

FROM CHIEFDOM TO STATE: TOWARD AN INTEGRATIVE THEORY OF THE EVOLUTION OF POLITY

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ABSTRACT: *The evolution of the polity, particularly the transition of chiefdoms to states, has been the subject of considerable debate. In this article, the authors engage the discussion surrounding the meta-theoretical positions on the tempo of change, specifically whether states emerged gradually from quantitative changes in chiefdom societies—gradualism—or if their appearance was the result of punctuated and qualitative change—punctuated equilibrium. After revisiting the classic debate, the authors update it with new contributions drawn from the natural and social sciences. They contend that chiefdoms do not simply become states as a result of increases in the size of component parts; instead, punctuated equilibrium, stemming from responses to selection pressures from social forces, has more empirical support than gradualism in explaining state formation. The authors then take steps toward an integrative model of polity evolution, in which the state emerges as a discrete change resulting from social forces reaching critical thresholds.*

Keywords: polity; institutions; evolution; social change; chiefdom

A significant development in our species' history was the emergence of the polity as an internally differentiated and relatively distinct institutional sphere. A source of considerable attention, then, is the evolution of the polity in general (cf. Marx [1845–46] 1972; Spencer 1874–96; Turner 2003) and, more specifically, the process of evolution from chiefdoms to agrarian states (cf. Carneiro 1970; Chase-Dunn and Hall 1997; Cohen and Service 1978; Fried 1967).¹ Underlying these analyses is a meta-theoretical cluster of issues that has not been as clearly addressed and examined as it deserves to be: the pattern, tempo, and type of sociocultural evolution.

Drawing parallels to evolutionary biology, two rival, yet not necessarily incompatible, processes have been delineated to describe the process. On the one hand,

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many evolutionists, building off of Darwin's ([1859] 2006) seminal work, have argued that selection in human societies is continuous and gradual, with adaptation occurring rather slowly and with quantitative changes revealing a linear pattern (i.e., Earle 1984; 2002; Service 1962; 1975; Wright 1984). On the other hand, there are those who contend that sociocultural evolution, while often gradual, is at times marked by rapid and revolutionary transformations (Marx [1845–46] 1972; Polanyi 1944; White 1959; Yoffee 2005). This perspective emerged in biology where Niles Eldredge and Stephen Jay Gould (1972; see also Gould 2002) argued that while stasis was the norm, there were certain changes that had revolutionary impacts on a given species. These transformations occurred (relatively) rapidly and in a step-like pattern—that is, they were discrete events that punctuated the otherwise stable equilibrium.

After reviewing archaeological and anthropological evidence, it is clear that the shift from chiefdoms to ancient agrarian states was not typically simply a quantitative change in which chiefdoms slowly became states as they grew in size—as the gradualist perspective would hold—but rather a relatively rapid qualitative transformation. Given this historical record, those who focus on the relatively quick evolutionary leaps that denote major epochal changes, such as Marx and other social scientists such as Daniel Chirot (1994), provide more satisfying theories of social change. In addition, it is contended below that the chiefdom as socio-political structure was not always a necessary stage in the evolution of the polity; some states were not preceded by chiefdoms at all, directly becoming agrarian city-states from relatively egalitarian societies. Given these facts, it is our contention that the historical emergence of the state form was principally a punctuated process. As such, it can best be understood by applying knowledge gained from complexity theory: while their specific characteristics differ, biological and physical as well as sociocultural evolution have more often been the result of transformations occurring after certain pressures exceed critical threshold points (cf. Adams 1988; Chaisson 2005; Christian 2004; Prigogine and Stengers 1984). Yet, despite the flaws in gradualism, we contend that important insights can be gleaned from scholars in the gradualist vein, and when integrated with complexity theory a robust theory of the evolution of the polity can be constructed.

In this article we will first trace the contours of the debate that has unfolded over the pattern, tempo, and type of evolution of the polity in order to capture important insights from the gradualist perspective and later integrate them into the more empirically supported punctuated perspective. Next, we draw upon complexity theory to provide the framework for understanding how and why punctuated change can occur in sociocultural evolution in general, and specifically in political evolution. Finally, an integrated model which incorporates the general process gradualists use to explain sociocultural evolution with the explanatory mechanisms provided by those employing punctuated theories will be posited. The strength of the new theory lies in its avoidance of linear stage modeling, while also explicating general mechanisms which transcend the specific case in question, the transition from chiefdoms to states.

Chiefdom or State?

The debate of the evolution of the political institution undergirds the various models attempting to explain if, how, and why chiefdoms transitioned into large-scale agrarian states. By *chiefdoms* we mean any

socio-political entity in which overall social control activities are vested in a subsystem which is externally specialized vis-à-vis other activities, but not internally specialized in terms of different aspects of the control process (e.g., observing, deciding, coercing). (Wright 1984:42)

For Wright, as well as others such as Carneiro (1981), emergent political autonomy was the ultimate defining characteristic of chiefdoms. It was thought of as the first form of polity to unseat the local autonomy that characterized the vast number of societies—99 percent according to Carneiro—that had ever existed (Yoffee 2005:24–5).

Conversely, *states* are political entities that are internally specialized with regard to function and have a monopoly over the legitimate means of violence (Weber 1978). While internal specialization is an important defining characteristic, it is the state's ability to legitimately monopolize force that most clearly separates it from chiefdoms and other political forms (cf. Mann 1986; Tilly 1990). Thus, while chiefdoms can and have become internally differentiated at high levels, revealing hierarchical levels of jurisdiction and the creation of sub-elites whose kinship ties likely cross-cut local modes of integration, there are no known examples of chiefdoms in which the chief and his lieutenants have a true monopoly over physical force (Earle 1989).

In a state the king and/or set of administrators can and do derive power from their ability, and legitimate right, to use force as a last resort. Chiefs are given legitimate authority typically through traditional means that can be withdrawn relatively easily by the tribe (Kertzer 1988), whereas states rely on more complex systems of legitimacy such as theocracy or legal-rational (Bendix 1978; Richards and Van Buren 2000). The lack of monopolized means of violence and the emergence of differentiated nodes of power make chiefdoms unstable political forms, as the possibility of breakdown is salient where internal struggles cannot be met with force or the threat of force (Yoffee 2005). The polity is then subject to problems caused by various internal and external factors leading chiefdoms to cycle between simple (two rank levels) and complex forms (three or more rank levels) (Anderson 1994; also Milner 1998). To be sure, the state does have problems of stability of a greater magnitude, yet they are also more successful at facilitating peaceful exchanges for longer periods of time because of their ability to use force to coerce internally differentiated social units as well as their control over what Bourdieu (1989) referred to as symbolic power and violence (cf. Eisenstadt 1963).

Before we move on and discuss the gradualist arguments in-depth, it is worth pointing out that much of the literature we will rely on is anthropological or archaeological in nature. It will be apparent below that some sociologists, such as Karl Marx ([1845–46] 1972) and his theory of *primitive accumulation* will provide some important mechanisms with which to explain punctuated evolutionary change. However, sociologists have been generally concerned with the formation of the nation-state in the seventeenth century in Europe (i.e., Moore [1966] 1993; Skocpol 1979; Tilly 1990; Tilly and Blockmans 1994), which is an entirely different organizational unit than the early city-states in Mesopotamia, Egypt, China, the Indus Valley, Mesoamerica, and Peru (Adams 1966).² Both types of political change are important, but we feel the transition from chiefdoms to states has been relatively (and recently) neglected in sociology as has general interest in *long-term*

social change, both problems of which the classical theorists were fascinated with. We hope to add to the discourse by revitalizing interest in these particular sociological problems.

EVOLUTIONARY THINKING

The Limits of Stage Models

Gradualism (e.g., Service 1962) and, in many cases, existing theories (e.g., Marx [1845–46] 1972) of punctuated social change employ stage models as heuristic devices. On the surface this strategy makes sense as it produces a parsimonious framework for interpreting a very large amount of history. Yet it often obfuscates the very real possibility that punctuated changes may emerge rapidly and spontaneously driving qualitative changes in unpredictable directions. That is, a stage model by definition assumes some unilinearity in sociocultural evolution as well as telic notions of progress.

Take, for example, the “four stages” framework that emerged from the French Physiocrats and the Scottish moralists in the thinking of Turgot, Smith, and others (cf. Meek 1971). In this model, the type of subsistence determined the characteristics of particular periods in social evolution—for example, hunting, pasturage, and agriculture. The common thread was a contention that evolution was a force for the betterment of individuals and humankind in general (Smith [1776] 1991, see Book III in particular); evolution was unilineally moving towards the apex of humanity where benign self-interest greatly reduced the need for government—the Age of Commerce.³ For Smith, though, tempo was rarely a consideration.

Relying on subsistence technologies as the prime mover as well, Lenski (1970; 2005) offers a stage model that appears to implicitly account for gradual and punctuated forms of evolution. On the one hand, societies accumulate subsistence technologies, population, and other cultural factors. On the other hand, at certain points—as denoted by his stage model—qualitative leaps are made. Like most stage models, the mechanism driving these qualitative changes is noticeably absent. Despite technological changes being key forces of other sociocultural change, Lenski admits it often takes a very long time before the impact is felt.⁴ Moreover, the model implies unilinear direction; despite Lenski’s assertions otherwise, he never provides evidence or reasons as to when, why, or how a society would “leap” over a stage.⁵

Sociology’s Contributions

Some sociologists offer some foundational elements that will help us avoid falling into the gradualist perspective, especially the unilinear and cumulative growth of sociopolitical structure. While Marx’s historical materialism is a stage model drawn from Adam Smith’s—and, therefore, makes the same mistakes—he provides one possible way to get out of the stage model trap and explain punctuated change more satisfyingly. His theory of primitive accumulation—or the “historical process of divorcing the producer from the means of production” (Marx [1867] 1967:712)—is founded on “those moments when great masses of men are *suddenly*

and forcibly torn from their means of subsistence," which can be safely considered "epoch-making" (Marx [1867] 1967:716, emphasis added). His friend and editor, Frederick Engels ([1884] 1978), used this model to explain the process by which patriarchy rapidly became the model for the uneven distribution of political power.

Other sociologists have avoided the stage model problem all together, choosing to follow (sometimes implicitly) Herbert Spencer's (1874–96) evolutionary strategy. For Spencer evolution was truly a selective process; selection was a tenuous affair which, as the historical record clearly demonstrates, was more often than not a process of elimination (see Diamond 2004). Jonathan Turner (1995) has argued that five ubiquitous forces—population, production, distribution, power, and reproduction—historically have forced societies (or, more specifically, members of societies) to make adaptive choices, sometimes with disastrous consequences. Others have combined a conflict model with more Spencerian-like population pressures. For example, Chase-Dunn and Hall (1997) provide a theory of world-system evolution in which population pressure from demographic growth and environmental degradation can directly lead to hierarchy formation in order to relieve the pressures. If left unresolved, circumscription and conflict then generate additional pressure for hierarchy. Interestingly, a long-term historical trend in the evolution of polities is one of a step-like growth in size; that is, a series of punctuated equilibriums. Similarly, Daniel Chirot (1994) posited that states could emerge out of conflict pressures for leadership: either the need for mediation arises due to population growth and conflict over water or land rights or a war leader emerges and simply settles the conflict with force. As we will see below, this is a plausible argument considered by Italian archaeologist Mario Liverani in trying to explain the sudden emergence of Uruk (c. 3300 BCE)—the first city-state in Mesopotamia.

Lacking in sociology, though, is a clear picture of evolutionary tempo. Because evolutionary theory is generally disregarded by mainstream sociology, the focus has been, more often than not, on legitimizing evolutionary processes. Gradualism, which will be discussed in detail in the following section, dominates most sociologists' conception of social change, while talk of punctuated evolution is often embedded in unilineal models shrouded in teleology. By integrating the insights offered by anthropological-archaeological neo-evolutionary theory (Steward [1955] 1972; White 1959; Yoffee 2005), it is possible to shift the focus from direction (e.g., stage models) to rates of change. Not only does neo-evolutionary thinking commit to multilinear models, work on the transition to chiefdoms provides us with evidence of the different "paths" of sociopolitical (and sociocultural) evolution. Some states emerged out of slow, gradual growth in social structure that reached a "tipping point" so to speak, while others happened quite suddenly. That is, chiefdoms do not necessarily become states and states may not necessarily evolve out of chiefdoms; additionally, societies rise, fall, and cycle between different qualitative states (cf. Chase-Dunn and Hall 1997; Tainter 1988). Evolution takes strange turns; when parallel evolution occurs—for example, pristine state formation (Fried 1967)—the trajectory is often divergent. When significant evolutionary changes occur, punctuated evolution assumes there are step-like leaps seen on the ground as structural and symbolic reconfigurations in social relations and organization.

GRADUALISM

Two Paths

In general, gradualists tend to envision or conceptualize the state emerging out of slow, quantitative changes of chiefdom society. No theorist was more instrumental in fleshing out this model than Elman Service (1962). He proposed that societies evolved from bands to tribes to chiefdoms and, finally, to states. In Service's model the key dimensions pertain to how effective a particular chief is in (a) providing goods and services to the community and, ultimately, (b) institutionalizing a redistributive economic system while (c) establishing a permanent office with a system of succession—presumably hereditary. A leader's success, then, depends in part upon his charisma and influence but also upon his success in institutionalizing structural and ideological supports necessary to maintaining his charisma. In addition, Service (1975:94) asserted that effective control over redistribution "enables the leader to become a permanent fixture" in that he organizes the allocation of goods produced by the commoners. It was this transformation, or the differentiation and subsequent institutionalization of a political position, that eventually "*grew* into a hereditary aristocracy" (Service 1975:8, emphasis added). Service envisions the breadth of the chief's command expanding with the appropriation of goods for subsidizing craftsmen or specialists, fighting wars, or having massive inter-chiefdom feasts. The classic problem facing all state-craft projects, then, is finding ways to sustain submission because it is an unnatural human state and resistance can be endemic (Johnson and Earle 2000). Thus, some gradualists have argued that states form as the chief gains more control over key services such that the goods and services offered by the chief outweigh the independence from authority most humans desire (cf. Service 1962; Wright 1984). That is, security from external threats through public works like walls, the insurance of safe and somewhat reliable/predictable economic exchanges, and the use of force to stabilize internal relations between heterogeneous social units grows more desirable vis-à-vis the alternatives, such as segmentation.

Yet Service's stage model did not bear out under the scrutiny of empirical findings and the chiefdom stage had to be split into simple and complex chiefdoms to better fit the ethnographic and archaeological record (Earle 1977; 1984). Simple chiefdoms were those in which the chief was drawn from the local kinship unit, while complex or paramount chiefdoms had a ruling elite belonging to a kinship unit that cross-cut local organization. Three further characteristics separate simple chiefdoms from complex chiefdoms (Wright 1984): (1) settlement hierarchies, (2) residential segregation, and (3) mortuary segregation. Presumably, the germ of some important aspects of state-level societies can be found in these three distinctions: acute rural-urban divides, occupationally and/or ethnically based geographic differentiation, and class stratification.

A second path taken by gradualists is argued from a conflict perspective: states emerge following the gradual appropriation of scarce resources, such as control over the redistribution of a surplus, coordination of collective labor, or possession of prestige goods like rare metals or stones. Morton Fried (1967), for example, argued that societies evolved from egalitarian to ranked to stratified; states became necessary as forces protecting the landed aristocracy against claims of inequity

from the masses or other rival groups. As noted above, some sociologists have followed this same logic. Recall, Chase-Dunn and Hall (1997) argue that hierarchy emerges as a response to population pressure leading to environmental degradation, or circumscription and conflict. Chirot (1994) posited that states emerged out of chiefdoms where chiefs were either able to monopolize the role of mediator or arbiter, settling disputes over land or water and using this position to accumulate prestige and wealth and then strong enough following to muster up an army, or the chief was already a war leader and rather than attempt to mediate simply resolved the problem through the use of force and the appropriation of the land or property in question. Lenski (1966:45–6) expands this argument to include chiefs monopolizing any types of technologies, whether subsistence or war-based technologies, which subsequently lead to the monopolization of positions of power and privilege, and finally, an elite class usurping the right to use force legitimately.⁶

A General Theory of Gradualism

Anthropologists Allen Johnson and Timothy Earle (2000) provide us with a very good synthetic theory of gradualism (see Figure 1). The engine of gradual change is a feedback loop in which societies eventually become locked. Initially, resources become strained as population size and/or density increases; subsequently,

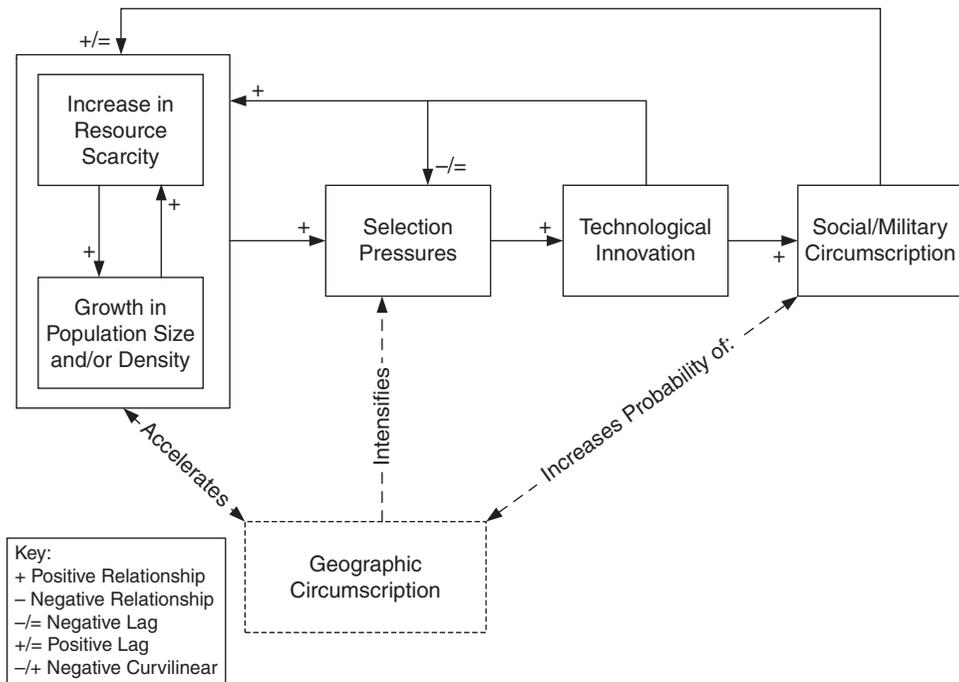


FIGURE 1
 Gradualist Feedback Model of Evolution

resource scarcity produces selection pressures that have often been historically resolved through fission (Maryanski and Turner 1992).⁷ However, where mobility is circumscribed due to natural or socially constructed barriers, fission becomes a costly option and technological innovation (e.g., the construction of an irrigation system) is undertaken to relieve the pressures.⁸ Each advance temporarily relieves the selection pressures, generating a feedback loop as populations can grow larger and more dense, impacting the environment in new ways, and making resources even scarcer (for a general discussion of the relationship between population and resources, see Boserup 1965; Cohen 1977; Hassan 1975).⁹

At some point, in Johnson and Earle's model, four new problems based on intensifying subsistence production emerge in some combination: (1) production risks grow salient, (2) raiding and warfare gradually become more frequent and grow in magnitude, (3) resources often are expended in inefficient ways, and (4) resource deficiencies can become magnified as selection for particular strains leads to a dearth in biodiversity and dependency becomes tenuous. In whatever amalgamation, these new problems act as selection pressures for some segment of the population to innovate in ways that manage risk, capital, "foreign" trade, and the central storage of resources, as well as mobilizing human resources to protect, fight, and raid neighboring tribes. And when we take Service's emphasis on leadership into the equation, then we can simply conclude that a charismatic leader—whether born on the battlefield, through his or her unique ability to channel the supranatural, or through his or her extraordinarily high degree of aptitude and intelligence—is the final ingredient needed to institutionalize, if only temporarily, the office of the chief and the import of his closest relatives (see Chirot 1994), and when these problems increase in quantitative magnitude, the office of the king and his administration (cf. Emerson 1990).

Perhaps the dimension of sociopolitical evolution gradualists have difficulty explaining is the emergence of power and hierarchy. Service (1975) maintains an argument that people become used to a chief's services and, as these services diversify, a power-dependent relationship emerges (cf. Johnson and Earle 2000). One of the key services these chiefs offer either pertains to conflict resolution within the group or successful war making (and defense) against external threats. Combined with mythologies surrounding hereditary succession, the subjugation of conquered groups, which provides even the "poorest" of the chief's people's relatively higher status and the loyalty earned through war making and distribution of war booty, transforms society from a rank society to a stratified society. To be sure, Morton Fried (1967) argues, *vis-à-vis* Service, that stratification and inequality are the prime movers of state craft, yet he still has little to say about tempo. Force is simply embedded in structural relations, and through the introduction of slaves, uneven growth in access to land and other resources, and the gradual monopolization of the legitimate use of violence, chiefdoms become states.

In sum, gradualists posit that societies become locked in population pressure-resource scarcity feedback loops predicated on natural and/or social barriers preventing fission. The feedback loop becomes the key to understanding the cumulative and imperceptible quantitative growth of a society and, with the evolution of power-dependence relations and the monopolization of force that this

functional indispensability provides, states, or full-time political entrepreneurship, become a taken for granted aspect of society. Whether conceptualized as chiefdoms evolving into states or ranked societies evolving into stratified societies, the unilineal nature of gradualism is clear. If anything, the weak explanations concerning the emergence of power and hierarchy point to the poor explanatory power of gradualism. Not only is force highly contested, in ranked and stratified societies, humans do not simply subordinate themselves to those offering services they need. The technologies necessary for effective monitoring and sanctioning did not exist and those that did were costly; resistance in the villages away from the growing political centers was likely endemic. Moreover, wanton displays of intense force were common reminders of power relations.

PUNCTUATED EQUILIBRIUM AND COMPLEXITY THEORY

Contrary to the gradualist perspective of relatively smooth linearity, the concept of punctuated equilibrium adds dynamism to evolution.¹⁰ Eldredge and Gould (1972) have been the strongest proponents of this position in biology, contending that transformational evolutionary change punctuated an otherwise static species environment. Speciation occurred rapidly, although the quick pace was realized only over the long time frames of natural history. Instead of the slow growth of a tree, then, punctuated equilibrium is evinced in the springtime blooming of many flowers.

The idea of rapid evolution from punctuated equilibrium finds its complement in the concept of phase transitions from complexity theory. In complex adaptive systems, increases in energy flow can produce self-emergent transitions from one state to another. The process creates discrete jumps—a series of punctuated equilibria—as critical thresholds are crossed and the system is transformed into a different qualitative structure (cf. Gunderson and Holling 2002; Prigogine 1997; Prigogine and Stengers 1984). The most mundane phase transitions may be witnessed as H₂O molecules change from ice to water to steam. Analogous processes and outcomes are found in living systems as well—for example, trophic levels in ecosystems form stepped pyramids as energy is transformed when it flows through the food chain (Colinvaux 1978), the level of complexity of societies increases by orders of magnitude when energy flows cross certain thresholds (Giampietro and Pimental 1991), “upward sweeps” in the scale of cities and empires reveal a similar punctuated pattern (Álvarez, Inoue, Lawrence, Love, Courtney, and Chase-Dunn 2009), and world-systems of societies reach bifurcation points in which the extant structure is no longer able to survive and is replaced (Friedman 1982; Wallerstein 1998; 2004).

But while it is easy to observe the tempo and shape of molecular evolution in water, the same processes in the evolution of human societies are not immediately perceptible. What takes seconds in the former may take years in the latter. Students of sociocultural evolution, therefore, have argued that social scientists in general need to reorient their conceptions of time (see Christian 2004 for a classic statement on this matter).¹¹ In their study of state formation in Mesopotamia, Douglas Kennett and James Kennett (2006:85) take the long view of human sociocultural

evolution—that is, ~80,000 years—arguing state formation that took place from ~6000 to 3000 BCE was a single punctuated event, “a dynamic interval of human cultural evolution.” What many would deem today a slow process, Kennett and Kennett recognize as being quite rapid in the face of the entire course of human evolution. Taking a larger, though complementary view, Claudio Cioffi-Revilla (2006:83) argues that between 7500 and 1500 BCE the Near East went “. . . from a disconnected region of simple and isolated societies (pre-pottery Neolithic period) to a network of chiefdoms, to a highly interconnected and interdependent network of politically complex polities at stately and imperial levels.” Cioffi-Revilla contends that this same punctuated evolutionary sequence—simple societies to chiefdoms to local and regional world-system—occurred not only in the West Asian region but also in the Mesoamerican, Andean, and East Asian world-systems.

Taking a slightly different appraisal of the archaeological evidence, David Anderson (1994:15–8) has argued that it is plausible to suggest that “*pristine*” chiefdoms occur gradually, “as resource control, alliance, and exchange networks, and supporting ideologies” emerged slowly and sometimes risk-management strategies generated legitimate authority for the best practitioners. *Secondary* chiefdoms, whose size and scale were *qualitatively* different, formed rather quickly in reaction to real or perceived threats from neighboring chiefdoms or other societies; while the rate of evolution was aided by secondary chiefdoms borrowing a tremendous amount of cultural material from their neighbors, it would be incorrect to conflate the quantitative growth of pristine polities with that of secondary ones. This evolutionary pattern appears to bear out, for example, in Mesoamerica. Archaeological evidence indicates that pristine chiefdoms evolved during the Middle Formative period (1500–600 BCE) on the South Gulf Coast region and not in Central Mexico, despite similar material conditions (Sanders and Price 1968:117–22).¹² Sanders and Price conclude that evolution of secondary chiefdoms in the Highlands was “indeed a rapid process” that was likely stimulated by “the development of other chiefdoms” on the Gulf Coast (Sanders and Price 1968:132).

Providing more support for punctuated evolution, Norman Yoffee (2005:60) offers a slightly different story that shifts the focus to cities: “In every region of the world where the first states appeared, cities were the collecting basins in which long-term trends toward social differentiation and stratification crystallized.” This reflects Yoffee’s “growth” model of state evolution: rather than chiefdoms, which remain anchored to an agrarian way of life, urbanization and population growth led to the formation of cities, city-states, and states, based on the expansion of interaction spheres (cf. Adams 1966). Yoffee points out that the growth of cities was “revolutionary” because it transformed all social life. Moreover, their growth occurred rapidly in “phase transitions” and are thus fitting of a punctuated equilibrium model: before 4000 BCE most villages in Mesopotamia were no larger than 10 hectares and they consisted of just a few hundred people, yet by 3300 BCE Uruk was around 250 hectares (2.5 km²) with around 20,000 people (Yoffee 2005:210–11, 230). Similarly, Chase-Dunn, Pasciuti, Alvarez, and Hall (2006) reveal a pattern of punctuated change from city-states to empire that occurred in regions such as Mesopotamia when the Akkadian empire (c. 2350–2100 BCE) was formed following internal ethnic revolt. This is just one of a number of instances when the scale

of cities and polities rapidly and significantly increased throughout evolution—a phenomenon referred to as upsweeps (see Álvarez et al. 2009).¹³

Mario Liverani (2006) provides archaeological evidence supporting the contention that Mesopotamian city-states did not derive from chiefdoms (cf. Nissen 1988; Pollock 1999; Postgate 2003). First, the extant texts found in Uruk (the first known urban area in human history) do not reveal the appropriation of surplus produce or taxation on the part of the temples as one would expect to find in chiefdoms or a nascent state recently emerging from a chiefdom. Instead, it appears as if the temple appropriated corvéé labor to harvest barley (Liverani 2006:21; see also Lipinski 1979). Second, conspicuous consumption patterns left behind in archaeological remains do not indicate the existence of chiefdom-like societies (see Earle 1987 for discussion of archaeological evidence). Chiefdoms tend to leave behind artifacts pointing to individual and close kinship consumption of wealth, whereas states have communal displays as witnessed by temples, palaces, and complex symbolic systems manifest on clay tablets or parchment—the latter and not the former have been found at Uruk.

Liverani (2006:19, emphasis added) asserts the creation of the long field, which was a response to the unique ecology of southern Mesopotamia, “must have had an impact on agricultural production . . . *no less important than the introduction of mechanization in modern agriculture*” as it would “have increased productivity in the order of between five hundred to a thousand per cent.” This sudden leap in productivity, and the construction and maintenance of a hydraulic system, would have necessitated a centralized political organization on a scale well above a chiefdom. Additionally, the lack of metals in the area would have necessitated long-distance trade routes, putting even more pressure on state-like structures that could absorb the risk involved in the purchase and delivery of high-cost resources. Thus, we find large storage sites for grain (indicating grain acted as currency, and not simply a means to indicating one’s prestige) and buildings that housed women and children for the weaving and spinning stages in the “mass” production of textiles.

Given that empirical evidence reveals instances of punctuated change in the history of sociocultural evolution, it is clear that concepts such as punctuated equilibrium and phase transitions are worth considering for their applicability in the evolution of political forms (see C. C. Spencer 1990). We want to be clear, however, that we are not positing that human systems operate in exactly the same manner as other living or non-living systems and are therefore subject to the same laws or are explained by the same theories. For example, the concept of self-emergence—the undirected creation of structure in complexity theory—does not seem to be applicable to the evolution of the polity. After all, humans have large brains and are able to manipulate their relationship with the natural world unlike any other species, creating institutions to deal with selection pressures caused by macro-forces such as population, production, distribution, regulation, and reproduction (Turner 1995; 2003). Moreover, social actors make decisions that impact the direction, type, and relative success of social change.

The key insight that we do unapologetically borrow from the natural and physical sciences and from complexity theory, however, is that the qualitative

transformation in the polity that generated the state form was a punctuated event occurring after reaching thresholds, sometimes slowly but other times in rather sudden fashion. We contend that energy flow—the driver of change in complexity theory—has an analogous process in human sociocultural evolution that operates in addition to any effects from thermodynamics: pressures resulting from macro-dynamic forces and macro-exigencies translated into micro-exigencies.

A robust theory of sociocultural evolution should therefore, in our opinion, include human responses to selection pressures but recognize that the reactions to perceived threats may occur only once certain thresholds have been crossed. This requires integrating fruitful aspects of the gradualist perspective—population pressure, circumscription, resource scarcity, and power, differentiation, and force—with the temporality of the punctuated perspective and the concept of thresholds from complexity theory. It is to our theory that we now turn.

TOWARDS AN INTEGRATIVE THEORY

Making Thresholds Historically Real

The *principle of least effort*, which states that people will only do enough to survive or maintain their current life situation, and that people will accept less than the objective “best” in favor of stability and less work, seems to undergird gradual or quantitative growth (Sahlins 1972; Zipf [1949] 1965). Additionally, people rarely give up their freedom unless other options are costly or unless forced to from above (cf. Johnson and Earle 2000; Mann 1986:34–73). Thus, the pressures or incentives conditioning rapid, qualitative changes must be great enough to produce the level of motivation necessary to overcome the inertia of complacency and also the desire for autonomy.

Thresholds in the Abstract. Figure 2 adds the abstract notion of thresholds to the model. By itself, the feedback loop that increases population size and/or density and resource scarcity will continue to produce quantitative, often imperceptible, changes in technology, organization, and symbols. Either purposively or unconsciously, humans always make minor changes in reaction to immediate problems, the pursuit of self-interest or gratification, or because of poor memory; however, these changes are not necessarily aggregated or institutionalized over time. Culture is flexible and change is constant; even where institutional inertia appears present, no society remains static over time.

Thresholds, in sociological terms, are moments in which exogenous and endogenous exigencies amplify the magnitude of the feedback loop, causing (a) the selection pressures to grow in intensity and (b) the adaptive efforts of individuals and the groups to which they belong to grow in importance, risk, and outcome. That is, the feedback loop is an additive process by which societies grow in complexity, but the presence of other exigencies has multiplicative effects on sociocultural evolution. Thresholds represent moments in which the principle of least effort and the desire to evade authority must be circumvented, otherwise the group or segments of the group’s survivability will be at stake. There are two somewhat inclusive paths to thresholds. The first occurs through the gradual accumulation of quantitative changes, or as Sanderson (1994:50) refers to it, the “grand

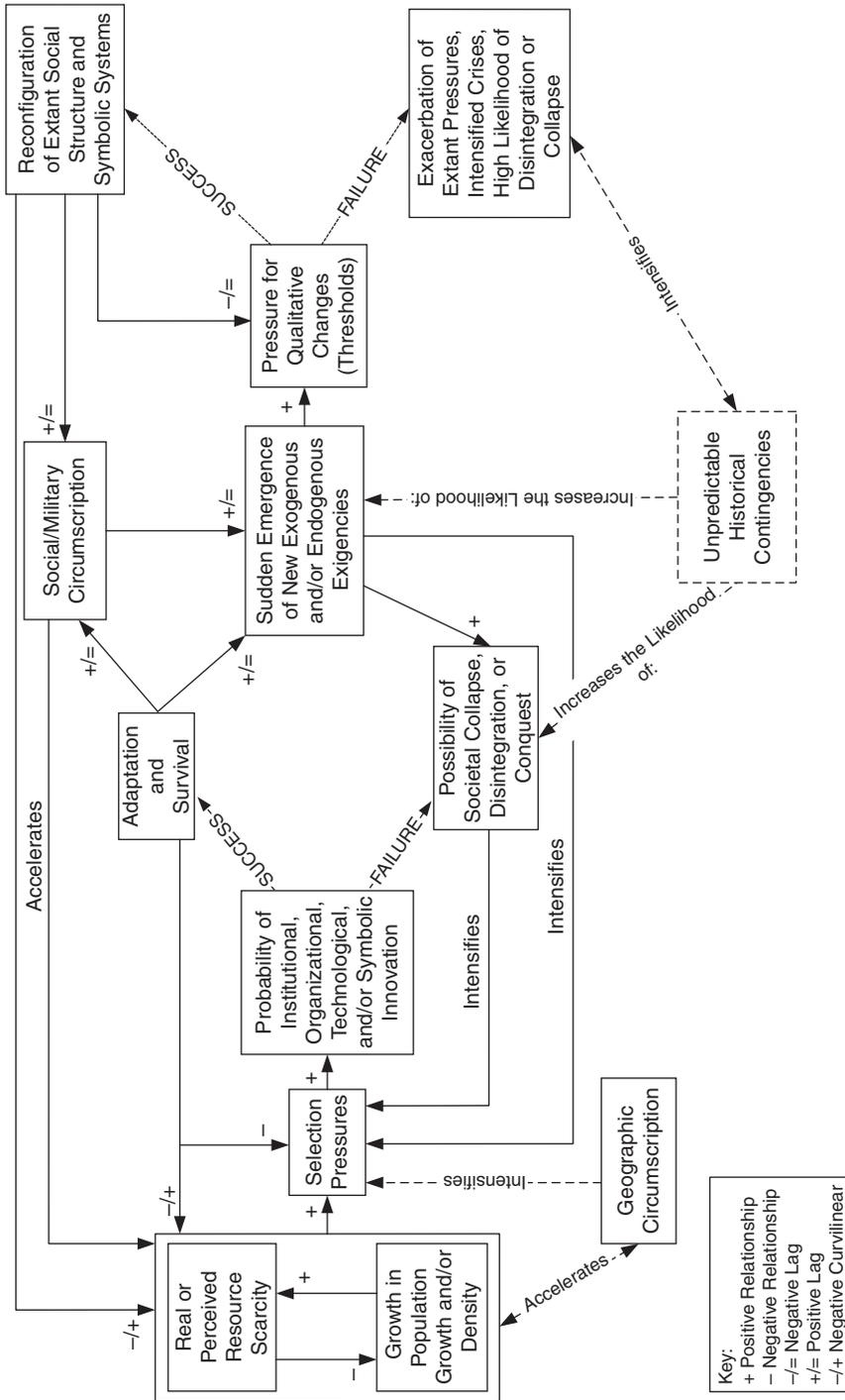


FIGURE 2
Integrated Model of Political Evolution

aggregation and multiplication" of micro- and meso-level changes; the second, through the multiplicative effects of a powerful exogenous and/or endogenous exigencies that often appear suddenly. There are a finite number of exigencies with which societies must deal; some have natural causes, such as famines, droughts, or volcanic eruptions (Fagan 2004), while others are the result of socio-demographic pressures, including population growth or density, inter- or intra-societal conflict, or resource scarcity. Thresholds, then, reflect the intersection of multiple exigencies, sometimes due to their slow buildup reaching a "tipping point"; in other times it is their sudden confluence.

Either way, at some point the accumulated exigencies become amplified by seemingly sudden historical events accelerating the process, generating a bifurcation point in the group's trajectory. Bad decisions, maladaptive solutions, lack of motivation or perception, or extant power structures that prevent action can all steer the society towards the brink of collapse, disintegration, or weaken it for conquest. Successful solutions—and success is always relative in time and space—produce qualitative leaps through the reconfiguration of extant social structure and symbolic systems. Regardless of where they emerge, the changes are correctly termed leaps in the punctuated sense, because groups on the doorstep of thresholds do not have much time to resolve the problems, because the feedback loop accelerates, problems magnify, and societies move precipitously to the edge. Thus, all moments in which thresholds are reached according to the definition delineated above reflect moments of punctuated change. What must be left to historical analysis is whether the thresholds are the result of sudden, historically contingent moments or the onset of a tipping point resulting from the intensification of problems emerging from the gradual growth in size and/or complexity. As we have argued above, given the evolution of chiefdoms in Mesoamerica, it is plausible to suggest both routes to punctuated change occur: the pristine chiefdoms appear to have grown from the gradual evolution of secondary exigencies as population size/density increased and new methods of resource intensification altered social relations and structure to the point where new forms of spatial, temporal, and symbolic organization became necessary in the face of uneven distribution and occupation heterogeneity. On the other hand, Central Mexico gave birth to secondary chiefdoms greater in size and complexity in a relatively short period of time, and without the archaeological record attesting to slow growth of ranking, centralized authority, and other features of chiefdoms. In Mesopotamia and Egypt the data indicate that states emerged where chiefdoms did not exist—that is, chiefdoms were dead ends. Both societies reached a bifurcation point in which exigencies and the feedback loop had multiplicative effects on selection pressure, threatening the standards of living of a greater proportion of the population and making collapse or conquest imminent and innovations vitally important.

It is worth noting that successful adaptation, as we are conceiving of it, has both a material and symbolic base. The standard sociological argument is more often focused on material changes—for example, economic and/or subsistence technology innovation at the expense of the importance of ideological innovations (e.g., Marx [1845–6] 1972; Sanderson 1999). Though initial success may in fact be predicated on economic and/or technological adjustments in the face of perceived environmental

or social exigencies, it is quite clear not every society survives (Diamond 2004). Thus, we strongly suggest that in the end, ideological or symbolic innovations are equal to material changes in contributing to successful adaptation. Humans are symbolic creatures with very large brains; making sense of their environment, linking cause and effect, and justifying/explaining social relationships in symbolic form appear to be essential components of human nature. As noted above, the dilemma between submitting to suprapkin systems of authority versus remaining independent is very real. Theorists of power have long pointed out that coercive force is unstable and short-lasting and must be buffered by reorienting cognitive reality. The near incessant rise and fall of city-states that characterizes ancient societies illuminates the importance of symbolic innovation (Yoffee and Cowgill 1988). Rather than presume primacy over which type of adaptation is most important in the process we propose that both are key aspects: economic and technological changes typically alter social relationships in ways that require new symbolic innovations—for example, ideological explanations/justifications, differentiated symbols to demarcate new social units and produce totemic foci for rituals of collective effervescence, and cosmologies which make sense of the new social landscapes. Societies which fail to implement successfully adaptive symbolic systems are just as likely to collapse as those whose material changes are maladaptive.

To recap, we agree with gradualists that quantitative changes are likely constant forces present in sedentary settlements, and perhaps even at many times during nomadic hunting/gathering life. As Malthus ([1798] 1926) proposed long ago, populations do press up against the available set of resources, gradually degrading their environment and forcing groups to produce adaptive solutions. For most of human evolution, the clear solution was fission, but with geographic and social circumscription came selection pressures that required technological, institutional, organizational, and symbolic innovations that could resolve them. Many of these solutions had immediate success and allowed groups to maintain the status quo in social relations and organization, gradually adding up to quantitative changes. However, at certain bifurcation points, the gradualist feedback loop (Figure 1) is suddenly amplified by either historical contingencies, such as natural disasters, or other multiplicative exigencies, like continuous inter-societal conflict, immigration, and heterogeneity. These moments are thresholds magnifying the selection pressures for innovation as well as the potential consequences of success or failure. People may be late in perceiving pressures, they may not be able to perceive or do anything about the pressures because of extant power structures, or they may choose maladaptive solutions in the short or long run, yet it is at these moments that simple solutions are no longer possible. Thus, at these thresholds, humans are forced to make difficult decisions and to innovate in ways that are irreversible and lead to qualitative reconfiguration of structural and symbolic reality.

FROM CHIEFDOMS TO STATES

While a general theory is useful, the title and subject of this analysis is the transition from chiefdoms to states. Already, we have posed the question whether chiefdoms are dead ends or whether they grow into states; with the integrative

model, it is possible to suggest both paths are possible. However, the change itself was one of qualitative change and cannot be understood as a simple quantitative, cumulative transformation. Preferring to emphasize a conflict-based model, we propose that, at least in the case of Uruk, the two key forces causing the sudden jump from village-based nucleated societies to the first city-state in human history are intensification of heterogeneity and, concomitantly, the intensification of conflict. It is quite possible to suggest, at least in terms of the transition from simple polities to states, that one or both of these forces always play an important role.

Durkheim (1893) was correct to assert heterogeneity is undeniably a force to be reckoned with. It is not important where the source derives, whether occupational, ethnic/tribal, or other distinctions, because the consequences are general across cases. Heterogeneity leads to massive problems of internal order that disrupt economic activities, social solidarity, and notions of morality, right and wrong, and the generation of collective effervescence necessary to reinforce the moral order. Political entrepreneurs, whether extant or not, emerge in ways that reduce the salience of heterogeneity, among other things, by (a) inventing and propagating more general and abstract ideological systems—for example, the Mesopotamian regional culture involved local deities emphasizing the distinction between states, but a pantheon emphasizing the solidarity across states (Kramer 1963)—(b) creating multiple levels of jurisdiction that allow for kin-based mechanisms of conflict resolution to resolve some problems, while channeling non-kin conflicts towards “neutral third-party,” and (c) converting loyal warriors into specialized police forces that materially and symbolically expressed their right to violence as a last resort as well as could act to quell rebellions.

Whether solutions to heterogeneity or heterogeneity itself precedes or follows the emergence of near constant warfare or the threat or perception of threat of warfare is a chicken-egg debate better left for another time. Herbert Spencer (1874–96) most notably argued that power and the monopoly over violence is driven by constant warfare and the need to centralize and consolidate authority if only temporarily (cf. Carneiro 1970). More often than not, in times of peace, warrior-shamans are able to institutionalize their positions into an office and employ the loyalty of a burgeoning warrior class to protect their power and privilege (Chirof 1994). External threats played two other key roles in the transformation of polity. One resulted from the social circumscription produced by barbarians and rival states: the need for defensive innovations, which required coordination of labor to build as well as created barriers between the outside and inside, further reducing the distance between heterogeneous peoples within the state; in-group/out-group distinctions were easily reinforced by visible demarcations of boundaries like walls and ethnocentrism borne out of state ideology. Second, threats gave self-aggrandizing kings and those aspiring to the throne reasons to expand the polity through imperialism. Chances to enhance prestige, widen the gap in wealth distribution, expand one’s court through slavery, produce stronger loyalty through the distribution of land to one’s warriors, and justify the need for a standing army and, subsequently, the unarming of the peasantry were all produced from the exigencies of war.

Recall Liverani's (2006) analysis of the appearance of Uruk discussed above. His argument can easily be placed in the context of our theory. If the archaeological evidence he provides stands as is, it is clear that these dynamics were at work. When the water table dropped and opened up new land (Fagan 2004:130–9; Nissen 1988:55–7), undoubtedly, a wave of migration produced settlers for the same reasons present during the populating of the American West. It is likely that the first wave was followed by other waves as people in distant lands left for the same reasons the first wave did, or because they had gotten word from kin or through trade networks of the opportunities. As these waves produced larger and denser settlements, problems of heterogeneity and external threats probably exacerbated the basic problems of population-resource scarcity. Chieftdoms were not an option, because they are founded on kinship logic and not on power and force. People were faced with a choice: leave the new land and perhaps start all over again or find new ways to organize disparate groups of people. In a very short period of time, temple-economies, which were more about polity and less about religion in the modern sense of the word, emerged as oligarchies concerned with political problems involved in coordinating labor for public works like irrigation and canals, taxation in the form of *corvéé* labor, and resolving the conflicts between neighboring villages (Lipinski 1979). It is also very likely that in a short period of time rival temple-economies whose location along the river and whose population sizes were important to their strength emerged in a web of conflict and cooperation with each other, not unlike the city-states of Sumer, Akkad, or Babylonia. Strong centripetal forces drove the unification of temple-economies and conditioned the rise of strong warrior chiefs who could parlay their newfound power and prestige into permanent, non-kin-based offices and begin to deal with the practical problems of governing as well as "venture capitalism."

In essence, in the absence of extant chieftdom-like structures and in the face of endogenous and exogenous exigencies putting serious pressure on people's standards of living, suprapkin political organization was a realistic and, in hindsight, effective solution. It could very well have been predicated on a "survival of the fittest" mentality as the kin group with the most cohesion, largest number of males, and/or best equipped shaman-warrior would likely impose their will on other kin groups. It is also plausible to think a brilliant engineer figured out how to irrigate effectively or an early shaman-astronomer studied the sky long enough to roughly estimate when a flood would likely come based on the sun's angle; in this sense, monopolizing valuable knowledge and practices could be parlayed into removing oneself and his kin from productive labor which would mean he would need to find a way to feed himself. Rather than give up his property, *corvéé* labor in exchange for the esoteric knowledge he could offer seems reasonable. From here, defense and self-aggrandizement are two likely options as barbarians, rival kin, or other types of threats would emerge as surplus increased (not to mention, the priest-king would want to increase his services to the surrounding villages, one of which is defense). What is most important is the fact that where chieftdom-like structures predate serious exigencies, past solutions will already be embedded within the sociopolitical structure. Pressures to invent suprapkin organization are likely to be muted, and collapse more imminent. Perhaps under the right circumstances—for

example, a serious armed rivalry—kingship may be invented, but it is likely to be punctuated change in the face of intense pressures.

CONCLUSION

The goal of this article was two-fold: first, to add to an already robust literature concerning sociocultural evolution by examining the ways in which tempo plays a role; second, we wanted to look more closely at the transition from chiefdoms to states as an example of why tempo is important as well as how tempo may have played a role in the evolution of sociopolitical systems. Sociology, especially, has left this question unanswered for too long, mostly choosing to emphasize historical typologies that do little to explain why transitions happen, the speed at which these transitions occur, and the mechanisms driving these transitions. While some classical and contemporary sociological thought implicitly emphasizes the role that material and/or existential crises have in fostering change, there remains a dearth of explicit statements on why and how these moments occur and are different from other types of change.

In this article, we presented a new model of state formation that builds off insights from the gradualist and punctuated perspectives of sociocultural evolution. We introduced a dynamic process—selection pressures reaching critical thresholds—as the driver of revolutionary change. But we did not abandon human action for a deterministic law; in our theory, individuals and groups are faced with micro- and macro-exigencies such as population pressures, resource scarcity, internal and external conflict, and environmental change. In some cases these pressures amount to minor adaptive changes, which when added up over time produce a tipping point and qualitative change; in other cases these pressures emerge suddenly, exacerbating extant exigencies and causing rapid and sudden change. If these pressures exceed the inertia to minimize effort and evade authority, attempts to innovate and adapt, including increasing the power of the polity, are made. Sometimes they are successful and the society thrives; other times not and the society disintegrates and possibly collapses.

We realize our theoretical discussion is not complete. Future theoretical work will depend greatly on research that attempts to apply our integrative theory to more cases of state-formation, as well as other instances of potential qualitative social evolution like the Axial Age, the rise of the Catholic Church, the Protestant Reformation, or Soviet Communism. Our study and theory were induced from a number of cases; some discussed in the text, others omitted for brevity's sake. However, we have not looked at every applicable instance, and there may be variation that produces scope conditions on our theory. We welcome this work, as theory should never be seen as unalterable. Only through the application of the theory posited above would we be able to modify and strengthen our assertions in ways that allow us to better explain sociocultural evolution.

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NOTES

1. Authors' note: In the literature related to this topic, the concepts of polity and state are used synonymously in some cases, while in others they are considered as distinct entities or processes. For our purposes, *polity* will refer to an institutional domain concerned primarily with collectively, binding decision-making and the distribution of power in a given society—a common definition employed by many macrosociologists (e.g., Chase-Dunn 1998; Evans 1995; Turner 2003). *State*, on the other hand, is understood to be the primary organizational unit located within the polity once the political institution has attained some degree of institutional autonomy (Abrutyn 2009). It is the locus of actors concerned with decision-making and the distribution of power, but it cannot be seen as the *only* political actor or the entire polity: other social strata with political interests, subjects and/or citizens, and extra-societal actors all may be a part of the polity at one point or another.
2. To be sure, there are scholars within sociology who study chiefdoms and states (for examples, see Chase-Dunn and Hall 1997; Chirot 1994; Nolan and Lenski 2009; Sanderson 1999). But even a cursory review of the literature would throw in sharp relief the great divide between anthropological concerns and sociological concerns.
3. The Hobbesian ([1651] 1982) problem of order undergirds the evolutionary work of Smith as well as Durkheim (1893), Herbert Spencer (1874–96), and Karl Marx ([1845–46] 1972), who were all believers in economic institutions being the best answer: a market with a strong division of labor would reduce the violent tendencies of humans, reduce government intervention, and channel conflict-oriented behavior into competitive drives beneficial to the entire society. The result, more often than not, has led these types of theories towards unilinear and progressivist tendencies that ignore empirical reality.
4. Relying on advances in subsistence technology can lead to dubious assertions. The plow, for example, is held by Lenski to be one of the most important inventions ever and its advent marks the transformation from horticultural to agrarian societies in his model (Nolan and Lenski 2009:139; see also Sanderson 1999). However, its impact in some regions is dubious. The old plow was only useful on light soils, whereas the hoe was much more effective for farming maize in the Americas, rice in Asia, and root crops in the tropics. In China, the hoe continued to be used until a metal-shod was put into place *ca.* 2,000 years ago; and in the Mediterranean region, the plow did little to increase surplus or production. Wheat farming could only produce about 500 lb. of grain per acre per crop, whereas in Mexico and China, yields were about 5 times as much (Eugene Anderson, personal communication, June 11, 2009).
5. Lenski does offer alternative paths like “maritime” or “pastoral” societies (see Nolan and Lenski 2009:176–87), but it is clear that the amount of time spent discussing these “bypaths” and relative lack of detail each one is accorded underscores his commitment to a predominantly unilinear evolutionary pattern.
6. In anticipation of the criticisms we level against gradualism, the Fried/Chirot/Lenski argument runs into some serious problems when applied to empirical cases. Many of the Northwest American Indian chiefdoms would not fit their version of the gradualist model: they tended to be simple politically—that is, rarely were they powerful individual chiefs—yet they had true classes as well as some other state-like elements of social structure (Matson, Coupland, and Mackie 2003).
7. *Selection pressures* are pressures that drive sociocultural adaptive solutions, but may result in inaction, maladaptive solutions and/or collapse, disintegration, or conquest (Abrutyn 2009; Turner 2003).

8. Robert Carneiro (1970; 1981) has been an ardent proponent of the gradualist chiefdom-to-state position. He argued that circumscription, or barriers to geographic mobility, are the key forces producing sedentary settlements and, ultimately, locking human societies into the population-scarcity-innovation feedback loop. Circumscription can be natural—that is, barriers like oceans, deserts, or mountains—or socially constructed—that is, strong kin networks, the luxuries or convenience of urban living, technologies tying individuals and groups to the land, or hostile neighbors/compulsory military service. Sources of circumscription tend to grow parallel to population growth and innovation meant to solve resource scarcity, becoming a key cause and consequence of the feedback loop itself.
9. Authors' note on reading the theoretical models: The model moves from left to right in time. Beside each arrow, the reader will find a numerical sign indicating the relationship between the preceding variable and its effect. A plus means a direct relationship and a minus an inverse relationship. Where an equal sign appears, the assumption is that the first variable has either a positive or negative impact in the immediacy, but over time the effect plateaus. Finally, +/- or -/+ stands for a curvilinear relationship: that is, the factor initially has a positive or negative effect, respectively, but over time reaches a peak or trough which eventually leads to the opposite effect.
10. It is worth noting that punctuated change from thresholds crossed also works in the other direction: the greater the complexity of the system, the more vulnerable it is to various shocks (Homer-Dixon 2006). In his study of societies that have succeeded or collapsed during climate changes, Fagan (2004) calls this scalar effect the result of a society "trading up on the scale of vulnerability."
11. To be sure, it is difficult to adjudicate between the two perspectives of time. On the one hand, the formation of the state in Mesopotamia and Egypt were rather rapid phenomena when considering the relative stasis of sociocultural evolution preceding it. In a similar vein it is difficult to suggest anything other than punctuated change in cases like the evolution of neo-Assyrian empire in the ninth and eighth centuries BCE or of Teotihuacán in Mesoamerica between 300 BCE and the Common Era. However, as Lenski (2005), Sanderson (1999), and even Frank and Gills (1996) are correct in pointing out, there are periods of similar duration—for example, the 500 plus years between the fall of Rome and the Gregorian Reformation in 1075 CE—that seem to be moments of gradual, quantitative growth. Thus, while we feel one must be judicious in their interpretation of time given the context of the period in question and the preceding periods. 5,000 years ago, change that took 300 years is quite rapid when considering the long period of development that preceded it. The so-called dark ages, on the other hand, appear to be periods of gradual, cumulative growth especially when considering the rapid changes in, for example, Europe around the tenth and eleventh centuries CE.
12. Archaeological evidence reveals a ceremonial center-hamlet pattern indicative of chiefdoms in the Gulf Coast regions; settlements in Central Mexico, during the same period, consisted of "nucleated villages or towns as centers with dependent hamlets" (Sanders and Price 1968:121).
13. Like Anderson's theory of secondary chiefdoms emerging rapidly in the shadow of pristine chiefdoms, some scholars have posited punctuated change is the result of "semiperipheral" marcher states (as well as chiefdoms and other types) that transform the extent polity quite rapidly due to advantages derived from their structural and/or geographic position relative to the "core" polity (Chase-Dunn and Hall 1997; Collins 1981; see also Love, Álvarez, Inoue, Lawrence, Courtney, Elias, Roberts, Genova, Autelli, Liyanage, Hopps, and Chase-Dunn 2010).

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