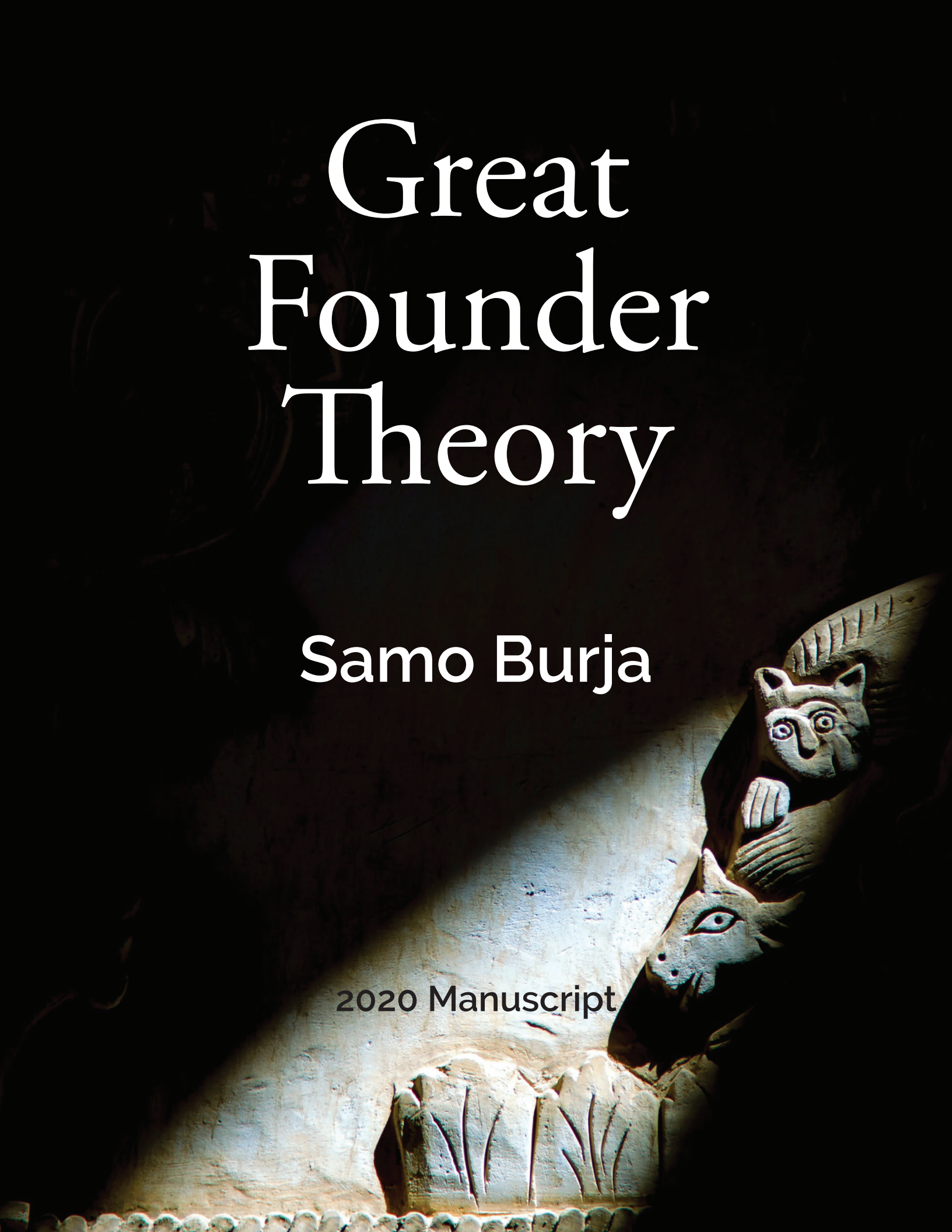
Great Founder Theory

Samo Burja



2020 Manuscript

www.SamoBurja.com/GFT

Great Founder Theory

Samo Burja

2020 Manuscript

Contents

Preface

What drives social change throughout history and the present? What are the origins of institutional health or sclerosis? My answer is that a small number of functional institutions founded by exceptional individuals form the core of society. These institutions are imperfectly imitated by the rest of society, multiplying their effect. The original versions outperform their imitators, and they are responsible for the creation and renewal of society and all the good things that come with it—whether we think of technology, wealth, or the preservation of knowledge, ideas, and culture. Over time, functional institutions decay. As the landscape of founders and institutions changes, so does the landscape of society.

This answer is the lens through which I analyze current and historical events, affairs, and figures. This intellectual project requires that we recast much of what we think we know about society and is therefore no small undertaking. This manuscript, titled Great Founder Theory, is an effort to consolidate and transmit the key analytical concepts we have developed so far. In it, we explain the models that are key to understanding how great founders shape society through the generations, covering such topics as strategy, power, knowledge, and social technology.

The saying goes "all models are wrong, but some are useful." When working on models and theories to explain society, it is always important to continue updating them as time passes. Concepts are clarified. Errors are corrected. New examples of phenomena are discovered and, often, serve to make an abstract claim more legible to the reader. Some counter-arguments are rebutted and others are not—and they therefore ought to be either noted or integrated into the existing body of work. Sociology is not as exact as the physical sciences, but at its best, it follows the scientific method.

Before the Information Era, it may have been prohibitively costly to publish new versions of one's work on an ongoing basis. Today, thanks to the Internet, the marginal cost of updating one's readers on one's latest thoughts and research is comparatively zero, or at least close to it. In this spirit, I write regularly on both SamoBurja.com and for outlets such as *Palladium Magazine*, *The National Interest*, and *Asia Times*, on topics ranging from Botswana's modern development to the intellectual debates of ancient China. This manuscript, which gives a broad overview of my approach to sociological analysis, is no less deserving of being kept up to date!

The first version of this manuscript, published on SamoBurja.com in 2018, represented the culmination of nearly a decade of research into the institutional underpinnings of both our own society and of past societies around the world, which are now only accessible to us through the records that they have left. After several additional years of research and theoretical work, this updated version is ready for public consumption.

The new manuscript features numerous changes. Returning readers will now find key concepts significantly fleshed out. The introductory essay to the manuscript provides a new explanation of great founder theory as a whole. Building on feedback from several readers and friends, the essay Social Technology has been significantly reworked, providing a clearer definition of social technology as a concept as well as adding numerous examples. The essay on the Loss and Preservation of Knowledge has also undergone renovation, with new considerations on what makes a tradition of knowledge live. Contemporary examples have been added to Live vs. Dead Players, in addition to a discussion on live players and traditions of knowledge. The Succession Problem has been expanded to emphasize the importance of succession for knowledge that cannot be liquidated. Functional Institutions Are the Exception now includes a critique of our ideology of market mechanisms. The essay on Competition for Power has grown to encompass a discussion on how and why power coordination occurs vis-à-vis competition. Honors Fuel Achievement has been reoriented towards a consideration of how to incentivize technological innovation. How Roman Emperors Handled the Succession Problem has been significantly enriched in order to provide a more detailed model of succession as it relates to institutional complexity, and formal versus informal power over time. Lastly, all essays throughout have received illustrative new historical examples.

In addition to these core essays, I have also added five essays of mine that have previously appeared elsewhere, but which are best understood when placed within a great founder theory context. Four of these pieces were originally published in Palladium Magazine: first, "How Social Engineering Drives Technology," which examines how social technol-

ogy, in the hands of live players, is upstream of all material technological progress; second, "What Botswana Can Teach Us About Political Stability," which demonstrates an example of successful succession in our contemporary world; third, "Reform is Driven by Rising Elites," which explains the mechanics of how institutional reform is actually advanced; fourth, "How Late Zhou China Reverse-Engineered a Civilization," which provides a particular case of large-scale reform. The fifth piece, originally published in The Sideview, is "Why Civilizations Collapse," which draws on my entire body of theory to sketch out a macro view of civilizational flourishing and decline.

Moreover, I have devoted a great deal of effort into synthesizing each core area with others: making sure the columns fit together to support a unified whole. The task of great founder theory is to show how a magnificently complex socio-historical structure can burst forth from a small, radical set of theoretical pillars. Therefore, I hope the reader will now be better able to follow me as I trace narrative threads from fundamental assumptions to illustrative particular cases, linking core theory to new observations on areas such as the nature of prestige and innovation, the influence of institutional decay on history, and more. Lastly, I have shown how this reinvigorated version of great founder theory fits into our existing field of social theory, both critiquing and building upon existing concepts such as creative destruction, market mechanisms, meritocracy, law, and more. Much work still remains to be done in our understanding of society—in fact, I would argue, the majority of such work has not been done.

This manuscript is not a book—but a book is coming soon! The upcoming book will be a full treatment of the aforementioned topics, fleshed out with historical examples and several new chapters on the topic of civilization as a whole, and written for a broader educated audience. In the meantime, I invite you to read and consider the more theoretical treatment of these topics that I have published here.

Introduction

A theory of history

Where are we, how did we get here, and where are we going? If we knew, could we change course? And what would it take to succeed? Many disciplines have sought to answer these proverbial big questions, with answers ranging from the philosophical to the biological and everything in between. But often overlooked is the value of history. The recorded history of human civilization over the last 10,000 years, with the stories and sagas of empires, religions, and great individuals, has left us with a tremendous corpus of raw material to read and analyze. Should we?

Perhaps history is overlooked because it feels superficially irrelevant to contemporary problems and issues. Much of it may be. Alternately, we might take the view of the ancient Biblical book of Ecclesiastes that there is "nothing new under the sun". Already, we must make an important epistemological decision. Our beliefs concerning large-scale patterns of the present world carry predictions for the future and explanations of the past. Yet, when we think about society as a greater whole and the humans in it, it seems all too natural to consider these kinds of models separately.

We change explanations of social phenomena to fit time periods, without principled reasons for doing so, for why some factors come to dominate. This divide is an artifact of our lived experience and limited knowledge, not of reality itself. Whether we like it or not, attempting to evaluate reality on the scale of society is to implicitly claim an overall theory of history.[1]

1 See, within this manuscript, the chapter "On Building Theories of History" (16–20).

In order to create such a theory, it is necessary to explore the functioning of institutions, the transmission of knowledge, and the landscape of power, among a number of other key dynamics. These phenomena substantially overlap and interact. I will summarize and illuminate this overlap, and try to make the common driving factor of their dynamics explicit in what I call "Great Founder Theory."

On institutions

What is an institution? This term conjures associations with organizations such as governments, courts, corporations, and universities. For our purposes, an institution is a zone of close coordination maintained by automated systems.

There is a spectrum of automation, however, and the more automated something becomes, the more useful it is to call it an institution. The most automated of institutions can be understood as bureaucracies.[2]

We can understand the world as a landscape of functional and non-functional institutions. Functional institutions are the exception.[3] Creating functional institutions requires a founder who knows how to coordinate people to achieve the institution's purpose, and who uses this knowledge to build new institutions or dismantle and rebuild existing ones.

Non-functional institutions are not simply institutions where, say, the buildings are on fire or mass layoffs have started. We might call those failed institutions, at the extreme end of non-functionality. Rather, the vast majority of non-functional institutions merely inadequately imitate functional institutions. In the institutional landscape, those are the norm, rather than the exception. They attempt to copy the relevant social technology from one or several functional institutions.[4] Such non-functional institutions can still easily generate narratives of being goal-oriented and functional, both for internal consumption by functionaries and external consumption by observers and competitors.

The internal narrative helps non-functional institutions achieve modest effects locally, but these are side effects of socializing. Its members might individually pursue actions towards the organization's goal, perhaps even believing they are pursuing them effectively; however, the social interface rewards appearance rather than reality, hence close

2 See, within this manuscript, the chapter "How to Use Bureaucracies" (103–110).

3 See, within this manuscript, the chapter "Functional Institutions Are the Exception" (97–102).

4 See, within this manuscript, the chapter "Social Technology" (21–30).

cooperation towards the organization's goals cannot materialize. The narrative is not only maintained internally, but broadcast to external society as well in order to invite participation in the appearance of functionality. Everybody has to keep their story straight.

One sign and symptom of this simple optimization for appearance is that everyone in the organization is trying to perform the same kind of task—the one that is most socially rewarded—rather than them being specialized according to their function.

The body of the institution becomes a social club gathered under pretense. We shouldn't disparage the value of socializing itself. Anomie, the rift between individual and community, has only grown since the sociologist Emile Durkheim introduced the concept in his diagnosis of 19th century society.[5] Given our predicament, it is perhaps wise to try and build community by any means available, so our society should tolerate some false pretense for socializing. Perhaps that is the very reason we have even more non-functional institutions today than the historical average.

However, whatever the talent or intentions of individuals within such a non-functional institution, the main body of the institution, the communal fabric of socializing and even material incentive, stands in the way of fully realizing the institution's nominal function.

Ultimately, vital functions must be realized. To name only a few, imagine militaries that cannot win wars, churches that cannot maintain communities, governments that cannot guarantee security, universities that cannot maintain intellectual life, courts that don't uphold the rule of law, industries that don't produce goods, and R&D labs that fail to advance technology.

To fail at all of these functions would amount to a failed society.

Limits to knowledge and effects of imitation

A society can make do with having some functional institutions and some dysfunctional institutions. You could argue that the Roman Empire, for century after century, succeeded in building armies that could win wars, but failed to maintain the intellectual life inherited from the Hellenic era, for example.

5 "...connected with a general state of extreme depression and exaggerated sadness, causing the patient no longer to realize sanely the bonds which connect him with people and things about him. Pleasures no longer attract." Emile Durkheim, *Suicide* (Simon and Schuster, 2010), 63.

Even then, such a society pays a high and often invisible opportunity cost. They might believe their institutions are functional, because they have simply never seen the functions carried out well. There are no outliers that can be used to disprove the thesis that the status quo is the best that can be done.

The invisibility of dysfunction may follow from a lack of viable comparisons. Comparisons between often competing societies are difficult because of clashing politics and social narratives. How well would a French audience have received a treatment of the strategic merits of pan-Germanism in the aftermath of the Franco-Prussian War? Comparisons across time are difficult, because of confounding factors we cannot control for. Commentators and historians today draw all kinds of parallels between contemporary America and historical empires, yet there is no single comparison that seems notably more explanatory than the others. Comparisons against theoretical ideals are limited by the quality of theory. We might only be able to clearly compare functional and non-functional institutions when functional institutions still exist in the same domain of society. This illustrates what a crucial difference even one functional institution can make.

If an organization is clearly better, it is possible to imitate it. In a famous Caltech commencement address, Feynman explained the folly of simple-minded imitation, likening such imitation to the notion of the "cargo cult": just as a lucky hunter-gatherer tribe in the path of cargo airdrops during World War II built imitation airstrips and wooden control towers after the war under the expectation that such forms were the causes of cargo airdrops, so too do we copy the appearances of old functional institutions without understanding or replicating their true nature.[6] As long as the functional example is still around, however, you can keep returning to it, each time narrowing in on what steps actually make it work. You are only stuck building wooden airplanes or wearing turtlenecks if the original is no longer around.[7] Success through reverse engineering is much easier than blind trial and error, even after controlling for false starts and dead ends.

This kind of imitation can bring you to an increasingly better approximation of a given set of social technology. However, since the social technology behind functional institutions wasn't discovered through blind tinkering, it is ultimately grounded in an existing tradition of knowledge.[8]

---

6 Richard Feynman, "Cargo Cult Science" (commencement address, CalTech, Pasadena, CA, 1974), http://calteches.library.caltech.edu/51/2/CargoCult.htm.

7 Kate Storey, "Why the Black Turtleneck Was So Important to Elizabeth Holmes's Image," *Esquire*, March 18, 2019, https://www.esquire.com/style/mens-fashion/a26836670/elizabeth-holmes-steve-jobs-black-turtleneck/.

8 See, within this manuscript, the chapter "On the Loss and Preservation of Knowledge" (50–58).

Once that tradition is lost, you are making photocopies of photocopies. Each subsequent copy loses information. A crucial difference between organisms and organizations is that organizations do not undergo natural selection.[9] Since the fidelity of transmitting intricate social technologies is so low, complex adaptations cannot arise.

There is no corporate equivalent to DNA. The positive copying errors do not propagate and overwhelm the negative copying errors as they would in millions of years of evolution in wasps or elephants. This means that institutions only arise through the process of imitation and invention carried out by human minds.

A single new functional institution that visibly and strongly outperforms others in its reference class offers an educational example that can be followed by many. Imitation of practice is much easier and faster than transfer of knowledge, especially when the tradition of knowledge is still alive to be imitated.

Some functional institutions shoulder the burden of their civilizational function entirely on their own. There was only one organization that sent human beings to the Moon: NASA under Wernher von Braun.

Whether because of the scale of the task they handled and consequently their solitary nature, or because other institutions learn from their crucial example, functional institutions are often irreplaceable. When a functional institution dies, the living tradition of knowledge disappears, followed only by ever fainter echoes.

Such institutions, when they arise, provide far more value to society than they can possibly capture for themselves or their founders.

A civilization is an ecosystem of institutions

In "Institutional Failure as Surprise," we explore how institutions rely on each other for handling many necessities.[10] Examples include infrastructure, enforcement of contracts, security, intellectual culture, design—too many to exhaustively name.

No single institution is self-sufficient. Rather it is a part of an ecosystem, receiving and giving support in complex arrangements. Due to interdependency and the extreme dif-

9 Eliezer Yudkowsky, "No Evolutions for Corporations or Nanodevices," *LessWrong* (blog), November 16, 2007, https://www.lesswrong.com/posts/XC7Kry5q6CD9TyG4K/no-evolutions-for-corporations-or-nanodevices.

10 See, within this manuscript, the chapter "Institutional Failure as Surprise" (146–153).

ferences in functionality among institutions, functional institutions subsidize all others. Consider, for example, how companies like Apple or Facebook, which provide hardware or software platforms of unprecedented scale, make it possible for ecosystems of apps and games—and the companies that develop them—to thrive. Facebook could survive without Zynga, but not vice versa.

Functional institutions solve and handle hard tasks not just for themselves but for many other organizations and communities. Thus, even mere social groups, being able to outsource to (not to mention imitate) functional institutions, can become quite productive. Functional institutions provide multipliers that make the non-functional institutions' modest linear efforts worthwhile.

In a civilization with several functional institutions, everything seems to work very well. The ubiquitous perception of functionality is then reflected in the culture and produces a very palpable mood of optimism. Nothing seems beyond the civilization's grasp.

People impact the world through the institutions they build

The term *institution* is similar, but not synonymous, with the concept of an empire, though they can overlap in some cases.[11] An empire is a region of coordination around a central power, where the central power is the cause of the region of coordination. An institution can be the entirety of a given person's empire, but empires can also include multiple institutions. Naturally, functional institutions can extend the reach of personal empires.

I argue in "Competition for Power" that people's impact on the world follows a Pareto-like distribution, with the most impactful people having a far greater impact than the rest.[12] The creation of functional institutions is the means by which people are hugely impactful. People who build institutions are far more impactful than people who don't, and among those, people who build functional institutions are by far the most impactful.

The height of personal power amassed by creators of functional institutions can certainly dwarf the power held by those merely inheriting them.[13] But power is a means, not an end. The big picture impact of such impressive personal empires doesn't lie in the power

11 See, within this manuscript, the chapter "Empire Theory, Part I: Competitive Landscape" (118–125).

12 See, within this manuscript, the chapter "Competition for Power" (111–117). See Stephanie Glen, "Pareto Distribution Definition," *Statistics How To*, May 6, 2015, https://www.statisticshowto.com/pareto-distribution/.

13 See, within this manuscript, the chapter "The Succession Problem" (77–81).

to right particular wrongs or achieve particular aims, but rather in how such empires lay the foundation for building further institutions.

A functional institution can outright solve a problem for a civilization. It might, for example, complete the construction of infrastructure so important it changes the course of economic development for centuries to come, such as ancient China's grand canal or a hypothetical space elevator.[14]

A functional institution can subsidize the working of many other ventures through providing services that other institutions and communities can rely on. One might consider Hammurabi or Muhammad's systems of law as examples, with many other revered lawgivers in history besides.

Those who build these functional institutions mold society, outperforming all others by orders of magnitude. This dynamic holds true even among the founders of functional institutions themselves: within this set, those who build the very most functional institutions are much more impactful than the rest of those founders who build functional institutions.

As a further consequence, the founders of these institutions are responsible for the vast majority of social technology that we see in society. Most social technologies, especially advanced ones, cannot be explained by evolutionary analogy, whether Darwinian or Lamarckian, although mutation and evolution may be helpful in explaining the ways in which social technology decays.

Rather, social technologies appear in clear, discontinuous jumps, with several interlocking, interdependent institutional complexes put into place in a short time span. They did not evolve, but were designed and then implemented. The Founding Fathers of the United States, who created Congress, the Presidency, the Supreme Court, and much more, all at once, serve as a clear example.

I will call those who found the most functional institutions that contribute to the bed-

14 The canal system which would eventually become the Grand Canal was first constructed in the Warring States period, directed by officials known as hydraulic engineers (水工), powerful actors and often statesmen in their own right. Centuries later, the network of canals was connected and unified into the Grand Canal by the chief engineer of the Sui Dynasty, creating an aquatic highway stretching from Beijing to Hangzhou, the equivalent of the distance from New York to Florida—the chief artery of Chinese civilization. For more, see Joseph Needham, Lu Gwei-Djen, and Ling Wang, *Science and Civilisation in China*, *Vol. 4: Physics and Physical Technology*, *Part 3: Civil Engineering and Nautics*, (Cambridge: Cambridge University Press, 1971), 285, 307. On a space elevator, see "What Is a Space Elevator?" International Space Elevator Consortium, 2014, https://www.isec.org/faq.

rock of their civilizations great founders. Through the creation of institutions, great founders become the primary force that shapes society.

To examine a society, then, we should first look for functioning institutions. A simple way to do this is to identify businesses, religions, governments, and so forth that are radically outperforming their competitors. We then seek out the founders of these institutions.

By looking at the distribution of founders across various domains, we can make predictions about the future of specific fields and industries. Even further, by investigating the plans and intentions of great founders, and evaluating how likely they are to succeed, we can make specific predictions about what the future holds.

The actions and capabilities of great founders determine the future social and material landscape of civilization, and thus the future of the world. Societies with many great founders will innovate and flourish, while societies with few will stagnate and deteriorate.

On Building Theories of History

Why was Barack Obama elected president in 2008? Was it because he ran a smart and successful campaign? Was it because new social media sites allowed young people to get interested in politics? Or was it because American culture was generally shifting away from George W. Bush's brand of conservatism?

If you read the news articles published in the days following November 4th, 2008, you'll notice something interesting: journalists explain this historic event in many different ways. Some journalists attribute the campaign's success primarily to the individual leading the campaign.[15] Others focus more on the influence of new technologies on campaigning.[16] Still others explain it in terms of a general cultural or political shift.[17]

These explanations are revealing—not necessarily of what actually landed President Obama in office, but rather of how each individual journalist conceives of the way things happen in the world. Through their explanations for the outcome of the election, we can glean a bit of their implicit theories of history.

Concept and importance

A theory of history is an explanation of how things generally happen in the world, both

15 Adam Nagourney, "Obama Wins Election," *The New York Times*, November 4, 2008, https://www.nytimes.com/2008/11/05/us/politics/05campaign.html.

16 Matthew Fraser and Soumira Dutta, "Obama's Win Means Future Elections Must Be Fought Online," *The Guardian*, November 7, 2008, http://www.theguardian.com/technology/2008/nov/07/barackobama-uselections2008.

17 Simon Tisdall, "Rainbow Coalition of Voters Sweeps Obama into Office," *The Guardian*, November 5, 2008. http://www.theguardian.com/world/2008/nov/05/obama-election-analysis-results.

in the past and in the future. If, for example, you subscribe to the great man theory of history, then you might explain events by looking at the influential individuals who shaped them. If you subscribe to a technological determinist theory, on the other hand, you might explain events in terms of the technologies that allowed them to occur.[18] Or, you might subscribe to a social determinist theory, explaining both influential individuals and new technologies as the makings of greater societal forces.[19]

Someone operating under the great man paradigm might explain Obama's election as a product of his and his staff's exacting efforts in the day-to-day of campaign work. A believer in technological determinism might attribute the win to the unprecedented use of social media, which mobilized previously uninterested voters. Someone adhering to a social determinist view might draw a straight line from the Civil Rights era to the election of Barack Obama, pointing out the inexorable cultural shift towards empowering African-Americans.

Everyone has a theory of history, in that everyone has an explanation of why the world is how it is and an understanding of how the world changes and has changed. Everyone has to: without an understanding of how the world works, no matter how faulty, implicit, or subconscious, we would be unable to act in what we believe is the right way to achieve our goals, whether big or small. Few people could tell you plainly that they are social or technological determinists, or adherents of great man theory. But everyone, if asked, can give reasons why some event or another happened, and whether, or why, it might happen again in the future.

We don't just explain things with our theories of history. We act on them. If you believe that individuals have the power to significantly shape history, for example, you might be more inclined to make things happen yourself. If you believe that technology drives historical change, you might specifically try to invent new technologies. If, on the other hand, you believe that the fate of the world has already been decided, or if you believe that history is inevitably heading in a certain direction, you may be less inclined to take a stand. After all, if it's going to happen, then it's going to happen.

Therefore, whether we're trying to change the world in a major way or just live our lives in society in the best way possible, it's vital that we come to understand the true theory

18 Daniel Chandler and Rod Munday, "Technological Determinism" in *A Dictionary of Media and Communication* (Oxford University Press, 2020), https://www.oxfordreference.com/view/10.1093/acref/9780198841838.001.0001/acref-9780198841838-e-2729.

19 "Social Determinism" *Oxford Reference* (accessed November 2020) https://www.oxfordreference.com/view/10.1093/oi/authority.20110803100515931.

of history. We need the true theory of history in order to take the right actions in the world, and we need to accurately predict the results of our actions. If we have an incorrect theory of history, we run the risk of producing unknown and possibly catastrophic consequences, for ourselves or others.

It's important here to note the distinction between the *true* theory of history, and the "true" theory of history that we're aiming for. The *true* theory of history will be unmanageably complex, because the number of factors that actually influence what happens in the world is incalculably large. Because of its complexity, the *true* theory of history will be difficult, if not impossible, to use to explain what's going on in the world. In aiming for the "true" theory of history, we are assuming the power law: we are assuming that there will be a small number of factors that have disproportionately large effects on the world, or that can explain the existence of other factors. We are aiming for a theory that generally explains how things happen in the world. Going forward, we will drop the quotation marks and stipulate that the true theory of history is the theory that takes into account the core causes contributing to the world as it exists, making it comprehensible and usable to us mere mortals.

No one has it

No one in the world has figured out the true theory of history. If they did, we'd know: not only would they be extremely, visibly powerful, but they would be active in many domains—politics, religion, culture, technology—reshaping society step by step, or taking seemingly prescient advantage of trends, with many successes and few false starts. There are historical examples of incredible individuals, such as the Indian Emperor Ashoka the Great,[20] and organizations, such as the Catholic Church, whose repeated success across multiple domains is difficult to explain without them understanding at least fragments of a true theory of history.

There are many reasons why no one has figured out the full true theory of history, some psychological and some practical.

20 Remembered by history as one of the greatest rulers of all time, Ashoka the Great was a 3rd-century BC Indian emperor who brought the Maurya Empire—which from its center on the Indo-Gangetic Plain conquered nearly the entirety of the Indian subcontinent, stretching from eastern Afghanistan to Bengal—to its institutional and territorial zenith. A convert to Buddhism, he is most well-known for his promotion of the faith, constructing tens of thousands of temples, sending monks throughout much of the known world, and erecting pillars around his realm carved with his personal conversion story and the precepts of a Buddhist-inflected lay ethic of social and moral authority called *dhamma*. For a comprehensive treatment of his life and times see: Nayanjot Lahiri, *Ashoka in Ancient India* (Harvard University Press, 2015).

There are at least three psychological reasons for why most people are deterred from finding the true theory of history. The first is that the vast majority of people only have an implicit, or subconscious, theory of history. In other words, most people do not even have the *concept* of a theory of history. The problem with relying on your implicit theory of history is that it's wrong, without a doubt. The world is complex, and your theory of history has to explain how everything in the world works. Without explicitly trying to improve your theory of history, there is no hope: there will be countless things that you have not had the time or perspective to take into account. Improving your theory of history implicitly is not systematic enough to work.

The second reason why no one has managed to achieve the true theory of history is that many people endorse one theory of history while unknowingly acting on another. For example, some people explicitly endorse the technological determinist view of history even as they implicitly act on the great man paradigm: believing that it will require the work of remarkable individuals to create the technology that will save the world, for example, instead of believing that the inevitable, impersonal progress of technology will do so.

There can be many belief-based reasons for why people fall into this trap, but on a more basic level, people simply don't have a good sense of what their implicit theories of history are, or know how to explicate them, which means they cannot reliably align their intellectual and emotional beliefs. To some extent, acting on your implicit theory of history while operating under a different explicit theory is fine—after all, your implicit theory will, for a while, be more nuanced than your explicit one. What is problematic is to act unconsciously on one theory of history and proclaim another; this makes it very difficult to improve your implicit theory of history, which you act on.

The third reason is that people tend to switch between theories of history in an unprincipled way, which prevents them from noticing theory-threatening anomalies. If they can't notice and explain seeming anomalies in their theory of history, then they can't improve their theory. If someone largely adheres to the great man paradigm, for example, but resolves any contradictions by falling back on the technological determinist view, then they've prevented themselves from justifying their understanding of the great man theory, or realizing that their justification is inadequate or incorrect. Theory-threatening anomalies have to be resolved, not rationalized.

These are just a few of the psychological barriers that prevent people from making progress towards the true theory of history. But there's a simpler, more practical problem: the

world is complex. In order to understand it, you need the right methodology, and you need a huge amount of properly processed data.

Social Technology

Although people are relatively aware of the material technology that powers their lives, they are less aware of the non-material technology that influences them—namely, social technology. Just as HTTP is the operating protocol for the web, politeness is the operating protocol for our social interactions. Following the protocol will lead to predictable and desirable outcomes. Breaking the protocol will lead to inaccessible websites, or, perhaps, unwanted social awkwardness. Politeness, just like HTTP, can be documented and taught.[21]

When we talk about "social technology", we are not referring to social media platforms like Facebook or Reddit, which are properly material technologies made possible by the right arrangements of consumer electronics, server farms, and computer networks. We mean something analogous to the idea of social engineering, a concept that came about at the end of the 19th century that refers to the intentional design of specific social arrangements and ways of operating. The Reddit platform itself is not social technology, but its use of moderators is. Facebook is not a social technology, but the expectation that you will regularly post nice pictures on Facebook for mom is. Similarly, airplanes are not social technology, but people generally agreeing to tie you to your seat if you keep trying to open the service doors during a flight is. Social and material technologies often act symbiotically, but they are functionally distinct.

21 Manners demarcate and conserve the boundaries of social identity and class. Recognized for their role as powerful social technology, they have been prescribed, documented and studied across civilizations. In our civilization, the social technology of politeness was constructed in the 18th century by the rising bourgeois class as they wished to ape the mores of the aristocracy. For an early parody of this imitation, see Molière's 1670 play *Le Bourgeois gentilhomme* (the title is an oxymoron). The word "etiquette," it should be noted, comes from the French *étiquettes*, the "little cards" which Louis XIV used to remind courtiers of proper behavior at Versailles. For a general discussion see Lawrence E. Klein, *Shaftesbury and the Culture of Politeness: Moral Discourse and Cultural Politics in Early Eighteenth-Century England* (Cambridge University Press, 1994).

It's important to note that all except the simplest social technologies are designed. Though many of our crucial social technologies seem like natural parts of reality today, this was not always so. At some point they required intentional construction and adoption. Many social technologies we take for granted, including the very idea of having such critical systems as currency, law, and government, were born from concerted human agency. It is for this reason that we call it social technology, rather than social "norms", or take a broader anthropological or philosophical approach. Much like material technology, social technology is designed, adopted, and scaled. It is proceduralized and documentable.

Social technology is a tool that directs people to knowingly or unknowingly take certain actions, and in so doing it has the ability to shape an extremely broad range of human action. It can be used to reduce coordination costs between people, causing them to work together more effectively towards a goal, but it can also be used to restrict collaboration and action.

In order to properly understand social technologies, we can examine them on an individual, institutional, and societal level.

On an individual level

Social technology makes it possible for individuals to operate in their environment. We are social creatures, after all, and rely on fellow humans for even the basics of survival. If there are high coordination costs, everything in life becomes harder. What would life be like, for example, if you couldn't trust that people would follow through on contracts?[22] What would life be like if there were no clear consequences for causing physical harm to others? Without coordination mechanisms to enforce these things, there are substantial psychological and logistical costs for individuals.

It is important to notice the existence of social technology and understand the ways it benefits yet controls you and other individuals—awareness of how you are being influenced is a prerequisite for social self-consciousness and agency. We are constantly influenced by social technology and thus are frequently unaware of it. It's difficult to understand social technology when it is inherited or when its purpose is intentionally concealed. Perhaps the best practice to overcome this difficulty is lighthearted fieldwork.

22 There exists a rich literature explaining the necessity of social trust for effective commercial organization. Without a shared baseline expectation of social coordination, market economies cannot function. For a general overview of the topic of social trust and economics, see Francis Fukuyama's *Trust* (Free Press, 1995).

When you operate within an institution, be it a school, an office, or something even more dreadful like a prison, take some time to carefully observe those around you. Identify common behaviors that are so universally practiced they are entirely taken for granted: papers are turned in on time, informal dress codes observed, etc. Then think: what would happen if knowledge of these norms had to be learnt from the ground up by every new student or employee, or even re-invented with the establishment of every new institution? Needless to say, it would be difficult to get anything done at all. But none of these automated social practices have existed forever, and once upon a time, they were wholly new.

Furthermore, organizing people is very powerful— if you can direct people's actions, you will have a much greater influence over the world. Creating new social technologies changes how you and others can organize, providing not only an—at times decisive—advantage, but also the possibility of a very long-lived legacy.

On an institutional level

Social technology makes it easier to scale institutions. The more advanced your social technology, and the more you can reduce coordination costs, the more effective your institution becomes. If you're building a purpose-driven institution—that is, an institution that isn't effectively a social club—then you will need advanced social technology to actually get your collaborators to hit the goal. Consider this: if you're assembling a team to reform a city government or build spaceships that can put people on Mars, should you motivate them by paying them lots of money and penalizing them if they don't show up? Or should you develop ways to find people who are already motivated to pursue these goals, and equip them with the skills they need to figure out what to do? Which more effectively gets people to work towards the goal?

On a societal level

Social technology is required for society to exist: we are born helpless into the world and must rely on others for survival. We need shared families to raise us, a shared language to communicate, shared tribes or states to maintain a peace we can live in, and so on. If there is no social technology, and thus no coordination whatsoever, you will never know what to expect from others, and therefore must protect yourself—sometimes by hurting others. A society without any social technology is a society where institutions do not exist, where groups do not exist, where *family* does not exist. A society without social technology is a society where the only possible accomplishments are individual

accomplishments, bounded by the psychological and logistical costs of the individual protecting themselves from harm.

What does this matter to us, given that we all live in societies regulated by social technology? It matters because it renders certain criticisms invalid. For example, it does not make sense to say that certain norms in the Middle East, which may appear backwards to us, are destroying a peaceful default state.[23] After all, the default state is not peaceful. Instead, it makes sense to understand these norms as very expensive ways of dealing with real problems—problems that we may not have to deal with because we live in a society where there is more, or more effective, social technology in place. It means that when we notice someone exhibiting extremely costly social behavior, we should ask: what coordination costs does this help to reduce?

We should be aware of the symbiotic relationship between social and material technology. That is, the failure of social technology can cause material technology to fail, and vice versa. This is because if the social technology fails, causing people to fail to coordinate, then people might not be able to coordinate effectively enough to produce material technology. The failure of social technology can cause technological dark ages. Ancient Roman architecture is an example of this. Long story short: the Roman state lost tax revenue; large scale construction ceased; architecture of this kind fell out of use; engineers became worse and thus technological knowledge (e.g. how to build an arch) was lost.

It's important to note that social technology comes with costs. In the process of building coordination mechanisms, you can also accidentally or intentionally reduce other things, such as diversity and freedom of thought. Scandinavia is an example of a very homogeneous society, and this is in part because of the social technology that is employed there, such as the Law of Jante, a set of norms discouraging individual achievement and non-conformity.[24]

Social technology then forms much of everything from the simplest logistics of our lives in a household to the most complex of human arrangements mediated by markets and states. Below, I'll examine a few examples of how social technology surrounds us in

23 This was one of the implicit claims undergirding the American ideological justification for the War on Terror. For example, Kim Berry of Humboldt State University notes that First Lady Laura Bush, in her November 2001 radio address to the nation, claimed that the invasion of Afghanistan was "also a fight for the rights and dignity of women"; this was soon followed by a suggestively titled *Time* magazine report on the subject called "Lifting the Veil." See: Kim Berry, "The Symbolic Use of Afghan Women in the War on Terror," *Humboldt Journal of Social Relations* 27, no. 2 (2003): 137–60.

24 "Law of Jante." In Wikipedia. https://en.wikipedia.org/w/index.php?title=Law_of_Jante&oldid=984164773.

spheres as diverse as politics, religion and private life.

Government

Government, which is just a group of people that society has agreed it will listen to, is social technology. It is a direct actor—its many bureaucracies and allies can organize and fund building efforts, support the logistics of an advancing army, conduct scientific research, force or forbid the movement of whole populations, and so on. Governments can further change and impose laws, and such laws directly change society. It is also an indirect actor whose reach goes beyond laws: it can make public statements about what is or is not desirable; it can create spinoff institutions and invest directly into ventures. Government can grant legitimacy to ad hoc actions. It can also just act in illegal ways.

Political theory

Political theory constitutes the engineering principles used to create government. So, political theory is social technology that allows people to build, monitor, and fix government—and organizations that function similarly. There is a thin line between creating countries and creating companies. Political theory can also function as an ideology (see section below).

Law

Law is a particularly clear example of social technology. It can be used to regulate disputes, define responsibilities, and set expectations and proceduralized bureaucratic action. Different legal systems can promote very different kinds of behavior and, in turn, reshape society. Compare ancient Roman and ancient Chinese family and inheritance laws. In both cases, your family has significant rights over you. However, under the Roman system parents have to enforce those laws themselves, and under the Chinese system the courts help parents enforce them. Differing incentives lead to similar laws being applied in different circumstances and different conditions. An impoverished or disgraced parent wouldn't necessarily have the means to enforce their claims in the Roman system, for example.

In modern states we tacitly assume that government directly enforces law, but law can be enforced in other ways. In Medieval Iceland, laws were interpreted by hereditary priests, but enforcement was left to individuals; meanwhile on the continent, the Catholic Church would at times imprison, release, or protect people on its own authority, independent from the Crown. In early modern Britain and its colonies, bounties were at times employed to track down criminals, and in ancient Rome, private individuals—tax-farmers—would collect owed taxes and keep a share as compensation. Under insti-

tutionalized codes of law, laws are enforced via punishment by the central institution. Under distributed codes of law, laws are enforced via punishment by elements of wider society.

Social norms

Social norms are an often invisible form of social technology. It is a result of social norms that we wear clothing in public, wash our hands, and spend time with family. It is a result of social norms that we have certain expectations around what our work-life breakdown should be, and how members of each social class should act. Even the notion of being professional, or "professionalism," is a social norm.

Diplomacy

Diplomacy is the practice of relations between sovereign states that has both formalized and customary dimensions. Rulers of a state send diplomats to represent them to the rulers of other states. This diplomatic representation is called an "embassy" and before modern times it consisted of a traveling ambassador's entourage; today an embassy is a "permanent mission" to a foreign capital. While some of diplomacy's rules are codified, much of diplomacy is governed by proper protocol and manners as much as by binding rules. The intricacies of diplomatic protocol can seem arcane—such as the requirement that a state hosting a foreign head of state fire its cannons 21 times in honor of the visiting foreign dignitary. This practice emerged from the days when a ship firing this many rounds was a signal of effective disarmament, but it continues today as a sign of respect and goodwill. Diplomatic protocol allows leaders from different cultures to meet on mutually-intelligible ground. It can prevent cultural differences from impeding the practical aspects of international relations, if not the substantive business of negotiation.

Ideology

Ideology can take different forms—religion, social movement, political theory. If people believe an ideology, it will shape their actions. If a religion dictates that families have to read the word of God for themselves, for example, then adherents to that religion will have to learn how to read. In this way ideologies have notable effects on society, whether they are true or not. Max Weber notes that Protestant societies have higher literacy rates than Catholic ones.

Strategy

In simple terms, if people know strategy, they know how to link means with desired ends. Such people can know whether or not certain actions are useful for the plan at hand, and choose to take those actions. Strategy is the key factor separating effective

action from pointless energy expenditure. Therefore, teaching people strategic thinking can reduce coordination costs between actors aligned around a common goal. We might expect, for example, that a country that teaches its people effective military and business strategy will out-compete other countries militarily and economically. Prussia provides one such example: after the Napoleonic Wars their elites founded the General Staff, a quasi-civilian institution responsible for the study of war and strategy—it counted Carl von Clausewitz as one of its first directors—and which churned out better officers than anywhere else in Europe for over a century.

Education

Education in the broad sense (i.e. state-sponsored systems and otherwise) is social technology. By delivering knowledge to other people, you can reduce coordination costs, or alter people's value systems, which then reduces coordination costs.

Credentials

Credentials are artificial markings that allow people to identify experts and sort others. An example of this is a college degree. A degree is something that allows you to get a job where you otherwise couldn't have gotten hired. It is a social construct that is sometimes converted into a legal construct; for example, it can be illegal to practice architecture, law, or medicine without the right degree.

Cities

Cities are one of the longest-lasting human social formations. The city of Xi'an in China has been continuously inhabited for over 3,000 years from the Bronze Age to the Nuclear Age. It has survived multiple dynasties and governing regimes. Cities often provide fertile ground for multiple different institutions over their lifespan. Rome's empire rose and fell over a long millennium but then was replaced by the rise and—arguably—fall of the papacy, an unrelated institution, that brought Rome to its heights again in the 16th century. Cities allow increased coordination and a common market for labor and other resources. Cities also condition their inhabitants—through de facto initiation or "hazing"—towards a particular culture and outlook.[25] This allows cities to have more shared culture than even most nations.

Healthcare

The institution of healthcare exists to maintain individual health in a bounded and

25 In brief, cities subject new residents to unpleasant experiences that psychologically condition them to their particular flavor of urban life—like riding the New York City or Tokyo subway to work every day. Cities thus institutionalize us. For a detailed discussion see: Samo Burja, *How Cities Process Information*. YouTube, May 5, 2020, https://www.youtube.com/watch?v=gjLeEDVCMR8.

specialized medical environment, offloading the burden of healthcare from society as a whole. This provides a legible and socially agreed-upon solution to the problem of physical health.

Sacrifice

The collective offering of a valuable object to a higher power can have a strong effect in coordinating group behavior. Arguably, sacrifice began as a form of sacred violence, where a scapegoat would be selected by a community to act as a lightning rod for collective violence in order to prevent that violence from turning inward and destroying the group, with the victim being sanctified after the fact. We can see many examples of this historically, for example human sacrifice as demonstrated by the Carthaginians' sacrifice of infants or the Aztecs' sacrifice of captured prisoners, or animal sacrifice as practiced by the Ancient Greeks and the Jews before the destruction of the Second Temple. Catholic, Orthodox, and many Protestant Christian theologians note that the modern Christian practice of taking communion—consuming the blood and body of Christ—is a sublimated form of historical sacrifice.[26]

Ritual

Ritual in the broadest sense is a way of codifying and standardizing rote human action, and in a group setting it can act as a powerful imitative coordinating mechanism. Debates have long raged over the actual social utility of ritual—see the ancient Chinese Mohists excoriating the state for wasting scarce resources on lavish funerary rites and the Confucians rejoining that such rituals, in their packaging and transmission of abstract systems of meaning, are indispensable for social order—but regardless, the intergenerational stickiness of ritual proves its undeniable importance in human affairs.

Psychotherapy

Psychotherapy is a recent social technology that places individuals in prolonged contact with therapists, usually in a one-on-one setting, in order to apply psychological methods to improve the patient's mental health. This is usually done towards the end of helping individuals to better negotiate social life. Though more limited in scope, it invites natural comparison to the benefits of the Abrahamic practice of spiritual direction, such as

26 Roman Catholics believe that "the Eucharist is the very sacrifice of the Body and Blood of the Lord Jesus which he instituted to perpetuate the sacrifice of the cross throughout the ages until his return in glory. Most Christian denominations generally concur with this statement; those who disagree—chiefly Baptists, Anabaptists, Jehova's Witnesses, and Plymouth Brethren—are termed "memorialist." For the Roman Catholic doctrine, see "Compendium of the Catechism of the Catholic Church," The Holy See Archive, 2005, https://www.vatican.va/archive/ccc_css/archive/catechism/p2s2c1.htm.

the Catholic and Orthodox rite of confession.[27]

Awards

The practice of giving awards and honors allows an individual, such as a king, or an institution, such as the Academy of Motion Picture Arts and Sciences, to regulate status within a society, organization, or industry.[28] Rather than regulating all behavior by all people at all times, an award sets the bar for what is the highest status behavior or achievement and, by virtue of its public nature, allows everyone else to figure out for themselves how they should aspire to behave as well.

Marketing

You might build the best product in a market, but it won't matter if nobody knows about it. The practice of marketing is key to matching consumers and buyers to the right products and sellers in the most efficient way. Advanced marketing practices are arguably even good enough to sell consumers on products that they don't need, or that are selling not only a product, but an ideology as well. Without marketing, it would not be possible to quickly scale a new venture and discover if it is viable or not. The tempo of innovation would be much slower.

Marriage

Marriage formalizes relationships between people and prescribes roles that come with a particular set of social expectations. Historically, marriage, both monogamous and polygamous, has served as a social technology to manage many forms of human organization, from child rearing to division of labor to property law to romantic love.

Adoption

Familial relations are almost always some of the most important relations in life. Being part of a family is a biological fact, but it also gives you access to a full stack of social technologies that will regulate your life from birth to death, closely tied to the biological reality. Adoption legitimizes and makes legible the entrance into a family of an additional person, usually a child, under the custody of the heads of that family. It allows the adoptee to take on the social role of child and the adopter(s) to take on the social

27 Judaism, too, has a long-standing tradition of spiritual guidance. Rabbis have historically held a role akin to community therapist—though this is less of a ritualized interaction as with confession, and more of a social function that communities can rely on directly for arbitration and counsel. See Martin A. Hoenig and Stuart H. Gilbreath, "The Counseling and Pastoral Role of the Rabbi in the American Jewish Community," *Jewish Social Studies* 31, no. 1 (1969): 20–24.

28 See, within this manuscript, the chapters "Honors Fuel Achievement" (40–46) and "How Elon Musk Is Making Engineers Cool Again" (47–49).

role of parent, thus smoothing over the social distinction between an adoptive family and a biological family and allowing for the adoptive family to integrate seamlessly into external society. Whether the contemporary practice of adopting a child, or the ancient Roman practice of adult adoption to secure succession, the trick of overruling biology with social technology is very useful.

Dynasties

The key power of dynasties rests in the transfer of informal ties as well as formal ones. Entering office, whether in politics or business, without the right personal connections and relying solely on the powers of the office is to be almost impotent. A child born to powerful parents can be trained from birth to follow in his or her parent's footsteps. Families are also one of the few social technologies where social credit is transferred from person to person. A dear friendship with a person's father or mother can easily transfer into affinity for their child. The ability to transfer affinities across generations allows families to accumulate power and social capital. While there are often conflicts within powerful families—be they the Ottoman sultans or the modern House of Saud—dynasties also align the family's incentives to a great extent. The external expectation of family loyalty—with high social costs for betrayal or defection—also reinforces cooperation.

How Social Engineering Drives Technology

This essay originally appeared in Palladium Magazine on May 28, 2020.

Common wisdom holds that technology disrupts society. That is, a technology is invented, and then a natural and inexorable process of spontaneous order changes society to use that technology. But the reality is that society is itself an engineered system that changes more by deliberate planning than common wisdom admits. If anything, it is society that disrupts technology.

From the design bureau's office politics, to the organization of industry, to consumer behavior, to national security, social technologies enable and regulate what technology we use and how we use it.[29] Without socialization, most of us wouldn't know how to use any particular technology, or even what it was made for. Technology only reproduces itself through instruction or imitation—and only when embedded in the larger social organism that puts it to use.[30] Every device not only has a manual but a social context. It is then social rather than material facts that drive or hinder the development and adoption of technology. The technologies we integrate into society become the foundation on which future technologies are built. We accept or reject technology together as a society.

When we talk about technology, we are talking about mass use of smartphones, gigantic interstate highways, a laptop in every lap, and so on. We are not thinking about a lone tinkerer's invention. The reason is that technology can't be sustained by individual genius

29 See, within this manuscript, the chapter "Social Technology" (21–30).

30 Samo Burja, "The YouTube Revolution in Knowledge Transfer," *Medium*, September 17, 2019, https://medium.com/@samo.burja/the-youtube-revolution-in-knowledge-transfer-cb701f82096a; Samo Burja, *Why We Still Need Masters & Apprentices*, YouTube, April 23, 2019, https://www.youtube.com/watch?v=ribdRDO75Rk&feature=youtu.be.

or fancy for long. The succession problem is an obstacle that snuffs out even the most brilliant spark.[31] Archimedes' elaborate weapons of war only vexed the Romans until his execution by a legionary. Many technologies are only feasible at scale.

Invention itself is rare, but more common than most assume. Many marvelous machines are built to satiate a craftsman's curiosity, or to amuse and impress the wealthy. An 18th century automaton with beautiful penmanship is technically impressive but of little or no historical consequence.[32] The self-driving cars of the 2010s may prove to be similar machines. They are novelties to show off the technical talent and capacity of particular laboratories rather than something on the cusp of practical use.

An invention does not achieve adoption because of its mere existence, but only when it has found a stable socioeconomic niche. This is the difference between an invention and a technology. The archetype of the blacksmith cannot be reduced to any mere individual, nor to a set of tools, but personalizes an entire socioeconomic niche—one deeply entwined with our thought and life over millennia. These archetypes are even reflected in myths of settled societies instructing us how to think, how to live, and what dangers to avoid. When a technology is so deeply embedded in social practice, it can even survive the collapse of civilizations. The ancient Greeks may be long gone, but their tale of the divine blacksmith Hephaestus and the goddess Aphrodite still serves to warn us of the dangers of neglecting your spouse for your craft.[33]

Since the Industrial Revolution, the more machines that are used, the cheaper they become. It became viable to build socioeconomic niches based on mass adoption. This adoption at scale is what gives rise to highly centralized halls of production. Factories are enabled by economies of scale and the efficiency of ever narrower specialization combined with the oversight of engineers to optimize entire assembly lines. The industrialist can glance through a single hall and see all stages of car production laid out in front of him. Ideas for how to improve the production process might be justified with lines in spreadsheets, but they originate in seeing and looking. Since the bottleneck on production of machines is almost never the resources used, scaling up the factory only improves these economies.

---

31 See, within this manuscript, the chapter "The Succession Problem" (77–81).

32 ABlogtoWatch, *Jaquet Droz The Writer Automaton From 1774 In Action: Inspired Hugo Movie*. YouTube, June 22, 2012, https://www.youtube.com/watch?v=ux2KW20nqHU&feature=youtu.be.

33 Karl Kerényi, *The Gods of the Greeks* (London: Thames and Hudson, 1951), 72.

Getting people to work in these halls was an entirely separate challenge. The Industrial Revolution required a breakthrough in the ability to educate masses of people on how to use new machinery. This was achieved with a kind of military discipline, using methods learned from prisons, crowd control, and army management to convert recently urbanized farmers into obedient workers. These methods were much parodied and bemoaned in the early 20th century in silent films such as *Metropolis* or Chaplin's *Modern Times*. The rapid spread of the state-mandated Prussian model of education as an aid in economic development, for example, owes as much to the desire of states to prepare workers for a lifetime of such discipline as it does to the pursuit of loftier goals like imparting literacy.

Eventually, most of society was subsumed into new industrial forms of life. But this new breed of worker isn't merely a cog on the producing side of the equation. Factories are naturally consumers for other factories. But what about consumption outside of factories? Production at scale requires mass adoption. During war, military orders are the driving demand. Two or three million steel helmets and three to five thousand tanks can certainly sustain a whole ecosystem of socioeconomic niches. But no society can wage war forever, even if wartime is the origin of much of technology.[34] Militaries lose the ability to tell good designs apart from bad due to institutional decay during long periods of peace, and without active demand, productive capacity decays from lack of use.[35] A big picture perspective on national security recognizes and plans for this contingency, since war eventually always returns.

A peacetime alternative for sustaining a technology is to make it necessary for participation in society and in everyday life. Coincidentally, the mass education and training of the new industrial society created new consumers as well. Urban workers become not just a labor force for one factory but part of a growing market of consumers for many factories.

34 Charles Lester Walker, "Secrets by the Thousands," *Harper's Magazine*, October 1, 1946, https://harpers.org/archive/1946/10/secrets-by-the-thousands/.

35 Take for example the F-35 Lightning II fighter jet. Lockheed Martin's development of the jet began in the 1980s, with production beginning in 2001. The Lightning II could be customized into three specialized variants via modular builds, meant to streamline defense budgets and quickly replace the US' aging fleet. Yet the three configurations of Lighting II only have 25% of their components in common—creating manufacturing bottlenecks—and have notable fuel, software and payload inefficiencies. The Lightning II's original yield estimate is expected to cost the Pentagon $379 billion over 40 years, and it is still affected by production delays. For further reading, see: Paul Barrett, "Is the F-35 a Trillion-Dollar Mistake?" *Bloomberg*, April 4, 2017, https://www.bloomberg.com/news/features/2017-04-04/is-the-f-35-a-trillion-dollar-mistake.

Why is a car part of normal life and behavior? To introduce the mass use of a car, you have to teach many drivers how to drive, but it is less obvious that you also have to teach these drivers where to drive and invent those places if they do not yet exist: commuting to work from the suburbs. Holiday trips. Perhaps shopping. Maybe a trip to a fast food restaurant. Those last tasks are sometimes recognized as engineered desires, but they are also engineered social patterns. It's one thing simply to build one car or a million cars—it's another matter to make people want to learn to drive, to give them the roads and highways to drive on, and make the car the cornerstone of modern transportation and city planning.[36]

These social patterns and institutions were designed, not discovered. Once designed, we were instructed how to participate in them, to support their economies of scale. The advertisement doesn't merely tell us what to want; it shows us how and why to want it. One key result of this engineered social change is that useful industrial capacity is sustained and improved.

Changing consumer behavior at scale through mass marketing was perhaps one of the greatest breakthroughs in social engineering to match newly available technology. Familiar marketing techniques are recognizable in the work of American evangelists in the 18th and 19th century. Every few decades, traveling preachers and mass pamphleteering would change the demographic balance between denominations and the religious practices of an entire generation. Historians have termed such periods 'Great Awakenings.'[37] Mormonism is a uniquely American faith whose rapid growth best shows how effective the techniques are.[38] Marketing was further perfected and developed with the arrival of Viennese psychology to the U.S. in the 20th century and ultimately applied to political and economic behavior, as described well by Sigmund Freud's nephew Edward Bernays in his 1928 book *Propaganda*.[39] The same methods that portray cigarettes as torches of freedom can later make them harbingers of cancer.[40]

36 Social engineers in the 20th century United States did just this, to great (though, I might personally add, disastrous) effect. See Peter D. Norton, *Fighting Traffic: The Dawn of the Motor Age in the American City*, (Cambridge, MA; London: The MIT Press, 2011).

37 Alan Heimert, *Religion and the American Mind: From the Great Awakening to the Revolution* (Wipf and Stock Publishers, 2006).

38 Matthew Bowman, *The Mormon People: The Making of an American Faith* (New York: Random House Trade Paperbacks, 2012); John G. Turner, *Brigham Young: Pioneer Prophet*, 1st edition (Cambridge, MA: Belknap Press, 2012).

39 Edward Bernays, *Propaganda* (New York: H. Liveright, 1928).

40 Amanda Amos and Margaretha Haglund, "From Social Taboo to 'Torch of Freedom': The Marketing of Cigarettes to Women," *Tobacco Control* 9, no. 1 (March 2000): 3–8, https://doi.org/10.1136/tc.9.1.3.

The post-Communist Eastern Europe of my childhood in the early 1990s was a world where mobile phones were introduced at the same time as many people were purchasing their first dishwashers and microwaves. This consumer-accessible bounty in technical and electronic equipment convinced my 7-year-old self that immense technological progress was inevitable. The futurists I watched on the English-speaking Discovery channel agreed; they predicted that in the distant future of 2020, we would merge with AI, leaving our physical bodies behind.

We were all wrong. There might have been a rise in living standards, but it wasn't evidence of how often new technology was invented or even how much technology was integrated into society. America and then Western Europe had learned how to integrate the microwave into society long ago.

America excels at early and widespread adoption of novelty. Marketing, both ideological and economic, remains one of America's key strategic advantages. The strange focus of state-sponsored Depression-era propaganda on consumption becomes understandable in this light.[41] As a consequence, the 20th century citizens of the U.S. didn't embark on consumption as mere personal indulgence—but as a pro-social and patriotic duty, acting on the highest authority of the land.[42] The purpose was to create a social order which sustained particular technologies and industries. In the aftermath of 9/11, President George W. Bush called on Americans to go shopping and travel to Disney World as an act of defiance against the terrorist goal of instilling fear.[43] Without consumption, the American machine stops. Something else may take its place.

Not all of our advanced technologies can be stabilized into social niches through mass production and adoption. No technology originates in mass adoption itself. For something to be marketed by either Steve Jobs' Apple or FDR's National Recovery Administration, it first must be invented and developed. The acceptance or rejection of a technology isn't just a matter of the whole society adopting it all at once. Rather, particular organizations first develop the technology and then undertake—much like Mormon missionaries—to alter society to accept it.

---

41 Rian Dundon, "Photos: Depression-Era Billboards Sold and Celebrated the 'American Way,'" *Medium*, May 14, 2018, https://timeline.com/great-depression-billboards-were-false-advertising-973ffbee981c.

42 Robert J. Shiller, "Spend, Spend, Spend. It's the American Way.," *The New York Times*, January 14, 2012, sec. Business, https://www.nytimes.com/2012/01/15/business/consumer-spending-as-an-american-virtue.html.

43 Robert B. Reich, "How Did Spending Become Our Patriotic Duty?," *The Washington Post*, September 23, 2001, https://www.washingtonpost.com/archive/opinions/2001/09/23/how-did-spending-become-our-patriotic-duty/bc893ad4-c8a9-4a65-8ed6-aefd9f392691/.

Surprisingly, even organizations dedicated to the creation of new technologies seem to become hostile to innovation over time. The underlying reason is that contrarian ideas—as all new technologies are by definition—almost never survive committees. How could they? By their very nature, they cannot have the majority on their side. If they do, it is because they have a powerful champion who has cornered the committee, an uncommon skill. This simple observation rules out the most frequently proposed reforms of philanthropy, academia, and government as ways to kickstart innovation. It opens up new ones, too.

Committees are commonly used in our society because they create the illusion of avoiding risk. They are a wonderful device for avoiding responsibility while making the institution seem more rather than less accountable. Modern institutions have overloaded on actual risk while fleeing the appearance of it, especially if you count "failing at core mission" as a risk.[44] Such aversion to the appearance of the unusual can't be justified on economic grounds. Rather, it is a socially driven aversion. There is no immediate reward for making a meeting awkward either in the boardroom or the engineering room. There's not even a reward for making it surprising.

In a startup, a difficult and aggressive personality might suffice at first. But larger corporate and government-directed technological efforts work best when they are clearly goal-oriented. Whether the Manhattan Project of the Trinity Test or the NASA which put a man on the Moon, there was a clear objective, backed by enough power to overcome social inertia. A functional institution is much easier to design if you have a yardstick with which to measure it and the political power to build it. For Oppenheimer's bomb project, the yardstick was creating a weapon that was usable before the Germans and Japanese were defeated by conventional means. For Wernher von Braun's NASA, it was landing a man on the moon in one decade, and most importantly, before the Soviets.

Oppenheimer and Von Braun both received temporary grants of political mandate, revoked with more or less fanfare after their missions were accomplished. Their projects are excellent examples of how power centers benefit from lending power to achieve a technical objective.[45] Their Cold War fruits are also perhaps examples of why we sometimes question the very legitimacy of technology. There is, however, no way out but through.[46]

---

44 Shawn Boburg et al., "Inside the Coronavirus Testing Failure," *The Washington Post*, April 3, 2020, https://archive.is/HXrzw.

45 See, within this manuscript, the chapter "Borrowed vs. Owned Power" (72–76).

46 "Digital Salon with Michael Shellenberger: Nuclear Power Is the Real Green Energy," *Palladium Magazine*, May 5, 2021, https://palladiummag.com/2020/05/21/digital-salon-with-michael-shellenberger-nuclear-power-is-the-real-green-energy/.

Either social or material technology must devise solutions to such problems.

The Los Alamos and NASA of today aren't focused on external goals, but rather on self-preservation and defending their budgets. Neither is very effective, and they mostly subsist on prestige earned long ago. Their social machinery has grown too unfocused to be able to build and maintain the technological breakthroughs they once could. Significant failures come as a surprise, purported to be completely unpredictable.[47] As the Nobel Prize winner Richard Feynman noted in the Report of the Presidential Commission on the infamous Challenger accident that killed seven astronauts:

> *There was no way, without full understanding, that one could have confidence that conditions the next time might not produce erosion three times more severe than the time before. Nevertheless, officials fooled themselves into thinking they had such understanding and confidence, in spite of the peculiar variations from case to case…Let us make recommendations to ensure that NASA officials deal in a world of reality in understanding technological weaknesses and imperfections well enough to be actively trying to eliminate them. They must live in reality in comparing the costs and utility of the Shuttle to other methods of entering space…For a successful technology, reality must take precedence over public relations, for nature cannot be fooled.*[48]

Feynman could only contrast the Challenger disaster with the functional Los Alamos he knew in his youth. This 1986 critique of NASA reads only more damning as the agency approaches nearly one decade since its last manned flight on July 8th, 2011, when it retired the 1970s-designed Space Shuttle.

In its place is the Demo-2 mission, which launched from Cape Canaveral, Florida, and brought two astronauts into orbit on an American rocket. Demo-2 is the result of a functional institution—but rather than a revived NASA, it is SpaceX, a comparatively new private company. This is not a success of privatization but circumvention. Live players[49] like Elon Musk find ways to maneuver around decaying bureaucracies, at times delivering good results to their dysfunctional patron, even when the patron does their

47 See, within this manuscript, the chapter "Institutional Failure as Surprise" (146–153).

48 "Report of the Presidential Commission on the Space Shuttle Challenger Accident," *NASA History Division*, June 6, 1986, https://history.nasa.gov/rogersrep/genindex.htm.

49 See, within this manuscript, the chapter "Live vs. Dead Players" (68–71).

best to stop them.[50] This process of new development has been an act of social as much as material engineering. Musk has had to maneuver politically to make room for SpaceX, to spin new visions of space exploration to motivate and raise the status of his engineers, and even to manufacture his own demand for his technology.[51]

Plain language accounts of technology's social origin are few and far between, both because it is a demanding subject in its own right and because we've built our society around several distinct and mutually incompatible stories about this powerful force.[52] The stories are planks of everything from the ethical standards of professions to the legitimacy of government institutions.[53] Almost no written theory is intended to be a practical guide to shaping such progress. Rather, it is written to inspire individual technical skill or to legitimize economic and political arrangements. Ideally both.

Many scientific hagiographies take the romance and achievements of historical scientists, industrialists, and inventors and then transfer these halos to institutions that would have never tolerated those pioneers in the first place. The Teslas and Fords of the world are many things, but they are not agreeable to us. This invites distrust, sometimes justified. The groundbreaking computer scientist Alan Turing was likely killed by British intelligence on suspicion of Soviet espionage, in what was for generations described as a tragic suicide.[54] Teenagers motivated to master technical subjects by the promise of moving history eventually find themselves harnessed by romanticized but declining institutions that go to great lengths to ensure that history moves no further—such as Google or contemporary Los Alamos.

---

50 Tim Fernholz, "What It Took for Elon Musk's SpaceX to Disrupt Boeing, Leapfrog NASA, and Become a Serious Space Company," *Quartz*, October 24, 2014, https://qz.com/281619/what-it-took-for-elon-musks-spacex-to-disrupt-boeing-leapfrog-nasa-and-become-a-serious-space-company/; Rafi Letzer, "Why NASA's Annoyed About Elon Musk's Giant Rocket," *livescience.com*, October 5, 2019, https://www.livescience.com/starship-crew-dragon-spacex-nasa-bridenstine.html; Tim Fernholz, "NASA Will Conduct an 'Invasive' Safety Review of SpaceX after Elon Musk's Public Weed Use," *Quartz*, November 20, 2018, https://qz.com/1470637/nasa-to-conduct-invasive-spacex-review-over-elon-musk-pot-smoking/.

51 See, within this manuscript, the chapter "How Elon Musk Is Making Engineers Cool Again" (47–49); Starlink, "Starlink (Division of SpaceX)," 2020, https://www.starlink.com.

52 For a canonical example, see Charles Babbage, *On the Economy of Machinery and Manufactures*, Illustrated edition, (Cambridge: Cambridge University Press, 2010; original edition: 1832). Also, for an oral history of the origin of the discipline of the history of technology and of the effort to explain technology's social origins, see John M. Staudenmaier, *Technology's Storytellers: Reweaving the Human Fabric* (Society for the History of Technology and the MIT Press, 1989).

53 Charlotte Zaidi, "The History of Medical Ethics," *OUPblog*, November 10, 2017, https://blog.oup.com/2017/11/history-of-medical-ethics/.

54 Roland Pease, "Alan Turing: Inquest's Suicide Verdict 'Not Supportable,'" *BBC News*, June 26, 2012, sec. Science & Environment, https://www.bbc.com/news/science-environment-18561092.

Any pursuit which requires developing implicit expertise and repeated practice will benefit from individual instruction. The esoteric and well-grounded knowledge needed for creation can't be achieved at industrial scales and tolerances. If you attempt to lop off one end of a bell curve, you'll always lop off both. Bureaucratic evaluation of people at scale, no matter how much it is aimed at merit, ultimately always first tests to see if someone is an outlier. A mass system has no more place for outliers than an assembly line. Perhaps this makes Six Sigma (a technique of industrial procedure meant to drastically reduce variance among the outputs of a given process) the M-theory of all theories of government espoused by the great powers of the 20th century.[55] The industrial mass society we built to sustain and utilize many of our technologies undermines the creation of new ones.

Describing how things are is almost always understood to be an implicit justification for how things should or could be. Hume's Is-Ought Problem, or the observation that "moral conclusions cannot be inferred from nonmoral premises," is notable precisely because everyone ignores it.[56] An account of the social origin of technology, then, necessarily carries political weight. This weight can be well-suited to a revolutionary payload, as was well-demonstrated by Karl Marx and Ayn Rand. Shaping history through technology requires precisely such an understanding, however. So this is a risk worth taking.

55 On Six Sigma, "In 1911, Frederick Taylor invented the management model of Taylorism, which...[gave rise to the] Organization Man...Six Sigma is the last hurrah of Taylorism…" Venkatesh Rao, "Allenism, Taylorism and the Day I Rode the Thundercloud," *Ribbonfarm*, January 8, 2009, https://www.ribbonfarm.com/2009/01/07/allenism-taylorism-and-the-day-i-rode-the-thundercloud/. M-theory refers to a particular unified theory of reality in physics. See: Margaret Wertheim, "How Many Dimensions Are There, and What Do They Do to Reality?" *Aeon*, January 10, 2018, https://aeon.co/essays/how-many-dimensions-are-there-and-what-do-they-do-to-reality.

56 Campbell Brown, "Two Versions of Hume's Law," *Journal of Ethics and Social Philosophy* 9, no. 1 (2015): 1–8, https://doi.org/10.26556/jesp.v9i1.170.

Honors Fuel Achievement

It is a cherished dream for many people to win a Nobel Prize, or an Oscar, or a knighthood, or whatever honor is most respected in the field they dedicate themselves to. These ritualized honors are very important to us, but do we fully understand them?

We usually think honors are about the recipient, but the giver of honors also gains. The giver and recipient collaborate to publicly assert that the recipient is worthy of prestige, and that the giver has the authority to grant it. Honors are thus acts of an alliance to mutually boost prestige.

This meaning is even codified in diplomatic protocol; representatives of countries often exchange honors for the explicit purpose of signalling alliance.

The audience also participates in this transaction of prestige. They either accept the whole affair and the implied claims of the giver and the recipient, or reject or ignore them. The honors only have meaning—and thus the primary parties only gain—if the onlookers take them seriously. The performance of honor-giving is a bid for that audience's assent, both the literal immediate audience, as well as the broader public who will hear about the honors bestowed or see them televised.

The audience accepts the frame because they recognize the preexisting prestige of someone involved. Honors can be prestigious because prestigious people receive them, because prestigious people give them, or both.

Consider the Nobel Prize in science. Its purpose is to tell the public who the most notable experts in a field are. In other words, it makes the recipient's standing within a given scientific community more visible to the rest of society, fortifying their standing within that particular scientific community in the process. This is a useful service to the

scientific community and the public.

The Nobel Prize has different functions depending on the field in which it is awarded. In the case of the Literature and Peace Prizes, its function is at least partially to advance the political goals of the overseeing organization. Rather than making the existing distribution of prestige more legible, these prizes alter it by granting prestige to the proponents of preferred causes. Looking at a list of Nobel Peace Prize winners leaves an impression of a particular political orientation, but the public story of the prize, from which it gets much of its prestige, is much more neutral. These more political Nobel prizes also derive much of their prestige from the scientific Nobel prizes.

The Nobel's initial prestige came from the reputation of Alfred Nobel and of the institutions named to oversee the prize (the Swedish Academy, the Royal Swedish Academy of Sciences, the Karolinska Institutet, and the Norwegian Parliament), as well as some money attached to it, which came from the fortune Nobel made by inventing dynamite. Money, however, is a limited source of prestige. The negative connotations of the term "nouveau riche" reflect this. This raises the question: what, then, are sources of prestige?

The ruler is the fount of honor

A ruler is a source of prestige and, moreover, usually the primary source of prestige in a society. This follows naturally from their status as the society's leader, that is, the person who has the highest authority in decision-making, who is deferred to above all. This authority extends to the domain of prestige. For example, Queen Elizabeth I granted minor titles to former pirates, like Sir Francis Drake and Sir John Hawkins, who helped harass the Spanish and set the course for later English naval domination.[57] King Charles II granted a charter creating the Royal Society, which would play a crucial role in the scientific revolution. By conferring the highest honor in the land on naval warfare and scientific exploration, later mainstays of British power, these may have been the most important decisions these rulers ever made.

Sometimes the ruler is also the recipient of honor. Comrade Stalin is a genius of literature. And biology. And architecture. Because if he isn't, you go to the gulag. He has a monopoly on violence. He uses this monopoly to monopolize prestige. He can then

57 "As a financial backer of English sea captain Francis Drake, [Queen Elizabeth] supported a buccaneer who found it easier to plunder the gold of others than mine it himself. This philosophy of plunder motivated the sea dogs of Queen Elizabeth's time. Making a business of raiding Spanish ships, John Hawkins and Francis Drake gained riches for themselves and their investors…" "Britain in the New World: Early Ventures Fail." *USHistory.org*, https://www.ushistory.org/us/2a.asp.

quite effectively award it, pushing nearly any status system in the direction he chooses to. If he has a good understanding of experts and isn't too afraid of being deposed from his monopoly, he can use his standing to reward excellent generals, scientists, and poets.

Comrade Stalin, however, has a problem. His authority, the legitimacy of his monopoly on violence, formally rests on him being the Genius of Socialism, and thus on the quality of all those papers. The insecurity of this legitimacy requires him to aggressively prop it up by hoarding prestige.

Things don't have to be this way. If the legitimacy of Stalin's monopoly on violence was officially grounded in something more secure and more true, he could dispense with biology and geology papers being written in his name. He could dispense with the papers being enshrined as obligatory reading in the relevant fields. He would be not just the monopolist of violence, but the monopolist of legitimacy much more directly. People feel the need to prove themselves where they are insecure. A secure ruler does not need to prove his legitimacy. In turn, a more direct claim of legitimacy is less falsifiable, and thus requires less upkeep and less distortion.

So while power can be used to create prestige, some ways to do this are more functional, in terms of costing less and having fewer negative side effects, than others. Stalin's elevation of Trofim Lysenko, and that biologist's rejection of Mendelian genetics, was perhaps useful for politically bolstering Stalin's preferred agricultural politics, but set back Soviet genetics by decades, and also contributed to the Great Ukranian Famine of 1932-1933 and the Great Chinese Famine of 1959-1961.

A ruler trying to gain standing by playing football is silly, because if he truly is the ruler, people will feel obliged to lose, ruining the game. Of course there are the unwise, like the Roman Emperor Commodus, who fancied himself a gladiator. Commodus always won his fights in the arena, and his subjects viewed his predilection for gladiatorial combat as a disgrace. For rulers trying to gain standing, what remains is the role of the status referee, the one who confers honor across domains. Distortions introduced by having to praise his work are thus reduced. This is one of the most important roles of the ruler: the ruler uses his fount of prestige to regulate overall status and prestige competition, so that the right people and the right behaviors win, solving coordination problems and tragedies of the commons.

There are brilliant rulers who really might have something to contribute to a field, and some who aren't particularly brilliant but wish to engage in hobbies for personal fulfill-

ment. A common practice for both of these kinds of rulers is to be active under assumed identities or proxies, sometimes convincingly, sometimes not. Frederick the Great of Prussia, for example, anonymously published a political treatise shortly after assuming the throne.[58] The anonymity prevents the prestige distortions that might come from the ruler visibly competing in one of the domains that he rules over.

The prestige of rulers and, more generally, the prestige landscape created by power, is the fount from which most other prestige flows. If someone tries to grant prestige out of line with this source, it may not be taken seriously, or may find itself undermined by power. If something is not being taken seriously, power can be applied behind the scenes to promote it until it is.

For example, after World War II, American officials in the State Department and the CIA wanted to undermine the dominance of pro-Soviet communists in the Western highbrow cultural scene. To do this, they planned to promote artists and intellectuals who were either anti-Soviet or at least not especially sympathetic to the Soviets—at the time this was often the best you could do in highbrow circles. They considered abstract expressionist painting, which was then a new and obscure movement, a promising candidate. Though no one would call it patriotic, it was American and it wasn't especially communist.

In 1946, the State Department organized an international exhibition of abstract painting called "Advancing American Art". It was so poorly received that the tour was cancelled and the paintings sold off for next to nothing. Undeterred, the CIA, under a front organization called the Congress for Cultural Freedom, continued to arrange international exhibitions for abstract expressionists.[59] Eventually, the movement caught on. It would be an oversimplification to say that the CIA made abstract expressionism famous—there were other influential promoters, like the critic Clement Greenberg—but their support was not irrelevant.

If one looks closely at any society, one will observe that its rulers—and their prestige—subsidize all other sources of prestige. Thus, when the landscape of power shifts, the landscape of prestige shifts accordingly. It is then critical that rulers are incentivized to allocate prestige well—that is, in accordance with the actual distribution of excellence. If

58 Friedrich II Hohenzollern, *The Refutation of Machiavelli's Prince or, Anti-Machiavel*, 1740, https://archive.org/details/AntiMachiavelFriedericktheGreat/page/n39/mode/2up.

59 Frances Stonor Saunders, "Modern Art Was CIA 'Weapon,'" *The Independent*, October 22, 1995, https://www.independent.co.uk/news/world/modern-art-was-cia-weapon-1578808.html.

they aren't, as in the case of Stalin, the resulting distortions in the allocation of prestige produce distortions in their society's understanding of what is good and what is true. Lysenkoism was an epistemic and moral disaster.[60] This kind of corruption can ultimately have catastrophic effects on the society's health, because the ability to ascertain the truth is fundamental to the functionality of a society's people and its institutions.

Awards are better than prizes

Among the many different kinds of honors, we can pick out two especially common ones: those meant to incentivize a particular achievement with a financial reward, which I call prizes, and those meant to afford prestige on the basis of past achievement, which I call awards. Prizes aim to get some specific thing done, whereas awards aim to affect the distribution of prestige, incentivizing achievement in a more indirect way. With a prize, money is fundamental. With an award, it is incidental. The Millennium Prizes are a prime example of the former, the Academy Awards of the latter.[61]

This distinction is often muddled, leading honors to be less effective than they could be. I have to clarify what I mean by each term, because in practice they aren't used in a reliable way. There are awards that are called prizes and prizes that are called awards. Despite its name, the Nobel Prize is a hybrid case that is more of an award. Though it comes with a financial reward, it is primarily about affording prestige, and this is what those who try to win it are after. The money is nice, but the glory is better.

It's for this reason that I think that awards are more effective than prizes in incentivizing the production of knowledge. Glory is a greater motivator than money. Furthermore, the money attached to prizes is often insufficient for justifying the investment of money, time, energy, social capital, and so on required to achieve the relevant goal.

A better use of prize money is to directly fund projects aimed at the desired achievement. The venture capitalists of Silicon Valley and grantmakers like the Mercatus Center's Emergent Ventures program are good examples.[62] Before any project begins, it's possible to determine which individuals or teams have the best chance of success. Giving them the money beforehand solves the financing problem, and even if success won't

60 On senkoism, see Edouard I. Kolchinsky et al., "Russia's New Lysenkoism," *Current Biology* 27, no. 19 (October 9, 2017): R1042–47, https://doi.org/10.1016/j.cub.2017.07.045.

61 On the Millennium Prize, see "The Millennium Prize Problems," *Clay Mathematics Institute*, December 14, 2020, https://www.claymath.org/millennium-problems/millennium-prize-problems.

62 "Emergent Ventures," *Mercatus Center*, https://www.mercatus.org/emergent-ventures.

make them a fortune, the glory of the achievement—perhaps augmented by an award—should be incentive enough.

A prize also provides less return on its creator's investment of social capital than an award. Once the goal is achieved and the prize won, there is no longer a reason for it to exist. It is self-abolishing. An award, on the other hand, can continue to be given out year after year, compounding the investment of prestige. Recognizing this fact, prize-giving organizations often convert their prizes into awards, contributing to confusion about the distinction.

The X Prize illustrates some of these flaws. Created by entrepreneur and space enthusiast Peter Diamandis in the 1990s, the prizes are meant to incentivize breakthroughs in solving the world's biggest problems. Their website says, "Rather than throw money at a problem, we incentivize the solution and challenge the world to solve it."[63] Perhaps the most well-known past prize is the Ansari X Prize, which promised a $10 million reward for the creation of a reusable spacecraft. Many of the other X Prizes are also about breakthroughs in space technology. Since their founding, the X Prize has directly collaborated with firms as well-known as Google, IBM's Watson, and Northrop Grumman, and today counts Google co-founder Larry Page on its board of trustees.

And yet, the great advancements towards space exploration in the past twenty years have had little to do with the X Prize. $10 million is a paltry sum compared to the money required to finance serious efforts in the area, and even less compared to the rewards of success, as SpaceX and Blue Origin have demonstrated. It's safe to say that an X Prize and $10 million played no part in Musk and Bezos' motivations. Even the project that won the Ansari Prize had $100 million in financing. Either the prize money wasn't much of an incentive, or the winning team was very confused.

If it's not really incentivizing breakthroughs, then what is the real use of the X Prize money? It's to garner publicity. The idea of monetary prizes excites our imagination and so lends them virality, and for this narrow purpose the X Prize money has worked. Its creators may understand this, and hope that the publicity brings attention to the relevant problems and so itself incentivizes breakthroughs. The evidence doesn't bear this out, however. The X Prize has garnered its fair share of media coverage, but it has failed to lend massive prestige to the sector of technological innovation, and thus has not institutionalized newly-legible professional communities of practice in the manner that the Nobel prize did. After all, we forget that much of what we think of as the immutably

63 "About | XPRIZE," *xprize.org*, https://www.xprize.org/about/mission.

prestigious "scientific community," and even the field of professional economics, is a result downstream of such shifts in the landscape of prestige. Imagine how different society would be today if we had a Nobel Prize for technology!

While publicity is good, it's even better to be able to affect the distribution of prestige throughout society.[64] The more closely social status corresponds to activity that's ultimately beneficial for society, the more such activity is incentivized, much more strongly than by even a large financial reward. Wisely distributing status makes the difference between a world where most kids dream of becoming YouTubers and one where they dream of taking us to space.

64 See, within this manuscript, the next chapter "How Elon Musk Is Making Engineers Cool Again."

How Elon Musk is Making Engineers Cool Again

Elon Musk made headlines in 2018 by launching his Tesla Roadster away from Earth at a speed of 12,908 km/h, sending it firmly beyond Mars' orbit. What could be more clearly wasteful? Except it isn't. The technologically important part of the launch is that it demonstrates and tests the launch vehicle. The socially important part is that it reorganizes society by conferring status, which enables engineering feats across domains and fields.

When examining the exceptional and the powerful, nearly everyone underestimates how reasonable their actions are. What some denounce as whimsy or waste is often a wise investment that solves real and difficult problems, sometimes in very prosocial ways. Perhaps we can find better ways to solve some of these problems, but these attacks are mere wishful thinking, resting on the assumption that some unstated alternative will naturally spring into existence.

Status is one of the irreplaceable currencies whose necessary transfer is often denounced in this way. Michael Sauder et al. define status as the relative respect and patterns of deference accorded to people, groups and organizations by wider society.[65] I think this is basically right. People cannot engage in any common projects without some commonly agreed-upon deference to people, groups or organizations, nor can they engage in common projects without someone or something holding, and yes, spending status. Status is a coordination mechanism, and this makes it valuable.

65 Michael Sauder, Freda Lynn, and Joel Podolny, "Status: Insights from Organizational Sociology," *Annual Review of Sociology* 38, no. 267–283 (April 25, 2012), https://www.annualreviews.org/doi/abs/10.1146/annurev-soc-071811-145503.

If we come together to do great things, much status is required, whether vested in an institution or an individual. That someone will be holding status in this sense, personally or as a representative of an organization, then, is an unavoidable consequence of people coming together to do things. Perhaps one can argue for a dispersed distribution of status as the best way for us to organize such efforts, but the fact is that deference by some towards others on technical and resource distribution questions is still the central guiding factor.

If one merely has enough monetary resources to fund such ventures, but not the social standing to do so, then spending results in backlash from media, society, and eventually government. To test this yourself, imagine someone you detest (perhaps Donald Trump, or Hillary Clinton, or your rival at the office) visibly expending huge amounts of material resources. No matter how good their cause, you'd just wish it wasn't *them* undertaking it. Their deployment of resources would feel illegitimate, and you would try to play it down or even punish it if you could. Therefore, many with the means to expend resources in our society do not do so for fear of incurring such enmity—importantly, our society doesn't punish material inequality when it's quiet. However, capital is for spending. To deploy it on new ventures is not waste, but use.

In the case of Musk's car launch, the product of his coordinated human effort was the Falcon Heavy rocket. With a LEO capacity of 63,800 kg, nearly half that of the Saturn V moon rocket (140,000 kg), it towers at 70 meters tall, approximately the height of a 20 story building. In one respect, it even surpasses that marvel of the 1960s, the Saturn V: the Falcon's boosters landed simultaneously back at the launch site. To quote the science fiction author and journalist Jerry Pournelle, they "landed on a tail of fire just as God and Robert Heinlein intended". This demonstrated reusability contributes to improving the economics of deep space travel.

Testing this machine necessitated a test payload. The test payload, which would otherwise have been a piece of space junk, was used as a work of art and promotion. This, then, had effects on the distribution of status. The piles of status replenished by this feat are:

1. ***Elon the Organizer***. Attention is brought to the achievements of two of Elon Musk's companies. This reminds them of demonstrated past competence. Because it is his personal car launched into orbit, the credit is cleanly attributed to the individual that brought about the technical outcome of recruiting and organizing engineers, as well as providing them with necessary funding for their work.

2. ***Exceptional Individuals***. People's attention is brought to individual human achievement in general.

3. ***The Engineers***. It viscerally demonstrates that the tastes of engineers can determine resource distribution. The idea of engineers having resources at their disposal is now demonstrated to everyone.

4. ***Space Projects***. It demonstrates that it is possible to achieve acclaim in society by working on space exploration.

Of these effects, 2., 3. and 4. are clearly positive externalities. Both Jeff Bezos and NASA now have more organizational capital than before. Someone justifying their choice to major in aerospace engineering to friends and family now has to justify a little less. Should our society be awarding status to the engineers and organizers who achieve such feats? I think the answer is clearly yes.

Whether we house them in the private sector as with Elon, or whether we grant them a government jersey as was done with Von Braun, the nature of their task doesn't change.[66] The organizers of feats of engineering must fundamentally understand engineering to evaluate engineers, and have to be deferred to both by the engineers themselves and those who have resources to distribute. In turn, the senior engineers must command the deferral of junior engineers. The celebration of such people isn't merely a personal reward: rather, it is how we replenish this social capital of engineering, which in turn powers the social fabric that enables these people to do what they do. Without it, you can't go to space.

66 On Von Braun, see "Biography of Wernher Von Braun," *NASA MSFC History Office*, https://web.archive.org/web/20190723042254/http://history.msfc.nasa.gov/vonbraun/bio.html.

On the Loss and Preservation of Knowledge

Let's say you are designing a research program, and you're realizing that the topic you're hoping to understand is too big to cover in your lifetime. How do you make sure that people continue your work after you're gone? Or say you are trying to understand what Aristotle would think about artificial intelligence. Should you spend time reading and trying to understand Aristotle's works, or can you talk to modern Aristotelian scholars and defer to their opinion? How can you make this decision? Both of these goals require an understanding of traditions of knowledge—in particular, an understanding of whether a tradition of knowledge has been successfully or unsuccessfully transmitted. But first: what is a tradition of knowledge?

A *tradition of knowledge* is a body of knowledge that has been consecutively and successfully worked on by multiple generations of scholars or practitioners. In talking about a tradition of knowledge, we may be talking about a philosophical school of thought, or perhaps a tradition of intricate rituals in a religion, or even something as humble as the knowledge of how to fashion the best wooden toy horse, passed down from one craftsman to another. In the contemporary world, it may include something like the tacit knowledge of how a codebase really works, which senior engineers teach to junior engineers. It is useful to classify traditions of knowledge into three types: living, dead, and lost traditions.

A *living* tradition of knowledge is a tradition whose body of knowledge has been successfully transferred, i.e., passed on to people who comprehend it (e.g., cryptography). The content of the tradition's body of knowledge does not have to be strictly or fully accurate for the tradition to be living; it merely needs to be passed on.

A *dead* tradition of knowledge is a tradition whose body of knowledge has been unsuccessfully transferred, i.e., its external forms, its trappings such as written texts have been transferred, but not the full understanding of how to carry out this tradition of knowledge as practiced (e.g. scholars who can recite Aristotle but can't use arguments as he did; Buddhist monks who chant the instructions to meditation rather than meditating). This means a tradition can be dead while people still read its texts.

A *lost* tradition of knowledge is a tradition that has not been transferred at all (e.g. numerous schools during the Hundred Schools of Thought period in China; the theology of the Cathars, which is only preserved in the words of their critics, etc). The people who had the knowledge died without leaving any successors or substantial record of their knowledge.

It can be difficult to distinguish between different traditions of knowledge. There are traditions within traditions, and there are traditions that become fellow travelers, in the sense that they are related to but merely adjacent to one another. There are also traditions that have a long history of arguing against each other. Perhaps the best example of such traditions are to be found in the realm of theology: the multitudinous schisms between and within the major branches of Christianity, such as the intra-Protestant debate between Calvinists and Arminians which began in the 16th-century Netherlands and continues to this day among some evangelicals; the centuries-long debate began in the 3rd century AD between the dominant Vaibhāṣika school of Buddhism and its successor faith of Sautrāntika in the patchwork of northern Indian states following the fall of the Mauryan Empire; and the infamous warring between Sunni and Shia Islam. We can find other examples in political thought: the ancient debates between Confucians and Legalists in China, the enemy factions of Anglo-American liberalism and conservatism, and the debate between the Originalist and Living Constitutionalist schools in American constitutional interpretation, to name a few.

It matters whether a tradition of knowledge is living or dead. This is obviously the case if you are starting a research program—you want the tradition you start to stay alive. Whether or not the Aristotelian tradition is dead also matters if you are trying to understand what Aristotle would have thought about artificial intelligence: it determines whether or not you can trust the "authorities" on Aristotle—if the tradition is dead, then their expertise will not be helpful to you. It also matters if a tradition of knowledge is lost: this will inform your understanding of what it is possible to know about that tradition. For now, we will focus on understanding how to distinguish between a living and a dead tradition. This can be tricky; it's hard to trace traditions of knowledge, so it's also

hard to notice when they die.

How can you tell whether a tradition of knowledge is living or dead? First, you have to be able to identify signs that indicate the existence of a tradition of knowledge. You have to be able to recognize signs that indicate the existence of a tradition at all, then determine whether those signs taken together indicate that the tradition is dead or that it is alive. The signs used to recognize the existence of a tradition are the same signs used to distinguish between living and dead traditions.

Signs of traditions of knowledge

Signs that indicate the existence of a tradition of knowledge vary in the degree to which they indicate that a tradition is alive —that understanding has been passed on. A collection of signs that weakly or do not at all indicate continuity of understanding, without any signs that strongly indicate continuity of understanding, is a sign that the tradition under investigation is dead. Below are some common signs.

Sign of tradition of knowledge	Example of this sign
Production of a notable effect	Powerful generals; well-balanced Damascus steel swords
Shared methodology (even if not explicit)	Plasmid transfection techniques in synthetic biology.
Shared concepts (even if under different name)	"Diagonalization argument" or "Yao's minimax principle" in mathematics.
Shared conceptual framework or theories	The Standard Model in contemporary particle physics.
Extension of the theory in the tradition	Mencius' work on Confucian philosophy.
Master/apprentice relationships	An apprentice signing up with a master stonecutter for several years of service. A master glassmaker in his old age supported by his former apprentice.
Explicit knowledge of specific arguments	The argument that it is naive to try and predict the effects of economic policy entirely on the basis of relationships observed in historical data is known as the 'Lucas critique' in economics.
Shared terminology	A surgeon might use the terms "proximal" and "distal" to describe locations on the human body.
Accreditation system (depends of health of institution)	An MIT program that awards graduates PhDs in biochemistry.

References to specific authors	Mathematicians sometimes recommend 'reading Artin' for algebra.
Familiarity with a person's works	A classicist can recite verses from Homer's Iliad.
A physical location where the tradition is ostensibly kept	University of Oxford campus. The Orthodox Christian monasteries of Mount Athos.

Figure 1: Signs of traditions of knowledge, listed roughly in order from best to worst indicators.

It's important to remember that in order to trace traditions, *you have to investigate the actual transfer of knowledge*. This means that you can't, for example, rely on the existence of a physical location where the tradition is supposedly kept to justify that the tradition is alive. There are many possible scenarios in which a tradition has died or been lost, and yet the physical location of its origin has been preserved. A useful way of determining whether a tradition of knowledge exists and is living is by investigating chains of master/apprentice relationships. When looking at the works of masters and apprentices, you can tell whether there are shared methods, concepts, ideas, and so forth.

Furthermore, the existence of master-apprentice relationships at all is an indicator of a living tradition, because master-apprentice relationships are especially effective means of knowledge transfer. This is borne out by the historical record. For example, Kongō Gumi, the world's oldest continuously-operating company and a family-owned construction firm based in Osaka, Japan, has extensively used the practice of *mukoyōshi*—by which a son-in-law is formally adopted into the family as an apprentice and eventual company owner—to stay in business since the year 578.

Live traditions

What keeps a tradition of knowledge alive? First, let's review our definition of a living tradition of knowledge: a living tradition of knowledge is a tradition in which either its founders are still alive and practicing, or its body of knowledge has been successfully transferred, i.e. passed on to people who comprehend it. There are multiple features of a living tradition that we can look for in order to determine whether a tradition of knowledge is alive or dead.

Transfer of Verification Mechanisms

Scholars and practitioners in a body of knowledge will often use discrete techniques or mechanisms to verify their work for accuracy. This is, essentially, a form of quality control that allows new work in a tradition of knowledge to be verified against reality.

Whether it's an oral examination at a medieval university, Napoleon riding into camp unannounced to review the troops, or a surprise internal performance review at the office, the principle is the same.

Transfer of Mechanisms for Correcting Transmission Errors

In addition to verifying new work for accuracy, it is also important to check new work for consistency with a previous or original body of work in a tradition. Errors in transmission from one generation to the next are almost guaranteed and thus require proactive measures to correct them and maintain the fidelity of a tradition—as fastidious Torah scribes, who will restart an entire scroll if they make a single error, can attest.

Transfer of Generating Principles

While there are mechanisms that can be used to check your work, it is also possible to transfer the principles that generated the tradition of knowledge in the first place. Someone who understands the generating principles of a tradition will be able to verify or check their knowledge, but, more importantly, they will also be able to extend it while remaining faithful to the original body of knowledge. An example of a generating principle is a technique for theorizing, such as the process of deductive reasoning.

Explication of Generating Principles

Generating principles must be passed down from one generation to the next implicitly, if they are to be truly transferred and understood. This is because the production of knowledge, in the limit, is almost always too difficult to put into words. Furthermore, not all knowledge is purely linguistic. However, in the absence of an ability to transfer generating principles implicitly, it is also possible to make a praiseworthy and useful attempt to transfer generating principles explicitly. The philosopher Mortimer Adler's 1940 book How to Read a Book could be considered an attempt at explicating a generative principle—namely, how to read well!

The Production of Masters

A living tradition is able to produce masters of the tradition of knowledge, ideally, both reliably and frequently. Here we might contrast a master of a tradition of knowledge with a student, teacher, mediocrity, or even a mere expert. A master is most likely to be able to preserve, understand, extend, or reconstruct a tradition as necessary.

The Production of Reliable Teachers

While a living tradition of knowledge should be able to produce masters, it will necessarily produce far more teachers. While a master may be key for reconstructing or extending

a tradition of knowledge, it will be necessary to have teachers who will primarily solve the counterfeit understanding problem (see below).

An Institution

A tradition of knowledge, like any successful effort involving many individuals, will require an institution in order to maintain and repair itself. This institution will need a great founder to found it. It will need to solve the succession problem. It will need to be periodically repaired by live players. It will have to deal with all the problems any other kind of institution must grapple with, such as setting up defenses against the destruction or capture of the institution by unaligned outside forces. While an institution's maintenance of a tradition of knowledge is distinct from the tradition of knowledge itself, it is often the case that one institution is mostly or overwhelmingly responsible for the maintenance of a tradition of knowledge and, when the institution fails, it becomes exceedingly difficult or impossible to preserve the tradition.

Remember: *traditions of knowledge are preserved intentionally*. It's hard to keep a tradition of knowledge alive.

Dead traditions and counterfeit understanding

The overwhelming odds are that traditions become lost or die. Decay is the default; entropy usually prevails. As a consequence, the number of problems related to transferring a body of knowledge is significant. Any one or combination of these can cause a tradition of knowledge to die.

Students of a tradition can appear to possess understanding of a tradition's body of knowledge despite actually lacking it. This is counterfeit understanding. This can happen if students merely reproduce the teacher's statements without understanding the underlying knowledge, or are simply cheating. This can also happen if teachers cannot correctly assess whether the students have achieved real understanding.

Some types of knowledge are particularly vulnerable to counterfeit understanding, such as knowledge about introspection, which is quite difficult to verify. Even types of knowledge that we might think are robust to counterfeit understanding may not be. Don't make the mistake of thinking that institutions that produce material effects, for example, have an easier time transferring knowledge—it is probably easier to teach someone to be a Little League baseball coach than it is to teach them to carve a totem pole or manufacture a precision machine tool. There are a number of sub-problems that exacerbate

the problem of counterfeit understanding:

Standardized Education

Standardized education is useful because, among other things, it is easily scalable, but standardized methods of education (e.g. standardized tests as a means of assessment rather than non-standardized evaluations by masters) tend to produce counterfeit understanding because education is too complex to be easily standardized. This problem is closely related to Goodhart's Law, which states that "when a measure becomes a target, it ceases to be a good measure."[67] After a while, test scores no longer reflect general ability, but rather skill at test-taking. To prevent this from happening, any successful system of standardized education would need masters to switch up the standards every now and then, to keep testees on their feet and ensure they could not meet standards with counterfeit understanding.

Purported Change of Purpose

Sometimes counterfeit understanding will be concealed by hiding the resulting loss of capacity as change of purpose. If a country has failed to keep the knowledge of how to make swords alive, for example, they might conceal it by saying, "We don't need to make swords! The style of combat has changed to favor spears." If the tradition is dead enough, they might keep saying this until they are thoroughly conquered by sword-users.

Difficulty Recognizing Mastery

Being able to tell whether people have true or counterfeit knowledge is a difficult skill. Even a master in the tradition's knowledge itself may lack this ability. This is related to the problem of assessing introspection. Humans are, quite simply, not telepaths, and it is difficult to know with certainty or fidelity what is actually going on in someone's head. Consider, for example, the rise of deconstructionist theory in the Western academy. The current generation of professors that teach this theory to students by and large lacks the intimate knowledge of the structures to be deconstructed which founders of the theory such as Deleuze possessed, and thus while students appear to be aping the forms of the old postmodern theorists, the underlying tradition of knowledge has in reality died.

Death of Implicit Models

People who don't understand the distinction between implicit and explicit models, and who thus can't or don't transfer their implicit models, will fail to transfer the actual body of knowledge—unless the entire body of knowledge has been successfully made explicit, which is exceptionally difficult, if not impossible. For example, a craftsman may think

67 "Goodhart's Law," *Oxford Reference*, 2020, https://doi.org/10.1093/oi/authority.20110803095859655.

he is transferring knowledge by writing down the instructions for how to fashion a particular type of wooden toy horse, but may not realize that the pressure he applies with his tools is as important as the motions he traces.

Lost Generators

If the generating principles of a tradition's body of knowledge are not transferred, then students of this tradition won't be able to re-generate knowledge that has been lost, or generate new knowledge that builds upon the tradition. Barring perfect knowledge transfer by every generation, which is extremely difficult if not impossible, this will result in the decay and eventual death of the tradition.

Syncretism

Syncretism, or the amalgamation of different schools of thought, is a moderately negative sign that people may be failing to transfer a tradition of knowledge. While syncretism is fine if it is an upgrade to the tradition, it is often difficult to tell if it yields an upgrade. There are three cases in which syncretism indicates a dead tradition: first, if people are trying to import something into a system that doesn't make sense; second, if people are importing things because the original tradition has stopped making sense to them; and finally, if the institution which has served to transmit the knowledge has been captured (see below). Examples of syncretism abound in history, whether considering the traditional amalgamation of Shinto and Buddhism in Japan, the common practice of identifying foreign gods with one's own in antiquity, and much more besides. What syncretism signifies for a tradition of knowledge is itself a difficult question that must be answered specifically for each instance.

Single Points of Failure

Although creating an institution dedicated to transferring a tradition of knowledge is very useful, and is necessary to preserve a tradition in the long run, it can also be dangerous. By institutionalizing a tradition, you can also introduce single points of failure. The bad judgment of one teacher at an organization, for example, can yield a whole class of students whose thought is severely damaged. One may attempt to lessen this problem through institutional redundancy, establishing multiple centers of knowledge to independently and mutually verify each other's work; but maintaining such a subtle dance of coordination between multiple institutions becomes a skill in need of transfer in its own right, and this greatly increases the risk of schisms.

Institutional Capture

If an institution built to transfer a tradition of knowledge gains power or prestige, it will attract people who want to use the institution for other purposes than the preservation and development of the tradition. Once the institution is captured for the power it holds, and the goal of the organization is no longer to transfer the tradition, the body of knowledge can easily fail to be transferred. Some types of knowledge are extremely vulnerable to institutional takeover, e.g. traditions involving political theory, because every social theory is also an ideology.

There are various ways to defend a tradition from death by institutional capture. One way is simply to understand the tradition—it's much easier to defend it if you understand it, because others can't distort it while you're unaware. Another way is to tie resources to the propagation of the tradition, for example, by dedicating a grant to fund people who only work on certain texts. Implementing these defenses, however, is tricky. If you overdo the defense mechanisms, they may prevent the successful transfer of knowledge. You can imagine a grant tying people to a particular work being detrimental if actual understanding is achieved by reading a different work, and there is no financial incentive to read that work. On the other hand, if you underdo the defense mechanisms, and the institution is captured, the tradition will die just the same.

Intellectual Dark Matter

Figure 2: Messier 106

This essay was originally published by the Long Now Foundation on July 16, 2019.

Missing mass, missing knowledge

Many galaxies would fly apart if they had as much mass as estimates based on their visible signature suggest. Although some have posited alternative theories of gravitation to explain this discrepancy, most physicists now hypothesize the existence of mass-bearing particles that are not detectable through emitted radiation such as visible light. We call these particles "dark matter", and which is estimated to compose about 85% of all matter in the observable universe.

In analyzing the functional institutions of our society, we are not able to see for ourselves most of the knowledge that created them.[68] Knowledge of this sort includes trade secrets, tacit technical knowledge, private social networks, private intelligence-gathering operations, management, persuasive skill, cooperation and collusion among founders and their allies, and founders' long-term plans for their institutions.[69]

This knowledge has profound effects on the social landscape.[70] We must understand it if we hope to understand society. We must therefore examine *intellectual dark matter*: knowledge that we cannot see publicly, but whose existence we can infer because our institutions would fly apart if the knowledge we see were all there was.[71] Such intellectual dark matter rests at the foundations of our society, dwarfing in scope and importance the accessible, shareable, visible knowledge on which we normally focus.

There are many categories of intellectual dark matter, but the three principal ones are lost, proprietary, and tacit knowledge.

Lost knowledge

A body of understanding becomes *lost knowledge* when the tradition of knowledge maintaining it ceases to exist. At the dawn of the modern era, during the Renaissance, there was a clear understanding of the importance and scope of lost knowledge. This led to an ambitious intellectual effort in which scholars unearthed and attempted to understand ancient wisdom.[72]

The recovered works of thinkers and scholars such as Cicero, Livy, and Thucydides were closely analyzed, and as a result now serve as the intellectual underpinning of many Western political systems. The unearthed texts of ancient Greek geometers and natural

68 See, within this manuscript, the chapter "Functional Institutions Are the Exception" (97–102).

69 As a very concrete example of the final item on this list, consider the founding of Amazon.com in 1994. One could infer at the time from Bezos' previous employment, an article in his high school newspaper, and reports from his ex-girlfriend that he planned for Amazon to take over all of e-commerce to net enough money to start a space tech company. For many years, however, Amazon was only branded as a bookseller, and Bezos made sure to obscure the company's long-term plans in quarterly earnings calls. Knowledge of this intellectual dark matter would have informed your strategic outlook, either as an Amazon competitor or a prospective investor. An email chain from Paul Graham is another example of an object of this form for Airbnb. See Paul Graham, "Subject: Airbnb," March 2011, http://www.paulgraham.com/airbnb.html.

70 See, within this manuscript, the chapter "Introduction" (8–15).

71 I first introduced this concept in August 2018 in a talk for the Foresight Institute. See Samo Burja, *Intellectual Dark Matter*, YouTube, April 4, 2019, https://www.youtube.com/watch?v=-KPAD1UjpsE.

72 See, within this manuscript, the chapter "On the Loss and Preservation of Knowledge" (50–58).

philosophers developed over centuries into modern mathematics and physics in the Scientific Revolution that followed. Our modern prosperity is arguably downstream of this discovery of lost knowledge. The echo of this early modern period can be found in the popular conception of the Dark Ages. If a dark age is an age that has forgotten most of what was previously learned, we are still living in one.

The relearning of Greek and Latin works was left fundamentally incomplete. Just as physicists are only able to observe 15% of matter in existence, today we possess written fragments from only 13% of the ~2,000 ancient Greek authors known to us by name.[73] This does not account for the authors we do not know, and only a small portion of the 13% figure consists of complete works: while we have recovered Aristotle's *Politics*, we only have fragments of his *Economics*.

Our core philosophical, political, and theological works are conceived in dialogue with Greek and Roman thought. Medieval and modern thinking vital to the creation of our largest and most important institutions, such as that of St. Thomas Aquinas or Montesquieu, rests on the preserved works of antiquity. Those works in turn are themselves written in dialogue with further works that remain lost to us. We therefore cannot even see the intellectual foundations of our most important religious, academic, and political institutions.

Lost knowledge is not just ancient. Strategic actors of the present understand the advantage of locating and revitalizing recently lost traditions of knowledge. If you aspire to build world-class rocket engines today, you might go to great depths, even deep-sea depths, to understand rocket construction during the golden age of American space exploration. In 2013, Jeff Bezos recovered two Apollo 11 rockets from the bottom of the ocean.[74] Do you believe that he donated them to the Smithsonian without having the team at Blue Origin, his aerospace company, reverse-engineer them first? It seems unlikely.

73 Hans Gerstinger, "Bestand und Überlieferung der Literaturwerke des griechisch-römischen Altertums," speech at the rectorate of the Karl-Franzens University in Graz on November 14, 1947, (Graz: Kienreich, 1948).

74 Adam Mann, "Jeff Bezos Recovers Apollo Rocket Engines From Deep Ocean," *WIRED*, March 20, 2013, https://www.wired.com/2013/03/jeff-bezos-apollo/.

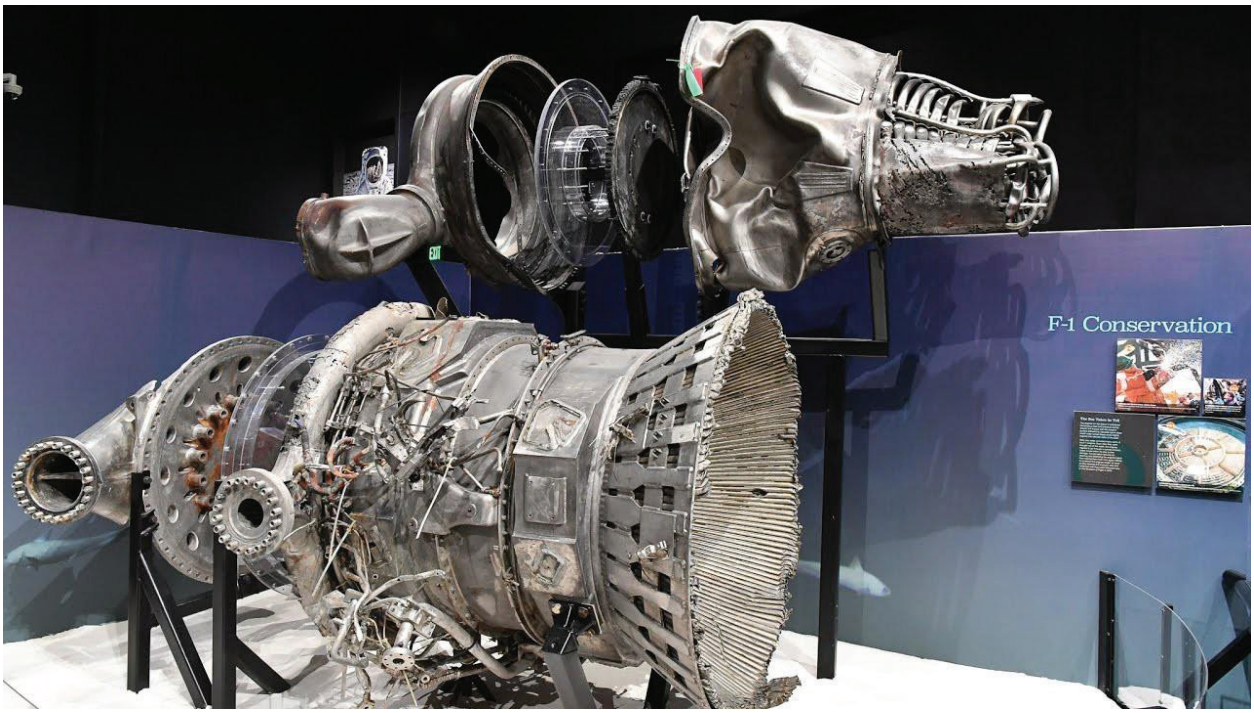


Figure 3: Apollo 11 engine components recovered by Jeff Bezos, currently at the Museum of Flight in Seattle.

Proprietary knowledge

The next large chunk of intellectual dark matter is *proprietary knowledge*. The use and spread of such knowledge is restricted by an institution guarding its monopoly. Companies use legal means such as non-disclosure agreements and information security practices to guard against industrial espionage and secure economic advantage. For example, the Medallion Fund managed by Renaissance Technology has returned an average of 40% annually since its inception, including a 100% return in 2008, making it by far the best-performing hedge fund in history and netting its investors tens of billions of dollars. Its mathematical underpinnings are kept secret not only via non-disclosure and non-compete agreements, but also very high compensation and a carefully crafted, unique company culture that disincentivizes interaction with the outside world.

RenTech's offices, for example, are on Long Island near Stony Brook University, about 60 miles from Manhattan, where the finance community is concentrated. This makes sense—were other quant funds to learn of its methods, Renaissance's ability to exploit market discrepancies would become far less profitable. RenTech is not unique in these practices. Bridgewater Associates, another premier hedge fund with a very unique company culture, has its offices at a secluded riverside location across the Long Island Sound in Connecticut, 20 miles from the nearest hedge fund cluster in Greenwich.

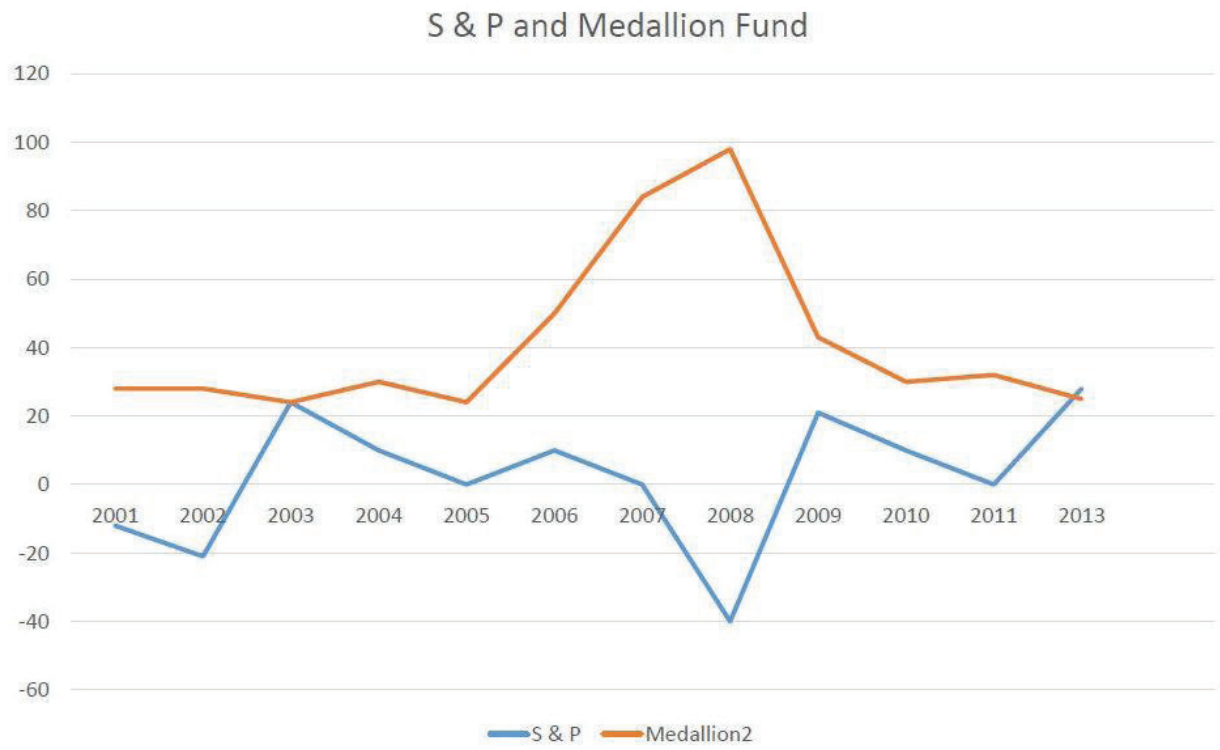


Figure 4: Historical performance of the Medallion Fund, 2001–2013.

Deeply networked professions can also develop a culture of restricting access to and limiting rights to use information. The purest form of such professional cultures are the guilds of medieval Europe. Only a handful of modern guilds are granted equivalent legal recognition.[75]

The term guild is archaic but apt. Recognizing a well-coordinated contemporary guild is important for understanding economic processes. Such communities carry significant clout in our social and economic landscape, and are likelier than a single company to punish transgressions, be it through legal, economic, or reputational attacks.

Guilds also protect information through formalized training and apprenticeship. While this training may not be necessary to master the relevant skills, its first purpose is to ensure commitment from those trying to access information. One of the ways costs

75 See: Lawrence Lessig, *America, Compromised* (Chicago; London: The University of Chicago Press, 2018), Ch. 4 ("Chicago school economists...might well say that [the American Medical Association] was just a guild conspiring to raise prices. Of course it was. That was its point. Through restrictions and rules, medicine would achieve independence from profit-making third parties--'quacks selling nostrums'"); See also Lloyd C Irland,"Ethics Codes of Professional Societies: A Quick Look," *Journal of Forestry*, Volume 117, Issue 4, July 2019, Pages 412–416, https://doi.org/10.1093/jofore/fvz034, which comments on how guidance issued by most professional associations is fundamentally different from the well-developed and binding ethical codes of the few modern professional guilds, like the National Association of Realtors.

are imposed is through obscurantism, deliberately conveying information unclearly. By making a subject appear much more intellectually demanding than it actually is, you discourage people from attempting to learn or compete with you. The pretense of intellectual rigor allows you to overstate proprietary knowledge and thereby further increase your authority or extend it to domains beyond your expertise. The overuse of mathematics in economics is a good example of this.

Law provides an example of a field where such guilds thrive in practice, if not in name. Nearly all knowledge of how to achieve favorable judicial outcomes is local and informal. Ranked in importance for judicial outcome, understanding of what will and will not be admitted in court comes first—second comes the construction of plausible legal arguments, and only third the discovery of relevant precedent cases. This first sort of information is guarded by a particular network or law firm to help secure an economic niche, hence the high degree of specialization within law. This is also why it is possible to outsource the routine and labor-intensive task of searching for favorable precedents to junior partners, assistants, and even machine learning algorithms—the firm is not seeking to protect that information.

Guilds and companies are not the only kind of institutions that guard proprietary knowledge. States regulate the use of information for political advantage. They make use of legal means and information security practices—much as guilds and companies do—as well as all the capacities afforded by their surveillance, security, and defense apparatuses.

Tacit knowledge

Tacit knowledge is knowledge that is not transmitted in written form. For example, a blacksmith learns to craft well-balanced swords through direct practice and correction from a master—not by reading a textbook.[76] Most practical knowledge is tacit, and for good reason. Explicit instructions become far too complicated and cumbersome to describe even moderately difficult tasks. Moreover, people learn far more easily from practice than from books, making practice a more reliable means of teaching large numbers of people, for example workers, how to perform a task. People become fluent in languages by speaking them, not by reading language textbooks.[77]

76 Burja, "The YouTube Revolution in Knowledge Transfer."

77 Learning a new language to fluency appears to be one of the rarest intellectual achievements compared to the amount of merely written education that is widely available for achieving it in both institutional—academic or governmental—and commercial contexts. Language immersion is functionally practice of a craft with a master—the fluent native speaker—and appears to be the most likely route to achieve fluency. Marko Jukic has discussesed this in an article. (Marko Jukic, "Nobody Knows How To Learn A Language," *Noteworthy - The Journal Blog* (blog), January 31, 2019).

Tacit knowledge is the most significant and widespread form of knowledge that allows institutions, and thus the economy, to function. Many professions, such as a cashier or an Uber driver, are very simple and function near the edge of automation. But those most critical to society, such as statesmen, skilled industrial workers, or engineers, require large bodies of tacit knowledge to perform well, and the best performers are highly compensated.

The Bessemer process illustrates the critical economic value of tacit knowledge and the difficulty of making it explicit.[78] In 1856, Henry Bessemer patented a new process for making steel that was much less expensive than existing methods. He licensed the patent to several manufacturers, but they weren't able to get the process to work based on his explanations, and eventually sued Bessemer over it. Bessemer took matters into his own hands, started his own steel company, and implemented the process with great success.

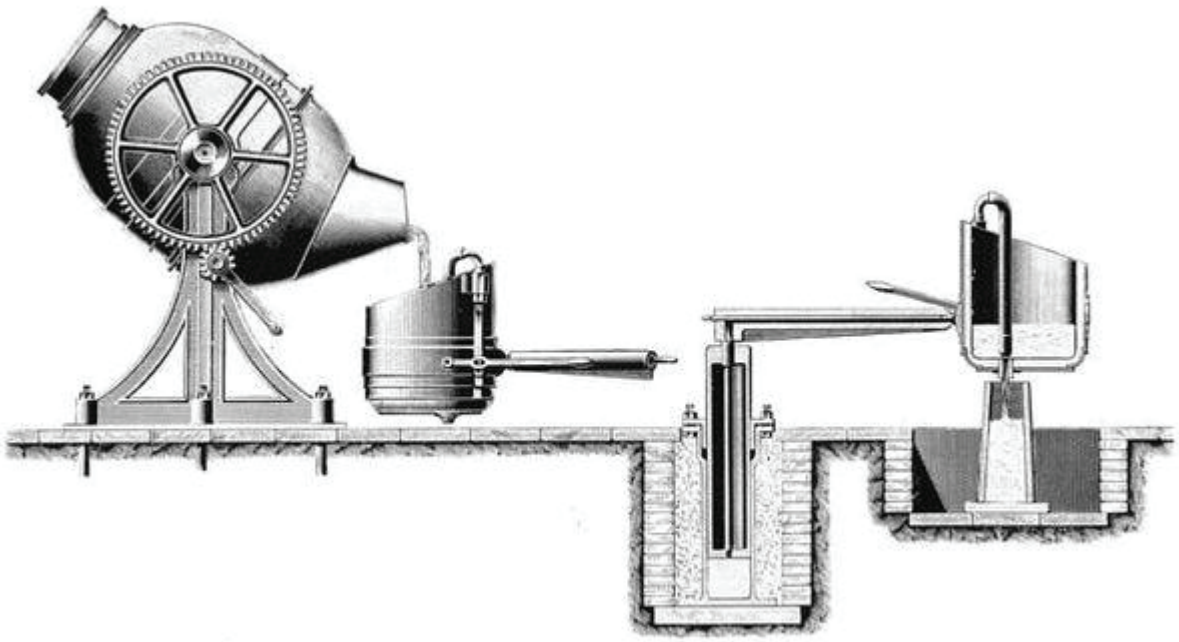


Fig. 44. Early Form of Bessemer Converting Plant at Sheffield

Figure 5: A sketch of a Bessemer converter.

Enormous efforts are made by strategic actors to secure and protect tacit knowledge, especially when that knowledge provides an adversarial advantage. In World War II, Germany's Wernher von Braun developed the V-2 rocket—the first guided ballistic missile—with devastating success.[79] Neither Germany's rivals nor its allies possessed the

78 "Bessemer Process," Wikipedia, https://en.wikipedia.org/wiki/Bessemer_process.

79 "V-2 Missile," *National Air and Space Museum*, n.d, https://airandspace.si.edu/collection-objects/v-2-missile/nasm_A19600342000.

technology, and Germany was sure to keep this knowledge close to its chest.

As the war was ending, the SS closely guarded von Braun and his team with orders to execute them if the Allies approached. Nonetheless, the scientists managed to escape and surrender to Allied forces, after which they were immediately sent to the U.S. to train teams of American engineers and military personnel in rocketry. This was not an isolated case—the United States and the Soviet Union both carried out large special operations to capture German personnel with valuable tacit knowledge, and both benefited immensely from it.[80]

Since it cannot be easily transferred via texts, tacit knowledge must be taught via direct practice and extensive interaction with a skilled practitioner. Traditional master-apprentice relationships are the gold standard for these training relationships, though other arrangements are feasible so long as there is an economic incentive for the skilled practitioner to spend a large amount of time with his student.[81] Otherwise, the knowledge simply isn't transferred, and with many crafts, is lost forever.

The quest for dark matter

We are standing on top of a vast system of institutions powered by intellectual dark matter. Some of this matter can be made visible—proprietary and tacit knowledge function in private but can be uncovered. However, much of this matter is lost, never to be seen again.

---

80 Operation Paperclip was a post-WWII intelligence-gathering project in which over 1,600 specialized scientists and engineers were retrieved from Germany and brought to the US to supplement domestic technical knowledge. While Operation Paperclip led to advances in science and technology that eventually gave the US an edge in the Space Race, it was also meant to render German technological capital off-limits to the Soviets as pre-Cold War tensions brewed. For further reading on the organization and extent of Operation Paperclip, see: John Gimbel, "Project Paperclip: German Scientists, American Policy, and the Cold War," *Diplomatic History* 14, no. 3, 343-365 (1990). https://www.jstor.org/stable/24911848?seq=1#metadata_info_tab_contents. Before Operation Paperclip was formally approved by Truman, the Soviet Union had already concluded the majority of its parallel intelligence project, Operation Osoaviakhim, which removed approximately 2,500 German personnel from the Soviet occupation zone for work on government projects. While Operation Paperclip relied almost entirely on high-level intelligence, Operation Osoaviakhim took in not only specialized scientists but also foremen and maintenance workers to service confiscated equipment, with the goal of transplanting laboratories and manufacturing sites from German to Soviet bases of power. For further reading on the impact of Operation Osoaviakhim, see: Charlie Hall, "A Completely Open Race': Anglo-Soviet Competition over German Military Science and Technology, 1944-1949," *War in History* 26, no. 4, (2019) https://kar.kent.ac.uk/73053/1/A%20Completely%20Open%20Race.pdf. One might argue that the Allies sought to seize primarily proprietary rather than tacit knowledge in the above example. But this is not correct: the vast majority of the US & USSR's payoff came decades after they seized German scientists and industrial workers, rather than from any immediate proprietary knowledge they were able to take. For example, Von Braun went on to become the architect of NASA—a project whose returns greatly exceed those of any 1945 V-2 blueprints.

81 Burja, *Why We Still Need Masters & Apprentices*, YouTube.

Institutions dependent on lost knowledge are running on autopilot and will fail to adapt or renew themselves.[82] Western countries continue to have high living standards and drive the bulk of innovation, but this should not be taken for granted. Many failed institutions were once highly functional, and they can maintain the appearance of health even as the late stages of decay set in.[83] On the eve of the financial crisis, Lehman Brothers looked as strong as ever. This is especially concerning considering how pervasive inflexible bureaucratic institutions are in our society.

We cannot predict and guide the trajectory of our society if we do not understand the importance of intellectual dark matter and so fail to locate and preserve it. The sum of public information available to us may be less important than even a small fraction of this knowledge. If we find this information and assemble it into a coherent understanding, we stand a chance of dramatically changing the world's course for the better.

82 See, within this manuscript, the chapter "Live vs. Dead Players" (68–71).

83 See, within this manuscript, the chapter "Institutional Failure as Surprise" (146–153).

Live vs. Dead Players

Whether you are examining past societies or living and acting within one today, it's important to distinguish between *live* and *dead* players. A live player is a person or well-coordinated group of people that is able to do things they have not done before. A dead player is a person or group of people that is working off a script, incapable of doing new things.

This distinction matters both for pragmatic and strategic reasons: it tells you how to act both offensively and defensively. Offensively, if you figure out whether a player is alive or dead, you can predict how they will respond to things and what that means you can do. If you find out that a player is dead, then you know that you can confront them in ways that are not known to them, and they will not be able to fight back. On the other hand, if you fail to figure out that a player has died, you might not realize that you can get away with replacing them. Defensively, paying attention to live players allows you to anticipate and prevent the grabbing of power, for instance.

The distinction between live and dead players also matters if you are trying to predict the future of society. You can predict what will happen in a society if you understand its landscape of live players. Societies with few live players will stagnate; societies with many live players will develop and adapt.

Whether a player is alive or dead is always relative to themselves. Thus, a live player is not necessarily exceptional in skill, although this is usually the case. If a player has already done X, doing X again does not make them a live player, even if other players can't do X yet or X is an impressive move. The player would have to make a move that is new for them in order to be a live player. For example, Vladimir Putin is a live player, and by virtue of his piloting the institutional machinery of the Russian state, Russia is also a live player. The Russian state is doing things it hasn't done in a long time, things that

were unthinkable a few years ago. Russia annexed Crimea, for example, and such a thing hasn't been done in Europe for decades. It also completed a successful military operation in Syria, notable in part because Syria is beyond Russia's geopolitical stronghold of peripheral former Soviet states in its "near abroad," and Putin managed to achieve his foreign policy objective of stabilizing Assad at considerably less cost than comparable American interventions in the Middle East.

Russia didn't have much time to develop plans for Syria—perhaps three years—which means it had to pull things together quickly. This is a very strong indicator that Russia can figure out new things, and quickly too. However, one country having this kind of influence over another country is nothing new—it's merely new for post-Soviet Russia, which is why we would deem Russia a live player. This same action taken by France in Mali would not indicate that France is a live player, for example, because France has routinely intervened in West Africa. A bureaucratized action, even if it is an impressive action, is not a sign that the player is alive.

It is possible then to describe the characteristics of live versus dead players in greater detail, which will help in distinguishing between them.

Live players

It's worth restating the definition of a live player: a live player is a person or tightly coordinated group of people that is able to do things they have not done before. There are two attributes that are necessary for a player to be considered live: tight coordination and a living tradition of knowledge.

If not merely one individual, a live player that is a group of people must be tightly coordinated in order to be flexible and responsive enough to do things they have not done before. This allows them to make moves outside of the formal structure of the group, go off script, modify themselves, continue acting even if the outer form dies, and so forth. Imagine, for example, an engineering team that keeps working together successfully after the company they work for formally blows up, perhaps transitioning together to a new company or just coordinating as hobbyists on the side.

The generation of new tactics, strategies, coordination mechanisms, and so on entails the production of new, useful knowledge. Thus, a live player must have a living tradition of knowledge. For the tradition of knowledge to be living, it must have at least one theorist,

among other things.[84] An individual live player may fulfill multiple roles in themselves, including being one's own theorist.

Signs of Live Players

What are signs that a player is alive? One strong sign is a player doing things outside of their expected domain—in a new, unexpected domain—which indicates that they can figure out new things for themselves.

Take Steve Jobs. Not too long ago, we saw Apple fighting against compliance with government requests for backdoor access to its data. This means that Jobs had previously found a way around compliance, which also means that Jobs was able to figure out ways to deal with the intelligence world. This was outside of his expected domain of building technology companies. This is a strong sign that Apple, at least while piloted by Steve Jobs, was a live player.

Another sign of a live player is exceptional individuals gravitating towards them. Such individuals tend to be good at assessing others, and will tend to seek out others who are also exceptional. If they cluster around a person or group, there is something exceptional about that person or group. Successfully reverse-engineering an attack is another, albeit weak, sign of a live player. Those who can make novel moves will also tend to be able to reverse-engineer moves, but those who can reverse-engineer moves often lack the ability to create novel ones.

Spotting live players is made difficult by the live players themselves. Live players frequently conceal themselves to avoid opposition from other live players or to reduce the likelihood of attacks. By concealing themselves, they delay other people's responses to them. For example, Amazon branded itself as a book-selling company long after it stopped being merely a book-selling company. This helped it avoid having Walmart think of it as a competitor. Nowadays, Amazon might prefer people think of it as a competitor to Walmart, to avoid people thinking of it as a competitor to SpaceX, Microsoft, or even the U.S. government.

84 See, within this manuscript, the chapter "On the Loss and Preservation of Knowledge" (50–58).

Dead players

We defined a dead player as a person or a group of people that is working off a script, incapable of doing new things.

What can cause a player to die? A player will die if their tradition of knowledge dies and they are unable to replace their thinkers or theorists. Perhaps an individual live player simply runs out of ideas. Even if tight coordination remains, the player is dead. They will compete in old areas, but have a hard time expanding into new areas.

A player will also die if their tight coordination is replaced by formal structures, which can happen as members of an organization change. If you're constrained by formal structures, it becomes harder to go off script, and this won't be adaptive enough. Remember, however, that tight coordination can be achieved by just one exceptional person.

Revival

How can you revive a dead player? It only takes one great person to revive a dead player. That said, reviving a dead player is challenging—more challenging than reviving a dead tradition of knowledge. In order to revive a dead player, you have to displace an existing power structure. It is frequently easier to do this by conquering the existing power structure with outside, owned power, than by trying to transform the player from dead to alive from the inside. This is because a dead player, if it is an organization, may contain mechanisms that preclude insiders from gaining enough power to restructure it into a live player.

Apple is an example of a dead player. It became much less interesting and powerful after Steve Jobs' death. Under him, it was a cultural and commercial force that was able to interface effectively with the U.S. government.[85] Now, it is a bureaucracy imitating his taste. It is incapable of adapting, building beautiful new things, and acquiring power.[86] It's much easier to detect live players than it is to detect dead players. This is because seemingly dead players might actually be alive (and playing dead).

85 Alexia Tsotsis, "Why Was Apple Late To The PRISM Party?," *TechCrunch*, June 17, 2013, https://techcrunch.com/2013/06/17/apple-nsa/.

86 Apple's main function now is to maintain a hold on previously amassed power. Apple has not developed a revolutionary product in years, and is instead focused on streamlining and integrating UI across its products. Apple's target market is not new users; it is only existing ones. See Dieter Bohn, "Apple and the End of the Genius," *The Verge*, June 28, 2019, https://www.theverge.com/2019/6/28/18870887/apple-jony-ive-design-genius-committee.

Borrowed vs. Owned Power

Power is the ability to realize your will, to affect the world in ways you desire, to achieve your goals. Power always has a source. *Borrowed power* is power that has been given to you and can be taken away by someone else. It usually takes the form of an office or title. *Owned power* is power that cannot easily be taken away. The major sources of owned power are resources, skills, personal relationships, and knowledge.

For example, say Alex was hired by Janet the CEO to manage one of her company's offices. Alex now has the power to assign work to employees at the office. Janet can fire Alex, and if she does, Alex can no longer assign work to the office's employees. This means that Alex's power to assign work was *borrowed power*. After Alex is fired, he might write an angry email to Janet and his other former colleagues. Janet cannot easily take away Alex's power to write angry emails, so Alex's ability to write angry emails is an example of *owned power*.

Whether or not power is owned or borrowed is relative to a competitive context. A person's job may be owned relative to their coworkers, but borrowed relative to their boss. Additionally, borrowed vs. owned power is not a binary distinction but a spectrum, though in practice it can often be used in a binary way. A source of power is owned to the extent that it can be defended. For example, money in most contexts is best thought of as owned power, even though it can be stolen.

It's better to have owned power rather than borrowed power, especially if you have ambitious long-term plans. As you execute such plans, there will be unexpected developments and new information that require significant adjustments. Because these changes cannot be foreseen, power that is less constrained in its use is desirable. The degree to which power is unconstrained in its use is a good proxy for the degree to which power is owned.

Consider General Motors competing against other car companies. In this context, GM's real estate assets are a source of owned power, because their competitors can't take them away. However, this is no longer true if we consider GM in competition with a branch of the U.S. government, e.g. the IRS. Although if GM had a large militia willing to defend the property, it might still be a source of owned power. So we see that when analyzing a player's sources of borrowed and owned power, you must select a context of competition.

Acquiring Borrowed Power

The most common route to acquiring borrowed power is what people call "getting a job". For instance, getting a job as an accountant at an insurance company gives you the borrowed power of managing that company's finances. Every official position confers borrowed powers, because official positions require you to render services for the group that hired you. The very right to render such services, the expectation of remuneration for such services, and access to the resources necessary to render the services are all borrowed powers, as they can be taken away by the employer.

Certain types of owned power are particularly useful for acquiring borrowed power, first and foremost the skill of persuasion. Since acquiring borrowed power entails someone else *giving you* some of their power, being able to persuade them that this is a good idea is very useful. Another is knowledge about the system in which you hope to gain power. For example, knowing the interview questions you will be asked ahead of time makes it a lot easier to get offered the position for which you are interviewing. A specialized skill that enables you to do useful work is a further example of owned power that can be used to gain borrowed power. The physicists who worked on the Manhattan project were given the resources and latitude to develop the atom bomb on the basis of their expertise. Unpersuasive nerds get employed by top banks at high salaries to do quant trading on the basis of their mathematical abilities.

It is possible to choose sources of borrowed power that also provide some owned power. An executive assistant, for example, could learn from and about their employer, and such knowledge would be a source of owned power. Improving your understanding of and ability to acquire borrowed power can thus improve your ability to acquire owned power.

Defending Borrowed Power

Since power is owned to the extent that it can be defended, when we talk about defending borrowed power, we are really talking about making borrowed power owned power. The primary way to do this is by exploiting information asymmetries. When power is lent, an information asymmetry always comes to exist between the lender and the borrower because the lender can't have complete knowledge about the actions of the borrower, and this can be exploited by the borrower to acquire owned power.

Let's say you get a job filing TPS reports in a cubicle at Initech Software Solutions. It turns out that you can do the TPS reports in less than a quarter of the time the company expects them to take, so you spend all of the extra time you suddenly have reading articles on Medium. The person that hired you would probably fire you, or give you extra work, or reduce your hours, if they knew that you were doing this, but if they don't know and can't find out—you're really good at minimizing your browser whenever your supervisor appears—then they can't do anything about it (this is the information asymmetry), so the position is more a source of owned than borrowed power. You've exploited an information asymmetry to acquire owned power, which you've then used to be paid for reading Medium articles.

As power borrowers are incentivized to maximize the information asymmetry between themselves and their lenders, borrowing and lending power is inherently adversarial. Power lenders are thus incentivized to spy on their borrowers to minimize information asymmetries. The ability of a system to lend power while still keeping ownership of it thus increases as the difficulty and cost of surveillance decreases. Likewise, the ability of a borrowed power system to accomplish the goals of its creator increases with the system's ability to minimize the information asymmetries within the organization. For example, if Initech has a system that records its employees computer activity, you will be much less able to read articles instead of filing TPS reports, thus making the position afford more borrowed than owned power.

While exploiting information asymmetries is the primary method, there are other ways to defend borrowed power (though many of them will exploit a similar mechanism). One tactic is to make yourself less replaceable to the lender. If they want something done that only you can do, this gives you leverage over them. You can also do things, like building trust, that cause the lender to decrease their level of surveillance. There are many other strategies of this sort.

Acquiring Owned Power

As we've discussed, borrowed power can be converted into owned power, but there are of course other ways to acquire owned power. Again, the major sources of owned power are resources, personal relationships, knowledge, and skills. Skills can be a tremendous source of power because they can allow one to gain nearly all other sources of power. For example, as I mentioned, persuasive skill is extremely useful for gaining, among other things, borrowed power. Many powerful people became powerful primarily on the basis of their persuasive ability.

Personal relationships are similar to persuasive ability in that they can be used to get people to do things for you. For example, say you are a young software engineer planning to start your own company, but you are working at a startup to gain more expertise. You develop strong personal relationships with your coworkers, and so when you decide to found your startup, you convince some of them to leave with you and use others to get introductions to funders. (This is an instance of converting borrowed power into owned power, because you have professional relationships with them due to your job.)

We can sometimes pursue knowledge on our own. It is possible to observe and contemplate our environment. Holding special information about your environment represents a notable advantage when navigating it. However we usually acquire knowledge from others. When we read the book of nature we stand on the shoulders of giants.

We learn from these giants. Sometimes we can talk to them about our study in person and at other times they speak to us through institutions and books.[87] Classic works are interpreted and contextualized by others. We might for example rely on a historian's understanding of Greece in the age of Aristotle to interpret Aristotle's claims in his *Politics*. You might consult your thesis advisor on an unusual result in your experiments. As our understanding grows, more and more of our knowledge in an area becomes in-sourced, and we grow to where we can with good epistemic standing disagree with the intellectual authority that was an invaluable step in our development. To consider the position of the teacher from the other end, this authority is itself a source of owned power that comes with knowledge.

Skills can be considered operationalized knowledge, or at least closely linked to it. They represent the ability to carry through on the logistical steps for a course of action. It is possible to know something can be done and should be done, without knowing how to

87 See, within this manuscript, the chapter "On the Loss and Preservation of Knowledge" (50–58).

perform the steps that make this occur. It is possible to use knowledge that is not operationalized in a skill as a means to power. One possibility is trade with someone in an opposite configuration—they have operationalized knowledge, they have the steps, but they don't know what exactly can be done or what needs to be done with them.

Resources are usually acquired because of skill, personal relationships, or information, and so one should aim first at these other sources of power as a means to them. There exists a virtuous cycle in acquiring skills that are leveraged into personal relationships that are leveraged into resources and information, and then the cycle repeats. If you miss some of these and focus on acquiring resources, you will sooner or later hit a ceiling you cannot pass. Contested resources need active defense.

The Succession Problem

Only a few institutions fulfill their intended purposes. Such a functional institution stands out as remarkable.[88] It is the exception, rather than the rule, and always traces its beginnings to a founder. Such institutions at first always have a skilled pilot—he can alter and direct the institution in a way that preserves or improves its functionality. If he weren't able to do so, he would not have been able to create a functional institution.

However, the founder cannot remain the pilot forever. Whether due to death, disease, old age, or simply new concerns, another pilot, a successor, eventually has to step in and take the reins for the institution to remain piloted. Furthermore, in order for the institution to remain both functional and a live player, this new pilot must also be skilled.[89] Such a person extends the life of the institution, allowing it to achieve more than it otherwise would. Ensuring the institution acquires this new, skilled pilot is the *succession problem*.

Institutional longevity requires skill and power

The succession problem has two components: *power succession* (handing off the reins of the institution, keeping it piloted) and *skill succession* (transferring the skill needed to pilot the institution well, keeping it a live player).

If the founder handles both parts of the succession problem, successfully handing off the institution to a person who can skillfully alter it as necessary, then the institution remains piloted and a live player. If neither part of the succession problem is handled, then the institution becomes unpiloted and a dead player.

88 See, within this manuscript, the chapter "Functional Institutions Are the Exception" (97–102).

89 See, within this manuscript, the chapter "Live vs. Dead Players" (68–71).

If power succession is successful but skill succession is not, then the institution remains piloted, but not a live player. Someone is at the controls, but they don't really know how to use them.

There are multiple possible outcomes to such a scenario. At worst, the pilot aggressively mismanages the institution. This situation can be catastrophic; the pilot might crash the plane. At best, the unskilled pilot remains at the controls but intervenes minimally, allowing the institution to function while also defending his ability to alter and direct it. Of course, if the pilot is also not skilled enough to maintain his power then the institution will eventually become unpiloted unless a skilled pilot steps in.

If skill succession is successful but power succession is not, then the institution becomes unpiloted and a dead player unless and until the skilled person gains the necessary institutional power to pilot it.

As an example, the founder of a company might retire, giving way to an outside CEO appointed by a rather conservative board. Even if there is a junior engineer or designer that has the passion and expertise needed for a whole new kind of product that the team could deliver, he will not be positioned to realize this vision.

To successfully change the company, the engineer would have to at best persuade, and at worst bypass, the new management. Ideally, the employee eventually maneuvers themself to the position of CEO. If this happens at all, it can take years. Instead, he might do better to fundraise and recruit for a new startup.

In the example above, if you imagine a chaotic and disorganized parent company, with responsibilities broken into uncoordinated shards with deep bureaucratic entrenchment, the problem of succession gets harder and not easier.

Over the lifespan of a bureaucracy, power lent out to various delegates becomes owned, allowing individuals to use organizational resources to pursue agendas at odds with the purpose of the organization.[90] They form an entrenched opposition, that makes rendering the institution functional a notable challenge.[91] Gaining control of institutions that have become unpiloted is often more difficult than founding one's own institution, even for a skilled actor.

90 See, within this manuscript, the chapter "How to Use Bureaucracies" (103–110) and "Borrowed vs. Owned Power" (72–76).

91 See, within this manuscript, the chapter "Functional Institutions Are the Exception" (97–102).

Even after becoming unpiloted, a functional institution can remain effective for a while, but it will decay and eventually cease to be functional or even cease to exist unless someone captures it and starts piloting it.

Creative destruction is not necessary for innovation

Silicon Valley enthuses over "disruption" because we have become so used to the succession problem remaining unsolved within discrete institutions such as companies. To disrupt an organization, industry, or culture can only be good if it isn't possible to cooperatively transform it. Under such conditions each generation of innovators must start anew or waste their efforts with a sclerotic structure.

Successful skill succession coupled with failed power succession can lead to destructive strife. People of exceptional ability and ambition do not necessarily seek out conflict, but are generally willing to endure it. Depending on their options, it might be the best course of action to attempt to dismantle or destroy the old organization with which they couldn't work.

Functioning firms are repositories of many kinds of capital that cannot be liquidated, and when they die, it is destroyed. The popular notion of "institutional knowledge" hints at this fact, but it is not broad enough: such capital includes not just knowledge about the institution itself, but also intellectual dark matter such as trade secrets, tacit technical knowledge, private social networks, private intelligence-gathering operations, management and persuasive skill, cooperation among founders and their allies, and founders' long-term plans for their institutions.[92] These are casualties of economic competition more frequently than we would like to think.

We have no problem identifying this phenomenon as unfortunate in politics. We view the destruction of an old political order by means such as civil war or political strife as a regrettable necessity at best, not something to celebrate. This stands in stark contrast with our view of the phenomenon in the economy, likely because we overlook the destructive side—what is lost—while we fixate on what is "innovative" about the fledgling disruptor-destroyer.

Disruption should be the backup rather than the first choice for innovation. That disruption is often the first choice instead results from poor institutional health. Few mature technological companies today use their position to support effective innovation. Many companies spend significant resources on research, but few manage to

92 See, within this manuscript, the chapter "Intellectual Dark Matter" (59–67).

aggressively implement and deploy such resources. Amazon provides a contemporary proof of possibility, with its constant pursuit of technical innovation in service of ever larger economies of scale and logistical efficiency. That Amazon is one of the exceptions reflects the poor health of the current batch of institutions, rather than the nature of mature companies or even underlying market incentives.

An overabundance of talent in the absence of sufficient opportunity and power succession can render society quite chaotic. If ambition is outlawed, only outlaws are ambitious. On the other side of the spectrum, buying stability through the absence of talent is futile in the long run. Institutions ultimately decay without renovation either from within or without.

Sclerotic institutions eventually break rather than bend, which is the source of catastrophic instability for those who rely on them. When thinking of a company, sclerosis might result in a desolated company town; when thinking of a civilization, the result is societal collapse.

Organizations and societies that solve the succession problem will have a less harsh trade-off between stability and innovation. When institutions of the previous generation are actively handed off to the next, they retain needed flexibility to pursue restructuring.

While variation between individual organizations is notable, most rely on social technology that is widely distributed and implemented around their society. A society is best thought of as a dense ecosystem of institutions always borrowing from each other, outsourcing services and sometimes clashing over resources.[93] It can be very difficult to implement a unique solution to any problem. If none of the institutions in a society solve a particular problem, the fragility of those institutions will be reflected in the fragility of society as a whole.

Great founders can solve succession

The foundation of a flourishing civilization is an abundance of functional institutions. These originate with founders who bring new social designs into being. In the natural course of events, their institutional legacy decays, becoming less and less suited to achieving the desired positive effects.

93 See, within this manuscript, the chapter "Institutional Failure as Surprise" (146–153).

The succession problem is the problem of ensuring founders can hand off institutions they have built to other founders. The key problems here are the creation and identification of sufficient skill, together with ensuring the next founder has inherited a position of sufficient power to remake the institution. Of course, even if the succession problem is handled once, it remains a problem for the next generation.

If the succession problem remains unsolved, the only process of institutional reform available is the destruction of abandoned institutions by new ones, the process sometimes described as "creative destruction". That our society valorizes rather than bemoans such outcomes unfortunately demonstrates that we have become accustomed to failed succession and notable dysfunction.

We should temper our enthusiasm for intense political and economic competition and instead develop a greater appreciation for the importance of successful succession. This change would go far in remedying contemporary institutional sclerosis and stagnation.

How Roman Emperors Handled the Succession Problem

Institutions built by one generation of founders must be successfully handed off to the next to keep them functional. In the absence of such succession, organizational sclerosis or constant internal conflict sets in.

The succession problem has two components: skill succession and power succession. In public discourse and political thought we have tried to solve either power succession or skill succession under different names. We seamlessly switch between two separate fragmented states of mind depending on which component of the problem is in front of us without even noticing.

Our culture is pervaded by an ideology of proving worth through struggle. This almost Darwinian view is strongly present in our economic, political, and even academic values. We define merit by equating it with success in competition, not even realizing this was merely one of many possible choices.[94]

These values then underwrite various legal and social obstacles imposed on power succession, that are widely believed to solve skill succession: we believe that by disempowering the holders of institutional positions from choosing their successors, we ensure that they

94 One of the best elucidations of this American value is Herbert Hoover's final speech of his landslide 1928 presidential campaign, in which he coined the term "rugged individualism." See "'Principles and Ideals of the United States Government' Herbert Hoover | October 22, 1928," *Teaching American History*, 2006, https://teachingamericanhistory.org/library/document/rugged-individualism/.

will be replaced based on "merit." When it comes to our private decisions, though, we have a more nepotistic mindset. In the private realm, we can think more cleanly about power succession. In this mode we usually fudge skill evaluation, however.

We assume that power and skill are unrelated at best and, often, further assume that power is ill-gotten by those who seize it without any warranted skill. What is missing from Western understanding is that power succession and skill succession are not actually at odds with each other, but are actually two mutually necessary halves. If your goal is to keep institutions functional, solutions that solve one but not the other are not solutions at all.

To explore and illustrate this reality, we can look to the example of adult adoption in the Roman Empire, which will provide insight into what kind of social norms and institutional features would be necessary in a modern solution.

When in Rome…

Roman society is correctly noted for its production of highly skilled individuals. It had no problem with skill succession—ambitious and greatly talented individuals abounded. They did find power succession to be a challenge, however, especially in the later eras of Roman civilization, when the cooperative elites of the early Republic were no longer around.

It's worth emphasizing just how anomalous the early Roman Republic was. For example, Cincinnatus could be called upon by the Senate to be dictator in an emergency, then earn the admiration of his peers by choosing to seamlessly retire back to his farm after the crisis passed, without fear of reprisals from former political rivals. They trusted that his retirement was genuine and that he would no longer be a towering figure in politics.

Contrast this with modern Libya, an example at the opposite extreme. Muammar Gaddafi's gruesome death at the hands of the National Transition Council militia is infamous. Even absent the American and French interventions that toppled him, if he had handed power over to his political opposition, a peaceful retirement seems unlikely at best.

The Roman republican system eventually met its limits as it grew from managing a provincial Rome and its client states on the Italian Peninsula to managing a more complex urban economy and the political life of the entire Western Mediterranean.

Problems that previously could have been solved by aligned political fundamentals or the social fabric of the patrician class grew difficult.

These structures, once the last recourse, could not bear the burden of regular use. What were once dire contingencies only to be resorted to in the case of a failure of coordination among the governing class, came to be seen as normal political moves. Roman economic, military, and political elites grew steadily less cooperative as a result.

By the late republic, talented people still arose but were forced to fight bloody civil wars to resolve disputes. The career of Sulla, for example, is littered with political opponents defeated not just on the senate floor but on the field of battle. An informal no-rules political sphere superseded the formal one, with dangerous consequences.

Long after these civil wars changed the Roman state beyond recognition, Roman Emperors found an inventive solution for the newly apparent problem of power succession. In subsequent periods of stability, such as during the Nerva-Antonine dynasty, this was achieved with the use of adult adoption.

In Roman society, adoption wasn't solely a means to help orphaned or abandoned children, but a social and legal mechanism through which you could make an adult male your son and heir, allowing him to inherit your position. In other words, your dynasty didn't need to end with your bloodline.

This solution had many interesting features, the most notable of which is that the emperor could work out an agreement with a rising younger rival, bringing him into the fold and aligning his aims with the emperor's. Adoption legibly positioned them as the natural successor.

Since the practice of adult adoption was well understood and respected throughout Roman society, it amounted to a credible guarantee of coordination. Credible guarantees changed incentives notably.

The adopted son, who might previously have been tempted to undermine the emperor, would now be in favor of expanding a power base that would one day be his. The current and future rulers would then have a reason to work together even before the transfer of power is affected. The result is not only a peaceful transfer of power, but a political alchemy that transmutes your most dangerous rival into your most potent ally.

A well-respected law backed by legal practice and expectation of enforcement is what ensures that ownership of wealth and other rights are successfully transferred. Importantly, the legitimacy of the social practice of adoption, together with the mutual expectation of future power, meant that intangible social connections, so vital to securing power, were transferred as well.

Even if the chosen successor and head of state were not in the closest political allegiance due to other factors, this adoption mechanism could still be used to formalize the capacity to carry out a coup to put that person in charge, or at least in the waiting line for formal governance, without a civil war. This solved one of the greatest difficulties with negotiated surrenders and peace negotiations in general: that of credible commitment.

The mechanism had benefits in terms of skill succession as well, since it allowed a skilled pilot, in this case a skilled ruler, to recognize and pick another with comparable skill. As a result, the era of the Nerva-Antonine dynasty through most of the second century was a period of sustained, relatively peaceful and competent governance.

The term "Five Good Emperors" has been used to refer to the chain of five good rulers from the Nerva-Antonine dynasty (Nerva, Trajan, Hadrian, Antoninus Pius, and Marcus Aurelius). The famous British historian Edward Gibbon went so far in his praise as to say mankind never had as happy a condition before or after as under their rule.

The relative harmony of this period provides an important contrast with the civil wars seen earlier in the late republic and later in imperial history. Adoption proved a viable method of solving power and skill succession, allowing the emperors to enjoy personal security that curtailed the problem of local focus—the allocation of resources to control a central coordinating body, to the extent that resources for the healthy functioning of the whole are depleted—which in turn ensured effective control and good functioning of the expansive Roman state.[95]

During his brief reign the politically weak emperor Nerva chose to adopt the up and coming Trajan, formalizing his rise and integrating him into the governing structure without a bloody civil war. Trajan's successor, Hadrian, was also adopted, though details are murky, as the documents were signed on Trajan's deathbed. What is clear, though, is that Hadrian was a long-standing member of Trajan's inner circle—according to the Augustan History, a collection of biographies of the Roman emperors of this period, it was Hadrian who brought the news to Trajan of his adoption by Nerva. Hadrian in turn

95 See, within this manuscript, the chapter "Empire Theory, Part I: Competitive Landscape" (118–125).

adopted Antoninus Pius, who had greatly impressed him with his performance as proconsul of Asia, under the condition that Antoninus himself adopt both Marcus Aurelius and Lucius Verus as heirs. He did so, and upon his death was succeeded by both Marcus and Lucius, who co-ruled until Lucius's death. Marcus Aurelius would, notoriously name his erratic biological son Commodus as heir, a decision subject to great debate but which seems to have resulted in a failure of skill succession.

The more complex the solution, the more fragile it is

The most developed version of the system of adoptive succession was implemented centuries later under Diocletian, the reformist ruler who brought the empire back from the brink of collapse. The practice of adoption was less common in Roman society by that point, so the stability of the guarantee was more questionable, since it was no longer a celebrated cultural practice. Diocletian revived it for use as a legal succession mechanism and developed it further by implementing a system of seniority and apprenticeship. The appointed successor was granted the title of Caesar (junior Emperor) and would be allowed to manage their own lands, under nominal supervision of the Augustus (senior Emperor).

This sweetened the deal: not only will I name you my son and, by culture and law, make you my heir, but I will also grant or acknowledge your right to manage territories right now.

An advantage of this approach is that the skills and responsibilities required of the senior position are directly analogous to the skills and responsibilities required of the junior one. The job of head of state is usually sufficiently unique that preparation, training, and directly relevant experience are infamously hard to come by. A disadvantage of this approach, however, is that it favors the junior party, perhaps to the point of making premature conflict a viable route to power.

The Roman Empire was experiencing great difficulties in this era, having become sclerotic and bureaucratized. Military and administrative demands made the division of the Empire into a Western and Eastern half politically advantageous. In the landscape of elite power, the territory was shared by a four-way alliance, a tetrarchy of the Eastern and Western senior emperors and their junior successors.

This complicated arrangement proved more unstable than the Nerva-Antonine dynasty. The balance of power between four skilled individuals is a hard thing to maintain. Ev-

ery now and then there do arise cooperative strategists that can make such a balance of power work, but the skill requirement for the job is significantly higher than the earlier Roman arrangement. The tetrarchy was stable only under the management of Diocletian himself. He managed the feat of safely retiring, but unfortunately in his old age he also lived to see the system fail.

More complicated systems of succession and coordination are generally fragile, since in those cases successful power succession relies on successful skill succession, as navigating the process of succession becomes a skill unto itself that must be transferred between generations. The more robust approach is to aim for skill succession, but enable power succession in its absence or partial success.

There are examples of seemingly very complex systems of succession that have endured for centuries. An example of complicated constitutional arrangements was the Republic of Venice, the longest-lived republic in history. However, such arrangements are best thought of as very complicated legal machinery that validate and render legal any decision arrived through some other means; the selection of the Doge of Venice was likely accomplished by direct negotiation between the patrician families of Venice, not through the nominal selection procedure.

Lessons for contemporary society

Successfully transferring not only the formal, but also informal, position that allows an individual to shape an organization is necessary for keeping an institution functional. On the scale of societies, employing solutions that prevent destructive conflicts between elites is vital.

The adoption of adults was a viable solution in the Roman Empire for as long as the social fabric underwriting it was there. As the underlying social norms changed, the legal norms that made it possible required backing by more and more complicated mechanisms and workarounds. This architecture proved less successful, in part because its complexity made it more difficult to maintain.

We cannot simply copy the Roman solution, because our own social and legal norms are different. While adult adoption is legal in many Western countries, the Roman social practice would be considered an exploit, and would leave companies and organizations that used it open to legal or PR attacks. The challenge, then, is finding a solution that would work as well and is as simple as possible.

Modern Japan, a technologically developed industrial economy, actually observes a similar practice. A son-in-law is chosen by a businessman primarily for his ability to run the family business, and called a *mukoyōshi*.[96] They marry into the family and take on the family name. The practice can be found in the history of companies such as Suzuki, Kikkoman, and Toyota.

It might be tempting to try to imitate *mukoyōshi* in the Western context. The legal vehicle of marriage certainly seems more appropriate for the task than our adoption laws. The crucial problem, however, lies in how we choose marriage partners in the West. Our choice of spouse is a personal and romantic, rather than a business and family matter (though of course some minority of us do set out to "marry up"). This means that while we could use marriage for power succession, its appropriateness for solving the problem of skill succession is dubious.

Despite the obstacles to its direct application, the Roman solution displays features we can and should emulate in our own institutional thinking. When pursuing reform, setting cultural expectations, or building new organizations with the intent to solve the succession problem, we should aim for simplicity and robustness of mechanism, have the mechanism transfer informal as well as formal resources, and ensure that the incentives of the successor and the current pilot are as aligned as possible.

96 Mariko Oi, "Adult Adoptions: Keeping Japan's Family Firms Alive," *BBC Magazine*, September 19, 2012, https://www.bbc.com/news/magazine-19505088.

What Botswana Can Teach Us About Political Stability

This essay originally appeared in Palladium Magazine on May 9, 2019.

It is hard to find a clearer outlier among developing countries than Botswana, a landlocked African country where 40% of government revenue comes from diamond mining and a fifth of adults are HIV-positive.[97] Everything taught by a development economics department would suggest the country is set up for failure.[98] But well-executed succession between presidents, and the resulting stability and good government, has meant success instead.

Botswana is possibly the nicest place in Africa—it is quieter and more stable than, say, Greece.[99] In the entire period since independence in 1966, Botswana has not suffered

97 "Botswana's Mineral Revenues, Expenditure and Savings Policy," *African Development Bank*, 2016, https://www.europarl.europa.eu/intcoop/acp/2016_botswana/pdf/study-en.pdf, 8; "HIV and AIDS in Botswana," *Avert*, July 21, 2015, https://www.avert.org/professionals/hiv-around-world/sub-saharan-africa/botswana.

98 A key concept of post-Cold War development economics orthodoxy is the resource curse thesis, coined by David Auty in 1993, which states that "not only may resource-rich countries fail to benefit from a favorable endowment, they may actually perform worse than less well-endowed countries" (Auty, *Sustaining Development in Mineral Economies*, Routledge, 1993). Great founder theory suggests that this fixed model of causality is unequipped to explain reality in a world such as ours where institutional functionality determines the use of resources. Empirical study has borne this theory out: by 2006, a large empirical paper (which included data from Botswana) in The Economic Journal found that "countries rich in natural resources constitute both growth losers and growth winners...the main reason for these diverging experiences is differences in the quality of institutions" (Halvor Mehlum, Karl Moene, and Ragnar Torvik, "Institutions and the Resource Curse," *The Economic Journal* 116, no. 508 (2006): 1–20, https://doi.org/10.1111/j.1468-0297.2006.01045.x).

99 In 1967, a right-wing military coup displaced Greece's constitutional government. Lasting until 1974, the regime was known for strict repression of political and civil liberties, resulting in the arrest, torture and exile of thousands of Greek citizens. For more reading on this topic, see: Nicos Mouzelis, "Capitalism and Dictatorship in Post-war Greece," *New Left Review* 96 (1976), http://gesd.free.fr/mouzelis1976.pdf.

devastating civil wars like those in the Congo or Mozambique, coups such as in Burkina Faso, or ethnic violence and expropriation as seen in Rwanda and Zimbabwe.

The country's development is comparable to Turkey, Mexico, and South Africa.[100] It has also been Sub-Saharan Africa's fastest growing economy for most of the last half-century. This rapid poverty reduction is due to a combination of increasing agricultural incomes, including subsidies, and demographic changes.[101]

The crucial variable is a sound government making well-informed, long-term choices. A low population density paired with abundant natural resources provides a reasonable standard of living even in the absence of administrative genius or favorable conditions, so long as governance provides stability. Political instability can impede development of physical infrastructure and the business environment, transforming good fundamentals into a bad outcome. See, for example, Kazakhstan compared to Venezuela.[102]

Unfortunately, there are many examples of countries that have tried and failed to achieve good governance in the often chaotic post-colonial context. These countries followed Western advice as closely as they could, drafting legally impeccable constitutions and recruiting well-educated statesmen, but the results have been mixed at best.[103] Botswana's positive outlier example raises the question of how it has done so well.

Good government starts with good leadership. Here is the list of heads of state of Botswana over the last six decades following deconization in 1966, including periods of mentorship of successors:

100 "Human Development Index," *United Nations Development Programme*, 2020, http://hdr.undp.org/en/composite/HDI.

101 "Overview," *The World Bank in Botswana*, October 13, 2020, https://www.worldbank.org/en/country/botswana/overview.

102 Luka Jukic, "Authoritarian Development Has Rebuilt Kazakhstan into a Eurasian Power," *Palladium Magazine*, January 19, 2019, https://palladiummag.com/2019/01/19/authoritarian-development-has-rebuilt-kazakhstan-into-a-eurasian-power/; Miguel Morel, "Report from Venezuela: An Inside Look at a Country in Free Fall," *Palladium Magazine*, March 6, 2019, https://palladiummag.com/2019/03/06/venezuela-an-up-close-look-at-a-nation-in-free-fall/.

103 Peace Ezebuiro, "10 Most Educated African Presidents," *Answers Africa*, August 25, 2015, https://answersafrica.com/latest-10-most-educated-african-presidents-no-1-tops-the-world-list.html.

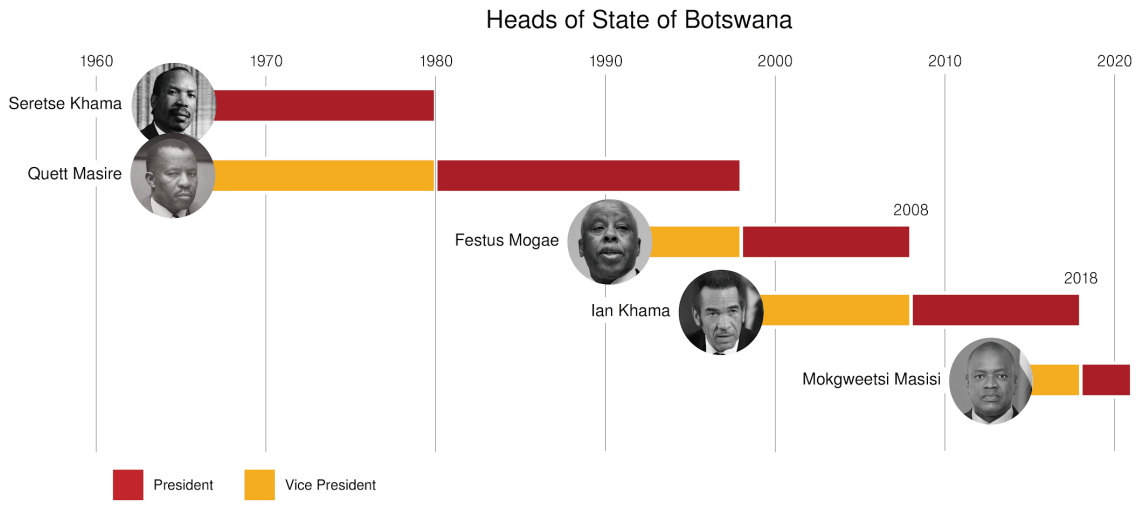


Figure 6: Botswanan heads of state since independence (note that the figure does not include the first post-independence president Seretse Khama's grandfather, King Khama III [r. 1875-1923], who decided to join the British Empire in the first place)

Given these clear personal, political, and familial ties between the heads of state, it seems that Botswana is actually an unofficial adoptive monarchy around the old royal family, quite similar to the case of the Roman Empire, where the head of state picks the successor and gives him the junior position.[104]

In the paradigm of contemporary political science, such an arrangement is usually taken as a negative sign. We are used to thinking of political dynasties and close alliances among insiders to be cardinal signs of corruption.

This negative association is at least somewhat the result of cherry-picking. We focus on political dynasties in failed or rogue states, but minimize their very real role in successful Western states. The modern West has its dynasties, most famously the Bushes and Kennedys. This is an open secret. Statistically, one of the best qualifications for being a U.S. governor is descent from one.[105]

But since America's national mythology is revolutionary, and our institutions claim legitimacy from technocratic grounds of impartiality, we tend to view such dynasties negatively—when we acknowledge them at all. It might be that Western states are successful in spite of such dynasties, but even then, we can't claim this is a crucial distinguishing

104 See, within this manuscript, the chapter "How Roman Emperors Handled The Succession Problem" (82–88).

105 Seth Stephens-Davidowitz, "Just How Nepotistic Are We?" *The New York Times*, March 21, 2015, sec. Opinion, https://www.nytimes.com/2015/03/22/opinion/sunday/seth-stephens-davidowitz-just-how-nepotistic-are-we.html.

factor between well- and poorly-governed states.

Further, as argued by Gregory Clark in his book *The Son Also Rises*, social mobility is about the same in all societies, and is much lower than we usually propose.[106] Regardless of how meritocratic a system claims to be, power tends to remain in the same families.

Since the same people tend to come up on top overall, the rough composition of the elites in a country will not be significantly different if it implements meritocratic policies or not. The key difference between functionality and dysfunctionality is in the institutional mechanisms the elites use to cooperate with each other, rather than just the selection or composition of elites.

The arrangement we see in Botswana—where the previous head of state publicly declares a successor—solves the problem of power succession.[107] This both helps prevent organizational sclerosis and renders succession conflicts unlikely. Many post-colonial states struggle with the problem of succession. Civil wars and coups are endemic. It is open to discussion how much of this is the result of internally driven miscoordination, and how much is due to destabilizing foreign interventions, especially during the Cold War. But at least some of the instability is internally driven.

Botswana avoided Cold War–driven instabilities by aligning with the West, but positioning itself such that the USSR had no interest in overthrowing it. Botswana was a thorn in the side of South Africa, and useful to the USSR, by sometimes allowing the communist-aligned ANC to operate in its territory. The Soviets may have worried that a revolution would simply result in a South African invasion. Thus, the only communists active in Botswanan politics were small Maoist and Trotskyist groups.

Other countries having disunified elites—possibly as a result of foreign interference—contrasts with the relative high trust that exists between elites in Botswana. In various countries around the world, there is rivalry between civilian and military leadership. When trust and coordination are low, the military and civilian government distrust each other, and there's no simple bridge between the two. For example, the Communist Party of China may not wish to allow the People's Liberation Army to become too independent or strong, since this would make a coup viable.

In such situations, if the military remains an effective organization, ambition will often

106 Gregory Clark, *The Son Also Rises* (Princeton, New Jersey: Princeton University Press, 2014).

107 See, within this manuscript, the chapter "The Succession Problem" (77–81).

be sated by directly deploying the military to subordinate the civilian government and make war on the elites in control of it. This results in a coup at best—at worst, a civil war.[108] Ian Khama resigning from the military before entering civilian politics, rather than using the position of general to install himself directly, however, is an example of the way military leaders can acquire political power without setting a precedent for coups. One of the key variables in determining whether a country has a coup is how many coups it has had in the past. It further demonstrates a degree of coordination and deal-keeping among elites.

There is a direct analogy here to the practice of successful U.S. generals who became president, such as George Washington, Ulysses Grant, and Dwight D. Eisenhower. That military leaders can rise to power through the civilian government demonstrates a high level of trust among Botswanan elites absent in most Third World states.

Historically, in another feat of competent political strategy, Botswana joined the British Empire on its own terms under King Khama III, preserving its autonomy. The tribal structure continued to govern during the colonial period, building its own bureaucracy.[109] Consequently, the current state stands on an actual base of power rather than being a legal fiction.

Moreover, compared to other African states, Botswana has a relatively homogeneous ethnic makeup, with a single dominant tribe, the Tswana.[110] This helps stability because it means the tribal power structure and the formal government structure are one and the same in practice, reducing motivation or opportunity for political conflict.

The demographic fundamentals are not perfect, however. As Amy Chua argued in her book *World on Fire*, one of the most important drivers of civil war, expropriation, and genocide is the dynamic of conflict between an ethnic majority with an economically dominant minority.[111] The political conflicts between the Hutu and the Tutsi in Rwanda are a canonical example.

Superficially, the conditions in Botswana are present for the development of such a sce-

108 Samo Burja, "The Risk of an American Civil War Is Remote," *Medium*, July 23, 2018, https://medium.com/@samo.burja/the-risk-of-an-american-civil-war-is-remote-2162ce192050.

109 See, within this manuscript, the chapter "How to Use Bureaucracies" (103–110).

110 "Africa :: Botswana — The World Factbook," *Central Intelligence Agency*, October 21, 2020, https://web.archive.org/web/20201021081603/https://www.cia.gov/library/publications/the-world-factbook/geos/print_bc.html.

111 Amy Chua, *World on Fire: How Exporting Free Market Democracy Breeds Ethnic Hatred and Global Instability* (Anchor, 2004).

nario. A significant minority of the population, around 3%, is white. This minority has substantial social and material capital. And yet, it continues to exist with few problems after half a century of independence, with no campaign of expropriation or expulsion, unlike countries such as Uganda and Botswana's neighbor, Zimbabwe.[112]

What is the source of this rare good fortune? It seems it was good judgment by the ruling dynasty. Seretse Khama pursued independence in a much smarter way than had been done in countries like Zimbabwe. For example, his government bought half of the local branch of the international De Beers corporation,[113] rather than seizing it. Instead of following Khama's initiative, Mugabe later expropriated the farms, destabilizing the agricultural and tobacco industry crucial to Zimbabwe's economy. Seizure is disruptive and often destroys a company's ability to produce as the best managers and engineers flee, while purchase ensures continuity and continued production.

Income from taxing or owning shares of such large companies can be used for patronage of political allies (Sheila Khama served as CEO of De Beers Botswana) as well as social programs that develop state power further. This reduces the pull of alternative institutions such as clans, radical religious groups, and ideological organizations. Another well-known example of this tactic is Saudi Arabia's use of the Saudi Aramco oil company.[114] From its inception, state policy integrated the company with Saudi educational and job creation programs, without cutting access to global innovation and technical expertise.

Retaining the friendship of the world's diamond monopolist doesn't hurt the important foreign policy necessity of maintaining good relations with Western powers. Further, not cooking the goose that lays diamond eggs makes expropriation measures aimed at prosperous minorities less attractive in the long run, as there is less financial need to do so. Expropriating De Beers might have interfered with its ability to maintain its monopoly, and thus high diamond prices, rendering the spoils much less valuable anyway.

Simply looking at a picture of former president Ian Khama reveals that the most pros-

112 "Asians given 90 Days to Leave Uganda," *BBC News*, August 7, 1972, http://news.bbc.co.uk/onthisday/hi/dates/stories/august/7/newsid_2492000/2492333.stm.

113 De Beers Group. "About Us." Accessed January 7, 2021. https://www.debeersgroup.com/about-us.

114 Jim Krane, "Energy Governance in Saudi Arabia: An Assessment of the Kingdom's Resources, Policies, and Climate Approach" (page 12: Center for Energy Studies, January 2019), https://www.bakerinstitute.org/media/files/research-document/09666564/ces-pub-saudienergy-011819.pdf.

perous ethnicity married into the traditional royal family.[115]

The marriage of President Seretse Khama, Ian's father, to Lady Ruth Williams Khama, was controversial at the time, likely an act of love rather than intentional statecraft. However, it was read by the white minority as a credible commitment to ethnic peace. Because of these obvious and noticeable family ties, the political capital of the influential Khama family cannot be shored up by inflaming inter-ethnic conflict for political gain as was done by Robert Mugabe in Zimbabwe and Idi Amin in Uganda. The family is thus reassuring for the white minority, while simultaneously legitimate to traditionalist Tswana.

Good government aligns political necessity with prosperity. When political necessity steps in the way of prosperity, it is prosperity that suffers.

Ethnic conflict can sometimes be politically useful, but is economically and socially harmful. The marriage decision made any such conflict politically more costly and less useful—just as the partnership with De Beers turned economic capital, which could otherwise only be wastefully burned for political capital, into an ongoing source of political support.

Plenty of autocrats at least try to name their successors. Botswana succeeds where they fail by prudent use and promotion of good fundamentals that make succession crises and intra-elite conflict much less likely: trust between military and civilian elites, exemplified by Ian Khama retiring from the military to go into civilian politics, means there's no point in a coup. The formal government being effectively the tribal power structure of the dominant tribe, with the tribal royal family holding political office, means little shear can arise between government and ethnic power centers. The relatively homogeneous economy centered around De Beers, which is well integrated via the government's ownership stake, reveals a single point of financial patronage that is aligned with government interests. Furthermore, good positioning through the Cold War meant no foreign power had interests in toppling the Botswanan government.

According to conventional development economics models, Botswana shouldn't be doing as well as it is. As a landlocked country, its access to international markets relies on neighboring states. This is commonly recognized as an important barrier to develop-

115 "H.E. Lt General Serêtsê Khama Ian Khama | The AAS," *The African Academy of Sciences*, 2021, https://www.aasciences.africa/fellow/he-lt-general-seretse-khama-ian-khama; "Ruth Williams Khama: First Lady of Botswana," *HistoryExtra*, March 29, 2017, https://www.historyextra.com/period/20th-century/ruth-williams-khama-first-lady-of-botswana/.

ment, with its own acronym "LLDC" (landlocked developing country).[116] It is suffering among the world's worst AIDS pandemics. This not only incurs significant direct medical expenses, but also lowers productivity. Morbidity drives up the dependency ratio,[117] depriving the country of a demographic dividend. Lastly, it is a post-colonial state. The norm for this reference class is corruption, political instability, and unexceptional growth. Together, these factors should have sealed its fate.

But our usual models do not sufficiently account for the difficulty and importance of succession. We model power and power succession unrealistically, if at all. Without conscious attention, power competition subsumes skill succession.[118] Botswana has avoided falling into succession traps through diligent attention to choosing and training successive leaders. Yet hand-picked successors and political dynasties are often overlooked as viable solutions, or regarded as a sign of corruption. Thus we usually miss or shrug at Botswana's success, and likewise miss some of the key sources of functionality in our own governments.

The world, including its functional governments, is a lot more dynastic than we like to admit, and dynasties work a lot better at securing institutional continuity and good government than we like to think. As we look into what's actually working about the American order, and how it could work better, we should pay close attention to cases where dynasties like the Khamas are a significant driving force of success. We would do well to become more comfortable with their role.

116 "About the Landlocked Developing Countries," *United Nations - OHRLLS*, 2021, http://unohrlls.org/about-lldcs/.

117 "Dependency Ratio," *United Nations Methodology Sheets*, July 15, 2007, https://www.un.org/esa/sustdev/natlinfo/indicators/methodology_sheets/demographics/dependency_ratio.pdf; "Fact Sheet: Attaining the Demographic Dividend," *Population Reference Bureau*, November 26, 2012, https://www.prb.org/demographic-dividend-factsheet/.

118 See, within this manuscript, the chapter "The Succession Problem" (77–81).

Functional Institutions Are the Exception

> *Every great company is unique, but there are a few things that every business must get right at the beginning. I stress this so often that friends have teasingly nicknamed it "Thiel's Law": A startup messed up at its foundation cannot be fixed.*
>
> *– Peter Thiel, Zero to One, page 107*

Within nearly every institution larger than a dozen people, insiders feel resigned about how hard it is to get things done. They complain, but don't expect improvement. They maintain a coordinated competence only barely above the level necessary to keep the institution in existence. Perhaps worse, many institutions persist for a surprisingly long time despite failing at their formal purposes: they've fallen, unwittingly or not, into new reasons for being.[119] Unprofitable companies and declining nations often last longer than their critics remain solvent.

Most things fail. Things that exist have avoided failure—so far. Institutions that we do see are functional enough to persist because of selection effects, not because humans are particularly good at making them work.

In my research, I found something that puzzled me: in any given type of institution, be it state or church, for profit or non-profit, there are some organizations that outperform all others by orders of magnitude. This is true in terms of their ability to reshape the world in service of their formal purpose, their informal purpose, or their self-perpetuation, even when comparing only among institutions that have similar material wealth, human capital, and formal structures. Regardless of the particular measure we use, exceptional institutions do exist, but they are rare.

119 See, within this manuscript, the chapter "Institutional Failure as Surprise" (146–153).

An elegant explanation for this phenomenon is that everything is broken. When something works the way it should, it appears exceptional. It's not that a particular institution started off with more material wealth or higher quality people than its competitors. Rather, it is simply put together properly; the cogs and gears fit. And just as a tornado cannot assemble a Boeing 747 by passing through a junkyard, functional institutions are not spontaneously generated. The machinery, if it functions, was assembled by someone with good judgment: the institution's founder.

The institution was also probably assembled properly from the start, rather than made functional over time. It is much more difficult to make a dysfunctional institution functional than to create a functional institution from scratch; institutions will nearly always have internal forces that resist change, and diagnosing institutional dysfunction in the first place is challenging. If an institution is broken, it's usually broken in many ways, not just one, and so discerning what's going wrong in order to fix it is quite difficult. This explains Thiel's Law: a founder's best shot at creating a functional institution is to get it right from the start.

This is not to say, however, that fixing dysfunctional institutions is impossible. A talented founder can do it, but it is hard. It is difficult enough to found a functional institution in the first place; to refound one, a founder must first defeat those opposing him in such a one-sided way that he establishes peace—a peace in which he can build—and then he must build well.

Most institutions are broken

I maintain that normal institutions frequently don't pursue their formal goal effectively, but rather spasm ineffectively in its general direction. Often, however, such as in education or medicine, this doesn't appear to be the case.[120] From afar, the institution looks functional. Research is being done, children are being inspired—there are even pictures! These cases provide a challenge to our theory of rare functionality. How do we explain this?

Appearances are deceiving. The reality, under the organization's facade, is by default one of a poorly run social club—a group of people with a no stronger drive than to fulfill some of their social needs.

120 Bryan Kaplan, *The Case Against Education* (Princeton University Press, 2018); Robin Hanson, "Cut Medicine in Half," *Cato Unbound*, September 10, 2007, https://www.cato-unbound.org/2007/09/10/robin-hanson/cut-medicine-half.

Unfortunately, institutions usually aren't even well optimized for that: the formal purpose, when too weak to exert a pull, becomes an obstacle. Many members don't notice this, or pretend not to notice. Specialization is haphazard; people often choose their fields based on social needs or other motives that are not tightly correlated with achieving the goals or the preservation of the institutions that they find themselves in. All kinds of bottlenecks result in much wasted effort and in local information being thrown away needlessly. Much effort is also lost in communication failures and political struggles. As a result, the institution also fails to effectively fulfill its members' subterranean social goals.

In such an institution, efforts don't multiply each other, but merely accumulate linearly. The sum of this activity is a noticeable but very weak optimization force. The optimization force, together with naturally occurring hierarchies, is quite sufficient to govern small tribes under conditions similar to those that prevailed for most of our evolutionary history. But most institutions try to be something different.

Market mechanisms are usually not the solution to such problems of social technology. The number of people involved in an institution is usually too small to organize via market mechanisms—at least internally—and market mechanisms require certain working institutions to maintain them anyway.

Working order is fragile

When order emerges, it can be dysfunctional. An operational machine can still be poorly designed, based on faulty assumptions, incomplete knowledge, or a bad fit for a particular social context. It can also be unlucky—it is possible to pursue an excellent plan and build a functional, well-designed institution, but have the circumstances simply be too difficult to prevail.

When there appears to be an outgrowth of impressive order without impressive results, it is often a deception—the appearance of functionality where it is, in fact, lacking—though sometimes impressive results might not be immediately obvious. Depending on the scale, this deception is sometimes maintained by charismatic individuals, or by a smaller and less impressive order of coordinated deception. The latter is particularly interesting, since the institutional energy is put into maintaining outside appearances instead of internal functionality; examples include various kinds of legal compliance, party lines, and more mundane public relations strategies. "Comrades, we have outperformed our quota!"

The order around us is also fragile and often more an illusion than a reality. Examples are numerous. The formal charters of companies never capture the reality of the office politics actually constraining and initiating actions. Areas that rely only on the police for safety tend to be dangerous. An army's morale is fickle—should it falter, it reveals that the command structure has rested on quicksand. Soon after, it becomes unable to function.

An absence of designers

Why are there so few true founders that can assemble good institutional machinery? There are many preconditions, but I think the key one is planning, defined here as considering your actions in advance and improving the entire sequence, rather than just thinking one step at a time. Successful planning is the exception rather than the rule.

We fail to plan for many reasons. For one, we don't have much time to figure things out. The world is large, and each of us has only a few decades at best in our prime. To make matters more difficult, much of the thought we do engage in is about making other humans treat us nicely or give us the things we want, rather than about discovering what is true. Desperate for social survival, we explicitly or implicitly agree to pay the long-term price for immediate improvement.

Thus, the "plans" we do make are not maps of actual future action towards the goals they claim to have. Rather, they become an agreed-upon lie, aimed at solving the immediate political problems of the people collaborating. This means the activity called "planning" is often an exercise in persuasion rather than engineering, with predictably bad results.

Given relevant knowledge, complying even with a benevolent plan, one that eventually fulfills our needs, requires us to postpone gratification. The self-domestication of mankind has barely begun to imprint this ability on the feral human animal. On the other hand, self-domestication has imparted a strong urge towards conformity in thought.

This is a useful feature in the components of the machine, as I will explain, but a bug for any would-be designer. The founder has to keep an accurate understanding of cause and effect over the extended lifespan of institution-building they engage in. Should they lose track of that understanding, they will not have much of an impact, becoming tools of the institutions and circumstances they find themselves embedded in, rather than transforming them. Lessons learned are more easily applied to a new institution than a failing one.

How we control coordination costs

Uncertainty about people's behavior is an obstacle to local planning. How can we overcome it without paying the high cost of deeply understanding others? We can sometimes work around the obstacle by simplifying our behavior—that is, making our actions follow a highly formulaic and even ritualized script, in order to increase predictability and standardize interactions. One example is what is usually called *professionalism*, another would be *courtesy*, another, the notion of being *law-abiding*. The most developed form is *virtue*. Failure to maintain all of these forms is apparent and common. When a community does merely marginally better at upholding them compared to most, the pay-off is large.

When we do manage to basically understand strangers, we still can't be sure they don't mean us ill. When stakes are low, and there is not much to gain for the other party from defection, we can still extend trust. But what about highly competitive industries? Politics? In such high-stakes contexts, where misplaced trust might cost us everything, we are forced to proceed as if others do mean us ill. It is a failure of due diligence not to. An interesting result of social science research is that different societies rest at different equilibria of such trust between their members.[121]

We try and ameliorate such modeling problems by self-sorting: making sure those we talk to and interact with are as similar to us as possible. This strategy can work well, since even slight preferences for similarity end up almost perfectly sorting people into self-similar groups, as is demonstrated by Thomas Schelling's 1969 paper.[122] We also put effort into standardizing other humans, either by capture or manufacture, with measures like schooling and rewarding conformity.

Difficult communication and imperfect models of others entail uncertainty about behavior. Scarcity, as well as locally justified assumptions of ill intent, result in conflict. Ultimately, if no other means suffice, people reach first for local politics, and then violence. As those struggles proceed, a costly process of reducing uncertainty takes place What's more, our allies—even if we understand how they tend to think and what they are like—remain hard to understand as well, especially if they have thought about a subject with which we are unfamiliar. Enemies will try to disguise themselves as allies.

121 Richard Wike and Kathleen Holzwart, "Where Trust Is High, Crime and Corruption Are Low," *Pew Research Center's Global Attitudes Project* (blog), April 1, 2010, https://www.pewresearch.org/global/2008/04/15/where-trust-is-high-crime-and-corruption-are-low/.

122 Thomas C. Schelling, "Models of Segregation," *The American Economic Review* 59, no. 2 (1969): 488–93.

Our coordination costs are typically high, and we pay them in forms so familiar that they are usually not noticed. There are also high costs to figuring out who is competent and who isn't. Relying on others to help map out how the world works—a workaround to the limitations of our small, short-lived minds—is only a sporadically good idea and has failures that are hard to detect from the inside.. This mode has failures that are hard to detect from the inside. Epistemically sound collaboration *is rare.*[123] The design of functional institutions is then the products of individuals, not large cooperative groups.

A great man is someone with a secret and a plan

Our puzzle leads us to an interesting conclusion. Starting with exceptional institutions as unexplainable anomalies, we saw that functionality is the anomaly, and then concluded that a founder capable of bypassing some of the limitations of a typical human mind, himself an anomaly, produces this functionality. Only once assembled and functional does *the machine* possess the capacity for purposeful self-improvement beyond the founder's design.

Great man history, disparaged by academic consensus starting in the late 19th century in favor of theories of socio-economic forces as the drivers of history, deserves a second look.[124] Great forces are perhaps only unleashed by particular great minds. The recasting of the Romantic era, Great Man ideal into a more cross-cultural theory of humanity approach, as "great minds history," provides a prophecy, one that extends even beyond the human era. Those who find secrets—that is, correct and special knowledge about the world—and have the ability to plan possess the building blocks of the next great social machine.

123 See, within this manuscript, the chapter "On the Loss and Preservation of Knowledge" (50–58).

124 See, within this manuscript, the chapter "On Building Theories of History" (16–20).

How to Use Bureaucracies

When we encounter unsavory features of reality, it can be tempting to look away. Instead, we should ask, "What purpose does this serve?" With this in mind, let's look at bureaucracies. Some people fear bureaucracies; they fear "the Machine." Others are bothered by the bureaucracies' apparent dysfunction. With a better understanding of bureaucracies—what they are, why they're here, and how they work—both of these responses evaporate, because the reality is this: bureaucracies aren't altogether bad. In fact, bureaucracies can be incredibly useful.

What is a bureaucracy?

A *bureaucracy* is an automated system of people created to accomplish a goal. It's a mech suit composed of people. The *owner* of a bureaucracy, if an owner exists, is the person who can effectively shape the bureaucracy. *Bureaucrats* are the people who are part of a bureaucracy (excluding the owner).

Not all organizations are bureaucracies. Most organizations are mixed — they have both bureaucratic and non-bureaucratic elements. *The purpose of a bureaucracy is to save the time of a competent person.* Put another way: to save time, some competent people will create a system that is meant to do exactly what they want—nothing more and nothing less. In particular, it's necessary to create a bureaucracy when you are both (a) trying to do something that you do not have the capacity to do on your own, and (b) unable to find a competent, aligned person to handle the project for you. Bureaucracies ameliorate the problem of talent and alignment scarcity.

Bureaucrats are expected to act according to a script, or a set of procedures—and that's it. Owners don't trust that bureaucrats will be competent or aligned enough to act in line with the owner's wishes of their own accord. Given this lack of trust, owners *should*

be trying to disempower bureaucrats. Bureaucracies are built to align people and make them sufficiently competent by chaining them with rules. When bureaucracies deliberately restrict innovation, they are doing it for good reason.

Bureaucrats are meant to have only borrowed power (power that can easily be taken away) given to them by the owner or operator of the bureaucracy.[125]

Effective bureaucracies

What is an effective, owned bureaucracy? Why are effective bureaucracies owned? To begin, we must make two important distinctions: one between *owned and abandoned* bureaucracies, and one between *effective and ineffective* bureaucracies.

Owned bureaucracies are bureaucracies with an owner; they're bureaucracies that someone can shape. *Abandoned bureaucracies* are bureaucracies without an owner.

If a bureaucracy is owned, the bureaucracy's owner is likely the bureaucracy's creator. The creator will have knowledge about the setup of the bureaucracy that is necessary for properly reforming it. Others, unless given this information, will not understand the bureaucracy well enough to properly reform it.

The person technically in charge of the bureaucracy (e.g. the CEO of a company who is not its founder) might not be its owner simply because he or she doesn't have sufficient information about the bureaucracy's setup to guide it.[126] As a result, the official head of a given bureaucracy may just be another bureaucrat.

While the owner is typically the creator, this needn't be true, as long as the new owner has come to understand enough of the function of the bureaucracy to make effective adaptations to its procedures.

Effective bureaucracies are bureaucracies that are handling the project they were created to handle. *Ineffective bureaucracies* are bureaucracies that are not handling the project they were created to handle.

Bureaucracies that are properly set up will be effective at the start. Changes in reality require changes in procedures, however, so a bureaucracy's procedures inevitably need to

125 See, within this manuscript, the chapter "Borrowed vs. Owned Power" (72–76).

126 See, within this manuscript, the chapter "Functional Institutions Are the Exception" (97–102).

be altered appropriately for it to remain effective. Over time, abandoned bureaucracies, having no person who can functionally shape the bureaucracy to make these changes, quickly become ineffective bureaucracies.

Owned bureaucracies, on the other hand, have a shot at making these adaptations to prevent decay. If the owner is skilled, the bureaucracy's procedures can be modified, and the bureaucracy will continue serving its original purpose. If the owner is unskilled, it is as if the bureaucracy is abandoned—the owner's efforts to change the bureaucracy's strategies won't yield successful adaptation, and the bureaucracy will become ineffective. As a result, for a bureaucracy to remain effective over time, it must be an owned, not abandoned, bureaucracy with a sufficiently capable owner.

Losing and dismantling bureaucracies

Bureaucracies are best thought of as an extension of their creator and as a source of power for him or her. However, the owner can lose control of the bureaucracy over time, as bureaucrats convert borrowed power into owned power by exploiting information asymmetries. While owners will try to limit the owned power of their bureaucrats, the bureaucrats will have more than enough time to study the instruments of their control and will learn what is rewarded and what isn't.

Imagine a bureaucrat who is supposed to be an assistant to the absentee owner of an institution. This senior assistant is supposed to research solutions to key problems, and then present several options to the owner, who then selects one. The assistant is then required to implement the one that was chosen. There is a very detailed document describing their job and requirements at every step of this process.

The key problem is that a very complex set of rules can be easily bent to achieve an arbitrary outcome. The outcome will be completely valid according to the rule set. This is analogous to how in science a very complex model, that fits the data, is not very impressive. As Von Neumann put it: "With four parameters I can fit an elephant, and with five I can make him wiggle his trunk." Let's walk through the described process the senior assistant is supposed to follow to demonstrate how bureaucrats wiggle their trunks.

You might require the assistant to not engage in original research, but rather work as a search engine through more objective academic literature or best practices in a particular industry. The assistant, however, can cherry pick seemingly objective academic papers to argue for their preferred policy outcome. It is actually much easier to start with a pre-

conceived opinion and then find work confirming it, rather than review a literature as a whole. The plausibility of this shortcut should be intimately familiar to any university student who has worked under the pressure of a deadline for a class paper they didn't much care about.

The chief assistant can craft several options. They can make option B, their favorite, the most appealing, and cripple options A and C. Maybe even include point 14, their core agenda, in all three of their proposals that vary on points 1 to 13 which they don't much care about. Whatever the implementation of the selected solution is, the letter of the law can be bent and can easily diverge from the spirit of the law.

In such a circumstance, an owner can lose control of the bureaucracy and the power that comes with it.

It is often beneficial for owners to dismantle bureaucracies after they have served their purpose to avoid losing ownership of them due to these information asymmetries. Bureaucracies of this type might grow to be independent powers that interfere with your plans. While it may sound inconceivable for a bureaucracy to be intentionally dismantled today, many secret police forces throughout history have been so dismantled, including the famous Praetorian Guard of ancient Rome. It is not that bureaucracies are inherently impossible to dismantle that causes this perception, rather that we suffer a shortage of owners for bureaucracies today.

Abandoned bureaucracies might also be viable targets for outside takeover. Such takeovers can be a serious problem if undertaken by your opposition. Bureaucracies nearly always carry a heavy legacy document footprint; when examined this footprint can not only produce, but also be used to carry out legal or PR attacks. If the institution is vested with the authority or reputation of its original owner, these attacks can also be turned against them.

If it is too hard to regain ownership, dismantling the institution for resources may be the best option. These resources might be quite easily quantifiable, such as real estate or key employees. They might also be less tangible, such as the attention of your allies. Unless you formally retire a vehicle, these allies might mistakenly believe it active, causing communication issues or misunderstandings of your key priorities.

In short, when handling multiple organizations, tying up loose ends becomes very important.

How to accomplish tasks in an institutional landscape

Building a bureaucracy is an effective way to accomplish your goals under the right circumstances, but it's not always the *best* option. In order of effectiveness, here are general options for getting things done:

Delegate

If you can find a competent, aligned person who will do the project in question for you—let's call them a *delegate*—then let them do it. This person can create a bureaucracy *for* you, if necessary, as projects of a certain scale will require bureaucratization. Unfortunately, because of the harsh talent and alignment scarcity mentioned earlier, finding delegates can be challenging. Furthermore, correctly assessing whether someone is a worthy delegate takes skill. Frequently people will accidentally delegate a project to someone who is insufficiently competent or aligned. *Failed delegation* is worse than building your own bureaucracy, because it will lead to project failure.

If you have access to a delegate, don't treat them like a bureaucrat. This wastes a valuable resource: a delegate can perform tasks you didn't know needed doing and build aligned systems beyond your design; a bureaucrat cannot.

Such treatment invites misalignment with your delegate. It isn't just a matter of interpersonal grace and respect, so it cannot be overcome with kindly management; rather if you are attempting to closely proceduralize the actions of a competent delegate, they might accurately conclude that the best way to perform their job is to attempt to bypass your control. If you picked them well, they will be rather effective in doing so. They don't need a script—if they're competent enough for your purposes, they'll be able to figure out how to do the project. Give them owned power, otherwise you might run them off.[127]

Bureaucratize

If you can't find a delegate, then building your own bureaucracy (even if it's small) is the best bet. Bureaucratizing some things and not others, on the basis of whether the task can be proceduralized, is typically more effective than bureaucratizing everything by default. Figure out when using an automated system is the best option.

127 See, within this manuscript, the chapter "Borrowed vs. Owned Power" (72–76).

Do it yourself
While doing it yourself may be most likely to result in a well run project, it is not always feasible — you have limited time and capacity. Without delegates or bureaucracies, the ambitiousness of the projects you can successfully execute will be bounded.

Don't do it
Some things, though useful, aren't worth doing…

How to assess people and organizations

Assessing People
An understanding of bureaucracies lets you analyze a given person's power: is someone acting as a delegate or a bureaucrat? Is someone *creating* delegates or bureaucrats? If someone has created a bureaucracy, do they understand the function of bureaucracies? Do they own their bureaucracy, or is it abandoned? If they own their bureaucracy, is it effective or ineffective? Are they creating bureaucracies under the right conditions? What is the role of bureaucracies in their plan?

If a person is powerful, what does it mean if he's created many bureaucracies? In some cases, the creation of many bureaucracies indicates that the owner is extremely good at building automated systems. Alternately, he might have trouble delegating—perhaps because he can't find competent, aligned people, or because he can't assess people well. People who can work well with others and have access to sufficiently talented aligned people need fewer bureaucracies. Instead, they'll delegate to others, who can either do the project themselves or create a bureaucracy of their own.

On the other hand, if a person is powerful, what does it mean if he's created few or no bureaucracies? If he isn't delegating, it means that he's doing everything himself and possibly doesn't know how to design automated systems. If he is delegating, he's likely to be good enough at finding competent, aligned people such that he doesn't need a bureaucracy. Powerful people who don't create bureaucracies can be just as powerful as people who do.

Assessing Organizations
The framework can be applied to evaluating all organizations. For a given organization, begin by asking if it's a bureaucracy. If it is, expect it to behave in highly stereotyped ways: it will not be very adaptive to new challenges and will not accurately evaluate things outside the assumed ontology of its paperwork and internal division of labor.

If it's a bureaucracy, we can ask: is it an owned or an abandoned bureaucracy? If it is owned, expect that a large enough challenge will eventually cause it to reorganize. You'll also be able to reach out to the owner to resolve problems or find a way to cooperate that the bureaucracy itself doesn't understand.

Is it an effective or ineffective bureaucracy? If it is effective, you can rely on the interface it offers you to achieve the goal it claims to achieve. Ineffective ones will provide a sometimes bewildering service that might only tangentially be related to their efforts.

Remember that not all organizations are bureaucracies.

Some non-bureaucratic institutions will have to pretend they are bureaucracies on paper for legal compliance. This is an example of a more general principle: independent organizations interpret externally imposed regulation as damage, and route around it.

Organizations can be tightly coordinated groups that feature a lot of delegation and deference. In these, expect adaptive behavior; the ontology they are working in might rapidly change to respond to either your challenge or offer of cooperation. Most importantly there will be individuals beyond just the leader who can exercise their own judgement.

Effectively interacting with existing organizations

If an organization is not a bureaucracy, but rather a tightly coordinated group, talk to the delegates if you want to get things done; they will have freedom to act competently within their own domain and will be easier to reach than leadership.

The key advantage of talking to people over engaging with automated systems is that you can bring considerations from outside their immediate institutional context into consideration. While the local balance of power might still be in the way of such considerations, it is often surprisingly viable to have them taken into account.
If it's a bureaucracy, you can either (1) go along with it, (2) figure out how to bypass it, or (3) coordinate with its owner, if it is owned. You may prefer to bypass (or game) the bureaucracy if it is abandoned and thus dysfunctional, or if you aren't aligned with its owner.

The value of bureaucracy

The origin of bureaucracies lies in their extending power and results far beyond what a single individual can do.[128] They can do so in the absence of expensive and difficult coordination, or individual talent that is difficult to train and evaluate.

Much like factories can produce cheap products at scale with unskilled labor, displacing craftsmen, so have bureaucracies displaced local social fabric as the generators of social outcomes.

We find ourselves embedded in a bureaucratized landscape. What can or cannot be done in it is determined by the organizations composing it. The constant drive by talented individuals to both extend power and make do with unskilled white-collar labor (a category that economists should recognize and talk more about) has littered the social landscape with many large organizations.[129] Some remain piloted, others are long abandoned.[130] Some continue to perform vital social functions, others lumber about making life difficult.

128 See, within this manuscript, the chapter "How to Use Bureaucracies" (103–110).

129 The white-collar temp work ecosystem is testament to this, and is becoming further atomized via isolated, self-directed employment channels like Fiverr. For an examination of this trend see Meredith Miller, "Temp Workers, Permanent Effects: How Temps Changed the Nature of the U.S. Workforce," *Monthly Labor Review: U.S. Bureau of Labor Statistics*, December 2016, https://www.bls.gov/opub/mlr/2016/book-review/the-temp-economy.htm.

130 See, within this manuscript, the chapter "Live vs. Dead Players" (68–71).

Competition for Power

To win on the global strategic stage, you must understand how to gain and wield power. As soon as you decide to gain power, however, you'll find yourself surrounded by others doing the same. Suddenly, you're competing for power. By studying the competitors and the nature of the competition, it becomes possible to craft a winning strategy.

Understanding the competition for power also provides a window into understanding the behavior of other important players. While you yourself may not be competing in a strategic landscape, other powerful people certainly are. Understanding the landscape they're competing within begins to reveal their plans, goals, and next moves, which you can use to piece together what's happening all over the world.

So, how does the competition for power work?

The distribution of skill

There is good reason to think skill lies on a Pareto distribution—some people are dramatically more skilled than others and can accomplish feats others cannot.[131] For example, very few people have the skill to found a company, far fewer have the skill to found a *successful* company, and fewer still can found a successful company that *does anything at all interesting*. Google seeks to hire programmers who are 10 times more competent than others, known as 10X programmers. Master Go players consistently beat those of even slightly lower rank.[132] Some politicians are drastically more persuasive and charismatic than others.

131 Glen, "Pareto Distribution Definition."

132 American Go Association, "What Is Go?" 2020, https://www.usgo.org/what-go.

There are two theoretical explanations for this that I find plausible. I call the first explanation the *Completeness Hypothesis*. It is the idea that having *all* of the important contributing pieces to producing an effect makes a given effect much, much larger than having *most* of the pieces. Having 100% of the pieces of a car produces a very different effect than having 90% of the pieces. The four important conditions for producing mastery in a domain are good feedback mechanisms, extreme motivation, the right equipment, and sufficient time. According to the Completeness Hypothesis, people that stably have all four of these will have orders-of-magnitude greater skill than people that have only two or three of the components. This produces the observed distribution.

The second possible explanation is the *Efficacy Arms Race Hypothesis*. This theory claims that your ability to accomplish your goals is determined by relative rather than absolute skill; to succeed in competitive domains, beyond a basic threshold of skill, you just need to be better than your competitors. Consider, for example, the skill required to create a successful restaurant. Beyond the relatively low level of default skill necessary to make the restaurant passably functional, the actual skill required for your restaurant to succeed will be determined by the skill of your competitors. It will be a lot lower in Boise, Idaho than in New York City. If everyone in the ancient world had been as skilled as Alexander the Great, he wouldn't have been Great. Certain players can out-compete others due to their greater *relative* level of skill rather than their absolute level of skill.

One or both of these explanations might be at play, and they have grounding in various theories of skill acquisition. Completeness relies on the nature of certain kinds of intricate tasks and processes. Building half an internal combustion engine does not give you the benefit of a combustion engine, after all—not even half the benefit of a combustion engine. A car with half of an engine doesn't move at all, no matter how much gas you pour into the tank. The arms race hypothesis relies on the nature of competitive learning. Imagine someone aiming to become a chess player that has never played with someone else, but only attempted to derive optimal moves from the rule-set: competitive skill growth typically just doesn't work that way. Your performance in a given competitive domain is always relative to the quality of the other agents in that domain.

Ambitious people will tend to be found near the upper end of the skill range. Ambitious goals require significantly more skill to achieve than unambitious goals. As such, perceptive ambitious people will be strongly motivated to develop the skills necessary for achieving their ambitious goals. Such strong motivation is one of the key prerequisites for achieving mastery—you do not reach great skill without great motivation.

In these upper ranges of the skill distribution, the ambitious people fall again into a Pareto distribution: some with moderate skill and a few with *very high* skill.[133]

Ambitious people

Those with moderate skill will tend to be found in areas of visible power and prestige. Ambitious people are often interested in winning these resources. Resources are highly concentrated in particular locations. Skilled ambitious people tend to flock to these resource-dense locations and enter into the few major domains of competition located there. In the United States, for example, they can be found pursuing finance in New York City, startups and technology in Silicon Valley, and politics in Washington, D.C. A very large number of ambitious, moderately skilled people can be found competing in these domains and locations.

In contrast, the few people with very high skill will tend to congregate in largely unoccupied areas offering owned power. Owned power is power that cannot easily be taken away.[134] For example, persuasive skill can't be taken away easily and is a source of owned power. In contrast, a particular position in a company that could fire you doesn't constitute owned power.

Unoccupied areas with opportunities to gain owned power may or may not overlap with areas of visible power and prestige. Very skilled people and not others can be found in these areas for two reasons: first, gaining owned power is strategically superior, which people of high skill will be able to recognize. As a result, they'll seek out sources of owned power. Secondly, these areas require skill to find, as they are well-hidden.

Skilled people will seek owned power as it is extremely versatile—it can be used for nearly any strategic aim. Borrowed power is significantly more limited in its usage. Furthermore, highly ambitious projects frequently specifically require owned power. For example, you need owned power to successfully found a company. You even need owned power (typically in the form of technical skill or persuasive ability) to successfully climb the ladder in competitive borrowed power systems, like government bureaucracies. Very skilled people are likely to be strategically savvy enough to understand these considerations, and they'll hunt for owned power as a result.

133 Glen, "Pareto Distribution Definition."

134 See, within this manuscript, the chapter "Borrowed vs. Owned Power" (72–76).

Less skilled people may be wise enough to hunt for owned power, but they'll tend not to find it—areas with great potential owned power are frequently difficult to identify.

At any point in history, there are only a few good places to gain large amounts of owned power. In the middle of the 18th and 19th centuries in the British Empire, it was the colonies. At the turn of the 20th century in Texas, it was the burgeoning oil industry. While the details differ across time and place, it has always been the case that there are relatively few at any given time.

In addition, the best places to gain owned power are new, undiscovered places. Old sources of owned power will become better known and more competitive, and frequently the resources available there will dry up. This phenomenon is especially apparent within great centers of power like Washington D.C. today or Rome during the time of Caesar. As a result, the best places to gain owned power will be far from the center and frequently not prestigious. For example, despite being a much better route to owned power, moving to Texas to compete in the burgeoning oil industry was less prestigious than competing in finance in New York or politics in D.C. at the time. Julius Caesar conquered Gaul to win the allegiance of his legion so that he could return to Rome with enough owned power to be named Dictator by the Senate. Leading an army to conquer Gaul is grueling work compared to residing in Rome in relative comfort. Gaining owned power is dirty and doesn't happen in well-established prestige centers.

To make matters worse, sources of owned power are deliberately concealed by those competing there. Once strategic players locate these areas, they will seek to conceal their existence so as to minimize the entry of other players into the area. Since competition or prestige are signs of these areas' existence, they will seek to conceal competition and avoid prestige, as well as obfuscate any other visible indicators.

By virtue of being few, undiscovered, and actively concealed, the best places to gain owned power are very difficult to find. Without investigative, strategic, and theoretical skill, players won't reliably find and be found in areas of owned power. People that are ambitious, strategic, and highly skilled will converge on the few available routes to gaining owned power. These people will be among the most skilled and competitive players that exist. To gain large amounts of owned power, expect to find yourself at the heart of intense competition occurring between very skilled people in highly unusual places, both geographically and intellectually.

Competitive dynamics

There are two types of actions in competition: limited action and unlimited action.

Unlimited actions are competitive actions that do not pertain directly to the competitive domain; they do not stick to the rules. Befriending the judges of an essay competition to bias them is an example of unlimited action. Unlimited actions are often considered unfair. The vast majority of people don't take unlimited actions when competing.

Limited actions are competitive actions that pertain directly to a given domain of competition and stick to "the rules." For example, in an essay competition, trying to write a really good essay would be a limited action. Most people only compete using limited actions.

There are four primary ways in which players' competitive actions can be limited.

First, some means of competition can be *monopolized* by a given player and thus denied to other players. For example, most national governments have a monopoly over the legitimate use of violence within their territory. As such, competitors in an essay competition are unlikely to murder one another to increase their odds of winning, because they'll suffer the wrath of the U.S. government.

Second, some strategies cannot be used by players who are *insufficiently skilled*. For example, it takes skill to use proxy warfare against a competitor. It is unlikely that low-level players will be aware of this strategic option, and if they did attempt the strategy, they would probably fail to execute it. Many competitive strategies only become available once a player has reached a sufficient level of sophistication.

Third, some actions that would otherwise increase a player's chances of victory are deemed *off-limits* by the competitors themselves. For example, most competitors in the essay competition will be unwilling to *consider* ways of sabotaging their competitors. Not sabotaging opponents in this case might be strategically sensible due to the low risk of getting caught, but this is not the point. Competitors don't even *consider* these strategies. If there were a safe and reliable way to sabotage other competitors, most players would not find it—they would not even think to look.

Fourth, competitive action can be limited by *personal incentives*. Players will pursue the strategies that best accomplish their goals. A particular strategy might win a given

competition while causing problems for the competitor's broader goals. For example, President Truman might have been able to achieve global American hegemony by nuking the Soviet Union after World War II and not done so because he didn't want to kill millions of people. It might be a bad idea to sabotage competitors in an essay contest due to the potential reputational damage if caught compared to the meager benefit of winning the competition.

Competitive dynamics between skilled, ambitious individuals

Competition between people who are ambitious, strategic, and skilled will tend to be particularly vicious because most of the previous constraints will either not apply or only apply in a limited way. Since the players are highly skilled, competitive strategies that require high levels of skill are accessible. Additionally, these players will limit their strategic actions much less than other players, by using otherwise off-limits actions and aligning their personal incentives behind their competitive goals. This is because the stakes of the competition are usually high; losing a potential opportunity for owned power can be extremely costly. As a result, competition in the areas offering owned power will feature unlimited action and is likely to be extremely brutal.

Within this vicious unlimited competition, strategic players will reverse engineer strategies that their opponents use, which yields symmetry in the strategies employed. As soon as a single competitor uses a strategy, all other competitors gain that strategy as well. For example, if one company gains an advantage over competitors by reducing costs using an outsourced programming company for basic coding tasks, other companies will then rush to imitate the strategy to remain competitive. Because they are skilled and their actions are unlimited, they are frequently able to do so successfully.

Offensive moves in competitive environments then result in escalation, through forcing the opposing side to counter the offensive move, frequently by reverse engineering and matching the tactic used for escalating, or even introducing a more severe tactic. Imagine that two companies dominate an industry in a particular country. One serves the eastern half of the country while the other serves the western half. If one company contests the other's territory, the other must contest in return, lest it lose too much business and demonstrate an unwillingness to fight, inviting further attacks.

Such escalation would be net-negative for both companies. To avoid this, they will sometimes avoid contesting each other's territory. In situations where no competitor has a clear advantage, spoken or unspoken agreements not to engage in certain types of

competition will often arise among competitors.

Nevertheless, competition among strategic players will tend to escalate because victory requires escalation. If a competitor wants to win, as such competitors often do, they won't indefinitely tolerate a stalemate, negotiated or otherwise. They will seek novel unlimited strategies to defeat their opponents, and they will find them. Executing new strategies is an escalation in itself, and if opponents reverse-engineer them, as they often do, there will be further escalation. Hence, competition at the highest levels tends to escalate symmetrically.

Does this mean that all competitive domains are destined to result in a never-ending and destructive "war of all against all"? Not necessarily. Due to the variance in skill even at the highest levels of competition, some competitors are likely to be unusually skilled at recruiting or neutralizing weaker competitors. If Muhammad and Charles De Gaulle happened to be competing in the same domain, Muhammad would likely quickly recruit or defeat De Gaulle after a short, if strenuous, struggle. It is for this reason that societies with an abundance of skilled people tend not to devolve into self-destructive conflict, but rather flourish. Competition and flourishing are not simple linear tradeoffs: a society can be free of conflict and barren, or highly competitive and successful.

On the path to power

The paths to power available to the naive aspirant are mostly false prestigious paths, pursued by ambitious people of only moderate skill. The actual paths to power pursued by strategic players are surprising, as they center around disguised or undiscovered sources of owned power. Developing a correct understanding of the strategic landscape, given this noise obscuring the signal, is non-trivially difficult.

Along the path to power, it is necessary to take competition seriously. If you are on track, you will encounter extreme competition from ambitious, skilled people in unusual areas. This competition will tend to be extremely unchecked, with a tendency to escalate quickly on both sides. Seek to postpone such competition as long as possible, to be ready for it when it does arrive, and to be able to discern between innocuous and realistically threatening attacks.

Empire Theory, Part I: Competitive Landscape

Empire Theory is a framework for understanding and practicing competitive strategy. Competitive strategy is the art of defeating opponents. Once you have chosen a domain of competition, good competitive strategy enables you to *win*.

Competitive strategy requires understanding how actors behave based on their position in a strategic landscape. This knowledge serves two clear purposes. First, by recognizing the patterns of these strategic players, it's possible to infer a vast amount about the strategic landscape on the basis of relatively little evidence. Second, a deeper understanding of strategic moves and opponents' incentives allows us to better craft our own competitive strategy, through predicting, planning for, and responding to behavior.

Empires

Here we use *empire* to mean a group of coordinated actors that operate around some central power. Coordinated actors are those people using discernible mechanisms for aligning their actions to achieve particular goals. A central power is an actor or set of actors causing others in a given region to coordinate. The actual central power may not be the ostensible central power; for example, a startup might be de facto run by its CTO rather than its CEO. An empire then, being a group of coordinated actors, will always have among those actors some kind of central power that is maintaining coordination. Let's list some example empires to illustrate:

	Coordinated actors	Central power
A company	Employees, business partners, customers	The CEO / executives
A government	The civil service, the military, corporations, citizens	The king / the president / the legislature
The Muskiverse	People at SpaceX, Tesla, Solarcity, and the Boring Company, perhaps others	Elon Musk

Figure 7: Examples of empires.

Empires are composed of players, resources, and other empires. Players are the individuals with enough power to be relevant to the overall functioning of the empire. Resources are assets that can be drawn upon for the empire to function. This category features many things besides physical resources, including money, information, and personal relationships. Coordination mechanisms—both natural and artificial—and people that are not sufficiently powerful to be relevant for the overall functioning of the empire are also considered resources. Finally, empires are fractal: empires contain other empires.

Fractality here is a key analytical lens. In the Catholic Church, for example, we could consider the coordinated actors to be the global Catholic clergy plus lay people, and the central power to be the leaders at the Vatican. However, it also makes sense to consider a single parish as an empire where the coordinated actors are the members of the parish and the central power is the priest. Likewise, a social movement like Effective Altruism could be considered an empire where the coordinated actors are the members of the movement and the central power is the cluster of people and organizations guiding the ideology and strategies of the rest. That said, an individual organization within the movement could also be considered an empire.

The fractal nature of empires follows from the fractal nature of coordination mechanisms. An empire can be identified either by noticing a group coordinating, or by identifying a coordination mechanism and then identifying the actors coordinated by that mechanism. As there will be different coordination mechanisms present in various parts of an empire, and thus sub-clusters of tighter coordination, empires will be fractal.

The problem of local focus

In a given empire, the dynamics of the most central sub-empire have a large effect on the rest of the empire, and control of the central sub-empire is important to top strategic players as it yields control of the rest of the empire. As a result, the top players in an empire tend to prioritize controlling the central sub-empire. This phenomenon repeats in a fractal manner. To illustrate, consider the United States an empire, and the president of the United States a player seeking to control the empire. Within the United States, let's say the central sub-empire is the executive branch. Within the executive branch, let's say the central sub-empire is the cabinet. If the president cannot control the cabinet, then it will be much more difficult for him to control the executive branch. If he cannot control the executive branch, then it will be much more difficult to control the United States government.

A great deal of resources then tends to be spent on control of the central sub-empire. This allocation of resources detracts from the proper functioning of the rest of the empire and hurts the empire's expansion, as more resources spent on central infighting means fewer resources spent on other things essential to the empire's functioning. Unfortunately, this outsized expenditure is not the result of corruption and whimsy, but political necessity—a lot of what we usually call "corruption" stems from political necessity. This problem of local focus is one of the strongest limiting factors on the sizes of empires, because the problem tends to get worse as an empire gets larger. The problem of local foci increases in larger empires because the more power an empire has, the more skilled players are attracted to it. The more skilled players are attracted to a given empire, the more difficult it is to control the central sub-empire. The more difficult it is to control the central sub-empire, the more difficult it is to preserve and expand the empire. As a result, the problem of local focus hugely limits the expansion of empires.

When examining an empire, it is always worth asking whether some inexplicable move or event is in fact best explained not by the dynamics and interests of the empire as a whole, but by the dynamics of the most central sub-empire. This will frequently reveal that global moves, which may seem inexplicable on the global scale, have their origins in local problems that are comparatively trivial. For example, many great empires in history were limited simply by the untimely illnesses of their core leaders, often giving rise to opaque power struggles for succession with great rippling effects. Another example might be the Cultural Revolution in China, which had massive consequences for hundreds of millions of people, but was instigated by Chairman Mao simply to buttress his position of power in the leadership of the Communist Party of China.

Power classes

The coordinated actors in an empire will have differing amounts of power. For example, consider a tech startup as an empire. The founder can hire and fire people, will usually play the lead role in determining the startup's strategy, and can contribute directly to the creation of the company's product. In contrast, a newly hired programmer may only be able to contribute to the product. As such, the founder has more power in the empire than the newly hired employee. *Power classes* are a typology of the coordinated actors in an empire distinguished on the basis of their relative power levels.

Like empires, power classes are fractal. The same actor can be classified as low, mid, or high depending on the frame of reference. For example, a parish priest in New York might be low if considering the entire Catholic church, mid if considering the Archdiocese of New York, and high if considering the priest's parish itself.

High is the central power that defines an empire's zone of coordination. Without high, the empire would not exist and the other actors would not be coordinated. High also plays the largest role in determining the distribution of resources within the empire. High can be an individual (e.g. a forceful CEO) or a group (e.g. the board of directors of a foundation). It will often make sense to model high as an empire in itself, because there are naturally occurring coordination mechanisms that cause high to be its own cluster of coordination within an empire, and there are usually a small number of individuals in high that coordinate the other high players—a high within high. These natural coordination mechanisms include the pressure resulting from the fact that high players are mutually threatened by middle players and by aggressive outside empires.

Mid is the collection of individuals or groups that have sufficient power to challenge high's control. Mid players will often have smaller empires of their own. Mid plays an important role in constraining the action of high. In our tech startup example, mid players might be the managers of the engineering and sales teams. It does not usually make sense to model mid as a single empire. They are very seldomly coordinated as such.

Because mid players control fewer resources than high players, any mid player will have to expend a greater portion of their resources to secure the coordination of a fellow mid player. An investment of $1 million is a notable and risky venture when your net worth is $20 million. It might be an afterthought if your net worth is $2 billion.

Since each individual mid player controls notably fewer resources than high, you have to coordinate more of them to reach the same capabilities that a single high player can provide. Coordination costs are superlinear, so pooling anything except the simplest resources in this way is uneconomical. Coordinating thirty different strategic players rather than three is likelier to increase costs by a factor of one hundred rather than of ten.

For any given mid player, high is usually a preferable ally to other mid players. Given these known problems and the existing uncertainty in mutual evaluation, a mid player must then not only match, but outbid the offer made to mid by high. This event occurs infrequently.

Low is the collection of players that can challenge mid but cannot challenge high. Low has the largest population and the least power. In our tech startup example, the low players would be individual programmers or salespeople. The programmers on an engineering team could plausibly challenge their manager, but they could not plausibly challenge the founder. Like mid, it does not make sense to model low as an empire.

Outside is any actor that is not coordinated by the high power. In our example, this could be the CEO of a competing company or the mayor of a town in France. Outside players may still seek to affect an empire, including by meddling in its internal affairs. It is also possible to further subdivide outside into *near* and *far*. The CEO of a competing company might be considered near, whereas a mayor of a town in France would be far.

As mentioned earlier, certain actors are best modeled as *resources*. Any actor that cannot independently challenge mid is best understood as a resource, because these actors will not be relevant for understanding the empire. They can be understood as resources, because they will be used by low, mid, and high players to accomplish their objectives. For example, they might provide labor or be weaponized by players against each other.

Examples of classifying by power class

In the United States today, high is best understood as being composed of key federal agencies. Heads of major institutions such as large companies, banks, universities or governors of individual states can be understood as mid. State officials, heads of local groups and smaller organizations can be understood as low. Everyone else is best modeled as a resource. Relevant outside powers consist of key foreign governments such as China or Russia.

At Harvard University, we can think of the position of high as occupied by the president, provost, deans, vice presidents, or trustees. Mid could be understood as key professors, long-time staff, heads of departments, and major donors. Low would be student organizers or less important professors. Other students, assistant professors, replaceable staff, and smaller donors would be resources. Relevant outside players might be companies that recruit from the university or the local Cambridge city government.

The official story of who is and is not powerful does not always match the actual story. For example, it might be that the president of Harvard has only moderate internal influence and that one of the deans has by far the most internal influence. In this case, the president might be better classified as a mid player. When assigning individuals and groups to power classes in an empire, be skeptical of your assessments, as it is easy to assume power distributions based on the official story.

Strategic landscapes

A *strategic landscape* is a domain of competition among players. A domain of competition is a region in which players compete for scarce resources.

Trying to analyze a strategic landscape without specifying a domain of competition will yield confusion and error. If the domain of competition isn't specified, ends and means cannot be distinguished. Most actions are ambiguous, so unless they are interpreted through a definite hypothesis, investigation has no clear direction and uncertainty cannot be resolved.

This approach distinguishes the mere accumulation of facts from analysis. The crucial task is determining which facts are relevant and prioritizing them. While you might imagine a logistical analysis that doesn't specify a domain of competition, it will fail to predict the range of interactions between players.

You might correctly note the industrial capacities in a particular region, but if you are not keeping track of whether the factories are aligned either through an owner, a state, or an oligopoly, you will fail to predict which products can be built or which projects will be carried out.

Since players can modify any mere logistical fact, the accumulation of facts without knowledge of the domain of competition may correctly show the functioning of some systems but will fail to predict changes in the system.

For example, analyzing the strategic landscape that includes the oil industry and the social justice movement without specifying a resource they are competing over will result in something like a list of reports of media events and general beliefs. To understand their dynamics or even correctly evaluate the facts on the ground, you have to identify either a definite conflict point, or their overall strategic aims and position. You might, for example, begin to analyze them as part of a political strategic landscape in which the resource competed over is the allegiance of a particular congressman.

The oil industry might have the ability to offer positive resources in the form of financial or legal support for the congressman, their purpose for competing in the political landscape being favorable legislation for their industry. The social justice movement might be able to mount a campaign against the congressman, attacking their character, their purpose being social reform, perhaps through legislation.

In this competitive scenario it would only make sense for an unpopular or weak congressman to go with social justice, and only temporarily, since all the social justice movement can offer is to stay its hand, while the oil industry can provide useful resources that improve the congressman's long-term position.

Empires are domains of competition, and domains of competition tend to be empires; empires are always domains of competition in which players are competing for power, and domains of competition almost always have coordinating mechanisms binding the competitors together (for example, competitors in the oil industry coordinating to defeat clean-air legislation).

The term "landscape" provides a useful metaphor for thinking about these domains of competition. You can think of the terrain of a strategic landscape as being determined by the competitors and their relative power. Imagine yourself standing on a precipice overlooking a strategic landscape of a university. You see rolling hills off to the left, some of which are larger than others, representing the heads of the various humanities' departments. In the middle is a towering mountain representing the central administration, upon which there is a high, rocky outcrop representing the president of the university. The landscape is not static, but dynamic, with the terrain shifting as players make moves and gain or lose power. If you want to compete in this strategic landscape, you will have to navigate it, taking into account the powers of the other players in determining your path and your competitive strategy. The same goes for the other competitors.

Patterns of power

Earlier I claimed that actors exhibit common patterns of behavior depending upon their relative position in a strategic landscape. Now we can parse this: in a domain of competition, behavioral aspects of high, mid, and low players will be consistent and recognizable. This means, for instance, that there are patterns of interaction between high and mid, and that, if we identify high and mid in a particular domain, we will immediately learn much about how those players will behave. The common behaviors of players are a consequence of what works and does not work for players given their position on the landscape. Understanding such patterns thus substantially broadens one's range of available strategic options.

Empire Theory, Part II: Power Dynamics

Power classes are a useful typology for players in an empire, because each group is subject to consistent incentives. As a result, there are consistent patterns of interaction between these groups. Understanding these patterns enables a deeper understanding of the strategic landscape and the crafting of superior strategy. In this essay we will explore these dynamics in detail.

The dynamics of power

Coordination and power go hand in hand. To understand both the opportunities for cooperation and under what conditions competition makes sense we have to take a look at key facts about power.

Power is a convergent instrumental good

Power can be used to accomplish a very broad range of goals. As such, many kinds of actors will aim to acquire power in the pursuit of their goals. The more effective they are and the better their understanding of reality is, the likelier they are to seek power.

There are two interesting consequences of this fact. First, those aligned on ultimate goals and values might still choose to compete over power, if they have different ideas as to how to achieve those goals.

Second, even those that aren't aligned on ultimate aims can still choose to cooperate for a time to acquire power together. Those that accurately understand the instrumental value of power recognize each other and cooperate in ways that are not available to the less savvy.

To miss out on the usefulness of power is to miss out on a mechanism of coordination with the powerful, while failing to protect yourself from competition by the savvy.

Power is Pareto-distributed
The most powerful players are orders of magnitude more powerful than all other players. This distribution is observed in many, many domains vital to gaining and maintaining power, ranging from land ownership to income to political contacts to personal effectiveness.

The competitive nature of reality
Everyone is locked in a state of de-facto competition against all others trying to access the same scarce resources as they are (e.g. companies in Silicon Valley competing for talent). Power is a scarce resource, and, as noted above, it will be pursued by many actors. Thus pursuing power successfully can quickly result in reaching high levels of competitive difficulty.

The difficulty of coordination
Coordination is a troublesome problem. It takes a large amount of skill and resources to successfully coordinate large numbers of people. If you've ever tried to organize a group of volunteers or run a company you know just how true this is.

The insufficiency of inherited models
Society doesn't equip people with correct ideas about how the social world works. A lot of political and social common sense is wrong or contradictory. For example, many people talk about the value of decision making through consensus, but many people also say that committees are utterly ineffective. Inherited models are insufficient for effective action.

The deceptive side of society
Lastly, sometimes rather than merely being insufficient, the models people are equipped with are actively deceptive.

In most modern cultures vicious competition is not socially acceptable. There are carved out exceptions to this, such as in business or entry to prestigious educational institutions such as the Ivy League universities.

Even there, the competition is claimed to be limited to only a few domains. Further, the justification for these partial exceptions is prosocial and ultimately cooperative.

There are a few possible justifications for competition. One of them is the notion of a meritocratic society, one where positions of privilege are distributed in accordance with merit—that is, talent and skill. Everyone should be as excellent as they can be—ultimately competition is supposed to produce relative rankings for the distribution of positions, rather than an absolute standard.

In the example of elite universities, the justification is applied to admissions tests of various kinds. SAT scores and the like limit attendance at the universities to the talented, rather than using some other key such as family ties.

Sometimes this prosocial story is correct and other times it isn't. The deceptiveness of the societal story and the attempts to obscure competition are especially visible as low, mid, and high form secret alliances to attack other players and claim power for themselves.
The dynamics of power classes

High

As we said in Empire Theory, Part 1: Competitive Landscape, high is the central power and cause of coordination in an empire.

High is generally concerned with maintaining its power in the empire; since high is already in the most powerful position, high has a lot to lose and less to gain locally. Due to its preoccupation with maintaining power, high will consistently be concerned about mid players growing strong enough to overthrow and replace high. As such, high will seek to control mid, usually through distribution or denial of resources.

High will also seek to expand its empire as a means of securing its position within the empire. High will seek both to increase the direct power imbalance between high and mid, as well as to acquire more resources in order to buy off certain mid players and play them against others. There is an important difference between resources high directly owns versus resources in the empire. While high can benefit from having powerful middle players with a lot of resources, high cannot directly use these resources. The total power of an empire is always larger than the power of high. High will try to steer growth with the priority of benefit to its internal position as the first priority, the overall growth of the empire is a secondary goal. Security and the ability to produce other kinds of effects in the world, are usually not at a trade-off; when they are, however, security takes priority.

Mid

Mid is the group of players that can challenge the high power.

Mid will often fight with other mid players, both to destroy competitors and to add those mid players' resources to their own empire. Mid will also often make alliances with high by specializing to perform services which high cannot or will not provide. Businesses, banks, and universities are good examples.

Mid players, in pursuit of increasing their own power, will be strongly incentivized to challenge high, since high has the most obvious concentration of resources. As such, mid needs to receive something very valuable from high in order to not challenge it. *The tense interaction between mid and high is the most important thing to focus on when trying to understand an empire.*

Low

Low players can challenge mid players.

Low usually matters little as an independent force within an empire, although it will sometimes contest mid players. Instead, low is important because it will very often be used as a proxy by both mid and high players for their own purposes. As such, it will be commonplace to observe low powers being picked up and discarded by stronger powers. Low players will rarely demonstrate agency in their strategic moves.

Outside

Outside is the group that is not within high's empire. Outside is composed of all empires and players outside of high's zone of coordination. As such, outside will include competitors of high, as high will be competing with other empires for expansion.

Sometimes outside empires will invade and try to take over an empire in their quest for growth. These takeover attempts might include alliances with players inside the empire so as to subsume or disintegrate it. Mid powers are often interested in leaving empires, and might accept aid from outside to break off from high. Low powers might be interested in rising to mid in the new empire led by the former outside. A negotiated surrender is an example of such an alliance between high and outside.

It is possible to further divide outside into *near* and *far*. In the context of an empire, near can be considered as the direct competitors to the empire, who are primarily external competitors to high. In addition to active competitors, near will also include potential or likely competitors. Far can be considered as the outside players that are not direct competitors to high. This categorization is useful because near players will often try to undermine high by allying with mid players, and vice versa. High, in contrast, will be more interested in allying with far players against mid and near.

Outside can also aim for opportunistic collaboration to achieve a particular end without aiming to merge with their collaborator. An example would be the cooperation between the French company Sud Aviation and the British Aircraft Corporation to develop the world's first supersonic passenger airline, the Concorde. The alliance is narrow, with the intent to produce a particular piece of technology.

The dynamics of interactions

The following sections will discuss all pairwise interactions between high, mid, low, and outside players.

In this discussion, there is an important distinction between degrees of cooperation. When two players are cooperating, they are working together to achieve a particular goal, but they are not necessarily generally aligned. Two players can cooperate in one domain while battling in a different domain. I call this a *narrow alliance*. When two players are coordinating to achieve most of their goals and no longer contest one another, I call it a *broad alliance*. Narrow alliances are the default between most players in an empire, whereas broad alliances are unusual.

High-high

High can be made up of many individuals. Each of these individuals will seek to expand their own power and increase the size of their personal empire. As we described in Part One, empires are fractal, and high is frequently best modeled as an empire in itself. High-high alliances will emerge when individual high players discern that the best way to grow their personal empire is if high can act in a unified manner. High can do things that no other player can do, because of the large pool of resources available to its members. As a result, there will often be especially large rewards for high acting in a unified manner. For example, in many countries, the only organization that can successfully execute large engineering projects is the central government, because they are the only group with sufficient resources and coordination power. The construction of the U.S.

highway system beginning in the 1950s is an excellent example of this.
What does the unification of high look like? In considering the dynamics within high (when it is composed of multiple individuals), it can be useful to model high as an empire unto itself, yielding low high, mid high, and high high players. High is in a state of unification when high high and mid high are broadly allied. If high high and mid high are not broadly allied, then high is disunified.

High will tend to be unified when it has the ability and opportunity to expand its empire. In this circumstance, individual high players will perceive that the best way to grow their personal empires is to help the larger empire to expand. If these opportunities dry up, high will often become disunified, because the best strategy available to individual high players is to contest the other high players' power. External threats to high are typically a subpar unifying force compared to the opportunity to expand. There is a nice story to be told about a dangerous external threat unifying a group of people, who then win against all odds; but more often in history, an external threat provides an opportunity for one high player or group of high players to win a local battle with another high player at the expense of the empire as a whole.

High disunity is especially problematic when considered in the context of the problem of local focus.[135] When high is disunified, high players will contest each other's personal empires. The focus of each high player will be the defense of his or her personal empire. In order to transition back to a unified high, the attention of high players needs to return to expansion of the broader empire. This transition can be very difficult to achieve, because all high players will need to simultaneously stop contesting each others' empires such that their attention can focus on the larger empire. As a result, high disunity is an equilibrium that is extremely difficult to break out of. High unity, then, is unstable, because any outbreak of internal strife can lead to stable disunity.

High-mid

Mid players usually gain by participating in the empire's domain of coordination. For example, two dukes can resolve a border dispute by going to the king instead of having to resort to violent conflict. Similarly, national governments can enforce contracts for mid players in modern states. As seen in these two examples, when mid establishes a narrow alliance with high, high can resolve problems that are outside the reach of either mid player: high provides a coordination service.

135 See, within this manuscript, the chapter "Empire Theory, Part I: Competitive Landscape" (118–125).

Likewise, high gains from having mid players, because there are goals high cannot achieve without the cooperation of mid. For example, consider a startup in which the founder is the sole high. Since the founder's time is scarce, he cannot personally manage each programmer once the company grows beyond a certain size. As such, he will cooperate with mid players (say, programming team managers) to manage the lower-level employees.

There is an interesting asymmetry in what has been described so far. The coordination services provided by high are insufficient, as they are merely making interaction with other mid players smoother.

On the other hand, the delegation services provided by mid are frequently sufficient to justify the cost of the coordination service and more from the perspective of high. Providing arbitration and other means of coordination in exchange for delegation is almost always a worthwhile trade for high. Mid, however, appears incentivized to leave the empire and only opportunistically ally for such services when needed.

Absent further action from high, this incentive is often followed, leading to cascades of mid players leaving being one of the common causes of the downfall of empires.

Furthermore, since mid players will always seek to expand their personal empires and high has the most resources in the empire, mid successfully challenging high is among the most rewarding resource acquisition strategies possible.

To establish a broad alliance between high and a mid player, high must provide mid with something that both offsets the cost of delegation services as well as the temptation of seeking to challenge high. As a result, high will usually control the distribution of resources in an empire, thereby incentivizing mid players not to challenge high. For example, a central government can bribe mid players to not challenge it by distributing industrial contracts. A totalitarian state can coordinate mid players by giving them the opportunity not to be sent to a prison camp.

In general, if an empire is not expanding, broad alliances between high and mid will be fragile. A high player coordinating mid players primarily with threats will usually not be able to coordinate the mid players long-term.

Providing and denying opportunity are asymmetrical. You only have to occasionally provide positive opportunities for collaboration to be worthwhile. If you are merely denying opportunities to force cooperation, you have to carry this out always. For example,

a CEO that is constantly threatening to fire his managers due to the company's poor performance will not be able to stably coordinate those managers. It would be much better for the CEO to set up incentives such that all the managers want to stay on to grow the pie and get a piece of it. As such, the most stable high and mid broad alliance is one in which mid is receiving resources from high (e.g. colonies, subsidies, commissions, etc.). High can give its own resources to mid in exchange for cooperation, or high can get resources from outside the empire and give some of these to mid. A somewhat ingenious high can even create resources from nothing using superior knowledge. An example might be the British honor system, with an endless number of titles to receive and orders to be knighted into. Social resources can be created *de novo* by high and then distributed by high. This type of coordination is limited by the skill and knowledge of high, so it is not an infinitely usable hack.

The strategy of resource distribution is much more stable than the strategy of threats, as it allows high to maintain the relative distribution of resources to high's advantage, while the latter does not. For high to stably distribute resources from the outside, however, the empire must be expanding.

High and mid achieving broad alliances, like those described above, is important for handling the problem of local focus. If both high and mid players do not need to focus on defense of their personal empires against adversaries within the broader empire, more effort can be put into expansion of the empire. An allied high and mid is an extremely effective internal structure for empire expansion.

High and mid can also ally to attack other mid players. High will often narrowly ally with a mid player to attack a more threatening mid player. For example, consider a university in which an influential tenured professor is rallying other professors to question the budget decisions of the administration.

The administration can ally with a different set of professors, who will usually be weaker or less politically savvy, to challenge the original professor. The professors allying with the administration can get pay increases, promotions, desired policy changes, or departmental budget increases in return for their cooperation.

If high is undertaking such an alliance, we can infer that it is already notably weakened. After all, it chose a mid player rather than a low player, which already means it required or desired the assistance of someone well-positioned. We can predict that the alliance will be short lived as the mid player might in turn become threatening.

Frequent alliances like this are not a good sign for an empire. It means that, for some reason or another, high is chronically finding difficulty in aligning with mid powers. It suggests that the only means available to it to preserve its domain, is undermining the powerful members of this domain, rather than, for example, distributing external resources to mid to preserve high's power and mid's loyalty. The limit of the empire's power has been reached.

Finally, high will sometimes scrap mid players to add their resources to those under high's direct control. We have previously mentioned the important difference between resources that are at high's direct disposal versus resources that are in direct control of other players in the empire. One way high can increase the amount of resources at its direct disposal is to take a mid player's resources. For example, a government can nationalize a particular industry as a legally held monopoly.

High-low

As we have previously said, low players are mostly irrelevant to high players. They don't have enough power to effectively attack high, and they don't have enough resources to be worth scrapping. They are also more difficult to usefully coordinate with than mid or outside players. Since they are individually weak, a large number of them must be coordinated in order to make it worthwhile. Coordinating such large numbers can be prohibitively difficult. For example, if the CEO of a tech company is working to launch a big new feature, it is much easier for him to work with three lieutenants to manage the project than manage fifty programmers himself.

Given the difficulty of usefully coordinating low players, why would high ally with low? High will ally with low because low can be weaponized against high's adversaries. A common offensive move for high is to ally with a low player to attack a mid player. Low players are strong enough to attack mid players but are not strong enough to be dangerous to high, making this alliance very safe for high. For example, say the CEO of a tech startup wants to get rid of one of his managers but doesn't have sufficient legal ground to fire them. The CEO could ally with one of the lower-level programmers managed by this person who has been doing poorly on recent work performance reviews. The programmer is tasked with filing a harassment complaint against the manager with HR in exchange for leniency in work reviews.

There are two important observations about this common type of offensive alliance. First, it helps explain the seemingly irrational paranoia that can be found among strategically savvy individuals. Attacks by powerful players will often appear to be random

harassment by low players. Second, all alliances between high and low are very asymmetrical. Since low cannot challenge high, the relationship is almost completely in high's control. The low player is *disposable* in high/low alliances, something important to keep in mind if engaged in an alliance with high as a low player.

High will also often ally with low players to avoid empowering mid players. For example, say the president of a university has to choose a professor each year to give a speech in front of the entire school. The president may pick an obscure professor so as to avoid giving a notable and powerful professor, a mid player, resources (in this case, public acclaim), since the president considers such professors a threat to his influence over the university. High/low alliances can appear extremely puzzling, because it will seem like high either has poor judgment or is wasting time with low players. In reality, though, it may be a prudent maneuver against mid.

It is useful to be aware of high's predisposition to ally with low if you are a low player within an empire. Low players can position themselves to ally with high in order to destroy a mid player and achieve mutually beneficial aims.

"Grassroots" movements are an example of this. Take, for example, the Little Rock Nine, a group of nine black students who enrolled at Central High School in Little Rock, Arkansas, formerly an all-white establishment, following the historic *Brown v. Board of Education* Supreme Court case in which the racial segregation of schools was declared unconstitutional. In response, the governor of Arkansas deployed the Arkansas National Guard to physically prevent black students from attending previously all-white schools. President Eisenhower intervened. Henationalized control of the Arkansas National Guard and sent the 101st Airborne Division to enforce the racial integration of the schools. One way of describing this event is that the grassroots civil rights movement won a major victory against segregationists. An alternate description is that high (the federal Government) took a resource (the Arkansas National Guard) from a mid player (the governor of Arkansas), using a conflict between low and mid which had been incited by high (the desegregation of schools, incited by the Supreme Court verdict) as justification.

High-outside

There are four major ways in which high interacts with outside players. First, high can attack them to expand and gain resources. Second, high can use them to fight internal political battles. Third, high's empire can be invaded by them. Fourth, high can ally with them to attack other outside players.

High is incentivized to expand the empire as a means of increasing its own power and as a means of coordinating mid players through the dispersal of resources. Sometimes high will expand by acquiring an outside empire. Consider Google acquiring a startup. Google will often acquire a startup because there is something that the outside empire can do which it cannot do (similar to how mid players specialize to coordinate with high). When an empire is acquired, it usually retains its original structure and some power, but becomes coordinated by and subordinate to high. In this case, the acquired company might maintain its internal structure and some powers like hiring, but what it produces will be owned by Google. Acquisition can also be less cooperative, like military conquest, for example.

Similar to how high can ally with low or mid players to defeat opponents in the empire, high can also ally with the outside to defeat its internal opponents. Take a tech startup in which the CTO and CEO disagree about strategy and the board is split on which to support. The CEO might hire a prestigious, supposedly unbiased consulting firm to rubber-stamp his decision in the hope of swinging the board. Another example is the hiring of foreign mercenaries by rulers to quell local rebellions. These sorts of alliances are basically always narrow alliances. It will rarely be the case that high and outside enter a broad alliance. These types of outside players are also likely to be far.

High inviting outside players into the empire carries a significant risk, the outside players might turn on high. This situation is particularly dangerous; outside players will learn a lot about high and the rest of the empire when they are invited in, because they need that information in order to coordinate with high. However, high won't necessarily learn very much about the invited player. This information asymmetry can be extremely dangerous for high—it turns a far outside player into a near outside player.

For example, in 1169, the King of Leinster invited Norman mercenaries to help settle a rebellion in his eastern Irish kingdom. Instead, the Norman mercenaries ended up seizing the territory for themselves, deposing the king. When inviting players from the outside, it is easy to misjudge their power due a lack of information about that player. Even a single, highly persuasive individual can be dangerous to invite into an empire if he or she cannot be controlled.

Just as high can attack other empires to gain resources, other empires can attack high's empire. Because there is intense competition for power, outside attacks are common and empires must defend against them. Competition in a market is one example. If your company locates a previously unserved market, you shouldn't expect to be alone for long

if you see any success. Other companies will soon seek to chip away at your empire. For example, Apple's success with the iPhone rapidly led to many copycat competitors like the Samsung Galaxy.

High can supplement its strength against an external enemy by building a narrow alliance with a third player from the outside. The strategy is particularly apt when the aim is defeating an external empire rather than acquiring its resources; because high needs to spend fewer of its resources to acquire an outcome, and isn't concerned about possible spoils, the ally can then be paid from the spoils. Successive Chinese dynasties relied on this policy heavily over the centuries, to the point of it being artfully captured in an idiom: "use foreigners to subdue foreigners; let the barbarians fight it out among themselves" (以夷制夷).

Mid-mid

Mid players will often behave antagonistically towards one another because other mid players are their primary competitors for gaining power. For example, the U.S. government often offers competitive contracts for construction projects. Mid players (large construction companies) will have to battle one another for the contract. That said, there are two ways in which mid players will sometimes coordinate. First, mid players will ally to create an anti-high coalition. This is the only common mid/mid broad alliance. Second, mid players will narrowly ally to attack other mid players.

There are four common types of anti-high coalitions: conservative coalitions, coup coalitions, secession coalitions, and dissolution coalitions.

A conservative coalition is when mid players coordinate to oppose the actions of high in an empire. For example, if the federal government is trying to pass a law curtailing the power of state governments, state governors might ally to oppose the legislation. If the CEO of a startup tries to push for the adoption of particular code testing policies, the engineering team leaders might collectively reject the CEO's policy. In both cases, the mid coalition may succeed; conservative coalitions can block attempted changes by high, but will often succeed only at *slowing* high rather than halting them altogether.

A coup coalition is an alliance in which mid players coordinate to depose high with the aim of having the group become high themselves. A classic example is when a king's ministers depose the king and install a patsy as the new king. When this sort of transition happens, the empire will usually remain intact but with a new high. Such coalitions are most viable when a small number of mid players are notably more powerful than the

rest. When this isn't the case, the new high will not have sufficient advantage to keep the empire intact.

The third anti-high coalition is the secession coalition. Mid players will often have their own empires within the larger empire. If the benefits of being coordinated by the high power are not worth the costs, then mid powers will be incentivized to exit the empire. Sometimes mid players will simply leave the empire, although frequently this move will be blocked by coordination mechanisms, by which we mean social technology that incentivizes coordination and usually doesn't require live players to pilot. Examples would be military force in the context of a local government breaking off from a national government, or social pressure in the context of a manager leaving a tech startup. In these cases, mid players can ally to aid each other in breaking away from the empire. The American Civil War, in which Southern states seceded from the Union to create the Confederacy, is a classic example of this.

The fourth anti-high coalition is the dissolution coalition. Sometimes, instead of mid players coordinating to leave the empire, they will simply destroy the empire. If a collection of state governments collaborates to destroy the national government, then sovereignty will devolve the individual states. This process drove the collapse of the Soviet Union, with the individual Soviet Republics cooperating to reduce the legal and political role of the union, and eventually helping legitimize its dissolution as well.

The risk of mids creating a dissolution coalition provides a strong motivation for high to distribute valuable resources to mid players so as to make the empire's continued existence preferable to them. Such distribution is viable if high's domination of resources persists, through some kind of growth; otherwise high is merely giving away its own advantage. Such generosity might slow down a particular dissolution attempt, but will make success more likely when dissolution is attempted.

Since redistributing resources to the most powerful mid player trades off against the risk of them initiating a coup, buying off weaker participants in a dissolution coalition first staves off dissolution without increasing the risk of a coup.

These scenarios often preoccupy high's attention and determine what actions are viable. Only the largest and most skilled mid players can fruitfully pursue them. In most circumstances continued cooperation with high is the best option.

An easier and more common option for cooperation among mid players is that of join-

ing together against other mid players. Mid players compete for power, since they benefit from influence over the commons and possible allies in the empire. As a result, it is sometimes viable to create a narrow alliance to defeat a particular mutual mid competitor. Fewer strong competitors means more resources available for the remaining players.

Mid-low

There are four main ways in which mid and low players interact. First, low players can be weaponized by high to attack mid. See the section on high-mid dynamics for a discussion of this.

Second, low players can be weaponized by mid players against mid opponents. This takes the form of a low player supporting or protecting a low player that is frustrating their common opponent. One might step into an existing conflict of interest between the two and support the weaker side to prolong it, or one can even incite the conflict to begin with.

Third, mid players will sometimes ally with low players in order to expand their own empires. For example, the manager of a team of programmers might notice a talented programmer on another team. The manager could befriend that programmer and convince him to join her team as a means of improving her own team's performance.

Fourth, low players will sometimes aim to ally with mid players in hopes of becoming mid players themselves. This alliance usually occurs either by low riding on mid's coattails as mid increases in power or by low directly gaining power through their alliance with mid. A good example of coattail-riding occurs in U.S. presidential elections. Campaign staffers (low) ally with a presidential candidate (mid) in the hopes that that mid player will win the election and then become high. If this occurs, the new president will repay the campaign staffers by delivering White House appointments, making the staffers mid players. An example of low directly gaining power through a mid alliance is mentorship. A mid player invests in a low player in the hopes that the low player becomes a tightly coordinated mid player.

Mid-outside

Interactions between mid and outside are often tense, because it is risky for mid players to interact with outside players. Mid will primarily interact with outside in two contexts: when outside is attacking their empire and when mid is going outside of the empire for resources. In both of these cases, mid is more likely to interact with near than far.
Aggressive outside empires will often try to ally with mid players in an empire they are

invading. Mid players can be extremely valuable to an invading empire because they will often have useful information on the target empire. Also, stealing them both increases the invader's power and decreases the target's power. For example, consider two website-builder tech startups competing with one another. It is very useful for one company to steal a highly skilled manager from the other company, because it gains a highly skilled manager, the opposing company loses a highly skilled manager, and the manager brings with her detailed knowledge of the opposing company's strategy and internal dynamics. Due to the damage defection can cause, punishments are usually harsh. In the context of competing states, treason is punishable by death. Defectors are usually completely socially ostracized after being discovered. Even between competing companies, defecting to the opposing company will often result in total social ostracization from the first company. Defection of mid players is a rare and destructive event.

After an empire has conquered another empire, they will attempt to ally with the conquered mid players in order to preserve the basic working order of that empire. Much of the value of an empire comes from the local players' ability to coordinate with one another. Setting up the structures necessary for effective coordination is very difficult. As such, when an empire is conquered, the conquering empire will often simply reuse the coordination structures that have already been set up by the previous leaders of that empire. Mid players are also incentivized to ally with the new regime, as the alternative is usually destruction—although, sometimes mid players will attempt to break off from the empire during the chaotic period of high's replacement. This pattern of reusing existing coordination structures leads to such structures being surprisingly durable, usually lasting far longer than any single empire. Examples might include the Roman Catholic Church, which outlasted the Roman Empire, or the trade network of the Silk Road that outlasted the Mongol Empire. We might imagine the strategic landscape of history as a huge number of unimportant lows, dotted by a smaller number of important mids, who are constantly being recombined by competing highs in new empires.

Venturing outside the empire is an interesting challenge for the mid player. In a space of many somewhat coordinated players, it is ideal to achieve growth with the help of said players rather than going against their designs. Opposition is costly.

In the British Empire of the 18th and even 19th century, great fortunes and energies could be absorbed by political struggles in the capital. However, one of the best routes for influence in London was making your fortune by expanding Britain's colonial holdings and then bringing that capital to bear. The returns were often better than fighting in the system. Examples of this were the military career of Sir Robert Clive, who conquered

Bengal for the British East India Company and the business ventures of Cecil Rhodes that drove expansion into Africa.

When high is coordinating mid players and distributing patronage from the common effort to grow the empire, there are few reasons for mid to pursue additional projects. Alexander the Great's generals are best served by staying with his army and carrying out his orders; their prospects for wealth and fame against a still-standing Persian empire were miniscule. In such contexts a high player is staking their position on their ability to continue providing patronage rather than on the ability to defeat mid players.

In this example, Alexander demonstrates the ability to win battles against the Persian empire and acquire more and more provinces. He is overwhelmingly incentivized to maintain such growth. He takes on most of the cost of failure, but will share in the spoils of his success. An independent venture by a mid player means they are spending their own resources and also directly bearing the risk of failure.

Given these expenditures and risks, mid players should pursue outside growth when high is not offering sufficient resources for the mid players' growth. An even more dire circumstance is when outside expansion is attempted to circumvent a high power actively trying to starve a large mid of resources.

Low-low

Low is generally unimportant except for when being used by mid and high. As such, low-low interactions are mostly unimportant at the empire level. That said, there is one circumstance worth mentioning. A low player will sometimes assemble a cluster of other low players into a local empire, making the organizing low power a new mid power. The famous slave rebellion of Spartacus in ancient Rome serves as an example. For a more recent example, consider the situation in which a town is passing new zoning laws setting a minimum size for plots of land in a county. Low-income residents of the county would be hurt by this law, because plots of land would be notably more expensive if they could not be further subdivided. One low-income resident might rally other low income residents to fight the zoning law, with the organizer becoming the group's leader. In this case, the organizer has suddenly risen from low to mid by coordinating low players using a new coordination mechanism (the personal incentive of low-income homes to oppose the zoning law). As the primary difficulty among low players is the cost of coordination, it is common to see the creation of new mid players when the strategic landscape changes and there are newly available coordination mechanisms for low players.

Low-outside

Low-outside dynamics are usually unimportant, but there are a few worth mentioning. First, low will sometimes coordinate with an invading empire by being weaponized against mid players—after the conquest they may coordinate with the new high. Second, low will sometimes leave the empire. It will usually be easier for low players to leave the empire than mid players, because an empire losing a mid player is both costlier and riskier than losing a low player, so the coordination mechanisms tend to be weaker in the case of low players.

Growth and decay in empires

We can use our understanding of the dynamics of power classes to determine whether empires are healthy. Since power is always somewhat insecure, there is always a need to import resources previously not in the empire, if only to maintain the status quo.

When thinking about coordinated groups (i.e. empires), health and growth are synonyms. How is this growth achieved, or how is the scarcity managed? Depending on how centralized the empire is these dynamics of growth and decay play out differently.

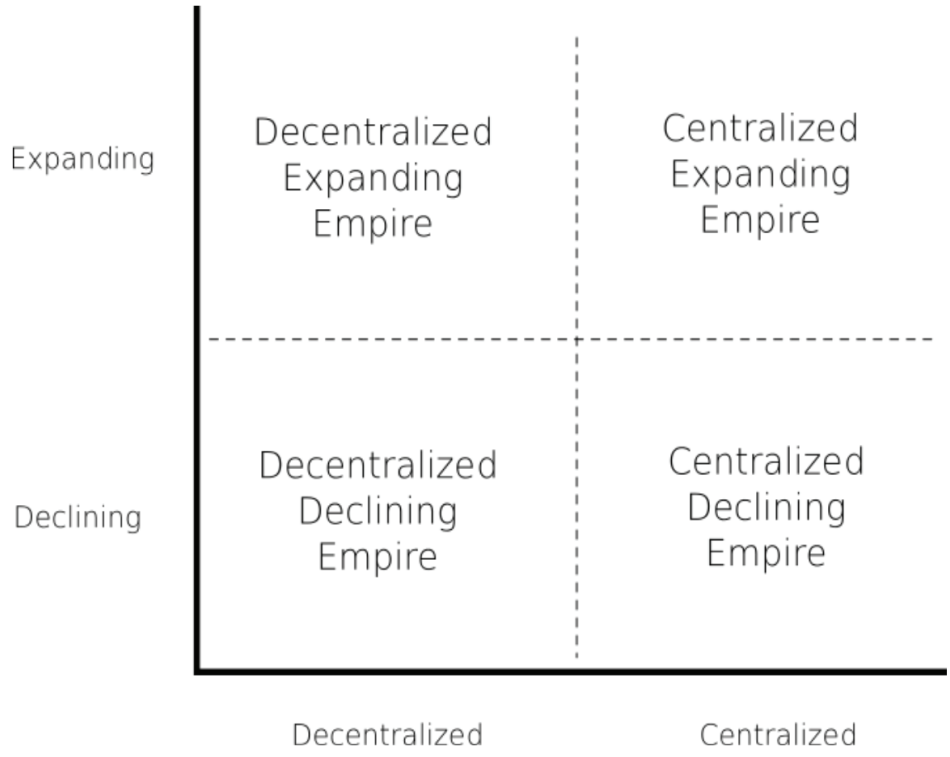


Figure 8: A matrix of empire classification by type of coordination regime.

For any empire, we can ask how centralized it is: to what extent is high coordinating

and coordinated with the rest of the empire, specifically mid? Though the degree of centralization is a continuum, we can draw a line somewhere in the middle and say that an empire on one side is centralized, and an empire on the other is decentralized. We can also ask whether the empire is expanding—that is, gaining resources from outside—or declining. Combining the answer to both questions yields four empire types. Typing empires in this way allows us to rapidly understand the basic internal dynamics of a given empire.

Centralized expanding empire

In a centralized expanding empire, the central power (i.e. high) is broadly allied with the middle powers, often by buying them off with resources acquired from outside of the empire. The coordination thus bought is then directed towards keeping the empire growing. Growth can take the form of captured provinces, new trade routes, acquired competitors, new technologies, and so on. Since high is driving the growth, the empire tends to expand decisively in one direction at a time. This type of empire can usually be discerned by its decisive manner of expansion. An example of a political entity of this kind is the Ottoman Empire, where the Sultan's forces either focused their campaigning in Anatolia and the Middle East or in the Balkans and Europe, never both at the same time.

Centralized declining empire

In a centralized declining empire, the central power is keeping the mid players coordinated by denying them resources and preventing them from acquiring resources from outside. Such an empire will either shrink gradually or suddenly and catastrophically implode. This type of empire can be discerned by observing a tightly coordinated empire that has shrunk over time, but hasn't had any major parts of the empire break off and become independent. Few civilizations embodied this kind of decline as well as the Western Roman Empire in the fourth century AD. The extraction by high was not only evident in the high taxation of the population, but in how the rise of successful generals such as Flavius Aetius was seen as a threat rather than an asset by their emperors: often they were assassinated or executed.

Decentralized expanding empire

In a decentralized expanding empire, the central power isn't strong enough to prevent middle powers from going outside for resources. High maintains its position by acquiring resources for its direct control from the outside without the help of middle powers and by occasionally scrapping weaker mid players. In this state, the empire is growing. It grows in multiple directions in a patchy manner, due to the unsynchronized actions

of mid and high. This type of empire can be discerned by its multi-directional expansion pattern. In the 18th century British Empire, many lower elites such as Robert Clive of the British East India Company made their fortunes and proved the ability to command in colonial ventures around the world, but eventually returned to London to gain honors and networks only accessible there.

Decentralized declining empire

In a decentralized declining empire, the central power is failing and isn't strong enough to keep middle powers coordinated. In particular, it isn't strong enough to prevent their growth. The empire is fragmenting, with no clear successor to the dying high. This type of empire can be discerned by observing an empire that is shrinking and has significant parts breaking off and becoming independent. The Zhou Dynasty of ancient China maintained ritual importance long after it lost effective control; as coordination between their nominal vassals who each grew more powerful broke down so too did the unity of China, giving way to the Warring States period, where these states would contest each other seemingly without limit.

Empires need growth

The landscapes of power and coordination are intimately interwoven. Patterns of alliances and rivalries come through necessity to define who we coordinate with and why. No matter what goals we pursue, we face this reality of power, and so must understand and account for it.

We explored a classification system for the power of individuals and institutions, pairing it with an overview of the dynamics that play out between these classes. This analysis allows us to take several important steps. We can diagnose the current landscape of an institution and the state of coordination dynamics within it, and predict with reasonable confidence the effects of various actions and strategies on a given empire. Finally, we can track relations between the powers in an empire to accurately predict where in the life cycle of institutions the empire falls.

The importance of growth for the health of empires stands out. In the analysis growth seems indispensable for harmonizing the interests of relevant high and mid stakeholders. Empires coordinated through cooperative ventures—by carrot rather than stick—will plateau and decay later than those coordinated by coercion, translating into more coordinated allies and resources.

The best way to win at adversarial encounters, then, is to focus energy on building out

cooperative ones. In the long run, acquiring power and empowering others is mutually reinforcing rather than mutually exclusive. Something to keep in mind.

Institutional Failure as Surprise

Discerning whether an institution is near failure is a difficult epistemic problem. There are many outwardly visible pieces of institutions that do not reflect their actual health. Before the 1929 collapse of financial institutions, naive observers were optimistic on the basis of soaring stock prices. Even after the Black Tuesday stock market crash, most observers expected a normal recession and recovery. Instead, the system continued to deteriorate: bank failures wiped out savings, the gold standard was abandoned internationally, and the Great Depression ensued.

Institutions often proceduralize tasks; that is, they create sets of instructions for completing tasks. This process yields bureaucracies: bureaucratization is proceduralization. If you've ever worked in or with an institution of some size, you've encountered proceduralization. Getting a driver's license at the DMV is a great example: you must follow a rigid set of instructions to do so.

In many organizations, particularly mature ones, a significant portion of tasks are handled by automated systems. Such systems can persist, and even fulfill their function, while the core institution itself is failing. Decay is in fact the rule: the maintenance of old institutional abilities is difficult, and the growth of new ones is rare. Therefore, if one wants to determine whether an institution is failing, one must discover which features of an institution indicate the current health of the core organization itself, while carefully distinguishing these from features reflective of past health, or support from outside institutions.

From these signs, it's possible to discover whether an institution has the ability to face new threats, or is merely trudging through a slow process of decay. If an institution is unable to adapt to meet new challenges, it will lose again and again. Enduring defeat can only last for so long, no matter how large or well-established the retreating organization. Eventually, the inability to win dooms all institutions.

Robots outlive their makers

The DMV's procedures are annoying, but they get the job done—millions of people have gotten driver's licenses. Proceduralization delivers very effective results at the cost of increased fragility. Human intelligence is a general process capable of solving problems. Applying your mind to any given task produces an approximate, context-appropriate solution. You can greatly improve this solution by adapting it more and more to the particular context in which it is used.

However, as you continue to adapt your solution to fit the case at hand, it becomes nearly impossible to also have the solution remain generalizable, let alone contain the full set of instructions necessary to fit it to all situations. As a result, proceduralization tends to sacrifice much of the adaptability and context fit that intelligence can bring to particular cases.

The basic structure of proceduralized systems makes it difficult for the people working inside of them to deviate in order to adapt to a new context, even when doing so would be beneficial. Proceduralization then always increases employee cost for altering an organization. The cost induced by proceduralization is the main obstacle to an organization adapting. The only comparable obstacle is lack of employee knowledge of how to adapt.

A basic building block of bureaucracy is the creation of incentive and responsibility schemes that induce many people to reliably follow a procedure of some kind. This kind of incentive-backed proceduralization pervades much of the modern workplace and institutional landscape. Because it is in the basic nature of such institutions to motivate people with incentives and constraints, it is exceedingly difficult to change or adapt them from the inside, lest you incur punishment or fall behind your less innovative co-workers.

One specific aspect of this incentive structure further solidifies the un-adaptability of bureaucracies: knowledge of the principles on which the institutions were built will inevitably fade, because the employees don't need to understand these principles in order to complete their tasks. Understanding beyond what is needed to play your role is not necessarily penalized, but it certainly isn't rewarded.

Over time, this incentive structure will result in a bureaucracy with no remaining understanding of the principles which generated it. Once these mental models are gone, it becomes difficult to change the system or adapt the procedures to new contexts. To make matters worse, the institutional stasis established through fixed incentive struc-

tures and an absence of principled knowledge inevitably decays over time. Systems of incentives often do not incentivize their own preservation. Vladimir Lenin quipped that capitalists would sell the rope used to hang them, and he was correct that nothing within the capitalist system incentivized working against the revolution. That systems of incentives aren't self-preserving results in a kind of erosion, as resources are extracted and minor things changed here and there at the expense of the institution's functionality.

Sometimes, systems succeed in partially incentivizing their own preservation, which extends their life; however, even then they always align incentives imperfectly. As a result, some parts of the system bloat over time, rendering it unfit for its original function.

In computer programming, there is a kind of program called a quine, defined as a program that takes no input and as its output produces its own source code, replicating the code perfectly.[136] There is no such thing as an institutional quine, a self-contained institution that with no inputs perfectly replicates itself. A system of procedures tied to a system of incentives requires active maintenance in order to perform the task it was designed to perform, and to counteract the inevitable decay that ensues as individuals fight to turn the organization's resources to their own ends.

This is the fundamental problem of bureaucracy: a system devoid of human judgement and oversight results in constant politicking, and constant politicking results in decay. This decay produces something worse than just an unadaptable system: an unadaptable system that fails to perform even its original limited function.

It is best to think of such institutions as machines with human parts. They can be constructed and designed by humans but can also easily outlast the humans that created them, even with someone no longer at the helm. In this situation, they will not automatically fail, but will shamble along less and less effectively in their preordained direction, sometimes continuing to accumulate material wealth or even ever greater numbers of employees. Their agility and adaptability will vanish, however, as too will their ability to achieve their original goals.

In this way, a powerful institution can be brought down by changing circumstances or even external attacks which it cannot adapt to. For example, major newspapers are still struggling to adapt to the internet and the subsequent rise of online news. They have not recovered their previous profitability or effectiveness at shaping opinion.

136 Loyola Marymount University Department of Computer Science, "Quine Programs," https://cs.lmu.edu/~ray/notes/quineprograms/.

The proceduralized actions such rigidified institutions perform, even if they are functioning well and not diminished by the usual transformations and distortions that arise in bureaucracies, are powerful but context dependent. As such, the institution as a whole is powerful but context dependent. Those individuals that generate such institutions, on the other hand, are powerful and not context-dependent.

Leaning on the outside

Some automated systems are not truly part of a given institution at all, but rather an interface with an outside institution.

An interesting example might be the simple observation that a given institution appears to be keeping the lights on in the office. To do so requires that the members of the organization work in a well-maintained building that is connected to a functioning power grid, while keeping up with their electricity bill payments. The building can be maintained by an appropriate service provider.

That the provider is doing their job is a sign of the health of the provider, not the organization hiring them. That the power grid is functional also doesn't reflect the health of the organization under consideration, unless it is the city or national government. That the payments are being made is in itself a weak or moderate sign depending on the size of the organization. Generally if the institution is a very large or established one, it is a weaker sign. When large entities go bankrupt, they keep the lights on until the end.

Thinking about the example, you should generalize it to include all the relevant ways in which an institution relies on others to maintain its appearance. If it is using simple contracts to acquire visible resources (such as reliable lighting), do not consider these elements signs of competence beyond whatever competence is needed to acquire adequate funding.

This insight is especially important, because there are several types of institutions that will reliably have enough funding until their very end. Notable examples are large companies and government institutions. In these cases, signs like reliable electricity provide essentially zero evidence of organizational flourishing.

If the institution is relying on non-monetary agreements, such as other institutions being legally required to provide them with a relevant service, you should ask yourself whether the organization could oppose an attack on these services, or at the very least survive, without outside help. Furthermore, could the institution maneuver itself

today into having such guarantees, if it didn't already have them? If the answer is no, this means that the institution has lost an important ability: it can no longer negotiate new deals. That the old deal continues to endure is not strong evidence that the ability to create or even permanently secure the resources on which the institution depends endures.

When seeking signs of institutional failure, you must carefully filter out evidence that primarily indicates the success of other organizations, making sure to account for those success-independent funding sources or unstable contracts that the institution in question would be unable to re-establish.

Official trappings are easy to maintain

Under conditions of widespread institutional dysfunction, formal trappings can be disconnected from the core competence with which they are supposedly associated. Sometimes they can even begin to anti-correlate. But assuming the institution in question is not in such a dysfunctional context, the formal trappings of an organization actually *do* indicate competence.

A crucial consideration is that trappings are generally easier to maintain than to set up anew. It is tempting to equate the difficulty of setting up a new, well-positioned organization with that of keeping an existing organization well-positioned, but in reality it is much more difficult to do the former than the latter. Naive intuitions are easily misled on this point. It is much easier to sail a ship, even in choppy seas, than to build a new one from scratch.

When labor unions were established in the early 20th century, they organized striking workers to endure near-starvation levels of hardship and violent reprisals from factory owners, and eventually achieved a stable position. Now, unions maintain that position with bureaucratic and legalistic tactics, and strikes are resolved with contracts instead of truncheons and pipe bombs.

Reputation is a crucial resource, and its dynamics show how difficult it is to create a new well-positioned organization. Reputations generally persist, unless spoiled. An easy way to avoid spoiling a reputation is by never failing, and an easy way to never visibly fail is to never undertake a task. In this way, an institution that is notably inactive and perhaps incapable of new or effective action can maintain its prestige long after demonstrations of the power, ability, or knowledge that earned this prestige in the first place are beyond its reach. NASA relies heavily on the reputation it earned from the moon landings. This mostly persists today, even though the last manned moon

landing was in 1972.

In many human endeavors, the most legibly valuable thing you can bring with you is a track record of past achievement. Sometimes you are only allowed entry into such a domain if you already have a track record. Enforced barriers to entry based on assessment of track record sometimes arise naturally and rationally, as there are often no good alternative signs with which to judge relevant competence. Other times they are the result of cartel-like rent seeking, intended to protect incumbents.

Certain permits have harsh entry conditions but lax inspection for compliance. When this is the case, the barriers to entry very likely exist for their own sake and not as a form of quality control. A regulatory environment that relies on track record is the most direct way to protect incumbent organizations from competition. Once such credentials are gained, they are hard to lose. These formal trappings show that the organization was capable of acquiring the permits at the time of acquisition, but do not necessarily say anything about present capabilities.

Unless recent, past success should not be taken as evidence of an organization's future endurance.

Fighting institutions do not fail

An organization engaged in ongoing conflict is surprisingly likely to be healthy, simply because surviving attacks requires some degree of health. Under conditions of real opposition, even retaining past resources such as prestige should be understood as a sign of activity.

After all, should opposition be serious in pursuing conflict, it will attempt to disrupt, attack, sabotage, or disable crucial individuals and automated processes. It will also attempt to wear out, destroy, or steal notable accumulated resources.

If the institution does not degrade under such pressure, there is someone repairing the damage, and that someone has to be effectively working within the reality of the institution under repair. There are two important considerations that must be considered before accepting this read in a given case, however: 'How real is the conflict?' and 'How big is the besieged organization?'

How real is the conflict?

Not all apparent opposition is real opposition, as is frequently the case with cartels. Cartels are vehicles for reaping some of the benefits of a monopoly, without being a single organization. Some are like OPEC, the alliance of oil exporting countries, and overtly attempt to fix prices along their shared interests.[137] However, many cartels have an incentive to disguise their coordination.

A recent example was Apple, Intel, Adobe, and Google making a secret agreement amongst themselves to not poach each other's employees by offering them jobs. This arrangement gave all of these companies a better negotiating position with their skilled engineers, enabling the companies to pay them lower salaries. This was ultimately illegal: the state of California doesn't allow non-compete clauses in company contracts.

In such circumstances it is an asset rather than a liability for a set of companies if the public or crucial decision makers are under the impression that the companies are in conflict. As the true, non-competitive nature of the arrangement came to light, the offending companies were sued and eventually had to settle, paying $415 million dollars in damages.[138]

Sometimes, the defeat of competitors isn't desirable for a given company or organization. The appearance of competition or opposition can be good optics. In Communist Yugoslavia, there existed toothless parties such as the Christian Socialists that were bound in a permanent coalition with the League of Communists of Yugoslavia. While the reality of this arrangement was that of a one-party state, the form was that of a multiparty state. The fig leaf of being a democratic society was preserved, at least internally. To eliminate these toothless parties would not be advantageous to the ruling party.

If the defeat of the other side isn't desired, then what appear to be attacks and counter-attacks can be, in reality, quite benign. Beyond politics with its staged political debates and occasional show trials, professional wrestling made an industry of producing performative feuds between its wrestlers for entertainment value. The pretense was that the industry was a sport; the reality was that it was show business. They even had an

137 Organization of the Petroleum Exporting Countries, "OPEC : Brief History," 2020, https://www.opec.org/opec_web/en/about_us/24.htm.

138 Jeff John Roberts, "Tech Workers Will Get Average of $5,770 under Final Anti-Poaching Settlement," *Fortune*, September 3, 2015, https://fortune.com/2015/09/03/koh-anti-poach-order/.

established term for keeping up the pretense that the feuds were real: kayfabe.[139] Since such long standing fake conflicts can be proceduralized, they don't constitute strong evidence of an institution's vitality. Fake conflicts don't require much adaptability.

How big is the besieged organization?

A very large institution can survive real opposition, even if its organization is mostly hollow. It absorbs organizational damage, never truly recovering, but still persisting. As it is unlikely to simply outlast a determined opponent, in order to survive it must have some automated defense mechanism in place that can permanently disable or deter opposition.

A security organization's ability to launch investigations that find compromising material on their opponent is an example of this phenomenon. This ability is part of their core functionality and can easily be deployed. Such automated counter-attacks will not be innovative, but rather will merely exercise one of the many organs that the organization developed long ago. Despite being more vulnerable to destruction by greater powers, organizations that are fighting, self-contained, and young are far likelier to be active. Where do we see these today? Overall, large and proceduralized institutions dominate the landscape in industry after industry. Even in Silicon Valley, companies like Yahoo and Facebook are best understood as mature media companies rather than young upstarts.

Prestige outlives institutional health

Peaceful, integrated, and long-lasting institutions are often seen as healthy and likely to endure. However, it is precisely these conditions that allow their gradual hollowing-out and descent into dysfunction to remain unnoticed. The ancient nature of such institutions might signify the presence of a fully-automated machine. Their integration with the rest of society and other institutions can signal that they are getting by on the health of their environment, rather than their own residual functionality (remember, functional institutions subsidize all others). And finally, a lack of serious conflict means that their current resources and positions aren't honest signals of their current abilities. The difficulty of assessing these factors makes it clear that organizational failure often comes as surprise not just to outsiders, but to insiders as well.

139 "Kayfabe" is a term used in professional wrestling to describe elaborately choreographed or scripted combat, which has more recently been applied to politics. See Eric Weinstein, "What Scientific Concept Would Improve Everybody's Cognitive Toolkit?," *Edge*, 2011, https://www.edge.org/response-detail/11783.

Why Civilizations Collapse

This essay originally appeared in The Side View on August 19, 2020.

Why do civilizations collapse? This question bears not only on safeguarding our society's future but also makes sense of our present. The answer relies on some of the same *technē*—the understanding of the principles and methods underlying the construction of social systems—that humanity needed to build civilization in the first place: we have to evaluate the perceptions that mint facts and theory, not merely peruse the body of theories handed down to us.[140]

Institutional failure comes as a surprise because organizations try to hide their shortcomings.[141] They lean on other, more functional organizations in order to keep up appearances. During civilizational collapse, no organization can properly hide its own inadequacy, since the whole interdependent ecosystem of institutions is caving in on itself. States, religions, material technologies, and ways of life that once seemed self-sustaining turn out to have been dependent on the invisible subsidy of just a few key institutions. The environment of societal collapse reveals much of the otherwise obscured inner workings of crucial social technologies. After all, to analyze something is to break it apart!

Despite being an excellent epistemic opportunity, civilizational collapse seldom inspires introspection among thinkers living through it. Mayan or Roman thinkers don't seem to have reflected on their ongoing collapse. As institutions turn to cannibalizing each other, there is little patronage or emotional energy going towards accurately describing the wider process. The notable exception that proves the rule of civilizational delusion is the long period of the decline and fall of the Zhou Dynasty of ancient China, a period

140 Richard Parry, "Episteme and Techne," in The Stanford Encyclopedia of Philosophy, ed. Edward N. Zalta (Metaphysics Research Lab, Stanford University, March 27, 2020), https://plato.stanford.edu/archives/fall2020/entries/episteme-techne/.

141 See, within this manuscript, the chapter "Institutional Failure as Surprise" (146–153).

broken by historians into the Spring and Autumn period and the Warring States period. It is an encouraging example, since it shows a societal failure arrested and reversed by an intellectual golden age which saw the flourishing of the so-called Hundred Schools of Thought.[142] Confucianism, Legalism, and Taoism could only come into being with this kind of epistemic opportunity.

In the West today, we operate under the influence of our own key philosophy, which we can call scientism: the tendency to rely on scientific claims to describe the functioning of society, even when there is no empirical reason to assume that they apply.[143] We act as if we are already living in a scientifically-planned society, immune to collapse on a timescale that any of us have to worry about. This is very far from the truth. We are certainly living in socially-engineered societies, but they are not scientifically planned in any straightforward way. Our organs of economic management do not secretly know how the economy really works. Our systems of political regulation are operating on the fumes of their institutional inheritance from two or three generations ago—the last spurt of institutional growth in Western societies happened roughly during the 1970s. At this time in the United States, new federal bodies such as the Departments of Energy and Education were created and organizations such as NASA reached their modern form. Concurrently, the United Kingdom dispensed with organized labor as a political force in favor of an expanded administrative apparatus, and France saw the resignation of Charles de Gaulle, the architect of the Fifth Republic; neither country's political economy has evolved much since.

Civilizational collapse always looms on the horizon. Though we usually think of collapse as a slow process, it can in fact happen very quickly, as was the case with the Late Bronze Age collapse.[144] The old dictum "gradually, then suddenly" is cliché, but accurate. To ascertain whether or not we are headed for collapse, we must first analyze the functionality of our own society and pinpoint where things go wrong.

Mechanisms of collapse

Our society is dominated by large bureaucracies. These bureaucracies break down the

142 See, within this manuscript, the chapter "How Late Zhou China Reverse-Engineered a Civilization" (174–182). For an explainer of the institutional, political, and intellectual origins of the Hundred Schools of Thought, see: Leon Poon, "Ancient Dynasties: II - The Hundred Schools of Thought," *University of Maryland - Chaos Group at Maryland*, 2009, http://www.chaos.umd.edu/history/ancient2.html.

143 Friedrich Hayek, "Scientism and the Study of Society, Part I", *Economica*, vol 9, no. 35, pp. 267-291, 1942, https://www.jstor.org/stable/2549540?seq=1.

144 Eric H. Cline, *1177 B.C.: The Year Civilization Collapsed* (Princeton University Press, 2015).

processing of physical goods and information into discrete tasks, such as how a factory worker puts doors on a car, or a stock trader buys futures contracts. These tasks are shorn of their context and executed in a systematized environment whose constraints are quite narrow: put the car door in, increase the portfolio value. Our society is thoroughly compartmentalized. This compartmentalization isn't driven by the division of labor, but rather by the need to make use of misaligned talent without empowering it. By radically limiting employees' scope of action, you make office politics more predictable. By fragmenting available knowledge, you can leverage information asymmetries to the intellectual or material advantage of the center. Some of this is necessary for scaling organizations beyond what socially connected networks can manage—but move too far towards compartmentalization, and it becomes impossible to accomplish the original mission of the organization.

Such large bureaucratic systems do not emerge organically; they require design and implementation.[145] Empirically, we can know this simply by examining the intent of the original founders of these systems. If you want to know, say, why the FBI exists, you can find the answer in the documents of its founder, J. Edgar Hoover. You could do the same for the IRS, or for Amazon, or for any other number of institutions. It is very difficult, though, to apply this analysis to the construction of society. No matter how large or how small, institutions always coexist in a symbiotic relationship with other institutions. There is no Amazon without the United States government, no U.S. government without—at least—some parts of the U.S. economy. Each of these institutions depends on the others in an intricate mesh. Society is not a single institution, after all, but an ecosystem of interdependent institutions.

In addition to this complexity, non-functional institutions are the rule.[146] Our institutions today rarely function in accordance with their stated purpose. Individuals within a given society are often very bad at judging institutional functionality. Some people spend their entire lives ruthlessly profiting from the misery of others, or greatly contributing to the prosperity of others, without even knowing that they are doing so. People who try to effect change are most often frustrated. Countless people spend their lives wrestling with a societal problem, slaving over papers for publication in academia or the nonprofit world. They act as if there is some sort of metaphorical wall which they throw their papers over, with some responsible person on the other side taking the output of their disinterested scientific study and translating it into policy, medical practice, or industrial production.

145 See, within this manuscript, the chapter "How to Use Bureaucracies" (103–110).

146 See, within this manuscript, the chapter "Functional Institutions Are the Exception" (97–102).

More often than not, there is nobody on the other side of that wall. Since society is so deeply compartmentalized, it rarely functions as a whole with a single purpose. Note that dysfunctionality is not a normative distinction; it often boils down to the simple reality of whether or not anyone ever follows up on key actions within the institution. It is also a question of whether or not there is a multiplier—be it individual, bureaucratic, oligarchic—behind that metaphorical wall.

Institutions often become non-functional due to the loss of key knowledge at critical junctures. Take, for example, the recent failure of the National Nuclear Security Administration (NNSA) to reproduce a niche classified material known as FOGBANK that is necessary for manufacturing nuclear weapons.[147] It took the NNSA ten years and millions of dollars to re-engineer a material that their staff in the 1980s knew how to make. That knowledge never should have been lost in the first place, but in a dysfunctional society, such loss of knowledge becomes the rule. Attempts at reverse engineering do not always succeed, if they are even made.

Civilizational collapse, then, looks like this dynamic at the scale of an entire civilization: a low-grade but constant loss of capabilities and knowledge throughout the most critical parts of our institutions, that eventually degrades our ability to perpetuate society. There might be a sudden point where the superstructure gives way dramatically, such as occurred during the Bronze Age Collapse, or there might be slow accommodation to this convergence to zero, as with the Byzantine Empire.

The key dynamic here is the loss of the subtle social technologies that allow us to solve the succession problem.[148] Running a large and complex institution requires skills which are often difficult to fully pass on. How can a successful founder ensure a successor who leads as competently as they did? The succession problem is the central obstacle to transferring the ownership and knowledge of institutions from generation to generation. In the case of the Nobel Committee, for example, the goal of succession is to produce a new chairman with similar faculties of judgment to the original chairman. In the case of ancient Egypt, it would have been making sure that the Pharaoh's son knows how to interact with all of the powerful people in Egypt and has an intuitive feel for the subtleties of public order, diplomacy, and famine prevention. In addition to knowledge succession, there is also power succession. The son of the Pharaoh may be just as skilled

147 Nick Baumann, "Did America Forget How to Make the H-Bomb?," *Mother Jones*, May 1, 2009, https://www.motherjones.com/politics/2009/05/fogbank-america-forgot-how-make-nuclear-bombs/.

148 See, within this manuscript, the chapter "Social Technology" (21–30) and "The Succession Problem" (77–81).

as his father, but if he does not inherit his base of power, the son will be vulnerable to usurpation or invasion.

The succession problem is especially important when transferring secrets. In ancient Egypt, accurate measurement of the Nile river was a state secret, in order to allow the state to monopolize agricultural production and resource flows. This was crucial to the functionality of Egyptian civilization—it was the legitimating story of the state. By design, it was not clear to the Egyptian public how they would go about running their society if it weren't for the expert knowledge of the state.[149]

The failure to maintain implicit traditions of knowledge speaks to the extreme difficulty of transferring secrets between generations. Often the problem is that the kids "don't get the joke": if you create an institution with a false premise in order to mislead society as to your true goals, the people you hire into it might be fooled by the propaganda themselves. This is why claims about multigenerational conspiracies are always highly suspect: such organizations are plagued by succession failures in knowledge.

Avoiding collapse is so difficult because succession failure is often opaque. If the Institute of Pottery lost the ability to make good pots—to mold people into skilled pot makers—would they declare it to the world? Of course not—institutions are very rarely self-abolishing. The same holds true throughout crucial niches of our society, from social engineering to science and philosophy. All of these areas could be in profound crisis today, and we wouldn't even know it. The intellectual apocalypse is invisible if there are no true intellectuals around. Again, institutional failure typically comes as a surprise.

And yet, clearly some functional institutions still exist, or our society would not function at all. At the end of the day, you can still go online and call a cab or go to a dealership and buy a car. This car will have doors bolted on by a worker you've never met, and these doors will seem to work. The same cannot always be said of stock portfolios.

History guides analysis of decline

We can define civilizational collapse as a process wherein most recognizable large-scale institutions of a society vanish, coupled with a drop in material wealth, a drop in the complexity of material artifacts and social forms, a reduction in travel distance and physical safety of the inhabitants, and a mass reduction in knowledge.

149 Barbara Bell, "The Oldest Records of the Nile Floods," *The Geographical Journal* 136, no. 4 (1970): 569–73, https://doi.org/10.2307/1796184.

Loss of knowledge is especially damaging, since it accelerates the other aspects of collapse and ensures that they will be long-lasting. Nearly all of the written evidence we have of societal decline comes from elites. Historically, literacy was restricted to the traditional elite class of a society, as they were the only ones with any use for reading and writing. This accounts for the total disappearance of writing after the Late Bronze Age collapse, since Bronze Age societies had a very small literate class. The result was a wholesale loss of civilizational knowledge. When writing reappeared in the eastern Mediterranean centuries later, it was based on the new Phoenician alphabet, rather than the old hieroglyphic system that gave birth to the cuneiform of the Assyrians or the Linear B of the Minoans. Such losses of knowledge are a constant throughout human history: as with FOGBANK, or as with the state of New Jersey recently scrambling to find a COBOL programmer with the ability to overhaul their legacy information systems.[150]

Despite how difficult it can be to gather historical data, it's still a far better way to understand societal collapse than purely theoretical models. Rather than picking and choosing our preferred explanations of collapse beforehand, we should first recognize that there are simply too many causal variables to control for. The best we can hope for is rigorous cross-comparison with the historical record, using sets of natural experiments between past societies. A broad historical literature of collapse does exist, especially on the Late Bronze Age collapse and the fall of the Roman Empire. But the scholars that pose these questions often have particular—and popular—answers in mind as to what causes collapse: environmental fragility, moral decline, an overloading of systemic complexity, and so on. The morality play is written first, the facts are found second, and this often results in a shoddy final product of a theory. Thus, the relevance of history for investigating our own society's potential collapse is also obvious: without comparing the present to other civilizations, we can't say much of anything useful about it.

It is hard to come to a consensus on historical cause and effect. In geology, we didn't build another planet to discover the Earth's plate tectonics, but rather dug among the rocks on which we found ourselves. In our macro-study of history and civilizations, we too must rely on in-depth exploration of historical examples.

That exploration is still itself theory-driven. Good historians and theoreticians explicitly acknowledge the theses they work with, so I will do the same. My theory of history is great founder theory: I propose that social technologies do not evolve out of mass action,

150 Kif Leswing, "New Jersey Needs Volunteers Who Know COBOL, a 60-Year-Old Programming Language," *CNBC*, April 6, 2020, https://www.cnbc.com/2020/04/06/new-jersey-seeks-cobol-programmers-to-fix-unemployment-system.html.

but rather are devised by a tiny subset of institutional designers. Looking at history, we see that new organizations and social forms often arise within a single generation, showing jumps in social complexity far too rapid to be explained away by collective action or evolution. This would be the equivalent of expecting a tornado tearing through a junkyard to assemble a Boeing 747 or a Tesla Cybertruck.

Designing complex objects through collective action, or perhaps through an intermittent individual strategy similar to the open software approach, is tempting. However, unowned commons tend to be raided, and individual visions tend to differ massively. It often takes an exceptional individual with exceptional vision to create a new social or material technology. It's hard to remember nowadays that the smartphone once had to be devised as a combination of the cell phone, the tablet, and the camera, and did not merely emerge out of mass market sentiments. It took a single individual, Steve Jobs, to see that while a combination of the car, the airplane, and the submarine would produce an inferior version of all three, the opposite case would be true in the creation of the smartphone. And then that individual had to implement the vision.

The result is usually one or more institutions, created by the individual to carry out their goals. Institutions are not naturally self-documenting. The descriptions of themselves that they provide can be misleading. Suppose you were watching the birth of a mystical movement like the Franciscans in the 13th century. At the time, you might describe them as the cult of a new god. But an observer in the 15th century would, according to the institutional information available at the time, describe them as a movement firmly within the Catholic Church. In theory, the Franciscans have always been good Catholics, but this only gets recognized after a struggle has played out. In the Middle Ages, you could often believe any heresy you wanted as long as you formally declared your loyalty to the Pope.

A different example might be the United States government today. A keen observer would examine the way that laws are made today and conclude that we have witnessed the emergence of a new legislative body all but in name, with Congress reduced to a vestigial organ of this governing structure. Law today is made mostly by the Supreme Court, or the civil service when it chooses what to implement and how, or occasionally via Presidential executive order. Yet very few people today come to such a conclusion, as the ideology of American government dictates that law is made in Congress, and does not make room for the development of new federal legislative bodies. If no one believes a hypothesis, the evidence for it remains unnoticed, even when such evidence is abundant.

Such thinking requires going beyond both public appearances and official narratives. The popular or expert definition of "law" that we use in 2020 can't help us here. Rather, we should use the term "law" in the same sense that one would use it to empirically describe the formalized customs of medieval Iceland, or of the function of the Twelve Tables in ancient Rome, or Lycurgus' Laws in Sparta, or Sharia law in modern-day Somalia. In none of these cases would the official self-documentation of the institutions give you an accurate picture of real conditions.[151] Institutions are similar to individuals in this way. Deep theory-building enabled by thorough scholarship or, better yet, high quality anthropological fieldwork would be needed.

Something as seemingly objective as the occurrence of a battle can only be inferred from scattered artifacts that other people have found, or the writings of long-dead strangers. Moreover, battles are relatively low-complexity—can you imagine trying to parse through Obama's emails to figure out what his key agenda was during the course of his administration? Could you even do this with your own emails from last year? Establishing historical knowledge is difficult. Narrative fills the gaps; stories are told both by you and Obama and FDR, and by Julius Caesar. These are always a mix of accuracy and self-interest, which is, in fact, what history is.

Material signs of collapse

Material evidence can provide something closer to objectivity—at least sometimes. The archaeological record shows that many large Roman cities were depopulated over the course of the 4th and 5th centuries AD. As indicators go, this is a fairly clear and obvious sign of a high urban society's decay. Indirect evidence corroborates this, such as the reduction in atmospheric lead pollution generated by Roman mining activity leading up to the collapse of the empire.[152] If we assume that mining activity is related to economic production, this is a good indicator of economic decline.

But even material evidence can be unreliable, since understanding it requires a high degree of contextual knowledge. The interesting question for the prospective collapse of our own society is this: if you were a late imperial Roman, and someone told you about the ongoing decline in atmospheric lead, how would you process this information? Today, if we saw a drop in lead pollution, our first assumption might be that this is due to

151 Mark Cartwright, "Twelve Tables," in *Ancient History Encyclopedia*, April 11, 2016, https://www.ancient.eu/Twelve_Tables/.

152 McConnell *et al.*, "Lead Pollution Recorded in Greenland Ice Indicates European Emissions Tracked Plagues, Wars, and Imperial Expansion during Antiquity," *Proceedings of the National Academy of Sciences* 115, no. 22 (May 29, 2018): 5726–31, https://doi.org/10.1073/pnas.1721818115.

the advent of greener technology. Economic decline wouldn't naturally come to mind. Victory has many fathers, but defeat is an orphan. We find it hard to believe that we were once more capable of intentionally affecting the world than today. After the collapse of the Roman Empire, wanderers among the ruins of aqueducts concluded that they must have been built by giants. The classical Greeks examined the massive stone ruins of Mycenaean civilization and assumed that the great walls were built by a race of Cyclopes.

Our persistent failure to understand the monumental achievements of the past speaks not to the historical prevalence of pyramid-loving extraterrestrials, but rather to the fact that we often lose the knowledge of the social technology on which such material artifacts rested. It is easier for us to conceptualize an extraterrestrial force that constructed the pyramids than it is to conceive of the political and economic system that made such architectural feats possible. Such loss of knowledge gives us an idea of our limited ability to maintain advanced social systems over generations.

If we compare the roughly twelve identifiable Dark Ages following civilizational collapse on the Eurasian continent—the collapse of the Bronze Age civilizations, the end of Mohenjo Daro, the decline of the Roman Empire, Han China and so on—we always find that nearly all material technology is not self-perpetuating, but rather rests on foundations of social technology. The only material technologies that routinely survive collapse are small-scale agriculture and small-scale metallurgy, likely because the social technologies needed to sustain such smaller communities *can* arise organically.

Since collapse in material technology is always preceded by collapse in the practice of social technology, Dark Ages are always preceded by Intellectual Dark Ages.[153] Knowledge of these social technologies is highly compartmentalized and, as a result, they are not understood explicitly by all parts of society. This means that a society undergoing an Intellectual Dark Age doesn't realize it is going through one at all—all the people who would notice are long-gone, and those who remain are miseducated, role-playing the forms left behind by their predecessors without realizing that they've lost the substance. Often not just the knowledge, but the socioeconomic niche that once fostered the creation of new social technology has been obliterated in all but name.

Today, our material technology is far superior to that of Rome, but our social technology may not be. Take the Industrial Revolution for example: surely the most interesting thing that has happened within the last 500 years, and a process that most currently assume is still ongoing. But if the Industrial Revolution was over, what would we expect to

153 Samo Burja, *Collapse vs. Dark Age*, YouTube, 2019, https://www.youtube.com/watch?v=6mEOhQ3yTYU.

see? Much as we see a late Roman drop in lead pollution, today we see drops in pollution in the West. The standard explanation is gains in efficiency and greener technology. But if we take a more global perspective, it seems that we outsourced not just production, but also the pollution associated with production to China. The economists' argument here is that we have intentionally outsourced our industries to China, obeying the industry-agnostic logic of gains from trade. It is worth considering the economists might be wrong if the promised gains from trade haven't materialized.

One could hypothesize the American worker and manager have, over time, lost the social technology that enabled them to run the assembly lines in the first place and that, now, our support for outsourcing isn't so much due to greed as it is an adaptation to inability. Europe, arguably, has adapted to its inability to fight wars anymore with a narrative of intentional pacifism.[154] We should seriously consider the possibility that we are a post-industrial society not in a positive sense, but in the sense that in our society the Industrial Revolution has stopped.

Such a hypothesis is strikingly hard to defeat. A civilizational collapse under conditions of advanced material technology might look very much like what we have now. Our society is the product of what were once advanced, rational, self-catalyzing systems of production, but we have now reverted to a more customary system, where things are simply done as they were 40 or 50 years ago. We have the same bureaucratic and economic institutions as we did then, with some marginal tweaks. Thanks to narrow progress in the CPU industry, most of which has left the United States, we are now able to have Zoom calls. Unfortunately, there are few other reasons for optimism.

Collapse is silent

When collapses occur more slowly, it is even more difficult to find anyone acknowledging the process at all. This was true of the late Roman Empire, where one finds letters exchanged between patricians complaining that the roads were often unsafe this time of year, but little acknowledgement of the fundamental changes taking place. The collapse of the Roman Empire was much less the constant burning of cities so much as it was GDP-equivalent shrinking by about 1% per year, while remaining more or less the same on the books, for two hundred years in a row.

154 Samo Burja, Matt Ellison. "Why America Prefers a Weak and Peaceful Europe." *The National Interest*, The Center for the National Interest, June 30, 2019, https://nationalinterest.org/feature/why-america-prefers-weak-and-peaceful-europe-64826.

In the context of adaptation to the COVID-19 pandemic, markets seem to be fairly stable and even slightly better than they were a few months ago, even though common sense tells us that production has fallen massively. If such a huge drop in economic activity can be papered over with government and private sector intervention, can we imagine how many crucial slower-moving changes are going unnoticed? If our actual wealth per capita, say, has been declining 1% per year for the last 20 years, how would we even know? Civilizational collapse happens on similar or even slower time scales—even though coronavirus hasn't left everything in flames, we may still be on the long road to collapse. Absent reform, I think we are in for a slow century of decline starting in about 2030 or so.

Intentional and, more importantly, successful reform of society is very rare. It does happen, but macro-scale social engineering is exceptionally difficult: Augustus Caesar truly did save the Roman Republic from tearing itself to shreds through unsustainable warfare. His imperial system was in turn torn to shreds through warfare after long-standing economic and intellectual decay 300 years later. The sheer difficulty of reform, coupled with the accumulation of social and cultural technical debt, provides a fairly solid explanation for why civilizations collapse.

The United States is well-positioned to attempt such civilizational reforms, since it has a remarkable ability to integrate exceptional talent from all over the world and has put that talent to work on some of the most successful institutional projects in history, including the Manhattan Project and the Apollo Program. America is, for now, in an unavoidable period of relative decline, and in 2030 or 2040 the largest economy in the world will almost certainly be that of China. But absolute decline is reversible—2060 is still an open question. A deep pragmatism runs through this country, and if reimagined, the 21st century could see another explosion in American economic, social, and cultural development.

The solution lies with a small number of people who can independently judge the generative minds behind the facts, rather than merely minding the integrity of the established body of theories and observations. If there is such a thing as a technē of civilization—the skill of managing the institutions of society and culture—it exists in very narrow corners of society. Engineering society to be self-perpetuating is an extremely difficult challenge, and we can devise all sorts of machinery to do so, but this is the bottom line. Such people are extremely rare, but if we create a socioeconomic niche for them, our civilization can rewrite its own future for the better.

Reform is Driven by Rising Elites

This essay originally appeared in Palladium Magazine on August 19, 2020.

America's failures, like those of any society, have deep roots. They can be traced to some fundamental misunderstanding of reality. In our society, one of these is a dissonant evaluation of elites. America's elites are seen to be simultaneously all powerful and completely incompetent. When great and terrible events come—natural or man-made—politicians, social media magnates, university presidents, billionaires, and others are ascribed agency over events, and we expect that they should use it. Why haven't they done everything in their power to prevent crisis? Yet when elites gather together to discuss how best to act, their forums become synonymous with malice and conspiracy. Blame assigned, the "realist" then proposes that the elites be replaced, and the "idealist" that we shouldn't have elites at all. The root misconception remains unchallenged by either.

The term "elites" has many connotations today, but early sociologists such as Max Weber or Vilfredo Pareto used it in a technical sense: the group of people that has a preponderant influence on society.[155] They are those with power. A different use of the term "elite" can be found in phrases like "elite athlete," which indicate someone at the top of a domain of skill. The two groups certainly overlap, but imperfectly. Narrowing our focus on the elites who endeavor to influence society, we notice that the standards by which success, and thus status as an elite, is measured are not universal. They vary with time, government structure, and other circumstances. Recognizing elites and navigating

155 On Weber, see Sung Ho Kim, "Max Weber," in *The Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta (Metaphysics Research Lab, Stanford University, November 27, 2017), https://plato.stanford.edu/archives/win2020/entries/weber/. On Pareto, see Amy Tikkanen, ed., "Vilfredo Pareto | Italian Economist and Sociologist," in *Encyclopedia Britannica*, accessed January 7, 2021, https://www.britannica.com/biography/Vilfredo-Pareto.

their world requires discerning the standards in play. Those elites who exercise influence may be called the ruling class even though they are certainly not confined to government positions. The idea of an elite class implies selectivity and outsized social influence. The distribution of power in society probably looks something like the Pareto distribution—though not quite the same, because in a Pareto distribution there would be a single most powerful person who would be radically more powerful than the next most powerful person.[156] Though this can be the case, societies can also be oligarchical, and in such systems, power levels between elites are much more evenly distributed. Discrepancies aside, in all cases, the distribution of power in the total population does roughly follow a Pareto curve. Within the elite cluster, however, it depends on the shape of the society in question.

The role of elites in society

Many view elites as playing an adversarial role by nature, the details in-line with the framework of one's political views. While this is understandable, and many charges are levied rightfully in spirit if not in letter, it is too easy to confuse elite failure or dysfunction, even widespread, with a case against elites per se. In a time of failing institutions and frequent crises such as ours, it would not be right to exonerate elites from responsibility, perhaps quite the contrary.[157] However, it is also worth noting that elites are not solely a negative influence on society, and in fact serve several crucial roles to its functioning. Without a functioning elite, we could not have a functioning society.

A society is best thought of as an ecosystem of mutually dependent institutions. Where those institutions are abundant, well-designed, and functional, we will find a flourishing society and civilization. Where they are few, poorly designed, or dysfunctional, we will find a broken and decaying society. Throughout history, the best institutions outperform others by many orders of magnitude—functional institutions are the exception. It is better to have one functional institution than one hundred dysfunctional ones.

Elites are necessary to marshal the requisite resources, talent, and enthusiasm to found new functional institutions and refound old ones. Nobody else has the influence and independence to do so. Founding an institution is very hard, founding a functional one much harder, and refounding a dysfunctional one perhaps the hardest of all. The difficulty is not just technical but also political. These tasks are hard enough for elites, much

156 Glen, "Pareto Distribution Definition."

157 Samo Burja, "Annoyance or Armageddon?," *The American Mind*, March 13, 2020, https://americanmind.org/features/the-coronacrisis-and-our-future-discontents/annoyance-or-armageddon/.

less you or me, and by succeeding at them, elites help create a flourishing society that benefits everyone. Furthermore, founding important functional institutions tends to rightfully make elites of those who found them. Without elites, we would have far fewer and far less functional institutions. A society without elites would necessarily decay and get worse for everyone in it.

Another important role that elites play is in the regulation of status and prestige within society. Not all societies in history have been motivated primarily by the same concerns. Some could be distinguished by their focus on economic concerns, others on scientific, martial, religious, or humanitarian ones. But all of them had a system of awarding, regulating, and seizing status and prestige and, in fact, that system is the engine that drives a society to concern itself with something or other beyond its mere survival.

Elites have the power to direct status and prestige to one activity or another, as Elon Musk assigns status to rocketry and space exploration today, or as many monarchs and leaders assigned status to scientific or artistic endeavors in the past.[158] The assignment of status and prestige to one field or another will directly affect how much effort is put into it, and thus how much a society achieves in that field. America's successful mission to the Moon began with an influential speech by JFK less than a decade earlier. He didn't have to make that speech about landing on the Moon, but he did.[159] Without that direction to beneficial ends, a society will simply achieve less.

All that said, it is also worth examining where elite power comes from in the first place. There are three major sources: formal positions within or proprietary knowledge of strategically relevant institutions, personal or professional connections to other elites or groups with which elites need to interact, and—simply—talent, like the "elite athlete." When considering elites with influence on society, this usually means talent at persuasion, organizing, or strategy. It's possible to become extremely influential in society through any of these means, but it often takes a combination of all three. Elites are fundamentally strategic, responding effectively to their environments and to other power players. Conventional signs of power, such as wealth, are usually derived from successful strategic maneuvering in one of the above three areas.

158 See, within this manuscript, the chapters "Honors Fuel Achievement" (40–46) and "How Elon Musk Is Making Engineers Cool Again" (47–49).

159 NASA Software, Robotics, and Simulation Division, "John F. Kennedy Moon Speech - Rice Stadium," August 12, 1962, https://er.jsc.nasa.gov/seh/ricetalk.htm.

Formal positions as stepping stones

Alan Greenspan, former chairman of the Federal Reserve, makes a good example of an elite whose power derived primarily from a formal position within a strategically relevant institution.[160] While in office, Greenspan regularly made media statements that affected the economy by influencing market confidence, a tactic known as strategic communication management.[161] This power was greatly enhanced by the fact that he had economists on speed dial to help select the right talking points. He also had direct access to government officials and top business leaders, and so could influence them personally and directly.[162] And all that's not even counting the direct political power over economic policy that he possessed.

But Greenspan's public influence cannot be taken at face value. He has admitted that his remarks to reporters were sometimes intentionally nonsensical; his press conferences were mere efforts to look accountable, without any intention to impart real information.[163] This illustrates a distinction between the formal reality and the actual reality. The formal reality is that the Fed chairman is holding a press conference to inform you about the state of the economy. Acting under this assumption, journalists will disseminate his remarks whether or not they personally believe him to be speaking in good faith. The actual reality is one where the press conference has to be held as a matter of course, but where accurate information on the state of the economy couldn't be shared while retaining the position.

This is characteristic of modern Western elites, selected for their ability to advance a narrative, or, at the very least, obscure challenges to it. What looks like idiocy or confusion can often be tactical, especially in a "transparent" and televisual era where something

160 Federal Reserve History, "Alan Greenspan," accessed November 2020, https://www.federalreservehistory.org/people/alan-greenspan.

161 Strategic communication management systematizes informational output, targeting specific audiences that can further institutional goals with minimal misdirected effort. As Chair of the Federal Reserve, it was imperative that Greenspan keep the economy stable and employment rates high. Releasing pacifying statements to press outlets and economic analysts could accomplish much of this directly, reducing incidences of market instability without interfering with the markets themselves. For further reading, see: Kirk Callahan et al., "Defining Strategic Communication," *International Journal of Strategic Communication* 1, no. 1 (2007), 3-35, https://www.researchgate.net/publication/241730557_Defining_Strategic_Communication.

162 Justin Mitchell, "Fed-up CEO Quite $750,000 Job," *Weekly World News*, September 10, 2002.

163 Greenspan has admitted to making statements during his tenure as Chair of the Federal Reserve that provided little if any substantive content, in order to discourage market overreactions. These statements were authoritative and jargon-heavy enough to convince the public of their veracity, but only those with significant institutional knowledge would know that they were inconclusive to the point of meaninglessness. See: Bill Barnhart, "Fedspeak's New Nuances," *The Chicago Tribune*, May 18, 2007, https://www.chicagotribune.com/news/ct-xpm-2007-05-18-0705171115-story.html.

has to be said. Donald Trump's weaponized distraction is now well-known; but while his style is unique, the chaos that results is not. Nancy Pelosi is known for being intentionally confusing in remarks to the press, obscuring her next move. When dealing with the statements and actions of elites, one must be careful not to automatically take them at face value. The ability to get away with making seemingly "bad" decisions is often an indicator of power, as one might hypothesize in the cases of Donald Trump, Kanye West, or a multitude of other celebrities.[164]

Networks and strategy

Elites tend to be very good at defending against attacks and at self-presentation, either publicly or interpersonally. This brings us to the second source of elite power: the ability to easily identify allies and close ranks against rivals. As with institutional position, exceptional ability can feed into this source of power. For example, being very good at understanding what people want and helping them get it can allow one to build and maintain a quality elite network. It is also important to understand where the lines are drawn—who is really on whose "side," and which disputes are more performative than substantive. This requires an ability to distinguish form from substance in complex social situations.

It also means keeping track of shifting elite coalitions—people and factions change sides depending on their interests, and as new elites are introduced. Pareto emphasized the necessity of bringing in "newer and more capable elements from the underlying population" for a functional elite class. In a world with multiple centers of power, distinct elite classes arise and the balance of power shifts. Participating in an elite circle means identifying the power landscape, the players in it, and the players' objectives.

This is not a task that can be accomplished merely with reference to image, credentials, position, and style. After identifying the interests of power, the task for those who would participate in elite circles is one of aligning with those interests. For example, the Queen of England's power derives from staying above the fray: it would be a mistake for her to try and increase it by revealing more of her personal beliefs to the public, despite the path to celebrity this often provides. Prince Harry and Meghan Markle have recently and famously learned that increased public exposure correlates with decreased royal prestige.[165]

164 Samo Burja on Twitter, June 22, 2020, https://twitter.com/SamoBurja/status/1275177848190328833.

165 "Prince Harry and Meghan Markle to Give Up Royal Titles," *Hollywood Reporter*, January 18, 2020, https://www.hollywoodreporter.com/news/prince-harry-meghan-markle-give-up-royal-titles-1270934.

However, there are ways to acquire an elite network without having conventional social skills, especially during crises or unusual situations. Doris Kearns Goodwin's best-selling *Team of Rivals*, about Abraham Lincoln's Cabinet during the American Civil War, often distorted into a story of bipartisan compromise, actually describes a very interesting case of this dynamic.[166] Secretary of War Edwin M. Stanton was not one to just go along with things, to put it mildly: he had a volcanic temper. He was known to be extremely insulting and disagreeable; even, allegedly, to Lincoln himself, years before the war.

But with Lincoln's sociable first Secretary of War dogged by corruption allegations, Stanton's disagreeableness induced the public to place trust in his fidelity to the public interest. They knew he wasn't easily socially influenced or concerned with looking good. His immense administrative and intellectual talent made him indispensable to the war effort and his personality allowed him to convincingly play "bad cop" to Lincoln's "good cop." Some believed him hostile to Lincoln, but this was largely performative or a temporary, impersonal outburst.

Another elite strategy is adhering to a predefined strategic role, such as a hereditary monarchy rooted in historical continuity. It has been said that Queen Elizabeth II's responsibility during World War II was the same as that of every British citizen: to be unbroken, to provide a symbol of stability, to be equanimous in the face of any hardship. Her personal talent at fulfilling this role so gracefully is not the source of her elite status, but it increases her power and helps preserve it. A general understanding of elite dynamics allows other elites, especially rising elites, to tailor their advice and strategic alignment to specific situations.

Queen Elizabeth obviously wouldn't be well served by adopting Donald Trump's Twitter style, since the monarchy's legitimacy currently rests on the unifying purpose of being "above it all," and especially above political strife. She certainly has political opinions; developing opinions is an occupational hazard in her position—she's seen state security decisions, national policy, and law made for 70 years—yet, we don't know them. This ambiguity is an intentionally crafted state of affairs that she has maintained for 70 years.

How rising elites join the ruling class

How are Pareto's "newer and more capable elements from the underlying population" brought in to join the elite class?

166 "Doris Kearns Goodwin On Lincoln And His 'Team Of Rivals,'" *NPR*, November 15, 2012, https://www.npr.org/2012/11/15/165220138/doris-kearns-goodwin-on-lincoln-and-his-team-of-rivals.

Typically, elites search for assistance from people who are, in plain language, useful. There are many ways for a rising elite to be useful. One could provide a rare or valuable resource, as in the case of Michael Bloomberg, whose first big success was in selling financial data through the Bloomberg Terminal. One could provide a crucial skill, as in the case of Robert Clive, whose military abilities during the conquest of India lifted him from an unremarkable East India Company clerk to become a major-general and governor of Bengal. One could provide the ability to make deals on behalf of a non-elite class with whom one is influential, as in the case of Martin Luther King Jr., whose ability to broker compromises with sympathetic elite factions gave him the leverage to transform America's racial politics.

Since existing elites are defined by their ability to secure and maintain power, being sensitive to power dynamics is key to forming connections with them. A rising elite must possess such an understanding in order to offer useful advice or assistance to elites: if they miscalculate, they will be a liability rather than an asset. They must also demonstrate that they have the judgment and loyalty not to use any information they may be given against their elite counterpart who provided it. In other words, both the ability to provide value and demonstration of loyalty to an elite's interest—a mutual interest—must be established for collaboration to make sense.

How does a rising elite gain access to begin with? The role of elite universities and other elite institutions in networking and ladder-climbing is well-known, but a simpler way is to directly exchange knowledge. This could come from requesting advice, if done in the correct way. Benjamin Franklin, an archetypal example of a rising elite in colonial America, described how asking a rival in the Pennsylvania state legislature to lend him a rare book proved to be a good way to end their rivalry. Why should granting someone a favor increase your regard for them? More even than receiving a favor from them! Such a seemingly irrational outcome has been termed the "Ben Franklin Effect" by contemporary psychologists.[167] Rather than assuming irrationality, I find an alternative explanation more convincing: the giver of the favor is examining what you might achieve with it.[168] Favors are overtures towards partnership that require follow-up on the part of the rising elite. Were the receiver of the favor not as driven as Ben Franklin, I doubt it would have had the effect in question.

167 Maria Popova, "The Benjamin Franklin Effect: The Surprising Psychology of How to Handle Haters," *Brain Pickings* (blog), February 20, 2014, https://www.brainpickings.org/2014/02/20/the-benjamin-franklin-effect-mcraney/.

168 Ben Landau-Taylor, "Musings On The Franklin Effect," *Ben Landau-Taylor* (blog), May 31, 2019, https://benlandautaylor.com/2019/05/30/musings-on-the-franklin-effect/.

A different approach is to make information that elites will find useful public, then hoping they see it. This can be especially valuable in niche areas, where there is, by definition, less competition. It also involves an element of generosity and a lack of clear short-term benefit. Elites are used to being approached by people who want something or allegedly have good advice, and they're used to getting out of such conversations, so gestures of goodwill and trust like this give them a reason to keep listening. For example, in intellectual fields, the communication and data made available by the Internet allow for elites to find capable collaborators outside of traditional institutions. Extensive research can now be done from anywhere, not only by people with access to archives and databases at universities and libraries. This transformation of the information ecology has led some elites to try new approaches, and this may intensify in coming years.

Once a rising elite gets a chance to present their case, they must make sure they understand the situation and desires of the person they are interacting with. Institutional analysis serves as one useful way to do this. An example of this sort of analysis would be to look at all the seats the Queen of England currently occupies—all of her institutional positions—and figure out how to improve her position. What hasn't she thought of yet? Which institutions and players would stop her from pursuing such action? To discuss such sensitive information, a rising elite would have to earn a great deal of trust. This is difficult, but achievable with skilled and careful action.

What kind of information would elites likely appreciate? A rising elite might identify areas of interest to the existing elite and determine what might advance their efforts. They would want to demonstrate that they have the missing piece of a larger puzzle: this may induce an existing elite to share information to see if the rising player can infer something from it that they cannot. This would not necessarily be because the rising player possesses superior intelligence or knowledge of the particular matter, but because they are coming at the issue from a different perspective or background. They could identify a flaw in the established elite's institution or approach, or suggest an overlooked improvement. They could identify an institution that would make a valuable acquisition, but that the existing elite hasn't considered pursuing. They could spot a gap in their elite network, and even fill that gap with an introduction to someone with the connections or abilities they lack.

Elites hold preponderant influence over society, but are not necessarily fully coordinated. There can be stray individuals, incomplete networks, or mutually competing networks that might have imperfect information about each other, possibly leading to elite conflict. A rising elite that has put in the legwork to study existing elites can be very

helpful in filling in gaps of this sort by spotting elites with complementary abilities or connections. Elites may also have preferences for or aversions to working with people of certain types of personality, style, or areas of interest. These may not be easy to discern at first, so a rising elite must watch carefully for patterns. This incentive for rising elites to create greater coordination does in fact produce more coordination, thus allowing elites to spend more time cooperating and less time battling each other, with positive results for society as a whole.

The inner workings of elite networks, whether existing or rising, are often opaque, but ripple throughout society. Only by coming to understand, empathize with, and analyze these inner workings, and by understanding these dynamics of elite behavior and strategy, can we make sense of society at all—and by engaging its real dynamics, reshape it.

How Late Zhou China Reverse-Engineered a Civilization

This essay originally appeared in Palladium Magazine on July 10, 2020.

When archaeologists discover a sophisticated artifact like the Greek Antikythera mechanism, we conclude that some ancient societies may have been more advanced than previously believed.[169] When we think of advanced civilizations, the image is usually one of advanced technology. Our civilization is advanced because we have rockets and nuclear power. Technology is the systematic application of knowledge, achieving goals that would otherwise be impossible. But not all technologies are material. The ability to organize human relationships, actions, and groups in organized and effective ways is itself a specialized form of knowledge called social technology.[170]

Like material technologies, people can develop social technologies to facilitate the flourishing of society and its people. One might naturally wonder whether great social technology has ever been lost. Just as material technologies like the Antikythera mechanism can be forgotten or destroyed, are some social technologies lost to history?

Ancient China may be one such case—specifically the Shang and Early Zhou dynasties, from roughly 1600 BC to 800 BC. That era met its end as relevant knowledge on how to govern the country was corrupted and lost during the Later Zhou dynasty. With the knowledge fragmented and missing, societal decay ensued. The Warring States period, which extended from the 5th century to the 3rd century BC, was a chaotic era which

169 Jo Marchant, "Decoding the Antikythera Mechanism, the First Computer," *Smithsonian Magazine*, February 2015. https://www.smithsonianmag.com/history/decoding-antikythera-mechanism-first-computer-180953979/.

170 See, within this manuscript, the chapter "Social Technology" (21–30).

resulted from the disrepair and malfunction of this social technology.[171] This spurred the era's leading thinkers to recognize what was happening, albeit quite late in the process, when it was too late in many ways.

However, that these thinkers recognized what was happening at all is important and noteworthy. The blatant decline of the late Roman Empire did not lead its great thinkers to do the same. The insights and debates of the Later Zhou dynasty about the social technologies behind civilization are worth studying to apply to our own era.

What to do when civilization is breaking down

The major figures of China's intellectual renewal came to define the famous Hundred Schools of Thought. China was unusually sophisticated when compared to the other great powers of the era. Archaeological evidence from the period documents impressive bronze works, superior to anything fashioned in the Middle East.[172] The Zhou inherited the use of beautiful, ornamented bronze, tripodal vessels called *ding* (鼎) from earlier dynasties, using them both in sacred rituals and to symbolize temporal wealth and power.[173] The Early Zhou dynasty spent as much bronze on these vessels as they did on their all-important bronze weaponry. This confounds modern assumptions that ancient societies did not have the material surplus to invest in "non-essentials," often given as a reason why they appeared to remain in stasis, with little development. In fact, this period in history saw important thinkers even argue *against* unproductive use of wealth, a stance which would be meaningless unless that kind of investment was normal and prominent.[174]

The assumption that these vessels represent mere luxury is unfounded. Western cathedrals are, on their face, an unproductive use of resources. But in fact, they played a central role in the social order as vehicles of coordination, ritual, legitimacy for power, and social assistance. The willingness of the Zhou rulers to invest huge resources in bronze

171 The proximate cause of the Warring States period has been subject to historical debate for millennia, but violent political fragmentation seems to have began in earnest with the partition of the Zhou state of Jin, an event dated by historians to sometime in the early to mid 5th century BC—see Edgar Kiser and Yong Cai, "War and Bureaucratization in Qin China: Exploring an Anomalous Case," *American Sociological Review* 68, no. 4 (2003): 511–39, https://doi.org/10.2307/1519737.

172 The Metropolitan Museum of Art, "Shang and Zhou Dynasties: The Bronze Age of China," *Heilbrunn Timeline of Art History*, October 2004, https://www.metmuseum.org/toah/hd/shzh/hd_shzh.htm.

173 Brooklyn Museum, "Ritual Tripod Vessel (Ding)," https://www.brooklynmuseum.org/opencollection/objects/4304.

174 Chris Fraser, "Mohism," in The *Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta (Metaphysics Research Lab, Stanford University, August 22, 2020), https://plato.stanford.edu/archives/win2020/entries/mohism/.

ding implies that they played a crucial role in the social technology of the day—if one which was lost over time. The value of Zhou social technology can literally be measured in the weight of the precious bronze alloy, and was at least as important as their weaponry.

Even the period's monumental construction suggests great skill at coordinating experts. Archaeological remains indicate palace buildings and towers of rammed earth and timber. Zhou-era art depicts two-storey buildings, possibly for ritual purposes.[175] The decay of these structures makes it difficult to know whether this era, seen by later periods as a golden age, made even greater accomplishments. When Lao Tzu blithely references a nine-storey tower in one of the *Tao Te Ching*'s meditations, is this fantastical musing, or a reference to a real achievement—or at least an attempt?[176] Written sources from the time point to a sophisticated feudalistic society. Reading them today reminds one of medieval Japan two thousand years later, in ways the imperial and bureaucratic China of later eras—that more obviously influenced Japan as we know it—does not.

When confronted with remarkable achievements from the past, archaeologists have been at a loss as to how to explain them. Sometimes, people will fill the gaps with fantastical theories—hence the beliefs about aliens or telepaths building the Egyptian pyramids. A more likely scenario is that either we have lost the memory of certain material technologies or of social technologies which could compensate for them. Which social technologies allowed China to achieve its feats?

Reverse-engineering civilization

Confucius, who died just a few years before the Warring States period, has a popular reputation among Westerners today for the wise sayings attributed to him. But his true project was to discover and restore the practices which had made the Zhou dynasty great. By doing so, he believed a ruler could renew an entire society, bringing a decayed, dysfunctional state and people back to health. This was to be achieved with the proper application of rituals by sufficiently virtuous rulers. By pursuing the correct relationships and rites, they could correct the damage done by the decline of the Zhou social order and the resulting warfare. Confucius focused on ascertaining both the correct rituals and the means with which to achieve virtue, or *de* (德), in rulers. The meaning of 德 is subtle; perhaps it should be thought of as including what we might today understand

175 Fu Xinian, *Representations of Architecture on Vessels of the Warring States Period*, ed. Nancy S. Steinhardt, trans. Alexandra Harrer (Princeton University Press, 2017), https://doi.org/10.2307/j.ctt21668kt.

176 Lao Tzu, "Tao Te Ching - Chapter 64," https://www.wussu.com/laotzu/laotzu64.html.

as prestige, an important resource for any statesman.[177] He crafted his philosophy by extensive research and study of the Zhou dynasty and its predecessors, attempting to reverse-engineer and understand the lost knowledge of the Early Zhou. Confucius sought to fill the gaps in his understanding of social technology by close study of the ritual and literature of a society which no longer existed.

The role of harmonious social relationships is the most widely known attribute of Confucian teaching. But an aspect that is overlooked is Confucius' emphasis on the traditional Chinese rites. In particular, Confucius was obsessed with the classical *Book of Changes*, also known as the *I Ching*, authored by King Wen, the founder of the Zhou dynasty.[178] The prestige King Wen gained through writing the work was part of what allowed the Zhou dynasty to rise over the even more ancient Shang dynasty in the first place and has been variously studied as a great philosophical text, a tool of divination, and a source of mathematical inspiration. Confucius' interpretation of this work has been respected ever since. However, it was only possible because the original applications of the Book of Changes, whatever they were, had been totally forgotten by his time. Its importance to the Zhou dynasty was uncontestable—yet the original reasons for that importance were nearly impossible to know for certain.

Confucius died thinking himself a failure. He didn't manage to get a ruler to adopt his solution long enough for a full-scale test. Though he was able to gain the ears of a few statesmen, he lost political fights to other advisers and so fell from favor.

The Book of Changes was merely one instance of a wider problem. The longer social technologies exist, the more varied the understanding of them becomes. The original contexts for their existence can change, or translation errors can occur in their reproduction. Which practices were fundamental to the success of the Early Zhou and their great predecessor dynasties? Which were simply relics? If fundamental, could they even be reproduced in the modern context? It isn't at all clear that you can reboot the social technology of an essentially intact empire in order to reforge it after it's broken. Perhaps in the very long run they are identical, but how long do you have to put the shards back together? Confucius' rivals challenged him on all these grounds.

177 See, within this manuscript, the chapter "Honors Fuel Achievement" (40–46).

178 "Book of Changes : Yi Jing," *The Chinese Text Project*," 2006, https://ctext.org/book-of-changes/yi-jing.

The advantages of jerry-rigging civilization

Among his most prominent opponents were the Legalists. Han Fei, who was the great synthesizer of this school during the Warring States era, attacked the Confucian approach several hundred years after Confucius' death. Han Fei repudiated the notion of following the ancients, instead championing an empirical approach in the Han Feizi: "[T]he sage neither seeks to follow the ways of the ancients nor establishes any fixed standard for all times, but examines the things of his age and then prepares to deal with them."[179]

To illustrate this point, he compared the Confucian-style approach to a farmer who once caught a hare after it broke its own neck by running into a stump, and then abandoned farming to wait for more hares. In other words, the fact that something worked once doesn't mean it will work in the future. That things worked in the past was perhaps due to luck or coincidence or conditions that are no longer the case, and so imitating past practices does not guarantee success.

While Han Fei is an important representative of the school, most Legalists were not skeptical of the existence of lost knowledge. Rather, they considered restoring or recovering this knowledge to be impractical. Rather than discussing virtue or harmony, they aimed to design a quick and dirty system built from easily ascertainable first principles so as to save their society in time. Unlike Confucius himself, the Legalists succeeded at a very hard task. Their solution was crafted to allow a king to conquer China, and one did: Qin Shi Huang. The empire fragmented 11 years later after his death, but the Qin dynasty's successes influenced nearly all the regimes which followed it to adopt China's well-known centralization and administrative continuity. Their legacy was strong enough that Mao's China rehabilitated Legalism as a progressive element, unlike the "reactionary" Confucians.

Legalists wouldn't have the last word, however. While Legalism had solved the problem of reforging the broken empire—Shi Huang built systems and standards for social technologies, including weights and measures and transport, that substantially facilitated unity—those technologies were not wholly adequate for stability.

The reforged empire proved brittle. After the death of the founding Emperor Qin Shi

179 Han Feizi, "The Han Feizi - Chapter XLIX. Five Vermin: A Pathological Analysis of Politics," *University of Virginia Institute for Advanced Technology in the Humanities,* http://www2.iath.virginia.edu/saxon/servlet/SaxonServlet?source=xwomen/texts/hanfei.xml&style=xwomen/xsl/dynaxml.xsl&chunk.id=d2.49&toc.depth=1&toc.id=d2.20&doc.lang=bilingual.

Huang, devastating rebellions broke out, tearing the new state apart. The harsh laws were built on the Legalist assumption that elites could never be trusted. This assumption had two acute issues. One, it was a self-fulfilling prophecy: confident in their read on human nature, Legalist courtiers distrusted each other as much as adherents of rival philosophies. A Confucian-style focus on filial piety might have proven more effective.

Two, it biased laws and measures towards a harshness that was sometimes counter-productive. The rebellion of Chen Sheng and Wu Guang began when the two commanders were delayed moving their troops by heavy rainstorms. This seems trivial and excusable enough, but a philosophy built on distrust was suspicious of excuses, and the law mandated the death penalty. They reasoned: "If we do nothing, we're dead, if we rebel we're dead. Rather than waiting for death, we might as well die for our own kingdom!"

A system can be functional in the founding generation, but rapidly dissolve after the founders are gone. The Legalists had underestimated the necessity of continuity. The special knowledge required to govern a large and complex civilization cannot be reinvented every generation. Since any ruler's capability for learning and evolution is limited—and some are far less talented than others—dynasties only last a long time when the collective knowledge they possess makes up for the failings or mistakes of any given generation. If the success of the Zhou Dynasty was as arbitrary as the success of the farmer in Han Fei's parable, it would not have persisted for so long—about 800 years, by far the longest-lasting dynasty in the consensus history of China (excluding ones we deem mythical).

Merely arbitrary success doesn't extend over hundreds of years. Rather, success of this kind is the result of persistent skillful action, and skill is founded upon knowledge. This doesn't rule out the hypothesis that a change in conditions made the old knowledge no longer effective, but that is a hard thesis to prove. After all, the institutional knowledge worked for hundreds of years, a period that encompasses many changes in conditions. More importantly, if there are sociological principles that are true in sufficiently large sets of possible conditions, then that knowledge can be reacquired.

But, the Legalists might have argued, aren't societies naturally robust, able to churn on for centuries without anyone in them having special knowledge? Perhaps functionality is not so difficult in most conditions and doesn't require special knowledge. Catastrophe strikes only on very rare occasions.

This objection understates the reality of decline. The collapse of a civilization might be

a rare event, but it isn't all that rare. Every millennium sees some empires rise and others fall. This collapse can occur in just decades, or even a few years. This happened in India's ancient Harappan civilization and in the Middle Eastern Bronze Age Collapse. It's worth noting that the civilization of the Middle Eastern Late Bronze Age was at a similar level of material development as the early Zhou and nearly contemporary with them. The features many consider unique to Chinese civilization—its longevity, cultural continuity, stability, and robustness to disasters—are seen in a much weaker form in later time periods.

Under the Han dynasty, successor to the Qin, many of the precedents set by the Legalists were integrated into a Confucian framework by a new generation of statesmen and thinkers. Confucianism had been unable to rebuild China purely by replicating previous social technology. There, Legalist pragmatism proved more effective. But in order to provide continuity once new states arose, Confucianism proved adept at sustaining and expanding the system's functionality. The Han oversaw improvements in agricultural systems, and improved administration by instituting entrance exams for the civil service. Their attention to the health of social technologies was exemplified in the strategy to post administrators far from their homes, in order to prevent nepotism and corruption. Their focus on the continuity of knowledge, by handing it down to future generations through custom and teaching, let them ensure that the achievements of dynastic founders would live on through their successors. Since then, Confucianism has remained a bedrock of Chinese civilization, returned to again and again by rulers—with impressive results.

The balance of harmony and power

The distinctiveness of these schools' approaches is evident in the way each engaged the great third force of the Hundred Schools: Taoism.

Lao Tzu is another impressive figure of the late Zhou period.[180] Compared to Confucius, his approach was based less on the study of social technological artifacts and more on a strong understanding of the realities behind them. According to Taoist accounts, he was court librarian of the Zhou, caretaker for a very old and extensive but decaying cache of knowledge. Given his exceptional intelligence and access to relevant texts, he might have been better positioned to follow this approach than anyone else at the time. This is attested to by the fact that Confucius was said to have sought him out for information about a book on ritual.

180 Alan Chan, "Laozi," in *The Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta (Metaphysics Research Lab, Stanford University, 2018), https://plato.stanford.edu/archives/win2018/entries/laozi/.

But unlike either of the other schools, Lao Tzu's tradition focused on internal practice and distanced itself from social and political involvement. Later legends all depict Lao Tzu as journeying away at the end of his life and vanishing from history. The relationship between Confucianism and Taoism was critical, particularly from the Taoist side. While both emphasized harmony, the former's definition was social, while the latter focused on harmony with nature. This individualism and anti-social bias had consequences all through Chinese history. Virulent strains of Taoist thought informed cults like the Yellow Turbans during their rebellions, which caused millions of deaths during the latter years of the Han Dynasty, and contributed to a Chinese suspicion of cult activity that lasts to this day.[181]

Its individualism also put it at apparent odds with Legalism's infamously harsh focus on order. But despite their extreme differences, Taoism agreed with Legalism that one could not rely on the past for wisdom. This pragmatism in fact led Legalist luminaries to be influenced by Taoist thought. When Taoist teaching began to organize itself into a ritualistic and religious force in the Huang-Lao school, its influence on political thought was through Legalist engagement, including by Han Fei himself.[182] In this reading, Taoist concepts like *wu wei* (無為)—action without effort—refer to the Emperor's total separation from his ministers, and the requirement that the Emperor's will demand the same obedience as any force of nature.

All three of these great schools would play central roles in Chinese thought and practice after the Zhou dynasty's fall. But in each case, they evolved beyond the original intents of their founders. The Legalist and Taoist focus on learning from nature and observance let their adherents bootstrap entire states by doing what worked and abandoning what did not. Moreover, the Legalist appropriation of Taoism made its concepts amenable to state power in a way that its more extreme expressions could not be. But depending on each individual or generation to re-learn the basics could never be a sustainable task. Legalism's total focus on strategy and power could become a liability if it undermined the regime's continuity. Confucianism was not able to fully learn and re-establish the social

181 Ulrich Theobald, "The Yellow Turban Uprising," *ChinaKnowledge.de*, June 28, 2011, http://www.chinaknowledge.de/History/Terms/huangjin.html; Tony Lambert, "The War against Cults in China," *ChinaSource*, March 13, 2015, https://www.chinasource.org/resource-library/articles/the-war-against-cults-in-china/.

182 "Scholarly research has accepted the view that Huang-lao Daoism and Legalism are closely associated with each other...Sima Qian...holds that the central theory of Legalism originated from Huang-lao Daoism. According to Sima Qian, 'the doctrine of Shenzi [Shen Buhai] is derived from Huang-lao [Daoism], it emphasizes status obligations;'...'the theory of Han Fei puts heavy weight on status obligations, penal law, and political techniques [of a ruler] and comes from Huang-lao [Daoism].' Despite their differing contents, both Huang-lao Daoism and Legalism advocate a ruler-centered political system in which the ruler's power must be absolute," Xuezhi Guo, *The Ideal Chinese Political Leader: A Historical and Cultural Perspective* (Westport, Conn: Praeger, Ch. 10, 2002).

technology of China's golden ages. However, its insight that such knowledge had to be maintained in order for a civilization to last secured its ascendancy in regimes which its rivals established, but could not maintain themselves.

Each school was able to identify and re-engineer admirable and possibly unique features of epistemic health, stability, and prosperity of later Chinese civilization. These were features the early Zhou displayed in great abundance. This collective fruit provides the greatest lesson for those studying social technology: the loss of this knowledge is common, but a permanent loss is rare. All that is needed is the right ruler or thinker for society to learn it anew.

www.SamoBurja.com/GFT