The Rise of the Modern State: Gradual Reform or Punctuated Transition

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A state is not alive, yet it performs many of the central functions of life like replication and adaptation to new conditions to balance social protection and opportunity. As a lifelike system the rise of the modern state raises four sets of fundamental questions about its evolutionary design. A first set concerns how it became a sustainable, autonomously replicating system, capable of evolution. All non-state agglomerations such as empires or chiefdoms eventually stagnate because they are closed systems that break down over time (Weber). A state is an open system that must able to absorb fresh materials and replenish itself from its own materials, and from the perpetual adaptivity of its interacting agents. What is its algorithmic nature, what simple recurring rules account for its self-reproducing dynamic? How can we distinguish the emergent outcomes of that algorithm from the forces that created it? The resilience of the modern state can be attributed to an algorithm that specifies three essential rules, a future orientation, leadership that is dependent on logic to justify its rule, and an equity norm.

A second set of questions concern how to classify and distinguish modern states from the chiefdoms and empires of the past. Douglass North et al (2009) distinguish natural states in which violence is employed to protect the rights of the privileged from open access regimes in which the state disposes violence to protect the rights of all.1 This juxtaposition can be applied to virtually all developing countries, it explains how developed societies differ from developing ones and it can be used to explain why policies that attempt to transplant first-world system will fail to be implemented in developing countries. However, it begs the question of how change happens. At what stage does a state become modern; many essential endowments of modernity have antecedents with roots in the remote past such as property rights that had to be there to cede open access.

In fact, what distinguishes modern states is relatively easy to agree upon. They are highly stratified, and internally diverse. Modern states typically have strong, centralized governments, are ruled professionally, the governing elite enjoys few bonds of kinship: and residence depends upon occupational specialization rather than blood relations. A modern state can declare war on behalf of the entire collectivity, reserving the right to declare mandatory participation and to contract the area of private vengeance. They proclaim a monopoly of force and of law, while requiring citizens to forgo violence; vengeance is not the responsibility of the offended party. Almost any crime against one member is a crime against the state. Subgroups seeking vengeance are viewed as threatening to the order of the state. Wrong doers are punished according to codified procedures. To further its own replication process the governments of modern states use highly varied tools to provision public security and law, to levy collection of taxes and mobilize citizens for war and eventually, industrial labor. The hard question is how they got that way; how did they emerge, and what synthesis of beliefs, formal and informal structures enables them to reproduce?

A third set of questions concerns whether the modern state’s evolutionary path was gradual or punctuated. Can all of the design work of the modern state be accomplished through gradual steps or must there be long jumps along the way? This question is rich in implications for international development policy. The evolution of European state system suggests an answer. That evolution is characterized by a selection process in which gradual reform process are not sufficient but were abetted by long, punctuated often violent ruptures. Not a single modern state was built entirely through a gradual process. The modern state’s evolutionary path combines long jumps with short, gradual steps that span hundreds of years.

A final set of questions concern why modern states emerged first in Europe. An environment of perpetual conflict characterizes most cultural spaces but in Europe there was a progressive tendency towards increasing economic security and public goods. One reason for the urgency for constant modernization that has long been recognized is that the decentralized nature of European political space.2 In an arms race of competitive design, complexity at the local level expanded, creating global optima. In a tournament of skill that incorporated intellectual, ideological emotional

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1In limited access orders limits on political and economic functions are deliberately designed to generate rents for distribution among the ruling coalition. In open access systems feature competition, rule of law, property rights and the right to organize.

2In which each complexity level gave rise to even greater levels of complexity to create a global optima.
as well as physical resources the action of the prime movers transformed the global ecology, foreclosing some local options while opening niches for adaptive partnerships and for new rivalries. We will reference this process to support the main generalizations of this paper. A final section refers to current threats that challenge the modern nation state to continue to balance opportunity with protection.

The Modern State’s Self-Reproducing Dynamics

What essential characteristics that played over and over again will replicate a modern state? The most important part of the mystery of the state concerns how the first forms of statehood emerged. Without an enclosing membrane like the state, how did all of the necessary ingredients for social progress come together to cause growth and self-replication? If modern social development started inside the membrane of a state, how did the necessary components all find their way in so that a state could form in the first place? What boundary conditions separate modern states from the construction of other political spheres?

One way to understand the rise of the modern state is to consider it as an algorithm, a bare, minimal self-reproducing process. An algorithm is “a certain formal process that can be counted on logically to yield a certain sort of result whenever it is ‘run’ or instantiated” (Dennett: 50).¹ From a tiny initial probability and from low levels of initial competencies, this algorithm produced a snowballing of self-improvement. In his Idea for a Universal History with Cosmopolitan Intent (1784) Kant wrote about a “state that, like a civic commonwealth, can maintain itself automatically”. Explaining the state’s self replicating properties, its autonomous metabolism, is a major task facing ecological social theory. What is the minimal complexity necessary for the process of self-replication to begin? How did the state acquire self-replicating characteristics? What are the minimum characteristics? How was the state woven into the hearts and minds of its population? How is this process linked to other transition processes such as nationalism, democracy and industrialization?

Future Orientation

Another feature of the state’s evolutionary algorithm is its future orientation and increasing capacity to channel resources into deferred gains. To assess a state’s modernity by its resemblance to the global optima is mistaken. The state may be perpetually modernizing but being modern is time bound and context specific. It only means staying one step ahead of competitors, not large steps, but small steps that are time, context and region specific. Being just modern enough is like story of the two campers, one of whom sleeps with sneakers on, but to what end asks the companion if a bear should suddenly appear in our campsite. The selfish partner replies: ‘I do not have to outrun the bear. I only have to run just fast enough to outrun the other person here, and for that sneakers are just good enough.’ Although the tendency towards state formation is universal the stresses that account for the evolution of states may be particular and local. The total number and types of a state are limited to the solution of a fundamental set of requirements determined by a particular ecology. For example, Asia’s business landscape is dominated by family owned enterprises or by state-owned companies that shield enterprise managers from shareholders, and from market pressures making them less accountable, less transparent and less innovative than first world structures. Contemporary Asian companies, however, do not have to lead the world in innovation in order to flourish within their defined niche.

A state can win over the hearts and mind of its population when people know that allegiance to the state will mean better lives tomorrow. As states evolve the rights of its individual components occupy more of the picture. The expansion of the rights of the citizenry occurs most frequently at a juncture when incumbent elites face a crisis of survival. Decisions that extended the domain of the state foreclosed future opportunities for elites to control accesses to resources. The medieval state assured the continuity of the landed elite by banding together under a prince. External security and freedom from foreign interference was its rationale. The kingly stated offered the promise of enhanced internal security and the end of internecine conflict among the barons; it surrendered to the territorial post-Westphalia state. From the state nation the population gained the civil rights of popular sovereignty. The nation state usurped the preeminence of the state-nation by offering economic security and public goods.

The Role of Logic

During the High Middle Ages in European governments rationalized their functions using logic rather than resorting to charisma or to divine intervention. The documents of European state craft had embraced Aristotelian logic as early as the eleventh and twelfth centuries.⁴ Deductive reasoning supported by logic is essential to state formation because it allows information and meaning critical to a state’s functioning to be conveyed indefinitely. Logic further allows for cause and effect thinking necessary to formulate public policy.

From the introduction of logic came a general confidence in the process of reasoning that facilitates shared learning. Logic gave order to the chaotic world of nature and politics making systematic thinking about nature possible and making contracts between men and women the subject of human will, discretion and agency. Collective learning was inculcated by the use of logic to persuade populations of the soundness and fairness of its justice and its fiscal rules.

¹Biologists have learned that you can treat any process as algorithms. It all depends on what needs explaining. Very interesting and useful insights can be gained from treating states as algorithms. There is are many social processes at play in development that have algorithmic qualities, nationalism is ne.

⁴In Europe Aristotelian logic played this role in large part because of the role of the Church in preserving the texts from the Greeks (Southern). Terms like property as defined in law and genus and species as defined in biology originated from the translations and applications of Aristotle’s works.
Logic rendered both the sacred and secular worlds tractable to human thought and intervention. It narrowed the appeal to the supernatural and led secular leaders to remove themselves from interference in spiritual affairs. Leaders who cloak themselves in the divine and who use miracles to spread their appeal, hoping to make their authority immune from argument, expose themselves to great risks, once their fallibility is exposed they end up vulnerable to rebellion.

Law and politics along with grammar and rhetoric were among the realms that were most strongly affected by the pervasiveness of logic as complex relationships between the ruled-over and their political masters came to be expressed in chains of syllogisms. The medieval revival of logical studies, through its diffusion into philosophy, theology and state craft, ended up defining the routines of both secular and monastic communal life and organization. It gave rhetorical shape to the instruments of the state, its legal and fiscal reach over its population, its definition of property and eventually its preeminent role in defining the rights of the crown’s subjects, their rights of property and eventually the sovereign obligations to citizens (Bodin). Logic helped to transform the privileges of the aristocracy into codified rights; as the tools of logic spread among the population, those rights were spread to wider segments of the populace.

**Equity Norm**

One the most often repeated clichés is that a state must possess a monopoly of violence within its jurisdiction. But this criterion fails to acknowledge that the violence it deploys must be legitimate, accepted in law and even more importantly in the hearts and minds of its people. All modern states require that citizens identify with some legitimating principle that embodies a universally accepted code of obligations and expectations. Ultimately the great sacrifices and rules of compliance that state making requires are voluntary (Levi). The state produces economic growth by an algorithmic process that solves the problem posed by the cohesiveness of social groups and identity. To this end the state must promulgate an equity norm that its populations can identify with. Just as credit markets deepen exchanges among nonrelated players so does an equity norm deepen identification of citizens with the organs of state authority?

Fitness in the European state system demanded greater inclusiveness to meet the increasing requirements of new skills that could only be mastered by expanding education and eventually the franchise. The winners had to become skilled at social integration, at providing justice, at creating the privileges of the aristocracy into codified rights; as the medieval revival of logical studies, through its diffusion into philosophy, theology and state craft, ended up defining the routines of both secular and monastic communal life and organization. It gave rhetorical shape to the instruments of the state, its legal and fiscal reach over its population, its definition of property and eventually its preeminent role in defining the rights of the crown’s subjects, their rights of property and eventually the sovereign obligations to citizens (Bodin). Logic helped to transform the privileges of the aristocracy into codified rights; as the tools of logic spread among the population, those rights were spread to wider segments of the populace.

**Classification of System Level Characteristics**

To account for the rise of the state and its increasing segregation from other systems of hierarchical authority we must be careful about distinguishing the process from the mechanisms by which its emergence takes place. We must also account for socio-ecological stresses that select for those mechanisms. Complex adaptive systems have levels of organization; the agents at one level are the building blocks of the next. The hierarchical levels represent levels of aggregation. Groups of individuals form families, groups of families form neighborhoods, groups of neighborhoods form cities, groups of cities form metropolitan regions. In each level of aggregation the agents adjust their behavior to each others actions. As the agents move from one level to another, the rules governing behavior also change. States are not just agglomerations of regions: something happens in the transition that is unique and emergent. What in the scaling process allows states to simultaneously increase the population size and the degree of cooperation or complexity of the whole? Almost all models of group behavior exhibit a breakdown in cooperation as the population increases and become more heterogeneous. Large scale cooperation that states facilitate is an exception to the evolutionary tendency of people to trust in small groups (Seabright). Being able to transport small-scale group cooperation to the level of an entire political community is what it takes to form a state, and in so doing state makers have created something new and different from the sum of its parts.

The difficulty in finding a consensus about which forced moves essential to the modern state’s evolutionary design reflects the contradictory nature of the state: they are networks of interests, coalitions and beliefs; is not a actor but a nexus of subsidiary organizations. As networks states integrate diverse ideological social and economic activities; the modern state is also the result of those very processes. States are catalysts for recent transition processes such as nationalism, and democracy amid industrialization, at the same time they are outcomes of those processes.

The process of state formation is one in which the state and its attributes detach themselves from the society by creating a definite boundary that distinguishes the private from
public interests of its operatives from those of the state itself. As the source of basic law the state must be able to guarantee rules, procedures and covenants that transcend the laws of its component groupings and be greater than the linkages that comprise it. Logic helps states to establish this boundary and to distinguish the routines of statecraft from the personal authority vested in people.

To ensure its business of self preservation the state requires a membrane to bind its essential parts together while keeping foreign bodies out. Thus the state acquires a legal personality which non-state forms of human organization do not possess and which allow the state to assert its interests above those of its component parts. The creation of permanent infrastructure to collect revenues along with permanent courts to mete justice is consistent with this logic (J. Strayer). Initially modern states emerged from strategies to protect narrow, sectarian class interests. The princes and kings were signing their own death writ when they created rule-bound processes for law, finance and justice; long-lived institutions resulted that ensured the state’s immortality. Institutions like the British parliament, the common law and the exchequer, created initially to protect and preserve privilege, status and exclusive access of the aristocratic lineages eventually became the foundations of the broad based participatory polities that supplanted the dynastic order. The blind process once began consumed its originators and often obscured all traces of its origin.

A Nexus of Institutions
A state is a nexus of organizations that mirror the macro level of authority. Complexity begets complexity, so a state begets other institutions that are forged in its image. Essential to the process is the emergence of long lived institutions in which individuals drop their liquidation option and submit to the will of the institution’s governing body. For the concept of the pooling of large numbers to be fully invested in the newly founded organization, the members must surrender their personal rights to terminate or liquidate the collective entity. Legally chartered corporation that can only be liquidated after a majority decision of the shareholders emerged throughout medieval Europe. “By surrendering their liquidation option the members enhance the validity of their contracts with external third parties, making the enforcements of judgments against the collective entity more credible. Being able to enforce contracts enables the institutions which comprise the state to transact with other entities in the name of its membership” (Root, 2006: 9).

Ironically, corporate identity was strengthened by the rise of absolute states in the early-modern period. The formation of a self-determining entity endowed with a legal identity represented an important curb and discipline upon monarch-chal discretion. The French monarchy, for instance, extended its power and legitimacy by employing royal jurisprudence to guarantee the integrity of a variety of self-governing associations. Under royal tutorship a number of corporate entities were strengthened in which subjects of the crown could place private resources in a common pool governed by an agent or representative body (Root, 1989 and 1994). Royal authority was an umbrella for many other organizations such as guilds, village communities and corporations that held property collectively and could make decisions that were binding on all of its members. The proliferation of such institutions throughout Europe ensured that secular power was diffused among entities that could function as intermediaries between the crown and its subjects. These kinds of associations based upon the concept of collective liability have far greater capacity to create civic capacity than the NGOs patronized by external donors for developing countries in the 21st century.

Punctuated Equilibrium
Dating the emergence of the modern State is a source of intense contention among scholars of Western Europe. Opinions diverge considerably depending upon the observer relies on cultural/literary sources or upon technological sources or military history. Observers of the state building process in Western Europe take very different perspectives on the relative importance of long jumps versus short steps. They also disagree on when key jumps or small steps were made. The critical difference between those who seek origins that can be traced back to the middle ages and those who see the rise much later have to do with importance placed on military technology. The technological evidence suggests dramatic, punctuated equilibrium and those who place high importance on military technology can be classified as advocates of punctuated equilibrium, those who are more inclined toward cultural and legal sources which suggest a secret and gradual process. However, the gradual character of cultural and institutional change processes makes it hard to date transition points. Some cultural historians trace the origin of the modern states to the Middle Ages, others to the Renaissance and still others select the seventeenth century, referring to the pre-and post Westphalian traditions.

Although, agreement exists on the landmark texts of the Western European State system, these include the Concordant of Worms, investiture, the Magna Carter and the British constitution more generally, and the treaty of Westphalia that ended the Thirty Years War. But the origins of the State are visible only very dimly in these pioneering documents. The importance of these milestones was only recognized long after the fact. Dating the origin of the modern state is frustrated by the fact that many of the milestone events and documents which revert to the Early-Middle Ages, are highly obscure and local and were diffused over a variety of jurisdictions. Much of the transformational action is obscured in thousands of local actions and events and smaller decisions in local court cases in the common and civil law tradition, whose meaning was barely discernable to their participants. The great British cultural historian and Medievalist Southern has observed that it was a secret revolution that brought the European state to preeminence on the global stage: “The slow emergence of a knightly aristocracy which
set the social tone of Europe for hundreds of years contains no dramatic events or clearly decisive moments such as those which have marked the course of other great social revolution” (Southern: 12-13). It was generally not a particular law but the continuity of law making that mattered. Although Southern muses, “The truly formative work of the period was often hidden from the eyes of contemporaries and it is doubtless often hidden from ours,” but he concludes the foundational building blocks were laid during the high middle ages as order emerged after slow recovery from the disintegration of Charlemagne’s empire. “The pattern of monarchy and aristocracy, at least in their more formal manifestations, of law and law-courts, of parishes and parish churches are too clearly the work of these centuries for the point to require emphasis” (Southern: 13).

To understand the threshold conditions that gave rise to the modern State we must include elements derived from gradual cultural and legal evolution along with moments of dramatic phase transitions caused by rapid transformations in the tools of state warfare. The revolutions in military technology transformed the European state system do not reflect the random mutations that are generally attributed to Darwin’s theory of evolution. In Darwin’s theory, evolutionary change is driven by the pressures of natural selection, organisms adapt to their environment until they attain a fit that is good enough to ensure survival and reproduction. These transformations had the characteristics of a punctuated equilibrium which can be described as long periods of stability with minimum structural variation, followed by sudden and dramatic transitions that produced novelty and instability.

New technology continually punctuated the equilibrium of the incumbent state system creating cascades of new structures. Mobile artillery shattered the castles and moats of the feudal aristocracy ending the Middle Ages. Pikes ended the domination of knights on horseback. Gunpowder in the seventeenth century sealed the fate of the walled cities of the Renaissance. Professionalism and eventually mass conscription in armies replaced dynastic rule with nation states. Another feature of the European system that generated continuous modernity was that advantage kept shifting from one political structure or regime to another making it impossible for any one regime to monopolize the politics, economics or technology of the entire design space.

Legitimacy in the European system was created through an interaction between law and strategy, but that legitimacy was punctuated, quite frequently, by inexplicable upheavals, strategic events "not least to a strategic event so cataclysmic as losing a war” (Bobbitt). The long periods of stasis occur when the individual states have attained legitimacy “although wars may create and mold states, it is the State that creates legitimacy both domestic and external, and it is legitimacy that maintains ‘peace’ (Bobbitt; xvi). Peace in Europe resulted from system wide "reciprocal acceptance and mutual recognition” Bobbitt). The legitimacy memorialized by the Peace of Westphalia in 1648, had to be updated at

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6The punctuated impact of military revolutions on state making was first brought to my attention by Aaron Frank and is an essential part of his dissertation in progress at George Mason University.

Utrecht in 1713, only to be shattered a hundred years later in Vienna when Europe’s dynamic autocrats united to contain the threat of the state/nation represented by Napoleon’s revolutionary army.

The French Revolution changed military strategy, its constitutional novelty dispensed with the hierarchical and aristocratic military structure of predecessor territorial states. Bobbitt argues that Napoleon’s innovation constituted the creation of the state-nation, putting people in the service of the state. Political mobilization of the mass of the French people established a new strategy that over the course of the nineteenth century swept all over Europe. Napoleon employed national identity as a tool to assemble a larger fighting force than any of his rivals.

Napoleon was defeated at Waterloo by a coalition led by Prince Clemens von Metternich foreign minister of the Austrian Empire from 1809-1848. His Concert of Europe, a loose alliance of Austria, Britain, Prussia, and Russia, was created to ensure against another Napoleon, but this victory did not preserve the ancient regime. To preserve their autocratic regime the Hapsburgs systematically denied their subjects the means to mobilize against their rulers. Soft goods like education and hard goods like the railroads were both denied. The Hapsburgs were committed to making sure that their subjects would be unable to solve collective action problems. In 1866 Prussia defeated Austria for leadership of the German states. The Austro-Hungarian populations fell further behind the rest of Europe and the Empire was eventually dismembered.

The states that were ruled dynastically and absolutely had to face another even more powerful threat than Napoleon’s state nation. Another newcomer, the nation which reshaped Europe’s political landscape ended dynastic rule forever. Taking the logic of Napoleon’s state nation one step further, as the architect of the Prussian state Bismarck put the state at the service of the people, creating the nation state. He made social insurance compulsory, nationalized the railroads putting its vast power of national coordination at the disposal of the state and intervened in the economy to ensure mass welfare. Bismarck fathered German unification by establishing the state as the deliverer of the people’s welfare: his creation, the nation state, demanded universal conscription in exchange for nation wide welfare coverage and a program of national industrialization. The Prussians dealt with the danger of arming the public by militarizing the entire society. Bismarck delivered the first social welfare program along with the demands of universal conscription making the entire population a beneficiary and a party to the wars of the state.

Military technology also served as an impetus for far reaching changes in state/society relations in Russia. A part of the European state system since the 16th century Russia was either in a war or preparing for the next one. Westernization was launched by Peter the Great to respond to the need to overcome the failure of Russian troops to fight the better equipped forces of Sweden and Turkey. Catherine the Great both recentralized and remilitarized the state, the second serfdom and the subordination of the nobility to mandatory military service for the purpose of expanding Russia’s
capacity to play a role as a major European power. World War I revealed another great gap between Russia and capitalist powers of the West. Again, concern about the decline of military power due to economic and technological backwardness justified Stalin’s internal regime of persecution and brutality. But it also resulted in a massive catch-up effort that industrialized Russia in a matter of a few decades.

A gradual evolutionary process did not create the great gaps that separate the European state-building experience from that in other world regions. Most institutional changes are a consequence of myopic small or incremental steps. The slow accretion of governance reforms through modest mutation rates would not have produced the level of fitness and capacity that separated the European experience from that of other world regions. Long periods of quiet during which the gradual work of culture accumulated was not sufficient to do all the design work of the modern state. Gradual reforms alone could not have accomplished so much in such a short time. The history of the modern European state is marked by a number of technological ruptures that arose in the dynamics of interstate warfare.\(^7\) Gradual change processes in systems of law, culture and administration were boosted by a number of long jumps in military technologies which altered the social landscape. The evolution of military technology had a focal point that was both global and deadly, bringing forward novelty that cannot be erased, with an impact that was anything but gradual.

### The Unique Evolutionary Logic of the European State System

Several characteristics of European state making were decisive in initiating a process of self-replication that continues to this day. These are a grounded in a series of innovations, that although, local at their outset, established a global optimum, that creates benchmark that finds imitators from all over the globe.

One reason for the dramatic series of changes within the European state system is that it operated as a perpetual tournament without any one state being able to secure a monopoly preventing unified elite from gaining the means to manage the entire system for its own benefit. Winning coalitions did emerge within each successive configuration of the state but over the course of European history no coalition was able to dominate the entire design space, therefore a calcification of the system did not occur. Elites arose within the various European states but because of the intra-European tournament for supremacy elites had to ensure their own survival by making bets on the future that included more inclusive strategies for resource mobilization. Such bets distinguished political authority in Europe from most other world regions where gambles that would empower wider groups of the population were consistently resisted ensuring institutional stasis. This great global divergence can be traced to a series of steps that equipped the local struggle for dominance with a unique logic. Fitness within the European system was derived by institutional reforms that constantly widened access of opportunity to non-elites. In a continuous rising of the stakes drove European state-making to a threshold that required increasing social inclusiveness, eventually eliminating categorical distinctions among the internal membership. The dynamics of state formation in Europe was driven by a simple algorithm that enables it to provide a better future than alternative social groupings? This precipitated a great bifurcation that separated the European state system from the historic chiefdoms and empires which appeared in Asia and South America and it made the European into the embodiment of modernity. Instead of perpetuating particular lineages like the empires and chiefdoms of the past, it is geared to assist the reproduction of the entire population.

### The European Difference

No single European nation was responsible for the dynamics of the entire system. The lead role of one nation was quickly replaced by that of another, making Europe different from China. China was unified in 246 BC under one emperor, and remained unified under one emperor until the twentieth century. Charlemagne’s forty six year effort at European unity ended with his death in 814 whereas in China’s central government enjoyed long periods in which it was able to snuff out any change that might threaten its role. Europe’s leaders lived at the edge of change and had to continuously adjust to external conditions. The key to their survival was adaptability. Try as the Hapsburgs or the Soviets did to arrest change and concentrate control, they only fell behind their rivals to eventually collapse. The great centralizers on the European stage like Louis XIV or Charles V seemed undefeatable in their day but frequently they did not see the opportunities, like the settlement of North America which ultimately allowed Britain to circumvent French dominance. Britain’s monarchs were not any more prescient than their French counterparts. They simply had less control over their fractious subjects. Even if they could not recognize extraordinary opportunities their subjects could. Economic historians no longer argue that Western Europe was more prosperous than early-modern China, they were more adaptable. Europeans were able to self-organize in response to a new set of opportunities, whereas Chinese populations faced greater hindrances.

Europe’s dynamism stemmed from the weakness of its central control system. Instead of a central control process, it was a network of interlinked noble families, with princely and royal houses serving as nodes in the system. These interlinked families did not follow orders from a centralized source. The network acquired a competitive nature because the central controllers were not able to exercise control over the rise of the lower classes. That rise was driven by the growth of the economy, which created more opportunities for new elite groups like the French parliamentarians, the urban bourgeoisie, professional associations like the Inns of London, non-conformist preachers, and decentralized technologies like the printing press.\(^8\) As the network expanded it grew more diffuse and more resistant to cen-

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\(^7\)The dissertation underway at George Mason University by Frank introduced this insight and expands upon it.

\(^8\)Dissertation of Yan Li, George Mason University.
central control. This is exactly what Louis XIV feared and it is the reason he did not favor allowing dissonant groups to settle in French North America. Although the European social system was structured to prevent opportunity from spreading beyond the core set of aristocratic families, economic growth enabled new nodes in the system to form. Because China was a single scale network it was less robust to failure and more threatened from change arising in the periphery, than Europe, whose leadership constituted a scale free network, more robust, but more difficult to control from the center.

Finding the system’s algorithm is a way to eliminate details so the small number of irreducible parameters or essential mechanisms will appear. The fact that the European system produced opportunities beyond those that are controlled by the centralized control group, was probably decisive in leading to European dominance of global exchange systems. The central characteristic of the European state system over a period of a thousand years was that the overall organization evolved without a deterministic, central or external organizing principle. This allowed individuals and groups within the population the possibility of adapting to opportunities as the system grew. This opportunity did not arise in the state systems of Central and South America or China. Whenever centralized control in China broke down a new emperor appeared. The European system exhibited organization without the application of an external organizing principle. Individual parts of the system could engage in self-adaptation, self-organization and continuous improvement. This continuous adaptivity of the agents made the system different from the empires of the past. Its essential characteristic was continuous modernization.

Formerly Unframeable, Still Unanswered Questions

Our application of adaptive social models to explore the formation of modern states raises many wickedly perplexing questions. Humans first organized themselves as families, clans tribes and ethnicities. States arose in tension with these earlier groupings. How and why did states arise in very few human settings? Why is it so difficult for states to form? How are states generated? Are they self-organizing entities? How much self-ordering is necessary to produce a state? Are some human groupings more prone to creating states than others? Is the propensity to form a state related to the fitness of the individuals comprising it or to some characteristic of group dynamics that we have yet to identify? Are certain organizational tendencies located within certain families which then play a role in macro-evolutionary processes?

The mystery of the state’s emergence has been a source of despair for social science. How early should one start to look for the ingredients? What continuity exists between the great empires of the past and the modern states of the present? An insurmountable paradox remains to be unlocked; the essential components found within states and its external or membrane structure were built up through social history as a single unit in an intricate process of co-evolution. Europe’s history raises one very sobering observation. Without the prospects of a punctuated equilibrium or long jumps how will the intermediary forms, the autocracies and partially democratized regimes that cover the globe ever be eliminated so that the world’s entire populations can enjoy the benefit of governance for prosperity.

References