis, political instability, and resource depletion, the same systemic vulnerabilities that once brought down past civilizations continue to threaten ours. Yet many people misunderstand the true meaning of collapse, making clarification necessary. Although 'collapse' is a crucial concept directly tied to our present-day reality, its relevance often goes unnoticed because it is often associated with exceptional, catastrophic events that lead to sudden downfall of otherwise thriving societies. Rather than simply referring to the fall of a society, collapse is a broader term that describes the rapid and substantial loss or failure of the established systems.

This essay will delve deeper into the concept of 'collapse' by redefining it based on existing literature and exploring various theories and historical phenomena related to the fall of civilizations. Ultimately, it will argue that in today's society, the determinism of many traditional causes can be mitigated—particularly in light of advances in modern technology and institutional resilience.

THEORIES AND PHENOMENONS ON COLLAPSE

What does it mean for a civilization to "collapse"? In order to understand what the collapse of a civilization is, we need to first understand what *can* collapse. For the purpose of this essay, it will be assumed that the idea of "collapse" is applicable only to civilizations beyond a certain level of complexity (Tainter, 1988). Joseph Tainter, an American historian and anthropologist best known for his work *The Collapse of Complex Societies* (1988), explains that in order to qualify as an instance of collapse, must have been at, or developing toward, a level of complexity for more than one or two generations. According to Tainter, a failed attempt at building an empire does not denote collapse because it lacks single dominant authority and is characterized by only **rudimentary forms** of social and economic control. Perhaps it's only natural that an advanced civilization that has already built infrastructure and social systems can "fall," since there would be nothing to 'disintegrate' or 'break down' in a society that has no structure or order to begin with. Collapse, then, can be defined and

assessed by the loss of the complex features of society - including economic stratification, cultural diversity, information flow and education. (Roman, 2023).

History offers numerous examples of civilizations collapsing for a wide range of reasons. One of the most well-known cases is that of Easter Island, most widely known for its giant stone statues, the Moai. The Rapa Nui people, who lived in isolation on the volcanic islands in the Pacific Ocean, built a vibrant and cooperative society capable of constructing these massive monuments. Archaeological evidence suggests they had a strong communal culture and a productive way of life that supported large-scale construction. However, the civilization declined over time, and when the Europeans arrived in 1722, only a few thousand inhabitants remained.

Jared Diamond's *Collapse* presents a widely accepted view that the collapse of the Easter Island civilization was caused by depletion of natural resources. Diamond writes:

In short, the reason for Easter's unusually severe degree of deforestation isn't that those seemingly nice people really were unusually bad or imprudent [careless]. Instead, they had the misfortune to be living in one of the most fragile environments, at the highest risk for deforestation, of any Pacific people... Easter's isolation makes it the example of a society that destroyed itself by overexploiting [overusing] its own resources (Diamond, 2005, p. 92)..

According to Diamond's theory, over time, the island's growing population—estimated at over fifteen thousand—put unsustainable pressure on limited resources. They cleared forests, hunted seabirds, and overworked the land. As a result, the environment suffered, and the civilization eventually declined.

Another civilization that has been widely studied by historians is the Mayan Civilization. Famous for its huge stone-made Mesoamerican pyramids, the Mayan civilization was not a single, unified empire. Rather, it was a cultural mosaic made up of diverse groups who inhabited regions of present-day Mexico and Central America. The Maya are an indigenous people who continue to live in these lands today. The massive growth of this empire, which developed over thousands of years, began as early as 7000 BCE, largely owing to its favorable climate for farming. The environmental characteristics of Maya enabled it to prosper through agriculture and expand its land and population over a long period of time. At its peak during the Classic Period, the Maya civilization produced astonishing cultural achievements in writing, art, architecture, mathematics, and astronomy. Despite its eventual fall in 1524 CE, often referred to as the “old Mayan empire” collapse, the Maya people and their traditions have survived through the centuries.

The collapse of the Mayan civilization remains one of history's most studied and debated mysteries. Scholars widely agree that there was no single cause. Just as the civilization was built over multiple centuries and regions, it fell for a combination of reasons that varied across time and space. One of the major factors was that the decentralized form of the empire led to frequent warfare between city states and local rulers. This disintegration was further driven by the Mayan rulers' close ties to divine authority-- when disasters struck, people lost trust in their leadership. Resource depletion added further

pressure. Agricultural overexpansion led to widespread deforestation and soil exhaustion. The population outgrew the capacity of local resources, creating immense strain on food and water supplies. The formation of cave minerals work as scientific evidence, confirming that their region experienced several droughts starting from 800 A.D. These all added up to the cut off access to clean water and other resources. As their society fell apart, Maya slowly left behind their once-crowded cities and their great stone buildings were left to deteriorate.

Resource depletion theory (Robertson, 2012) attributes the cause of the collapse of these two great civilizations to the exhaustion of their critical physical resources, either via a gradual depletion of a resource base (often due to human mismanagement) or a more rapid loss of resources due to environmental fluctuations or climatic shifts. A pertinent example of this is Easter Island. The islanders deforested extensively, causing severe soil erosion and a subsequent reduction in agricultural productivity (Diamond, 2005). This environmental degradation contributed to social conflict, fragmentation of the society, and ultimately, political disintegration, making living conditions unsafe. Along this line of reasoning, climatic conditions specifically have been attributed to the rise and fall of civilizations, with favorable conditions energizing populations and adverse conditions leading to economic distress, famine, and societal collapse (Huntington, 1915; Winkless & Browning, 1975).

However, while the resource depletion theory establishes a clear cause-and-effect relationship, it overemphasizes environmental determinism, overlooking the importance of human action and social flexibility. For example, the demise of Easter Island was due to deforestation and subsequent resource constraints. However, this explanation ignores the islanders' capacity for social innovation and adaptability in the face of natural problems. Furthermore, cultures facing the same environmental constraints have managed to adapt and survive, indicating that resource depletion is inadequate to wholly explain collapse. Therefore, a threat to resources may contribute to the increase in complexity, but not necessarily its collapse.

One of the factors in civilization collapse that the resource depletion theory overlooks is institutional integrity. The example of the Roman Empire demonstrates that simple resource depletion is not sufficient to explain the fall of an entire civilization. The Roman Empire began when Octavian became the first emperor in 27 BCE, following the assassination of Julius Caesar in 44 BCE. Over time, the empire expanded to become a civilization that deeply influenced modern society through its innovations in art, architecture, technology, language, and law. It improved on Greek designs using arches, domes, and concrete, and left behind monumental legacies such as aqueducts and the Colosseum. Roads, water systems set the foundation for modern infrastructure and legal principles like trials based on evidence became precursors of the modern date court system. Severus Alexander, one of the prominent military leaders of the Roman empire who reigned from 222 to 235 as the emperor, was assassinated amidst the chaos among the competing military powers within the empire. Following this event, power struggles, plagues, and Christian persecutions further destabilized the Roman Empire, ultimately leading to its division into two nations.

Though the empire's troubles began long before its official split, they escalated even further afterwards. The collapse of the Western Roman Empire in the 400s–500s CE reveals how institutions failed to adapt under pressure. Internally, the empire suffered from political chaos and weak leadership, which eroded administrative stability. Corruption was deeply embedded in the political and financial systems of the Roman Empire, contributing significantly to its instability. Electoral bribery became a normalized part of Roman politics, which triggered financial crises. While some elites were troubled by this, systemic reform was minimal, and a 55 CE law targeting bribery came too late. This corruption eroded public trust, and the state became increasingly unable to fund public services or maintain law and order. The rise of Christianity also redirected societal focus away from traditional Roman values such as military discipline, further weakening institutional unity. Externally, the empire's borders became vulnerable to continuous invasions from Germanic and Persian groups during the Migration Period. These external shocks exposed the empire's inability to coordinate defense or sustain its infrastructure. As its political systems faltered and could no longer uphold order or provide protection, the Western Roman Empire gradually unraveled, not through a single event but through the long-term erosion of its governing institutions.

Another example that shares common patterns with the collapse of the Western Roman Empire is the collapse of the Qing Dynasty. The Qing dynasty was founded by Manchus from northeast Asia, and enjoyed a period of vast territorial expansion, economic strength, and cultural flourishing, particularly during the 18th century. However, rapid growth of the empire did not necessarily mean success. It meant that there wasn't enough farmland or jobs, and the civil service system, once a source of order, became corrupted and inefficient. Although China had vast resources and remained rich in goods like silk and tea, the imperial bureaucracy struggled to keep up with both internal unrest and increasing foreign pressure. Despite efforts to limit European trade, British merchants smuggled in opium, which led to widespread addiction and two destructive Opium Wars. These ended with Unequal Treaties that weakened the Qing's legal and territorial sovereignty. Internally, rebellions such as the Taiping Uprising, fueled by social desperation and failed scholar-officials, devastated large parts of the empire and reflected declining trust in both religious and political legitimacy. Despite recognizing the need for change, Qing institutions proved too inflexible and fragmented to adapt. Reforms such as the New Policies, introduced after the Boxer Rebellion, attempted to modernize education, the military, and administration, but they came too late and were inconsistently implemented. The civil exam system, once a pillar of elite recruitment, became overcrowded and corrupt, intensifying intra-elite competition and producing waves of frustrated scholar-gentry who increasingly supported revolution. The dynasty's inability to coordinate a cohesive response across its vast bureaucracy led to a collapse of state capacity, and in 1911, following widespread revolt, the Qing empire fell—an institutional breakdown triggered by long-term demographic and structural pressures it could no longer withstand.

The institutional failure theory, in contrast to the resource depletion theory, suggests that societal collapse results from the inability of institutions to effectively address and solve societal problems. The Western Roman Empire exemplifies this case. Despite its riches and strong military, the empire had a number of internal tensions, including economic crises, civil wars, and administrative inefficiencies. Barbarian invasions exacerbated these domestic concerns. The empire's separation into western and

eastern half in 395 A.D. weakened the western part even more, eventually culminating in its destruction in 476 A.D. (Tainter, 1988).

However, while internal institutional flaws have a role in the fall of societies, external factors are often unavoidable as well. The hypothesis also suggests that stronger institutions might have avoided collapse, neglecting the possibility that external forces could have overwhelmed even the most solid structures. Thus, while institutional failings contribute to collapse, it is not, by itself alone, a comprehensive enough reasoning.

The disequilibrium theory (Patinkin 1956; Clower 1965; Leijonhufvud 1968) offers an explanation that fills the gap that neither the resource depletion theory nor the institutional failure theory resolves. It sees social collapse as the result of an imbalance between societal demands and available resources (in economic, political, and cultural forms). According to the disequilibrium theory, economic disequilibrium arises when a society's consumption of resources exceeds its availability. Societies that rely on external trade networks are especially vulnerable, as disruptions can result in economic collapse. For example, Ekholm (1980) claims that the collapse of the Third Dynasty of Ur and Mycenaean civilization was caused by a loss of trade networks and external resources. Political disequilibrium occurs when complex systems of governance become inefficient or corrupt, incapable of meeting societal requirements or adapting to new problems, resulting in political instability. Institutional failings such as irrational subsidies, market failures, and a lack of openness in decision-making processes all contribute to political disequilibrium. Cultural disequilibrium is the disintegration of social cohesion and togetherness, which reduces a society's ability to respond collectively to crises. When cultural legacy and social standards deteriorate, trust and collaboration within society erode, intensifying social division and contributing to collapse. For example, Gibbon (1776) argued that it was the degradation of "virtue" in the Roman citizens that made them less willing to protect their own borders, and ultimately outsource protection to barbarian mercenaries.

ASSESSMENT AND ANALYSIS

Each theory of civilization collapse provides valuable insights, but they each have their limitations. Societal collapse is a complex phenomenon and is not, as suggested by many of the theories above, a single linear process of cause-and-effect. The disequilibrium theory, which focuses on the **imbalance** between society needs and available (economic, political, cultural) resources, provides a more comprehensive framework. It extends the definition of "resources" and corresponds better to the multifaceted causes identified in historical collapses.

The fall of the Roman Empire is a complicated example of the interplay of many variables that result in societal breakdown. The Roman economy was plagued by hyperinflation, high taxation, and an overreliance on slave labor, resulting in substantial economic instability (Heather, 2005). As agricultural output fell, the Empire struggled to maintain its population and armed forces, deepening economic suffering and lowering state revenues. This economic downturn further weakened Rome's ability to protect its frontiers and maintain public facilities. Politically, the Roman Empire was plagued by

corruption and ineptitude, as emperors changed frequently and civil conflicts weakened central power (Diamond, 2005). This political volatility, along with economic and environmental challenges, resulted in a loss of provincial power and damaged the state's overall coherence. Socially, the empire was severely fragmented due to class divides and the inability to integrate many peoples within it. Barbarian invasions, such as those by the Goths and Vandals, exploited the empire's internal weaknesses, hastening its demise (Heather, 2005).

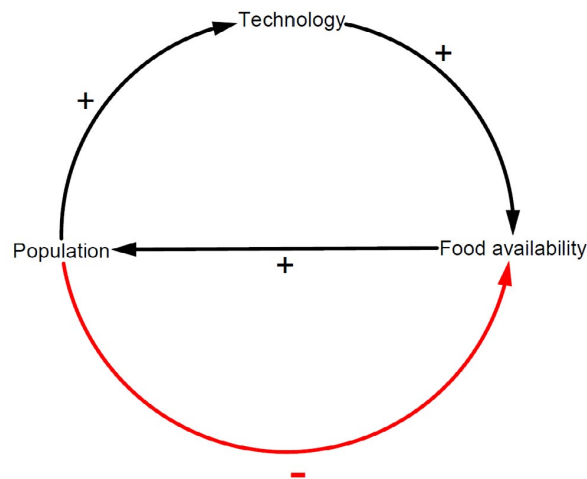
Another example of a society crumbling owing to multidimensional disequilibrium is the Classic Maya civilization. The Maya relied largely on agriculture, particularly maize farming, which declined as a result of land misuse and deforestation (Turner & Sabloff, 2012). This resulted in soil fatigue and decreased agricultural output, generating food scarcity and economic stress. Furthermore, prolonged droughts also played a crucial role in the Maya civilization's demise. The lack of adequate water sources worsened agricultural difficulties, resulting in widespread hunger (Turner and Sabloff, 2012). Politically, the Maya city-states were marked by constant warfare and competition, further destabilizing the region. Political fragmentation and infighting impeded a coordinated response to the environmental and economic crises, resulting in the breakdown of political structures (Diamond, 2005). Socially, the collapse was characterized by a breakdown of social order and increased violence as communities battled for limited resources. This social fragmentation eroded societal cohesion and eventually led to the abandonment of many urban areas (Middleton, 2010).

These examples illustrate how multiple stressors can interact and amplify each other, leading to a tipping point where the society can no longer maintain its structure and functions. In contrast, equilibrium would refer to a stable state where the needs of the population are met by the available resources without overexploitation. Achieving and maintaining equilibrium involves sustainable resource management, effective governance, social cohesion, and the ability to adapt to changing conditions.

Not stopping at treating technology as one of the variables that affect food production, Roman (2023) looked into how technology itself was subject to the economic principle of increasing marginal cost. In economics, marginal cost is the cost of producing one additional unit of a product, and increases as the quantity of output increases. While the development of technology often helps solve problems, it also creates new demands. For example, the production of innovative smartphones or electric vehicles require more time and resources than its prototypes needed. The greater complexity of advanced technology requires highly trained professionals and experts for greater innovation. So even though technology might seem like the answer, it can't entirely prevent collapse because technological development will stop at one point when the cost of innovation surpasses the benefits.

Figure 1

Feedback mechanisms illustrating the dynamic interactions among population growth, technological advancement, and food supply



Note. From “Theories and models: Understanding and predicting societal collapse,” by S. Roman, 2023, in S. J. Beard, M. Rees, C. Richards, & C. R. Rojas (Eds.), The era of global risk: An introduction to existential risk studies.

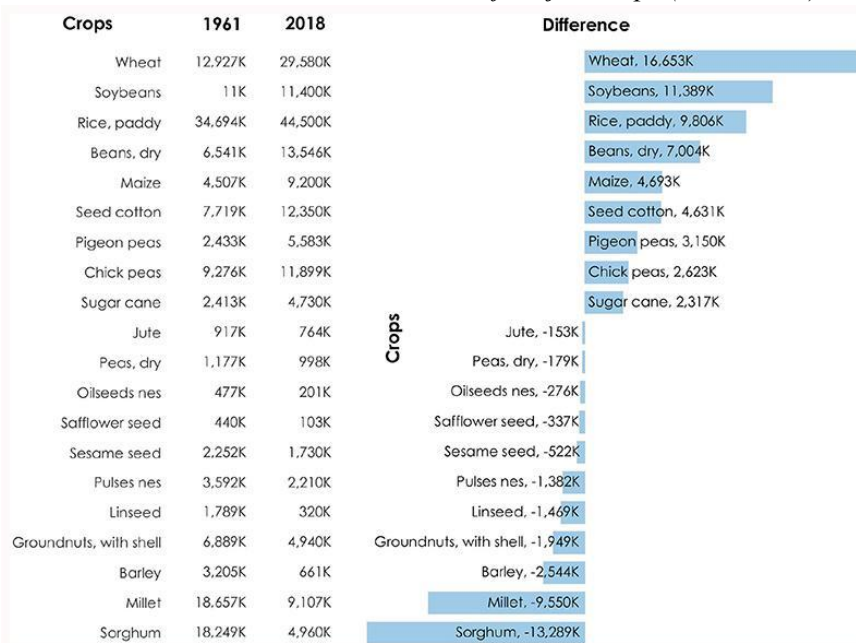
This kind of “equilibrium” has also been visually shown as “feedback loops” in recent studies (Roman, 2023). Although the word collapse may sound terrifying and destructive, it is actually a process that every human society inevitably goes through—particularly from an economic perspective, as explained by the economic theory of equilibrium. According to the feedback loop shown below, an increasing population leads to a higher demand for resources. This usually results in overexploitation beyond the available supply. While technology can partially solve this issue by improving resource efficiency and slowing the rate of overexploitation, it cannot completely prevent it. As technology advances, it becomes more complex and demands more time, labor, and resources. In other words, the more we rely on technology, the more resources we need to sustain it. Since our initial resource pool is limited, no matter how advanced technology becomes, it can only delay collapse—it cannot stop it entirely. This makes collapse an unavoidable outcome for all civilizations. This makes collapse an unavoidable outcome for all civilizations.

To understand this concept of technology’s limited capability to prevent collapse, we can think about population and food. As the population grows, more food is needed to feed people. First, we can increase production by expanding farmland or using synthetic fertilizers. But eventually, soil becomes less fertile, water becomes scarce, and climate change reduces harvests. While technological advances have innovated agriculture drastically, the increase in demand for food eventually outruns the speed of innovation when time and cost required for further innovations reaches a tipping point. While

technological innovation is considered one of the major factors that shift production toward greater output, it can sometimes cause more harm than good. The Green Revolution which started in the 20th century of India and Mexican subcontinents, is a case where crop yields were significantly increased by the use of chemicals, irrigation, and machinery. But it also led to water shortages, chemical runoff, and long-term damage to ecosystems. These consequences led to long-term soil degradation and decline in yields, and endangered more than 100,000 traditional species, canceling out the short-term benefits of the technological developments.

Figure 2

Net Production Increases and Decreases of Major Crops (1961–2018)



Note. From “Lessons from the aftermaths of green revolution on food system and health,” by D. A. John & G. R. Babu, 2021, Frontiers in Sustainable Food Systems, 5(1), (<https://doi.org/10.3389/fsufs.2021.644559>).

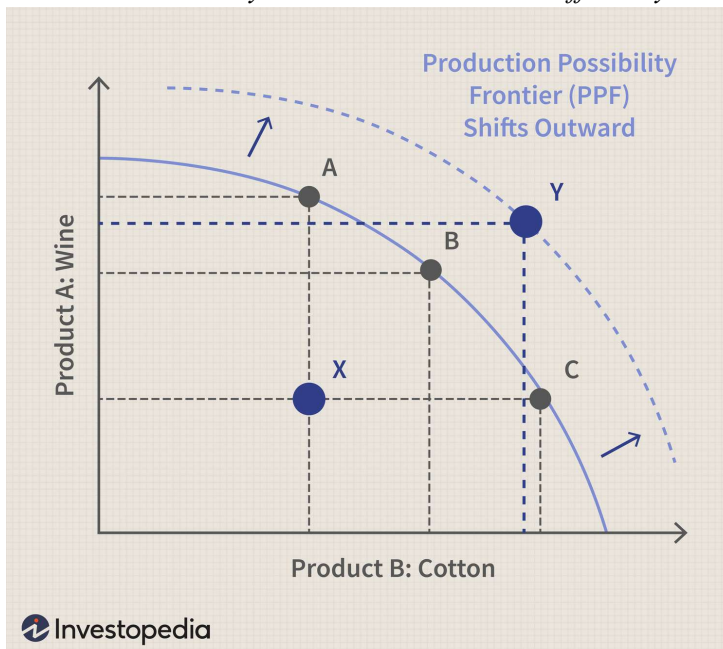
MODERN APPLICATION

If this is the case, then is our current society also in danger of collapse? From the previous sections in the essay, we have shown that true “collapse” is a multidimensional phenomenon, ultimately occurring when a society “tips” over equilibrium. However, one can argue instead that globally, technologically, economically, and culturally, our society is at a point of “phase-shift” (Ahmed, 2023). As such, we are at a point in history where we are “re-organizing” (rather than obliterating) ourselves, either with the use of artificial intelligence in the workplace, or with increased awareness of

sustainability issues, and the development of technologies to battle global issues like climate change. The question, then, is whether new feedback loops (like technology) can stave off the intrinsic and external factors of decline forever.

Tainter (1988) generalizes the economic theory of marginal returns to productivity to all problem-solving endeavors. He ultimately argues that there will always exist diminishing returns to investments, whether it be in technology or any other problem-solving activity. However, what Tainter underestimates is technological “innovation”. Yes, increasing the quantities of a specific technology (or other effort) to solve a particular problem will reach decreasing marginal returns. Maintaining all the investments will distract a society from solving new problems as they present themselves, making it more vulnerable. Nevertheless, it is with “innovation” that changes a society’s problem solving “ability” and “potential” altogether. For example, shifting from an agricultural society to an industrial society, or including previously excluded parts of the population (such as women) into the labor force. In more economic terms, this can be linked to the shifting of the entire production possibilities curve (PPF) outwards (Figure 2).

Figure 3
Production Possibility Frontier and Economic Efficiency



Note. From “Production possibility frontier (PPF): Purpose and use in economics,” by A. Bloomenthal, 2024, Investopedia, (<https://www.investopedia.com/terms/p/productionpossibilityfrontier.asp>).

Smaller phase shifts have already occurred in our history. The Industrial Revolution, for example, drastically increased manufacturing efficiency and economic output, transforming economies and preventing resource depletion crises by optimizing resource use. However, the Industrial Revolution, too, was initially motivated by societal needs-- which is why it started in Britain (with rising labor costs, and comparatively inexpensive coal prices) (Allen, 2009).

In conclusion, civilizations collapse results from multifaceted interplay of resource depletion, institutional failures, and cultural disintegration. The disequilibrium theory offers a comprehensive framework, emphasizing the importance of maintaining a balance between societal needs and available resources. While our modern civilization faces significant challenges, technological innovation and sustainable practices provide a path to resilience, offering hope that we can avoid the fate of historical societies. Understanding these dynamics is key to sustaining our global society.

REFERENCES

Ahmed, N. M. (2023, August 29). The collapse of civilization is an unprecedented opportunity. Age of Transformation. <https://ageoftransformation.org/the-collapse-of-civilisation-is-an-unprecedented-opportunity/>

Bloomenthal, A. (2024, April 19). *Production possibility frontier (PPF): Purpose and use in economics*. Investopedia. <https://www.investopedia.com/terms/p/productionpossibilityfrontier.asp>

Boserup, E. (1965). *The conditions of agricultural growth: The economics of agrarian change under population pressure*. Aldine Publishing Company.

Diamond, J. (2005). *Collapse: How societies choose to fail or succeed*. Penguin Books.

Ekholm, K. (1980). On the limitations of civilization: The structure and dynamics of global systems. *Dialectical Anthropology*, 5(2), 109–127.

Gill, R. B. (2000). *Great Maya droughts: Water, life, and death*. University of New Mexico Press.

John, D. A., & Babu, G. R. (2021). Lessons from the aftermaths of green revolution on food system and health. *Frontiers in Sustainable Food Systems*, 5(1). <https://doi.org/10.3389/fsufs.2021.644559>

Heather, P. (2005). *The fall of the Roman Empire: A new history of Rome and the barbarians*. Oxford University Press.

Karabarbounis, L., & Neiman, B. (2014). The global decline of the labor share. *The Quarterly Journal of Economics*, 129(1), 61–103.

Malthus, T. (1798). *An essay on the principle of population*. Oxford University Press.

Mark, J. J. (2025, February 4). Maya civilization. *World History Encyclopedia*. https://www.worldhistory.org/Maya_Civilization/

Orlandi, G., et al. (2023, August 18). Structural-demographic analysis of the Qing Dynasty (1644–1912) collapse in China. *PLOS ONE*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10437944/>

Roman, S. (2023). Theories and models: Understanding and predicting societal collapse. In S. J. Beard, M. Rees, C. Richards, & C. R. Rojas (Eds.), *The era of global risk: An introduction to existential risk studies*. Open Book Publishers.

Tainter, J. A. (1988). *The collapse of complex societies*. Cambridge University Press.

Turner, B. L., & Shabloff, J. A. (2012). Classic period collapse of the central Maya lowlands: Insights about human–environment relationships for sustainability. *Proceedings of the National Academy of Sciences*, 109(35), 13908–13914.

Vidal, J. (2018, March 22). Paul Ehrlich: ‘Collapse of civilization is a near certainty within decades’. *The Guardian*. <https://www.theguardian.com/cities/2018/mar/22/collapse-civilisation-near-certain-decades-population-bomb-paul-ehrlich>

Wasson, D. L. (2025, February 4). Fall of the Western Roman Empire. *World History Encyclopedia*. <https://www.worldhistory.org/article/835/fall-of-the-western-roman-empire/>