Decline and Fall, Growth and Spread, or Resilience? Approaches to Studying How and Why Societies Change

Daniel Hoyer
Evolution Institute & George Brown College

Abstract

Academic and popular libraries are filled with works seeking to uncover why some past societies collapsed, or to explain why others flourished, or why a few prove resilient against the major shocks and disasters that have doomed so many others. While we have learned much from this diverse set of scholarship, there are still many questions about how these different aspects of societal dynamics relate to each other and we lack clear consensus on the best approach(es) to provide answers. Further, historical precedents of collapse, growth, and resilience are being sought to help craft effective responses to the forces that threaten our contemporary world, from climate change to the risk of global pandemics to rising inequality and sectarian conflict. This essay reviews recent and prominent approaches to these topics and provides some thought on how broad, holistic approaches to studying societal dynamics can shed light on these pressing issues.

Introduction

Any avid reader of history will be quite familiar with the many rich, emotive narratives detailing the tragic decline and ultimate fall of a once mighty civilization; Rome succumbing to barbarian hordes, Alexander of Macedon's and Chinggis Khan's spear-won empires splitting into warring factions, and the demise of the great Inca or Maya civilizations are just a few such examples. Titles sporting phrases such as such as *1177 BC: the year civilization collapsed*, *Inca Apocalypse*, *Alexander the Great Failure*¹, and many, many more make up a sizeable share of any library's history section. These works have gained prominence as signs of distress, and possibly societal collapse, have risen in recent years².

On the other side of the stacks, similarly grandiose narratives document one precocious society's incredible growth and conquest over vast territories and populations. These tell typically of societies coming to dominate a region, often in the face of overwhelming odds and tribulation or through development of a key technology or strategy that later becomes widespread. This tradition sports titles equally moving as the collapse narratives, such as *The Making of the World's Greatest Empire*, *The Making of a World Power*, and *The How the Spread of Islam Changed the World We Live In*³. Works with even wider scope such as *The End of History*, *Why the West Rules - For Now*,

¹ Eric H Cline, *1177 BC: The Year Civilization Collapsed* (Princeton: Princeton University Press, 2014); R. Alan Covey, *Inca Apocalypse: The Spanish Conquest and the Transformation of the Andean World* (Oxford: Oxford University Press, 2020); John D Grainger, *Alexander the Great Failure: The Collapse of the Macedonian Empire* (London: A&C Black, 2009).

² Demonstrable from headlines such as "Are we on the road to civilisation collapse?" ([BBC 2019](#)), "A warning on climate and the risk of societal collapse" ([The Guardian 2020](#)), "Theoretical Physicists Say 90% Chance of Societal Collapse Within Several Decades" ([VICE 2020](#)), and "Collapseologists are warning humanity that business-as-usual will make the Earth uninhabitable" ([LA Times 2021](#)).

³ Anthony Everitt, *The Rise of Rome: The Making of the World's Greatest Empire* (New York: Random House Incorporated, 2012); Henry Kamen, *Spain's Road to Empire: The Making of a World Power, 1492-1763* (New York:

and *How Bronze-Age Riders from the Eurasian Steppes Shaped the Modern World* find the roots of modern (western) civilization in the deep past⁴.

With quite different goals and approaches, these traditions also have much in common. Both seek to understand one specific type of social transformation by scrutinizing a single or fairly small set of cases. A related body of historical scholarship combines the two approaches, tracing notable societies from their initial rise through a later decline and fall, or the reverse – societies that emerge and grow after the collapse of another. These studies too tend to highlight the exceptional, focussing on detailing specific incidences over abstracting common cross-cultural patterns. Alternatively, a host of studies eschew such focus on dramatic changes, choosing instead to explore how certain traits persist over large timescales. Finally, some recent work looks to combine these perspectives by studying the complex dynamics that societies experience, exploring a large set of cases in different contexts covering centuries or even millennia.

While we have learned much from this diverse set of scholarship, we still lack robust methodologies tuned to answering important questions about exactly why societies of the past and present experience the highs, lows, and status quo's that they do. Further, many scholars and policy-makers look to the past to help understand how these same processes continue to play out among contemporary societies. Historical precedents of collapse, growth, and especially of social resilience are being sought to help craft effective responses to the forces that threaten us all, from climate change to the risk of global pandemics to rising inequality and sectarian conflict. It is thus worth taking stock and asking what is the most fruitful lens with which to view fluctuations in how societies function and change over time. This review essay seeks to shed some light on these pressing issues.

Studying Collapse

The modern preoccupation with collapse owes much to Gibbon's monumental treatise on the collapse of the (Western) Roman Empire⁵. While still influential, the qualitative and prescriptive narratives offered by Gibbon and others have been mostly supplanted by more structuralist, functionalist approaches. This newer line of thinking on collapse owes mostly Tainter's seminal work⁶. Tainter argues that societies become increasingly complex as they continue to expand and encounter new and bigger challenges, meaning essentially that they develop longer chains of command and more specialist functions in political, military, and economic administration. Over time, the resources devoted to supporting this growing complexity outmatch the returns from it. The vast Roman Empire and Classic Maya are seen as prime examples. Rather than pare back state function or scale, Tainter argues, these societies 'doubled down' on existing systems, devoting more and more resources to maintain the status quo. Eventually a new challenge arises that the society, already overextended, is unable to respond to and it rapidly loses the complexity it had struggled so hard to maintain.

Penguin Adult, 2003); Hugh Kennedy, *The Great Arab Conquests: How the Spread of Islam Changed the World We Live In* (Philadelphia, Pa: Da Capo Press, 2008).

⁴ Francis Fukuyama, *The End of History and the Last Man* (New York: Simon and Schuster, 2006); Ian Morris, *Why the West Rules - For Now: The Patterns of History, and What They Reveal About the Future* (New York: Farrar, Straus and Giroux, 2010); David W. Anthony, *The Horse, the Wheel, and Language: How Bronze-Age Riders from the Eurasian Steppes Shaped the Modern World* (Princeton, NJ: Princeton University Press, 2007).

⁵ Edward Gibbon, *The Decline and Fall of the Roman Empire*, ed. Hans-Friedrich Mueller (New York: Modern Library, 2003).

⁶ Joseph A Tainter, *The Collapse of Complex Societies* (Cambridge: Cambridge University Press, 1988).

For Tainter, this defines collapse: the Roman Empire conquers more territory than it can defend resulting in the conquest of the western half by a series of “barbarian incursions”, while run-away population growth coupled with an exhausted agricultural base caused an implosion of the Maya’s once-thriving city-state network⁷. Tainter’s focus on the diminishing returns to complexity have been taken up by many subsequent scholars and applied to specific case-studies⁸. His broader goal of providing a single unified theory to explain a host of collapse events at different times and places has likewise proven tempting to subsequent thinkers, though this enterprise has seen a fair amount of criticism as well⁹.

In a similar vein, Goldstone’s influential 1991 work looks at how population growth over time tends to overextend a society’s productive capacities, which generally rise much slower or at times stagnate¹⁰. Goldstone takes as a basis Malthusian and Boserupian ideas about population pressure, adding to it the idea that demographics on their own can’t explain periods of crisis and collapse, but that population pressure stresses social structures, which in turn generate conflict and can lead to collapse. This approach, known as structural-demographic theory (SDT), argues that as territorial and/or economic expansion wanes yet populations continue to grow, this puts downward pressure on wages and incomes for the majority of the population. These same dynamics, though, are a boon to the small group of wealthy elites who own the most of a society’s productive land, workshops, and other means of production; essentially, consumers of this ever-cheaper labour. Because of this, elite numbers (and those aspiring to their ranks) swell, leading to tension and conflict within this group as well. Add to this the tendency of past (and present?) states to rely on elite support for fiscal and administrative needs, and population pressure has then created tension at three levels of the social structure: unrest and dissatisfaction among the majority population, conflict and competition within elite ranks, and fragility within the state itself. All the conditions for major rebellions and social collapse are, thus, in place. This perspective has likewise been

⁷ Tainter, 188–90.

⁸ Examples include: Brunk’s study of how institutional growth produces non-linear feedbacks leading to (cascading) system failure (Gregory G. Brunk, “Why Do Societies Collapse?: A Theory Based on Self-Organized Criticality,” *Journal of Theoretical Politics* 14, no. 2 (April 1, 2002): 195–230, <https://doi.org/10.1177/095169280201400203>); Janssen et al.’s argument that sunk-costs reduce societies’ flexibility to adapt to new challenges or change course once opportunities are saturated (Marco A. Janssen, Timothy A. Kohler, and Marten Scheffer, “Sunk-Cost Effects and Vulnerability to Collapse in Ancient Societies,” *Current Anthropology* 44, no. 5 (December 1, 2003): 722–28, <https://doi.org/10.1086/379261>); Levitt’s monograph on how systemic dysfunction in governing capacity and a failure to maintain collective well-being led to the collapse of several ancient states from different parts of the globe (Malcolm Levitt, *Why Did Ancient States Collapse?: The Dysfunctional State* (Oxford: Archaeopress Publishing Ltd, 2019); Runciman’s recent work on the unwillingness of affluent modern states to reconfigure institutional arrangements to reinvigorate political and economic systems (David Runciman, *How Democracy Ends* (New York: Basic Books, 2018); and Motyl’s arguments about the fragility of extensive imperial formations to organizational decay and fragmentation (Alexander J Motyl, *Imperial Ends: The Decay, Collapse, and Revival of Empires* (New York: Columbia University Press, 2001). Many others could be cited as well.

⁹ Patricia A McAnany and Norman Yoffee, *Questioning Collapse: Human Resilience, Ecological Vulnerability, and the Aftermath of Empire* (Cambridge: Cambridge University Press, 2009); Guy D. Middleton, *Understanding Collapse* (Cambridge: Cambridge University Press, 2017); Rachel F Moll, “The Collapse of Complex Societies,” *Complicity: An International Journal of Complexity and Education* 5, no. 1 (2008); Norman Yoffee and George L Cowgill, *The Collapse of Ancient States and Civilizations* (Tucson: University of Arizona Press, 1991).

¹⁰ Jack A. Goldstone, *Revolution and Rebellion in the Early Modern World* (Berkeley: University of California Press, 1991).

employed by a number of scholars in recent years to explain several periods of crisis and collapse in the past as well as contemporary societies¹¹.

A separate group of scholars have also taken up the task of providing general accounts of collapse, but look more to factors external to the societies in question. These works are often positioned as a response or corrective to perceived shortcomings in Tainter, Goldstone, and others' focus on the fragility or unmalleability of social structures as principal drivers of collapse. This line of research focusses instead on how societies respond to the challenges of shifting climate and ecological threats (or fail to do so). Notably, Weiss gained prominence for his work stressing the causal role of climate fluctuation, for instance showing that the onset of drought conditions across West Asia in ca. 2200 BCE undermined the productive and therefore social stability of societies in the region leading to the collapse of the Akkadian Empire, among others¹². Harper similarly recently argued that worsening ecological conditions, along with growing urbanization and inter-regional exchange, promoted the outbreak several major pandemics in Rome between the 2nd and 7th centuries CE that lead to demographic and economic shocks and ultimately played a major role in bringing the mighty empire to its knees (at least in the western half)¹³.

The leading voice of this turn has been Diamond, who follows Weiss placing the spotlight on how environmental shifts set societies on a path towards failure¹⁴. Diamond, though, is particularly interested in changes resulting from human agency, which are tragically typically unappreciated or overlooked by those living through them. Diamond cites the dramatic depopulation of the Eastern Island Rapa Nui population as a colossal 'self-inflicted wound' from overpopulation and

¹¹ David C. Baker, "The Roman Dominate from the Perspective of Demographic-Structural Theory," *Cliodynamics: The Journal of Theoretical and Mathematical History* 2, no. 2 (2011), <https://escholarship.org/uc/item/5j8740dz>; Jack A. Goldstone, "Demographic Structural Theory: 25 Years On," *Cliodynamics* 8, no. 2 (January 1, 2017), <https://doi.org/10.21237/C7clio8237450>; Daniel Hoyer et al., "Flattening the Curve: Learning the Lessons of World History to Mitigate Societal Crises," 2022, <https://doi.org/10.31235/osf.io/hyj48>; Andrey Korotayev et al., "A Trap At The Escape From The Trap?," *Cliodynamics* 2, no. 2 (2011): 267–303; SA Nefedov, "Demographic-Structural Analysis of Socioeconomic History of Russia. The Late 15th–the Early 20th Centuries," *Ekaterinburg: Izdatelstvo UGGU. In Russian*, 2005; Oscar Ortman et al., "Modeling Social Pressures Toward Political Instability in the United Kingdom after 1960: A Demographic Structural Analysis," *Cliodynamics* 8, no. 2 (January 1, 2017): 113–58, <https://doi.org/10.21237/C7clio8237313>; Peter Turchin, *Ages of Discord: A Structural-Demographic Analysis of American History* (Chaplin, CT: Beresta Books, 2016); Peter Turchin and Andrey Korotayev, "The 2010 Structural-Demographic Forecast for the 2010–2020 Decade: A Retrospective Assessment," *PLOS ONE* 15, no. 8 (2020): e0237458, <https://doi.org/10.1371/journal.pone.0237458>.

¹² Ashish Sinha et al., "Role of Climate in the Rise and Fall of the Neo-Assyrian Empire," *Science Advances* 5, no. 11 (2019): eaax6656, <https://doi.org/10.1126/sciadv.aax6656>; Harvey Weiss, "Megadrought, Collapse, and Causality," in *Megadrought and Collapse: From Early Agriculture to Angkor*, ed. Harvey Weiss (Oxford: Oxford University Press, 2017), 1–31; Harvey Weiss et al., "The Genesis and Collapse of Third Millennium North Mesopotamian Civilization," *Science* 261, no. 5124 (August 20, 1993): 995–1004, <https://doi.org/10.1126/science.261.5124.995>.

¹³ Kyle Harper, *The Fate of Rome: Climate, Disease, and the End of an Empire* (Princeton: Princeton University Press, 2017). See also the highly critical 3-part response from Roman historians to this work, objecting to a perceived mismatch between the contextual details required to study an ancient society against the higher-level abstractions and use of proxy evidence needed to track ecological fluctuations: John Haldon et al., "Plagues, Climate Change, and the End of an Empire: A Response to Kyle Harper's The Fate of Rome (1): Climate; (2): Plagues and a crisis of empire; (3): Disease, agency, and collapse," *History Compass* 16, no. 12 (2018): e12508; e12507; e12506. Also note Harper's response, where among other defenses he calls for the study of history to engage more deeply with quantitative reasoning and theory testing, arguing that "At present, the field needs models that start to synthesize knowledge from traditional sources, archeology, and the natural sciences" (more on this below): Kyle Harper, "Integrating the Natural Sciences and Roman History: Challenges and Prospects," *History Compass* 16, no. 12 (2018): e12520.

¹⁴ Jared Diamond, *Collapse: How Societies Choose to Succeed or Fail* (New York: Viking Penguin, 2005).

over-exploitation of the small island's natural resource base. He argues that once a critical threshold of deterioration in these resources was reached, it created an unrecoverable cycle of further exploitation and deterioration, conflict, and even cannibalism. Diamond offers an explanation for the collapse of the Classic Maya as well. Unlike Tainter's argument, Diamond puts the ultimate blame on prolonged drought, exacerbated by deforestation, though the two share the argument that overpopulation and the increasing exploitation of resources to support these numbers transformed a natural disaster like a drought – which other societies had survived – into a case of civilizational collapse when striking over-extended Mayan capacities.

Ferguson recently produced a much-discussed study echoing many of Diamond's arguments¹⁵. Ferguson contends that climatic shifts, expansion into increasingly marginal territories, or simply the scale of production lead to over-exploitation and depletion of resources, which in turn can cascade into societal collapse. The 'doom' in Ferguson's title, or what Diamond calls society's 'choice to fail'¹⁶, is that humans often don't realise they are in such precarious situations with respect to their natural environment. So, instead of changing production or consumption habits, they maintain or even expand the now maladaptive practices. As notable environmental scientist Bardi put it, "attempts to stave off collapse tend to worsen it"¹⁷.

Many recent works have adopted a similar approach, seeking to explore how changing ecological contexts lead to more or less adaptive responses by the societies that inhabit (and alter) them, while also being sensitive to how a society's structure can lead to overshoot or diminishing returns, as Tainter and Goldstone stress¹⁸. Diamond, Ferguson, and others adduce some tantalizing examples of societies failing under such changing contexts. These works, though, have been criticized for relying on relatively small numbers of unrepresentative or mischaracterized cases as well as for seeking generalizable explanations rather than highlighting the contingencies of each unique case¹⁹.

Another common critique of these studies is that, despite the long pedigree of scholarly interest, no one quite seems able to agree on what exactly collapse *means*²⁰. Some follow Tainter in defining it as a loss in socio-political complexity, some focus on a decline of population and/or the number or size of settlements, some prefer looser definitions as a loss of 'societal functioning'. On top of

¹⁵ Niall Ferguson, *Doom: The Politics of Catastrophe* (New York: Penguin, 2021).

¹⁶ Their 'tragic flaw', in Middleton's phrasing (Middleton, *Understanding Collapse*).

¹⁷ Ugo Bardi, *Before the Collapse* (Springer, 2020), xii.

¹⁸ Bardi, Ugo, 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." *BioPhysical Economics and Resource Quality* 4, no. 1 (2019): 1–9. <https://doi.org/10.1007/s41247-018-0049-0>; Bardi, *Before the Collapse*; Paul R. Ehrlich and Anne H. Ehrlich, "Can a Collapse of Global Civilization Be Avoided?," *Proceedings of the Royal Society B: Biological Sciences* 280, no. 1754 (March 7, 2013): 20122845, <https://doi.org/10.1098/rspb.2012.2845>; Clive Ponting, *A New Green History of the World: The Environment and the Collapse of Great Civilizations* (New York: Random House, 2007); Ronald Wright, *A Short History of Progress* (Toronto: House of Anansi, 2004).

¹⁹ G. W. Bowersock, review of *Review of The Collapse of Complex Societies*, by Joseph A. Tainter, *Journal of Field Archaeology* 18, no. 1 (1991): 119–21, <https://doi.org/10.2307/530158>; Karl W. Butzer, "Collapse, Environment, and Society," *Proceedings of the National Academy of Sciences* 109, no. 10 (2012): 3632–39; McAnany and Yoffee, *Questioning Collapse: Human Resilience, Ecological Vulnerability, and the Aftermath of Empire*; Middleton, *Understanding Collapse*.

²⁰ Middleton, *Understanding Collapse* and Cathy Rubiños and John M Anderies, "Integrating Collapse Theories to Understand Socio-Ecological Systems Resilience," *Environmental Research Letters* 15, no. 7 (July 13, 2020): 075008, <https://doi.org/10.1088/1748-9326/ab7b9c> provide useful overviews of the different proposals put forward in notable collapse studies.

such disagreements, there is also no consensus on what distinguishes collapse from mere change: Is it in the scale of change and, if so, at what thresholds? If some trait or function disappears but re-emerges, perhaps altered in some ways, is this a case of collapse and (re)formation, or simply of a slow transformation? Further, studies focussing on ecological drivers of collapse can struggle at times to distinguish different levels of effect: Is the cooccurrence of an ecological disaster and a societal collapse enough to infer causation? When one society disappears but another one resettles in the same location a short time later (however 'short' is defined), is this a true collapse of the older regime as Weiss suggests, or is this a marker of successful adaptation and resilience as others argue (see below)?

In short, while there have been a great number of insights gained about possible processes that can lead to maladaptive, destructive societal outcomes, there are apparent shortcomings in each of these approaches and many questions remain.

Studying Growth

Studies hailing periods of rapid growth and development have an equally impressive lineage as works on collapse, with early champions such as Toynbee, Sorokin, and others seeking to uncover the foundations for the rise and spread of history's 'great civilizations'²¹. More recent offerings follow a similar turn as collapse studies after Tainter, as scholars have come to eschew narrative tales of flourishing civilizations for more structured, functionalist approaches. These functionalist works generally highlight how uniquely favourable circumstances, a particular technical innovation, or some novel institutional arrangement put some society on a path to outcompete and outperform others.

An important figure in this turn is Pomeranz, who sought to explain how Europe came to dominate the globe in economic and technological output – the so-called 'Great Divergence'²². Pomeranz was building off of Toynbee and others' description of the social, political, military, and economic advantages early Industrialization conferred on early modern European countries. His work spawned a cottage-industry of studies seeking to identify and explain why exactly European countries were able to harness the advantages of coal and fossil-fuel power while others, including formerly great civilizations across Asia, failed to do so, at least until the west had already become global hegemon²³. These studies often contrast the experience of the fortunate Europeans from the

²¹ Fernand Braudel, *Civilization and Capitalism, 15th-18th Century, Vol. III: The Perspective of the World*, vol. 3 (Univ of California Press, 1992); Fernand Braudel and Richard Mayne, *A History of Civilizations* (Penguin Books New York, 1995); Samuel P Huntington, *Political Order in Changing Societies* (New Haven: Yale University Press, 1968); Harold A Innis, *Empire and Communications*. (Oxford: Clarendon Press, 1950); Pitirim A. Sorokin, *Social and Cultural Dynamics*, 3 vols. (New York: American Book Company, 1937); Arnold J Toynbee, *A Study of History* (Oxford University Press, 1934).

²² Kenneth Pomeranz, *The Great Divergence: China, Europe, and the Making of the Modern World Economy* (Princeton: Princeton University Press, 2000).

²³ Stephen Broadberry, "Accounting for the Great Divergence," *Economic History Working Papers* 184/13 (2013), <http://eprints.lse.ac.uk/54573/> <http://eprints.lse.ac.uk/54573/1/WP184.pdf>; Stephen Broadberry and Bishnupriya Gupta, "The Early Modern Great Divergence: Wages, Prices and Economic Development in Europe and Asia, 1500–1800," *The Economic History Review* 59, no. 1 (2006): 2–31; Leonid Grinin and Andrey Korotayev, *Great Divergence and Great Convergence: A Global Perspective* (Springer, 2015); Morris, *Why the West Rules - For Now*; Walter Scheidel, *Escape from Rome: The Failure of Empire and the Road to Prosperity* (Princeton: Princeton University Press, 2019); Jan Luiten Van Zanden, *The Long Road to the Industrial Revolution: The European Economy in a Global Perspective, 1000-1800*, vol. 1 (Leiden: Brill, 2009) ; Jesús Fernández-Villaverde et al., "The Fractured-Land Hypothesis," *NBER Working Papers*, 2020; Chiu Yu Ko, Mark Koyama, and Tuan-Hwee Sng, "Unified China and Divided Europe," *International Economic Review* 59, no. 1 (2018): 285–327.. Though see Goldstone's insistence

rest of the world, or describe how long-held global patterns were broken during the 17th and 18th centuries. Scheidel's recent entry into this debate, for instance, argues that the fracturing of the western Roman Empire into multiple, relatively similar and balanced successor states at the end of antiquity created a peculiar (at least in European history) context that lingered for centuries in which a crowded competitive field of similarly-organized states promoted the rapid innovation, economic growth, and, eventually, early industrialization that characterized the Great Divergence²⁴.

A similar vein of scholarship is less concerned with explaining Europe's exceptional rise in the early modern period and more on understanding divergent experiences in the contemporary world. These works generally argue that particular packages of institutions – governance systems, administrative capacities, economic rules and regulations – tend to favour growth and development over others. Fukuyama, perhaps the most prominent champion of this perspective, stresses the importance of the rule of law along with inclusive and accountable, democratic governance for meeting collective needs and increasing general prosperity²⁵.

Like Fukuyama, Acemoglu and Robinson privilege institutions, highlighting not only democratic and inclusive political systems but also key economic rules and incentives such as property rights and regulations on predatory or asymmetric practices²⁶. They identify 'good' or inclusive institutions that promote growth and stability, featured in the same modern, western nations in northern Europe and North America that Fukuyama lauds. The unlucky rest of the world are saddled with 'bad' or extractive institutions that leave them trapped in negative cycles of poverty and underdevelopment, either because of short-sighted decisions by predatory rulers or due to the imposition of rapacious systems by European colonizers in previous eras. They offer the example of Nogales, a small city that straddles the US-Mexico border, pointing out that those on the US side fare far better by most measures of well-being (life expectancy, education, income, etc.) than those on the other side of the fence. They argue that this difference is a manifestation of colonial history, as British and French colonizers in what became the US and Canada established strong property rights rules and other institutions favouring productive development, whereas Spanish rule in Mexico and southern and central America preferred to exploit and expand more extractive institutions.

As with Tainter and Diamond, a wealth of scholarship has been produced applying the insights of Pomeranz, Broadberry, Fukuyama, Acemoglu and Robinson, and others onto specific examples of

that the 'west' was not as precocious or unusual in its early modern efflorescence compared with eastern and south Asia as traditionally thought (Jack A. Goldstone, "Efflorescences and Economic Growth in World History: Rethinking the 'Rise of the West' and the Industrial Revolution," *Journal of World History* 13, no. 2 (2002): 323–89, <https://doi.org/10.1353/jwh.2002.0034>; Jack A. Goldstone, "Dating the Great Divergence," *Journal of Global History* 16, no. 2 (2021): 266–85, <https://doi.org/10.1017/S1740022820000406>.)

²⁴ Scheidel, *Escape from Rome*.

²⁵ Fukuyama, *The End of History and the Last Man*; Francis Fukuyama, *The Origins of Political Order: From Prehuman Times to the French Revolution* (New York: Farrar, Straus and Giroux, 2011); Francis Fukuyama, *Political Order and Political Decay: From the Industrial Revolution to the Globalization of Democracy* (New York: Farrar, Straus and Giroux, 2014).

²⁶ Daron Acemoglu and James A. Robinson, *Why Nations Fail: The Origins of Power, Prosperity and Poverty* (New York: Crown Business, 2012). Cf. Mark Koyama and Jared Rubin, *How the World Became Rich: The Historical Origins of Economic Growth* (John Wiley & Sons, 2022).

spectacular societal flourishing²⁷. And as with studies centered on collapse, these works on growth present conclusions largely through vivid, detailed descriptions of a few select examples. Similar questions, then, also linger with these studies, namely: If the advantages of industrialization set Europe on a course to surpass the rest of the world, why have developmental disparities persisted in spite of the proliferation of industrial production globally? If contemporary social democracies like Denmark provide the playbook for prosperity and stability, what allowed northern Europe to develop these policies to begin with, and how transferable is their path to other areas²⁸? And how do we explain the growth of an authoritarian regime like China in recent years (a seeming affront to Fukuyama and other's expectations of the triumph of democratic rule)? Or why do advanced western states with inclusive institutions and long histories of growth and prosperity, as Acemoglu and Robinson highlight, continue to exhibit stark regional differences, as with northern vs southern

²⁷ A decidedly non-exhaustive list of examples, both academic and work aimed at more general audiences, includes: Van Zanden and colleagues' depiction of the specific trajectories undertaken by different early modern states who were part of, or left behind in, the economic Great Divergence (Leticia Arroyo Abad and Jan Luiten van Zanden, "Growth under Extractive Institutions? Latin American per Capita GDP in Colonial Times" (Utrecht University, Centre for Global Economic History, 2014), <http://econpapers.repec.org/paper/ucgwpaper/0061.htm>); Jean-Pascal Bassino et al., "Japan and the Great Divergence, 730–1874," *Explorations in Economic History* 72 (April 1, 2019): 1–22, <https://doi.org/10.1016/j.eeh.2018.11.005>); Bozhong Li and Jan Luiten Van Zanden, "Before the Great Divergence? Comparing the Yangzi Delta and the Netherlands at the Beginning of the Nineteenth Century," *The Journal of Economic History* 72, no. 04 (2012): 956–89; and Pim De Zwart and Jan Luiten Van Zanden, "Labor, Wages, and Living Standards in Java, 1680–1914," *European Review of Economic History* 19, no. 3 (2015): 215–34, <https://doi.org/10.1093/ereh/hev007>); Kamen's study on how the rise of the Spanish Empire was supported by favourable economic structures in line with Acemoglu and Robinson's ideas (Henry Kamen, *Spain's Road to Empire: The Making of a World Power, 1492–1763* (Penguin Adult, 2003)); Kennedy on the adaptability of early Islamic political and military administration during their rapid advance out of Arabia in the 7th century CE (Hugh Kennedy, *The Great Arab Conquests: How the Spread of Islam Changed the World We Live In* (Philadelphia, Pa: Da Capo Press, 2008)); Lomas' work highlighting how the rise of Republican Rome was bolstered by the formalization of political administration and law (Kathryn Lomas, *The Rise of Rome: From the Iron Age to the Punic Wars* (Cambridge, MA: The Belknap Press of Harvard University Press, 2018)), themes echoed by both Everitt's ideas about the rise of the Roman Empire (Anthony Everitt, *The Rise of Rome: The Making of the World's Greatest Empire* (Random House Incorporated, 2012)) as well as Manning's explanation of the subsequent rise of the Empire after the Republic's fall (J. G. Manning, *The Open Sea: The Economic Life of the Ancient Mediterranean World from the Iron Age to the Rise of Rome* (Princeton University Press, 2018)); Chang's and Lewis' ideas about how administrative reform and organizational capacity gains made during the tumultuous Warring States period and the early phases of imperial China laid the foundation for subsequent Empire-building and the stability of imperial rule in the region (Chun-shu Chang, *The Rise of the Chinese Empire: Frontier, Immigration, and Empire in Han China, 130 BC–AD 157*, vol. 2 (University of Michigan Press, 2007); Mark Edward Lewis, *The Early Chinese Empires: Qin and Han* (Cambridge, Massachusetts: Belknap Press of Harvard University Press, 2007)); Moreno Garcia's description of how early Dynastic leaders reaped material and organizational benefits from institutions favouring resource growth while ceding some authority to powerful regional elites (Juan Carlos Moreno Garcia, *The State in Ancient Egypt: Power, Challenges and Dynamics, Debates in Archaeology* (London: Bloomsbury Academic, 2020), <https://doi.org/10.5040/9781350075023>); Covey on how Inca rulers pursued a sustained policy of consolidation, ideological justification of authoritarian and bellicose rulers, and state-led development of economic output which promoted their imperial expansion from the Peruvian highlands (R. Alan Covey, *How the Incas Built Their Heartland: State Formation and the Innovation of Imperial Strategies in the Sacred Valley, Peru*, History, Languages, and Cultures of the Spanish and Portuguese Worlds (Ann Arbor: University of Michigan Press, 2006); R Alan Covey, "The Inca Empire," in *The Handbook of South American Archaeology*, ed. Helaine Silverman and William H. Isbell (Springer, 2008), 809–30); and countless others.

²⁸ Nina Witoszek and Atle Midttun, *Sustainable Modernity: The Nordic Model and Beyond* (Routledge, 2018).

parts of Italy²⁹ or urban coastal areas compared to interior rural areas in the US³⁰, despite enjoying the same institutions?

Studying Both Sides of the Coin

A related line of scholarship is interested in both collapse and growth, seeking to explain the two coupled phases: The rise and development of a society which subsequently experiences breakdown and collapse, or the reverse, societies that coalesce in the ashes of a fallen prior state. These studies³¹ pitch collapse and growth as really two sides of the same coin. This perspective provides an advantage over many of the studies mentioned above that focus on only one face of this coin and so run the risk of reifying one process over the other, overlooking the connection between the two over longer timescales. These coupled narratives also have an advantage in being to ask whether the same key factors are implicated in both processes. Ober, for example, explains what he terms the economic efflorescence of Classical Greek city-states: “Competition, along with growing human capital and lower transaction costs ... promoted economic growth,” linking this rise directly with the later fall by noting that “The same conditions paved the way, however, for an entrepreneurial and opportunistic authoritarian leader to borrow selectively from Greek institutions and technological innovations and thereby to conquer the mainland Greek states, ending the era of full great-polis independence”³².

Many of these coupled narratives, however, avoid explicit assertions of the causal mechanisms involved in the chosen cases, let alone that would pertain more generally. Wilkinson, to take one example, offers a popular volume on the rise and fall of dynastic Egypt – all 4 millennia or so – that provides many captivating details on the waxing and waning of fortune experienced by the various dynasties. His primary focus is to document the precocious innovations of great rulers who shaped the course of Egyptian history, creating “the concept of the nation-state that still dominates our planet”³³. Such a ‘great man’ focus, though, bellies any attempts to propose any general theory or insights that could be applied to alternate cases; the explanations offered are restricted to the peculiar cases and unique circumstances described.

Indeed, all of the approaches cited so far tend to magnify particular historical moments and certain sets of traits or processes that seem connected to the outcomes described, whether that outcome is spectacular growth or monumental collapse. Many of these studies imply (occasionally making explicit) fairly strong path dependence as well, presenting the end of the story with an air of inevitability once initial conditions and systems have been established: Mayan populations are

²⁹ Guido Tabellini, “Culture and Institutions: Economic Development in the Regions of Europe,” *Journal of the European Economic Association* 8, no. 4 (2010): 677–716, <https://doi.org/10.1111/j.1542-4774.2010.tb00537.x>.

³⁰ Jesse R. Harrington and Michele J. Gelfand, “Tightness–Looseness across the 50 United States,” *Proceedings of the National Academy of Sciences* 111, no. 22 (June 3, 2014): 7990–95, <https://doi.org/10.1073/pnas.1317937111>.

³¹ Evident from titles such as: Sunny Y. Auyang, *The Dragon and the Eagle: The Rise and Fall of the Chinese and Roman Empires* (New York: ME Sharpe, 2014); Peter Heather, *Empires and Barbarians: The Fall of Rome and the Birth of Europe* (Oxford: Oxford University Press, 2010); Parviz Kambin, *A History of the Iranian Plateau: Rise and Fall of an Empire* (iUniverse, 2011); Oded Lipschitz, *The Fall and Rise of Jerusalem: Judah Under Babylonian Rule* (Eisenbrauns, 2005); Hugh Kennedy, *The Court of the Caliphs: The Rise and Fall of Islam’s Greatest Dynasty* (London: Weidenfeld & Nicolson, 2004); William S. Maltby, *The Rise and Fall of the Spanish Empire* (Palgrave Macmillan, 2008); Josiah. Ober, *The Rise and Fall of Classical Greece*, 2015; Toby Wilkinson, *The Rise and Fall of Ancient Egypt* (Random House Trade Paperbacks; Reprint edition, 2013); Ian Worthington, *By the Spear: Philip II, Alexander the Great, and the Rise and Fall of the Macedonian Empire* (Oxford University Press, USA, 2014).

³² Ober, *The Rise and Fall of Classical Greece*, 294.

³³ Wilkinson, *The Rise and Fall of Ancient Egypt*, xxxiv.

described as ‘doomed’ by the ecologically-exploitative economies that facilitated their early growth and the misfortune of settling in a drought-exposed area³⁴, or the present-day prosperity enjoyed by formerly colonized territories like Canada is credited to the ‘blessing’ of having been imbued with inclusive institutions under British rule in the 18th and 19th centuries CE³⁵.

The coupled narratives are also open to the same criticisms as the collapse- and growth-focused studies discussed above, notably in the struggle to apply insights in a wider set of contexts than the few, select cases chosen for study. All of these approaches too have fairly disappointing track records in predicting the path that societies have undertaken subsequent to writing. This is especially true for the growth and development focussed literatures, but all of the intriguing work into the nature of societal collapse or the narratives describing coupled processes have likewise not translated into insights that could allow political theorists and policy makers to track early warning signs of turmoil and so avoid the more disruptive consequences³⁶. Tracking two sides of a single coin has advantages, but to gain causal insight may require studying the two sides of several coins put together; to trace how societies in a given area rise then fall, then see another rise in its place and fall again in turn.

Studying Resilience

An increasingly popular line of research turns attention away from the monumental changes that societies experience towards a concern for how societies to persist in the face of ecological threat or rising internal tensions; namely, societal resilience. These works document or imply that a society had experienced a previous period of growth which generated ‘mature’ and functioning social systems. They then stress the ability of these systems to maintain and preserve function in spite of shifting contexts³⁷. Collapse may have been prevalent, but resilience scholars argue it is by no means inevitable, pointing to examples of societies escaping the sort of diminishing returns to productivity or calamitous ecological challenges adduced by collapse-focussed studies.

Offerings in this line prefer to treat such periods as representing change and adaptation. For example, the disappearance of monumental complexes in the southwestern US Chaco Canyon region in the early 2nd millennium CE are often seen as part of the ‘collapse’ of Puebloan society, but some scholars highlight how other features persisted or quickly returned with some alteration

³⁴ Diamond, “Collapse: How Societies Choose to Succeed or Fail.”

³⁵ Acemoglu and Robinson, *Why Nations Fail*.

³⁶ On the difficulty of forecasting socio-political unrest and state failure, see for instance: Drew Bowlsby et al., “The Future Is a Moving Target: Predicting Political Instability,” *British Journal of Political Science* 50, no. 4 (October 2020): 1405–17, <https://doi.org/10.1017/S0007123418000443>; Dan Braha, “Global Civil Unrest: Contagion, Self-Organization, and Prediction,” *PloS One* 7, no. 10 (2012): e48596; Lars-Erik Cederman and Nils B Weidmann, “Predicting Armed Conflict: Time to Adjust Our Expectations?,” *Science* 355, no. 6324 (2017): 474–76; Aaron Clauset, Maxwell Young, and Kristian Skrede Gleditsch, “On the Frequency of Severe Terrorist Events,” *Journal of Conflict Resolution* 51, no. 1 (2007): 58–87; Jack A. Goldstone, “How Valuable Are the Indicators?,” *The Cipher Brief* (blog), August 18, 2016, <https://www.thecipherbrief.com/how-valuable-are-the-indicators>.

³⁷ There are several collected volumes featuring contributions responding to previous claims of Diamond, Tainter, and others and challenging the notion of states as static entities that collapse rather than dynamic systems that change and transform, losing and gaining in complexity and other measures of societal functioning. Notable examples are: Ronald K Fauseit, *Beyond Collapse: Archaeological Perspectives on Resilience, Revitalization, and Transformation in Complex Societies* (Southern Illinois University Press, 2016); McAnany and Yoffee, *Questioning Collapse: Human Resilience, Ecological Vulnerability, and the Aftermath of Empire*; Glenn M Schwartz and John J Nichols, *After Collapse: The Regeneration of Complex Societies* (Tucson: University of Arizona press, 2010). See also Rubiños and Anderies, “Integrating Collapse Theories to Understand Socio-Ecological Systems Resilience” for a useful summary of work both on collapse as well as the more recent turn towards resilience.

– monumental building for instance resumes in certain parts of Chaco shortly after the ‘collapse’, but employing different styles and building techniques suited to the new labour demands³⁸.

Another recent trend is to frame these processes as part of a longer adaptive cycle, an idea repurposed from the concept developed by environmental scientists and adapted recently by some archaeologists and urban studies researchers³⁹. Here collapse is described as a release of built-up tension or ‘energy’ within a closed, complex system, but this release then allows the system to be restored, perhaps with modification. As Fauseit recently remarked, envisioning collapse and resilience studies as separate beasts sets up “an unnecessary dichotomy, because collapse and resilience are part of the same phenomenon, and one cannot be studied without addressing the other”⁴⁰.

As with collapse and growth work, resilience studies tend to focus on a small set of cases, highlighting the unique features, adaptability, and ‘ingenuity’ of these societies. Critics thus have likewise found it difficult to cull general principles or to identify a set of key features that make some societies more resilient than others facing similar challenges. Hunt and Lipo, for instance, point to the resilience of the Rapa Nui populations in Easter Island – one of Diamond’s preferred examples of collapse – in the face of changing ecological conditions, placing the blame for the loss of their civilization rather on the destruction wrought by the arrival of European colonizers⁴¹. While limited mention is made of other societies that had faced similar challenges, systematic comparison between the Rapa Nui and other societies’ capacity (or inability) to adapt is absent in this and most other accounts of resilience. This leaves a host of questions unaddressed: Were the Rapa Nui simply lucky in finding ways to adapt to diminishing resources, then unlucky to be exposed to a destructive outside force when the European arrived? How does illuminating this experience help us understand resilience in other contexts, past, present, or future? The focus of these works remains on constructing detailed narratives of particular, generally (at least implicitly) exceptional cases rather than on seeking common patterns.

Further, the very notion of resilience as a desirable social trait has been questioned, as in certain situations resilience actually perpetuates maladaptive practices that lead to depressed well-being and ultimately foment instability⁴². Resilience in a system that institutionalizes inequalities and

³⁸ Jakob W Sedig, “The Decline and Reorganization of Southwestern Complexity: Using Resilience Theory to Examine the Collapse of Chaco Canyon,” in *Beyond Collapse: Archaeological Perspectives on Resilience, Revitalization, and Transformation in Complex Societies*, ed. Ronald K Fauseit (Carbondale: Southern Illinois University Press, 2016), 237–61.

³⁹ Crawford S Holling and Lance H Gunderson, “Resilience and Adaptive Cycles,” in *Panarchy: Understanding Transformations in Human and Natural Systems*, ed. Crawford S Holling and Lance H Gunderson (Washington D.C.: Island Press, 2002), 25–62; Michael E Smith et al., “The Persistence of Ancient Settlements and Urban Sustainability,” *Proceedings of the National Academy of Sciences* 118, no. 20 (2021).

⁴⁰ Ronald K Fauseit, “Collapse, Resilience, and Transformation in Complex Societies: Modeling Trends and Understanding Diversity,” in *Beyond Collapse: Archaeological Perspectives on Resilience, Revitalization, and Transformation in Complex Societies*, ed. Ronald K Fauseit (Carbondale: Southern Illinois University Press, 2016), 4.

⁴¹ Terry Hunt and Carl Lipo, “Ecological Catastrophe and Collapse: The Myth of ‘Ecocide’ on Rapa Nui (Easter Island),” in *Questioning Collapse: Human Resilience, Ecological Vulnerability, and the Aftermath of Empire*, ed. McAnany, Patricia A and Norman Yoffee (Cambridge: Cambridge University Press, 2009), 21–45.

⁴² Shalanda H Baker, “Anti-Resilience: A Roadmap for Transformational Justice within the Energy System,” *Harvard Civil Rights-Civil Liberties Law Review* 54 (2019): 1-48; Roberto E Barrios, “Resilience: A Commentary from the Vantage Point of Anthropology,” *Annals of Anthropological Practice* 40, no. 1 (2016): 28–38; Hugo Herrera,

denies access to material, political, and social resources may be seen to perpetuate the status quo, building inertia where substantial, systemic change is desired. Indeed, a handful of scholars have pointed to the frequency by which major reforms and improvements in popular well-being followed periods of large-scale violence, unrest, and collapse. For instance, the improved economic conditions enjoyed by labourers in Northern Europe have been credited to the demographic devastation of the Bubonic Plagues, while the rise in participatory democracy and increased public goods provision offered by European states during the early modern period have been argued as resulting from these states' need to maintain cohesion while mobilizing ever greater numbers of troops and resources to the war efforts they frequently faced⁴³.

Many policy-makers are currently seeking to boost resilience in contemporary contexts in the face of climate change and other major global threats, yet others point out that the damages wrought by persistent (and in many cases growing) wealth inequalities and racial divides call rather for major social, political, and economic overhauls⁴⁴. This underscores the importance of studies looking to tease apart the influence of different factors involved in societal functioning in order to assess which traits are desirable to be 'maintained', which ought to be discarded, and how best to manage the difference. Nevertheless, resilience studies add an important dimension to these topics as they seek to trace how societies function and respond to change over longer time-scales than many of the works described above.

Studying Complex Systems

In a similar vein to resilience studies, an increasing number of scholars in recent years have been adapting methods from the natural sciences, particularly the study of complex systems⁴⁵, in order to build a more holistic, integrated approach to understand how societies function. Here, the nitty-gritty details of specific cases are put aside in favour of articulating the general processes that occur over and over in various geographical and temporal contexts. Even Tainter came to eschew the idea of collapse as the thing-to-be-explained, asserting in the volume on resilience edited by Faulseit that "Rather than asking, 'What went wrong?' it would be more productive and less biased to situate collapse within the broader anthropological question, 'What causes societies to vary and change in complexity?'"⁴⁶. A notable departure from the resilience-focussed work noted above, however, is that the complex systems approach more explicitly invites multiple types of outcome; societies can vary in complexity over time in all or only some components, certain traits can persist

"Resilience for Whom? The Problem Structuring Process of the Resilience Analysis," *Sustainability* 9, no. 7 (2017), <https://doi.org/10.3390/su9071196>.

⁴³ David Stasavage, "The Rise of Western Democracy: Why It Happened in Europe and Not China or the Middle East," 2019; Kenneth Scheve and David Stasavage, "The Conscription of Wealth: Mass Warfare and the Demand for Progressive Taxation," *International Organization*, 2010, 529–61; Walter Scheidel, *The Great Leveler: Violence and the History of Inequality from the Stone Age to the Twenty-First Century* (Princeton University Press, 2017).

⁴⁴ Facundo Alvaredo et al., eds., *The World Inequality Report* (Cambridge: Harvard University Press, 2018); Gargi Bhattacharyya, John Gabriel, and Stephen Small, *Race and Power: Global Racism in the Twenty-First Century* (New York: Routledge, 2016); Ta-Nehisi Coates, *Between the World and Me* (Melbourne, Victoria: The Text Publishing Company, 2015); Thomas Piketty, *Capital and Ideology* (Cambridge: Harvard University Press, 2020).

⁴⁵ See e.g. Stefan Thurner, Rudolf Hanel, and Peter Klimek, *Introduction to the Theory of Complex Systems* (Oxford: Oxford University Press, 2018).

⁴⁶ Joseph A Tainter, "Why Collapse Is so Difficult to Understand," in *Beyond Collapse: Archaeological Perspectives on Resilience, Revitalization, and Transformation in Complex Societies*, ed. Ronald K Faulseit (Carbondale: Southern Illinois University Press, 2015), 27-39.

while others disappear, and whole systems can collapse or transform, allowing space for new entities to grow and spread.

This work seeks not to pinpoint any great, single cause of disaster or driver of development, but to explain how elements within a system interact in complicated and often difficult to appreciate ways, generally exploring very long time courses and taking a fairly macro-level view of the topic. The goal of studying complex dynamic systems themselves in this way, rather than shining a light on any one element within this process such as growth, spread, or decline, is really to learn how to manage (inevitable) societal transformation⁴⁷.

Feinman and Nicholas, for instance, take this tact to re-evaluate the supposed collapse of the Oaxacan center of Monte Albán, concluding that pinpointing a single moment at the end of the 1st millennium CE, traditionally ascribed as the transition from ‘Classic’ to ‘Postclassic’ phases, does little justice to the complexity of the empirical record⁴⁸. While acknowledging widespread destruction of certain political centres and elite complexes along with massive loss of life during this time, these authors avoid the idea of collapse. Instead, they stress the changes in complexity that occurred over a longer time scale, revealing a gradual shift from more to less centralized political authority and more regionally-focused monumental construction, while certain cultural manifestations such as Zapotec language and ideological traditions not only survived this supposed ‘collapse’, but persist to the present.

This approach provides several advantages over other perspectives, particularly in not reifying only one type of process – growth, collapse, or resilience – or privileging one level of explanation – climate, governmental sophistication, cultural traits – over others, a common critique of much of the other work described here. It also holds the promise of avoiding the trap of cycle-focussed works, which have been criticized for offering specious patterns, but proving unable to provide any tractable insights into real-world contexts⁴⁹ (more on this below). By pinpointing the causal forces that drive societal change, cycles may be identified empirically but are explained as arising from complex social processes. Bardi for instance notes that a complex systems framework can demystify cycles, remarking that “In reality, the historical cycles of empires and civilizations indicates that there have to be generally valid mechanisms that bring about their fall”⁵⁰. For Bardi, the way that increasing scale and complexity stress a society’s capacity to respond to challenges, following Tainter’s logic, coupled with the impact of resource availability *à la* Diamond, are the most convincing of such mechanisms.

The insights and tools of complex systems research hold great promise in understanding the interconnected processes of growth, collapse, and resilience, especially in providing a framework to study explicitly how traits and behaviours at different scales and over various time-courses interact to produce divergent outcomes. The field, though, at least as it relates to studying societal processes, still requires some maturing. Notably, there remains no clear consensus about how to

⁴⁷ Richard Heinberg, *The End of Growth: Adapting to Our New Economic Reality* (Gabriola Island: New Society Publishers, 2011); Donella Meadows and Dennis Meadows, *The Limits to Growth* (New York: Universe Books, 1972); Donella Meadows, Jorgen Randers, and Dennis Meadows, *Limits to Growth: The 30-Year Update* (Vermont: Chelsea Green Publishing, 2004).

⁴⁸ Gary Feinman and Linda Nicholas, “After Monte Albán in the Central Valleys of Oaxaca: A Reassessment,” in *Beyond Collapse: Archaeological Perspectives on Resilience, Revitalization, and Transformation in Complex Societies*, ed. Ronald Faulseit, (Carbondale: Southern Illinois University Press, 2016), 43–69.

⁴⁹ Ferguson, *Doom*.

⁵⁰ Bardi, *Before the Collapse*, 153.

articulate or test causal hypotheses within this framework, especially with an aim to reaching generalizable conclusions. Studies often rely on description of a few select cases, similar to many of the other approaches noted above, or they provide rather abstract theorizing about complexity as a concept, leaving it unclear how the insights could be applied to explain or predict outcomes in a range of different cases. Bardi points out, in fact, that this reticence about identifying causal forces in complex systems is deliberate. He notes that, when trying to understand examples of societal collapse “The first question usually asked is what caused the collapses, but it may be an ill-posed one. It is typical of complex systems to behave in a complex manner and that may generate a series of feedback effects that may mistakenly be taken as the “cause” of the collapse,” concluding that “complex systems defy simple interpretations in terms of cause and effect”⁵¹. In a similar vein, Tainter argued recently that “nothing necessarily goes wrong in a collapse. Collapse is a normal evolutionary process” that, as such, requires no explicit causal explanation⁵².

These are certainly valuable insights that provide needed nuance to previous attempts to pinpoint and explain periods of collapse or growth. This perspective, however, belies attempts to derive any generalized understanding or produce actionable insights into how to address, head-off, or at least manage the collapses (or, perhaps better, transformations) that threaten to disrupt societal functioning around the world today – from climate change to pandemics to sectarian violence – regardless of how ‘normal’ these events may be within a complex system. Further, there has been little integrative work to date attempting to reconcile the different models of complex interactions documented by these studies. Rarely are explicit statistical or empirical tests used to pit alternate causal mechanisms against each other directly⁵³, which makes it difficult to assess which factors or feedbacks drive outcomes in different cases, whether the focus is on growth, collapse, or resilience.

Studying Societal Dynamics: The Search for Causality

So after all of this work to expose the ways that societies function over time, where are we left? Clearly, an enormous wealth of empirical detail has been brought to light on a host of societies from all corners of the globe over thousands of years of history. Yet, there is little overlap between the cases selected, factors highlighted, or perspectives taken in these works. This leaves us without a clear and widely agreed upon foundation from which to build a study that could address the host of issues involved in tracking societal change, belying attempts to draw more general conclusions.

The case of the Classic Maya period in 1st century CE Mesoamerica offers a neat illustration of this, as it is one of the more common examples cited across these approaches. After surveying the large literature on the fate of this once great civilization, are we to conclude that the Maya collapsed because they faced terrible persistent drought but failed to recognize and change their productive systems in the face of their degrading environment⁵⁴? Or because they had grown too complex for their governing and economic systems to manage⁵⁵? Or simply because they fell victim to invasion

⁵¹ Bardi, 225.

⁵² Tainter, “Why Collapse Is so Difficult to Understand,” 37.

⁵³ T. E. Currie, “Inequality and Institutions: A Review Essay on Why Nations Fail by Daron Acemoglu and James A. Robinson,” *Cliodynamics: The Journal of Theoretical and Mathematical History* 4, no. 1 (2013); Peter Turchin, “Arise ‘Cliodynamics,’” *Nature* 454, no. 7200 (2008): 34–35, <https://doi.org/10.1038/454034a>.

⁵⁴ Diamond, “Collapse: How Societies Choose to Succeed or Fail”; Ferguson, *Doom*.

⁵⁵ Tainter, *The Collapse of Complex Societies*.

by larger, more powerful and prosperous neighbours⁵⁶? Or was it the culmination or interaction of these different factors⁵⁷, and if so which ones and what role exactly did each one play? And how do we explain the rise of Mayan society to begin with: Were they fortunate to settle in a productive landscape that became increasingly deteriorated and unstable, to which they failed to respond adequately? Did they develop growth-enhancing institutions which somehow became degraded or altered, and if so how exactly? Or did they not actually collapse at all, as many aspects of Mayan culture and civilization persist to this day⁵⁸? But what then to do with all the other evidence adduced for the disappearance of Mayan sites and massive decline in population?

The study of societal dynamics, a fairly recent entry into this large body of scholarship, seeks to combine the insights of collapse, growth, resilience, and complexity studies into a single framework. Scholars of societal dynamics take their cue in large part from the complex systems science approach described above, incorporating also insights from cultural evolution and a host of other disciplines ranging from physics, psychology, and economics along with history, archaeology, sociology, anthropology, and other fields more traditionally associated with the study of the human past. The focus on dynamics comes from the idea that social systems never undergo only one major transformation, but, like other biological and ecological systems, are always in motion. Proponents argue that only by studying the series of changes – as well as periods of persistence or resilience – that societies experience over the long-run can these processes be properly understood.

As a still-developing area of research, there is no established unifying method for this research. What does appear to be emerging as a common set of concerns, though, are a focus on *longue durée* patterns and cross-cultural comparison, along with a central interest in developing and testing the causal mechanisms that drive the patterns being studied. Indeed, it is the combination of this concern with causation and the ability to explain both peculiar and common occurrences with an appreciation of complex systemic interaction between factors that separates the study of societal dynamics from the other approaches described here.

Causality is a tricky process to pin down, but these works attempt to put theoretically-derived causal mechanisms to the test against a range of empirical data, often borrowing quantitative, statistical approaches from the natural sciences. While this body of scholarship is still in its infancy, a number of projects have been developed in recent years employing a range of methods in pursuit of macro-level causal understanding⁵⁹. Many follow a cultural evolutionary perspective,

⁵⁶ T Patrick Culbert, “The Collapse of Classic Maya Civilization,” in *The Collapse of Ancient States and Civilizations*, ed. Norman Yoffee and George L Cowgill (Tucson: University of Arizona Press, 1991), 69–101.

⁵⁷ Rebecca Storey and Glenn R Storey, “Requestioning the Classic Maya Collapse and the Fall of the Roman Empire: Slow Collapse,” in *Beyond Collapse: Archaeological Perspectives on Resilience, Revitalization, and Transformation in Complex Societies*, ed. Ronald K Fauseit (Carbondale: Southern Illinois University Press, 2015), 99–123.

⁵⁸ Patricia A McAnany and Tomás Gallareta Negrón, “Bellicose Rulers and Climatological Peril? Retrofitting Twenty-First-Century Woes on Eighth-Century Maya Society,” in *Questioning Collapse: Human Resilience, Ecological Vulnerability, and the Aftermath of Empire*, ed. Patricia A McAnany and Norman Yoffee (Cambridge: Cambridge University Press, 2009), 142–75; Middleton, *Understanding Collapse*.

⁵⁹ Notably Turchin’s work employing a SDT approach to pinpoint the causal processes behind long-run historical processes: Peter Turchin, *Historical Dynamics: Why States Rise and Fall* (Princeton: Princeton University Press, 2003); Peter Turchin, *War and Peace and War: The Life Cycles of Imperial Nations* (New York: Pi Press, 2005); Peter Turchin and Sergey Nefedov, *Secular Cycles* (Princeton: Princeton University Press, 2009). Other notable examples of this approach include: Kohler’s work studying the dynamics of populations in the southwestern US (Janssen, Marco A., Timothy A. Kohler, and Marten Scheffer. “Sunk-Cost Effects and Vulnerability to Collapse in Ancient Societies.” *Current Anthropology* 44, no. 5 (December 1, 2003): 722–28. <https://doi.org/10.1086/379261>; Timothy A

which adapts theories and methods developed for the study of biological evolution and applies them to trace how and why various socio-cultural traits change over time⁶⁰. A similar tool that has become popular in dynamic historical research, also adapted directly from biological evolution, is the use of phylogenetic models⁶¹.

The relatively new field of cliodynamics⁶² developed recently precisely in order to bring this approach to bear on large bodies of historical information. Named after Clio, the ancient Greek

Kohler et al., “Modelling Prehispanic Pueblo Societies in Their Ecosystems,” *Ecological Modelling* 241 (2012): 30–41; Timothy M. Lenton et al., “Survival of the Systems,” *Trends in Ecology & Evolution*, (January 4, 2021), <https://doi.org/10.1016/j.tree.2020.12.003>; Marten Scheffer et al., “Loss of Resilience Preceded Transformations of Pre-Hispanic Pueblo Societies,” *Proceedings of the National Academy of Sciences* 118, no. 18 (2021), <https://www.pnas.org/content/118/18/e2024397118#sec-5>; Korotayev et al.’s SDT studies of macro-level global social dynamics: Andrey V Korotayev, Artemy S Malkov, and Daria A Khaltourina, *Secular Cycles and Millennial Trends* (Moscow: Editorial URSS, 2006); Andrey Korotayev, Daria Khaltourina, and Artemy Malkov, *Introduction to Social Macrodynamics: Compact Macromodels of the World System Growth* (Moscow: Editorial URSS, 2006); The world-system approach taken by Chase-Dunn and colleagues quantifying patterns in how the largest states within a given network rise and fall in response to inter-state interactions (Chase-Dunn, Christopher, Richard Niemeyer, Alexis Alvarez, Hiroko Inoue, Kirk Lawrence, and James Love. “Cycles of Rise and Fall, Upsweeps and Collapses: Changes in the Scale of Settlements and Politics since the Bronze Age,” *History & Mathematics: Processes and Models of Global Dynamics*, ed. (2010): 64–91, 2010; Hiroko Inoue et al., “Polity Scale Shifts in World-Systems since the Bronze Age: A Comparative Inventory of Upsweeps and Collapses,” *International Journal of Comparative Sociology* 53, no. 3 (2012): 210–29; Hiroko Inoue et al., “Urban Scale Shifts since the Bronze Age: Upsweeps, Collapses, and Semiperipheral Development,” *Social Science History* 39, no. 02 (2015): 175–200); Peregrine’s recent study showing how the same climate event led to divergent outcomes depending on the different evolved characteristics of the impacted societies (Peter N Peregrine, “Climate and Social Change at the Start of the Late Antique Little Ice Age,” *The Holocene* 30, no. 11, (2020): 1643–48.; Heinrich’s well-known explanation of the great divergence rooted in the peculiar cultural expressions of modern, industrialized western nations (Joseph Henrich, *The WEIRDest People in the World: How the West Became Psychologically Peculiar and Particularly Prosperous* (New York: Farrar, Straus and Giroux, 2020); Gray and Watts’ encouragement to utilize large samples of empirical, cross-cultural data to explore major changes and transitions in human socio-cultural evolution (Russell D. Gray and Joseph Watts, “Cultural Macroevolution Matters,” *Proceedings of the National Academy of Sciences* 114, no. 30 (July 25, 2017): 7846–52, <https://doi.org/10.1073/pnas.1620746114>); and Mace et al.’s work tracing the evolution of cooperation-enhancing social, religious, and political traits over long periods (T. E. Currie and Ruth Mace, “Mode and Tempo in the Evolution of Socio-Political Organization: Reconciling ‘Darwinian’ and ‘Spencerian’ Evolutionary Approaches in Anthropology,” *Philosophical Transactions of the Royal Society of London B: Biological Sciences* 366, no. 1567 (2011): 1108–17; Erhao Ge et al., “Large-Scale Cooperation Driven by Reputation, Not Fear of Divine Punishment,” *Royal Society Open Science* 6, no. 8 (2019): 190991, <https://doi.org/10.1098/rsos.190991>).

⁶⁰ Robert Boyd and Peter J. Richerson, *The Origin and Evolution of Cultures* (Oxford: Oxford University Press, 2004); Joseph Henrich and Natalie Henrich, *Why Humans Cooperate A Cultural and Evolutionary Explanation* (Oxford: Oxford University Press, 2007); Alex Mesoudi, *Cultural Evolution: How Darwinian Theory Can Explain Human Culture and Synthesize the Social Sciences* (Chicago: University of Chicago Press, 2011); Peter Peregrine, “Atlas of Cultural Evolution,” *World Cultures* 14, no. 1 (2003); Peter J. Richerson and Robert Boyd, *Not by Genes Alone: How Culture Transformed Human Evolution* (Chicago: University of Chicago Press, 2005).

⁶¹ For instance, a recent study by Currie et al. employs phylogenetic modelling and historical data to explain both similarities and divergence in institutional systems of various societies across the globe at different periods, and trace how institutions co-evolve with other societal features (Thomas E. Currie et al., “The Cultural Evolution and Ecology of Institutions,” *Philosophical Transactions of the Royal Society B: Biological Sciences* 376, no. 1828 (July 5, 2021): rsthb.2020.0047, 20200047, <https://doi.org/10.1098/rsthb.2020.0047>). Mace et al. take a similar approach to argue that intense interstate violence generally propels the development of apocryphal, eschatological beliefs (traced using phylogenetic tables), which in turn have been argued to promote cohesion and coordination among believers and thus aid them in competition against other groups: Kiran Basava, Hanzhi Zhang, and Ruth Mace, “A Phylogenetic Analysis of Revolution and Afterlife Beliefs,” *Nature Human Behaviour*, (January 4, 2021): 1–8, <https://doi.org/10.1038/s41562-020-01013-4>.

⁶² Peter Turchin, “Arise ‘Cliodynamics,’” *Nature* 454, no. 7200 (2008): 34–35, <https://doi.org/10.1038/454034a>.

muse of history (Clio) and the study of how things change over time (dynamics), cliodynamics research seeks to test various causal theories against a large set of time-series data, ideally from a representative cross-cultural sample. This is the approach taken for instance by [Seshat: Global History Databank](#)⁶³. As causes can be legitimately inferred to precede their effects, this method leverages the dynamic time-series information provided by historical evidence to pull out patterns in the elements that tend to move in response to a prior change in some other factors, especially when grounded in specific theoretical predictions that can help structure the interpretation of dynamic time-series data⁶⁴. Borrowing some of the tools and aims of complexity science as well as cultural evolution and other fields, cliodynamics points a wide lens at how societies change over time in diverse and non-linear ways, incorporating (and, arguably, moving beyond) discrete categories like collapse, crisis, or even more continuous processes like growth and resilience.

The field has also been aided in recent years by the increasing number of projects compiling large, detailed, curated information on a wide range of past societies, which in addition to the Seshat project include the [D-Place project](#), a compilation of anthropological information known as the Human Relations Area Files ([HRAF](#)), the [Database of Religious History](#), the [Clio-Infra](#) data compilation project, and an ever-growing list. The more information that is accessible on a diverse set of cases, the more scholars are able to make explicit links between the insights offered in previous, more case-study centred work and to test the various theories developed over the years against real-world empirical data.

The development of increasingly sophisticated computational tools has also made important contributions to the study of societal dynamics. Leveraging advances in computational power and modelling techniques, scholars are now turn causal theories into a suite of mathematical declarations and build computer simulations to see how the behaviours ‘predicted’ by the models match the true historical record. In particular, a number of studies employing agent-based models (ABMs) – so-named because models are built around discrete agents (corresponding to individual people, interest groups, firms, or entire societies) – have offered some intriguing results providing novel (and long sought-after) support for a particular theory or revealing the weaknesses in some long-standing beliefs. Bennett, for instance, has developed a model combining theories about what causes the rise, spread, and collapse of large-scale societies across Afro-Eurasia and covering thousands of years of history⁶⁵. He finds that with a surprisingly scant number of modelled factors—largely the combination of internal forces (the dynamics of social development and intra-elite competition) and external circumstances (the impact of underlying ecologies and the

⁶³ Peter Turchin et al., “Quantitative Historical Analysis Uncovers a Single Dimension of Complexity That Structures Global Variation in Human Social Organization,” *Proceedings of the National Academy of Sciences* 115, no. 2 (January 9, 2018): E144–51, <https://doi.org/10.1073/pnas.1708800115>; Peter Turchin et al., “Rise of the War Machines: Charting the Evolution of Military Technologies from the Neolithic to the Industrial Revolution,” *PLOS ONE* 16, no. 10 (October 20, 2021): e0258161, <https://doi.org/10.1371/journal.pone.0258161>; Peter Turchin et al., “Explaining the Rise of Moralizing Religions: A Test of Competing Hypotheses Using the Seshat Databank,” preprint (SocArXiv, 2021), <https://doi.org/10.31235/osf.io/2v59j>; Peter Turchin et al., “Disentangling the Evolutionary Drivers of Social Complexity in Human History: A Comprehensive Test of Hypotheses,” preprint (*Sciences Advances*, forthcoming).

⁶⁴ Peter Turchin, “Fitting Dynamic Regression Models to Seshat Data,” *Cliodynamics* 9, no. 1 (June 30, 2018): 25–58, <https://doi.org/10.21237/C7clio9137696>; Peter Turchin et al., “A History of Possible Futures: Multipath Forecasting of Social Breakdown, Recovery, and Resilience,” *Cliodynamics* 9, no. 2 (2018), <https://doi.org/10.21237/C7clio9242078>.

⁶⁵ James S. Bennett, “Retrodicting the Rise, Spread, and Fall of Large-Scale States in the Old World,” *PLOS ONE* 17, no. 1 (January 12, 2022): e0261816, <https://doi.org/10.1371/journal.pone.0261816>.

sometimes-asymmetrical military interactions between states) — the model comes remarkably close to reproducing the historical record⁶⁶.

This approach is not without critics either. Ferguson for instance remarks that such generalizing theories rely on apparent cycles observed in historical contexts, citing repeated patterns and events with some surface similarity in support of the mechanisms proposed by the theory. Here again the critique is solid, as cycles themselves offer no explanatory power; they simply describe outcomes that seem to recur in different contexts. For truly causal theories, though, cycles are emergent, rather than fundamental. A proper focus on societal dynamics seeks to describe the mechanisms and forces that lead to particular outcomes. If these mechanisms are common to a host of different cases, then cycles will appear not because the outcomes are cyclic by nature, but because the workings of the mechanisms happen to produce similar events over time and in a variety of contexts, perhaps, roughly similar time-courses⁶⁷.

This work is also often criticized for relying too heavily on general theories and complex statistical analyses, overlooking key details about specific cases. As Middleton put it, often “in ‘big’ history, the facts of ‘what happened’ are not established enough (or can be seen from multiple perspectives rather than a single narrative) to draw off a theory at a higher level convincingly”⁶⁸. Certainly, ‘big history’ efforts that get the facts wrong will prove incapable of explaining a wide range of cases, but good theory is informed by this qualitative detail, the ‘nuance’ and contingencies of the past. Such generalizable, macro-level explanations should be able to explain not just the broad patterns, but also account for a wide range of specific cases.

Moving forward: gaining insight into the past, present, and future of societal change

The preceding discussion is in no way meant to suggest that such macro-level, cross-cultural dynamic studies should supplant or overshadow the more fine-grained, case-study focussed work described before. Indeed, though generally pitted against each other – the latter seen as the purview of the more traditional, detail-oriented historical disciplines, the former often reviled as the result

⁶⁶ Other such work includes: an ABM developed to test Diamond’s ideas about the importance of ecology in shaping the development and spread of complex societies finds support for the importance of geographical and ecological conditions in the divergent experiences of modern Europe and East, an important contribution to help move forward debates about the causal factors behind the Great Divergence that have eluded scholars for decades, as noted above (Jesús Fernández-Villaverde et al., “The Fractured-Land Hypothesis,” *NBER Working Papers*, 2020); a dynamic model developed by a group of archaeologists, palaeoclimatologists, and biologists to understand the forces that drove spread of agro-pastoralists from western Asia into central and west Europe during the Neolithic transition (roughly between 10,000 and 3,000 BCE), who find that sudden fluctuations in climate may not have played as central a role in this process as often argued (Carsten Lemmen and Kai W. Wirtz, “On the Sensitivity of the Simulated European Neolithic Transition to Climate Extremes,” *Journal of Archaeological Science: The world reshaped: practices and impacts of early agrarian societies*, 51 (November 1, 2014): 65–72, <https://doi.org/10.1016/j.jas.2012.10.023>); a model exploring the rise and fall of Puebloan societies in the US southwest (Kohler et al., “Modelling Prehispanic Pueblo Societies in Their Ecosystems”); a model tracing the coevolution of sedentary farming and private property rights, arguing that this was instrumental in supplanting foraging populations in Neolithic western Eurasia (Samuel Bowles and Jung-Kyoo Choi, “Coevolution of Farming and Private Property during the Early Holocene,” *Proceedings of the National Academy of Sciences* 110, no. 22 (2013): 8830–35, <https://doi.org/10.1073/pnas.1212149110>); and a model exploring how humans came to evolve preferences and behaviours promoting intra-group identities and cooperation (Sergey Gavrilets and Peter J. Richerson, “Collective Action and the Evolution of Social Norm Internalization,” *Proceedings of the National Academy of Sciences*, (May 19, 2017): <https://doi.org/10.1073/pnas.1703857114>).

⁶⁷ Turchin in fact wrote a [blog post](#) responding to Ferguson’s claim that cliodynamics is ‘cyclical history’.

⁶⁸ Middleton, *Understanding Collapse*, 41.

of the pretensions of interlocuters bringing ideas from the natural sciences to bear on terrain in which they have no expertise – the two approaches are in fact symbiotic.

The wealth of detailed information uncovered by traditional works of history, archaeology, anthropology, and studies providing in-depth explorations of a few case studies are an essential component in this quest. Focussing too closely on the peculiar details of individual cases, however, can miss the forest for the trees, obscuring the ultimate causal forces from the contingent, proximate factors⁶⁹ or adducing a series of stylized facts that suggest a correlation with observed outcomes but leave causal mechanisms obscure. The complex systems approach has made great strides adding this element to the study of societal growth, collapse, and resilience. Dynamic theory-testing, phylogenetic modelling, agent-based computational simulations and other methods employed by cultural evolutionary scholars, cliodynamicists, and similar prespectives provide a further step in this direction by offering explicit, structured, statistically-informed and empirically-grounded tests of mechanistic causal theory. These endeavors continue to face rather fierce criticism from the more established disciplines, particularly those traditionally engaged in the study of the human past, but the proof will be in the pudding; whether any specific general theory can indeed explain a host of diverse cases in both general patterns and more fine-grained detail. This underscores the importance of developing formal (especially mathematically articulated) mechanistic theory, as only by explicating what we think drives societal outcomes in a structured, formal way can we then offer clear, intelligible, reproducible tests of these theories against empirical evidence.

A related critique often leveled at studies taking a macro-level view of societal dynamics, especially those using analytic tools and methods from the natural and computational sciences, is that searching for generalizable patterns or single theoretical frameworks to explain the diversity of the human experience is simply a fool's errand. "The reality ... is that history is a process too complex to be modelled"⁷⁰ as Ferguson recently remarked. The idea is that those who attempt to do so are doomed to either fail completely, or at best offer only grand narratives with little basis in empirical fact. Indeed, these are important critiques, but arguably go too far lumping a host of different perspectives and approaches together. Macro-level theorizing is in no way synonymous with constructing grand narratives; theories only become grand narratives when insights are turned into normative, prescriptive moral behaviours, a sin more often of the policy-makers implementing the ideas than the theoreticians.

Still, this does not mean that scholars, policy-makers, and other public interests ought to shy away completely from exploring the policy relevant implications of scholarly findings. In an interesting review of Tainter's and Diamond's approaches to collapse, for instance, Moll notes that "complexity thinking emerged from scientific disciplines where contributions to understanding complex systems such as climate change are beginning to make an impact on policy and research"⁷¹. Moll then implores researchers to engage more deeply with complexity science approaches to both understand societal dynamics and to offer innovative policy solutions. Without

⁶⁹ Currie offers a useful summary of the difference between ultimate and proximate causation in his review of *Why Nations Fail* (Currie, "Inequality and Institutions: A Review Essay on *Why Nations Fail* by Daron Acemoglu and James A. Robinson"). In his explanation of the 'Great Divergence(s)' between eastern and western Eurasia, Scheidel likewise distinguishes the proximate causes drawn from internal institutional and fiscal arrangements of specific states from the ultimate causes of geography, ecology, and the broad cultural differences (Scheidel, *Escape from Rome*).

⁷⁰ Ferguson, *Doom*, 51.

⁷¹ Moll, "The Collapse of Complex Societies," 175.

providing mechanistically-driven theory about *why* societies in the past developed, collapsed, or maintained function, however, we are unlikely to be able to find solutions that can translate into present circumstances. This again suggests that the generalizing theory sought by dynamics-focussed accounts hold the best promise for providing insights that can be applied to a range of cases and in different circumstances.

There are now a host of societies and institutes in the US and elsewhere looking to harness the insights of recent academic historical research into real-world insights and policy applications⁷². It is crucial to proceed down this path with caution, avoiding the temptation to be overly abstract or self-assured in prescriptions. But with the appropriate stipulations, an understanding of what drives societal dynamics both in general as well as in specific contexts. Identifying the causal forces that have driven the ups, the downs, the persistence, and the transformations experienced by societies in the past might reveal leverage points that can, with careful application and collective effort, tilt the course from the more to the less devastating. As we look for ideas on how to navigate the challenges we collectively face, from climate change to sectarian conflict and violence to spiraling global inequality, finding what has worked in the past to provide for sustainable, equitably-delivered well-being and avoid the pitfalls that have doomed populations to exploitation, impoverishment, and loss of capacities, the lessons from our shared past have much to offer; but we can only learn these once they are put into a larger, structured, theoretically-driven and mechanistically intelligible context.

⁷² For instance, think-tanks like the [Brookings Institute](#), [Wilson Institute](#), or the Columbia University-based [Earth Institute](#) host scholars who discuss policy-relevant findings, charitable foundations like the [Russell Sage Foundation](#), [John Templeton Foundation](#), or [V. Kann Rasmussen Foundation](#) fund academic projects with policy implications, and public policy institutes like the [Post Carbon Institute](#), the [Institute for Policy Studies](#), or the researcher-led [Scholars Strategy Network](#) look to summarise and promote scholarly ideas to policy stakeholders and the general public.