

# 4

## The Puzzle of Human Ultrasociality

### How Did Large-Scale Complex Societies Evolve?

Peter Turchin

#### Abstract

After a long and turbulent history, the study of human cultural evolution is finally becoming comparable to the study of genetic evolution, with human history the counterpart of the biological fossil record. One of the most remarkable products of cultural evolution has been an increase in the scale of human societies by many orders of magnitude. Today, the great majority of humans live in complex societies, which can only exist due to extensive cooperation among large numbers of individuals. *Ultrasociality*, the ability of humans to cooperate in large groups of genetically unrelated individuals, presents a puzzle to both evolutionary and social theory. Although much theoretical effort has been devoted to understanding the evolution of cooperation in small-scale groups (hunter-gatherers living in societies of hundreds to a few thousand individuals), the same cannot be said about the next phase of human evolution, the rise of complex societies encompassing tens and hundreds of millions of people. Evolutionary biologists, political scientists, anthropologists, and others have proposed a multitude of theories to explain how complex societies evolved. However, scientific study has suffered from two limitations. First, with a few exceptions, theories have relied on verbal reasoning; formal models tend to focus on the evolution of cooperation in small groups, whereas the transition from small- to large-scale societies has been mostly neglected. Second, there has been no systematic effort to compare theoretical predictions to data. Human ultrasociality has evolved repeatedly around the world and across time, reflecting both common selection pressures and the unique contingencies affecting each case. An enormous amount of archaeological and historical information exists but has not been studied from an evolutionary perspective. Thus, explicit models that will yield specific and quantitative predictions are needed as well as databases of the cultural evolution of human ultrasociality. Furthermore, a research program combining explicit models with empirical testing of predictions is not only an academic endeavor. Understanding conditions that either

promote or inhibit human ultrasociality is highly relevant for addressing the challenges of large-scale cooperation and conflict in the modern world.

## Introduction: The Theoretical Background

The great majority of humans today live in large-scale complex societies, which can only exist on the basis of extensive cooperation among large numbers of individuals. Such cooperation can take many forms: volunteering for the army when the country is attacked, willingly paying taxes, voting, helping strangers, refusing to take bribes, etc. In each case, the result of cooperation is production of a *public good* (i.e., no one can be effectively excluded from using the good), while the costs of cooperation are born privately (e.g., one can be killed defending one's country). *Ultrasociality*, the ability of humans to cooperate in huge groups of genetically unrelated individuals (Campbell 1983), is a great puzzle in both evolutionary and social sciences (Richerson and Boyd 1998). We now understand that neither the "selfish gene" perspective (Dawkins 1976) nor rational choice theory (Becker 1978) is capable of resolving this puzzle (Turchin 2006, chapter 5).

Human ultrasociality represents a major evolutionary transition. Other transitions include those from independent replicators to chromosomes, from a prokaryotic to a eukaryotic cell, from unicellular to multicellular organisms, and from solitary individuals to eusocial colonies (Maynard Smith and Szathmáry 1995). A powerful conceptual framework for understanding major transitions is the multilevel selection (MLS) theory (Sober and Wilson 1991; Okasha 2007; Wilson and Wilson 2007). Generally speaking, major transitions involve several interacting processes: evolution of cooperation among lower-level units, selection which acts on higher-level "collectives," policing mechanisms which suppress "free riders" and competition among lower-level units, and increased functional integration of collectives which makes them increasingly organism-like. Eventually, higher-level collectives become so well integrated that they can be treated as "individuals" in their own right (and can serve as lower-level units for the next evolutionary transition).

Evolution of human ultrasociality fits quite well into this scheme, but with one important twist: it occurred in several stages. Thus, it is perhaps best to think of multiple transitions instead of a single one. The first stage was the evolution of cooperation in small-scale groups (i.e., groups of hundreds or, at most, a few thousand of people). Our theories of how small-scale sociality evolved in humans are rapidly maturing (Boyd and Richerson 1985; Sober and Wilson 1991; Richerson and Boyd 1998; Wilson 2002, 2005; Bowles 2006; Turchin 2006; Choi and Bowles 2007; Lehmann and Feldman 2008). Mechanisms involved at this stage were:

- Increasing returns to scale (see Jordan et al. in this volume): examples include big-game hunting and coordinated defense against predators,

risk pooling through extended networks, economic returns from trade and division of labor, and ability to generate new and retain existing knowledge. Probably the most important mechanism capable of generating increasing returns to scale is warfare (or parochial altruism, Bowles 2009). Warfare is particularly important because it generates increasing returns at all social scales. Thus, a village which has more warriors will be favored in a conflict against another village, and an empire which collects more taxes and raises more recruits will be favored in a conflict against another empire.

- Inequity aversion and other leveling mechanisms: examples include food sharing, monogamy, and social control of “upstarts” (Boehm 1999, 2011). These mechanisms reduce within-group variation in fitness and, thus, the strength of individual-level selection relative to between-group selection.
- Moralistic punishment and other mechanisms that control free riding (see Jordan et al., in this volume).
- Culture (Richerson and Boyd 2005), which (via conformist transmission) reduces within-group variability and enhances between-group variability.

For a more extended discussion, see Jordan et al. (this volume). Evolution of small-scale sociality operated in both genetic and cultural modes; in fact, the key process was gene–culture coevolution (Richerson and Boyd 2005). Because cooperation in small-scale societies relies on face-to-face interactions, large brains were required to store and process social interactions data (Byrne and Whiten 1988). However, once a human group attains the size of 100–200 individuals (Dunbar 1992; Dunbar and Shultz 2007), even the hypertrophied human brain becomes overwhelmed with the complexity of social computation. Thus, for group size to increase beyond the few hundred individuals typical of small-scale human societies, evolution had to break through the barriers imposed by face-to-face sociality.

The second stage—evolution of large-scale sociality (ultrasociality)—was enabled by several additional key adaptations. First, humans evolved the capacity to demarcate group membership with symbolic markers (Shaw and Wong 1989; Masters 1998; Richerson and Boyd 1998); the first symbolic artifacts appeared around 60,000 years ago (Marean et al. 2007). Markers such as dialect/language, cult/religion, clothing, and ornamentation allowed humans to determine whether someone personally unknown to them was a member of their cooperating group or, vice versa, an alien and an enemy. Second, hierarchical organization allowed unlimited growth in the scale of cooperating groups, simply by adding extra organization levels. Centralized hierarchies are also much more effective in war, which is why all armies have chains of command (Andreski 1971). However, the downside of hierarchical social organization is that it inevitably leads to inequality (Michels 1915; Mosca 1939). As a result, evolution of complex societies reversed the trend

to greater egalitarianism that had previously characterized human evolution; this trend reversal is sometimes referred to as “U-shaped curve of despotism” (e.g., Bellah 2011). Other key innovations include literacy and record keeping, formal legal systems, bureaucracies, organized religion, urbanization, and states. The primary mode of evolution during this stage was clearly cultural, although recent analyses indicate that genetic evolution did not cease with the rise of civilization (Hawks et al. 2007).

Cultural evolution has had a turbulent history and it remains a controversial field. Even the nature of cultural variation is contentious, with rival approaches (evolutionary psychology, memetics, and the dual inheritance theory) each offering a variant view (Richerson and Boyd 2005). Nevertheless, the study of human cultural evolution is gradually becoming comparable to the study of genetic evolution, as evidenced, for example, by the successful deployment of the methods of phylogenetic analysis (Mace and Holden 2005; Fortunato and Mace 2009). Thus, evolutionary theory provides a powerful framework for the study of human ultrasociality. It can serve as a unifying conceptual framework for the multitude of theories proposed by political thinkers, anthropologists, and social biologists to explain how complex societies and, in particular, states evolved (for reviews, see Mann 1986; Chase-Dunn and Hall 1997; Sanderson 1999; Grinin and Korotayev 2009). These theories invoke a variety of mechanisms: population pressure, warfare, class struggle, economic exchange, large-scale irrigation works, and information-processing capacity.

However, most of these theories have been formulated only as verbal, rather than mathematical models. Currently, only a handful of modeling studies have focused on the transition from small- to large-scale societies (Dacey 1968; Bremer and Mihalka 1977; Cusack and Stoll 1990; Cederman 1997; Spencer 1998; Cioffi-Revilla 2005; Cederman and Girardin 2010); these studies primarily use simple models borrowed from mathematical ecology or complex agent-based simulations. Together with Sergey Gavrilets, we are in the process of adding to this growing theoretical corpus. One theoretical approach was based on a central mathematical result in MLS theory, the Price equation (Price 1972), which proposed that evolution of prosocial traits is favored not only when group-level selection is strong but also, and most importantly, when between-group variability is maximized (Turchin 2009, 2011). A second approach employed a spatially explicit agent-based model of the emergence of early centralized societies via warfare (Turchin and Gavrilets 2009; Gavrilets et al. 2010). Despite progress, an enormous amount of work remains to be done to develop a cohesive body of theory on the transition from small-scale to large-scale societies.

Thus far, the theories have not been confronted with data in a systematic way, a procedure which would allow us to reject some in favor of others. A major stumbling block has been a lack of good databases codifying information on cultural variation in a broad spectrum of societies. As a result, previous empirical tests have been ad hoc and haphazard, tending to focus on those

aspects and regions with which individual authors were familiar. To make further progress we need to start testing theories, and that requires a much better empirical base than is currently available. We are fortunate to have such resources for cross-cultural comparative ethnography as the *Ethnographic Atlas* (Murdock 1967) and the *Standard Cross-Cultural Sample* (Murdock and White 1969). However, these static datasets tell us about a culture at a particular point in time. More decisive empirical tests of various theories of social evolution require dynamic datasets that describe cultural trajectories through time.

Experience in other fields (e.g., many natural sciences) suggests that general theories about the functioning of complex adaptive systems (such as human societies) cannot be directly tested with data; we need an intermediate step—specific models. First, general theories formulated verbally need to be translated into explicit mathematical models (in whatever form it takes, systems of equations and agent-based simulation being the most common approaches). As a practical matter, usually we cannot come up with a single “best” model, and thus need to develop a suite of models, each capturing different aspects of the theory. The next step is to extract quantitative predictions from the models which can be then compared to data. Ideally, we want to test not a single theory in isolation, but compare how well rival theories compare to each other, using the data as arbiter. Thus, models play multiple roles in this process: they serve to test the logical coherence of theory (when the expected dynamics indeed emerge from the postulated mechanisms), they generate sharply defined, quantitative predictions, and they can suggest novel ways to test theories.

We need to do two things to answer the question raised in the title of this paper: How did large-scale complex societies evolve? First, we need to translate verbal theories into mathematical models (understood broadly to include agent-based simulations) that will yield specific and quantitative predictions. Second, we need databases of the cultural evolution of human ultrasociality that will allow us to test model predictions empirically. Current developments on both the modeling (Turchin et al. 2012b) and data (Turchin et al. 2012a) fronts indicate that such a research program is not entirely unrealistic.

### **Conceptual Issues: Cultural Evolution of Ultrasocial Institutions**

If cultural evolution provides a powerful framework for the study of human ultrasociality, we must address the following questions: What is it that evolves? How does it evolve? In this section, I discuss conceptual issues and begin by clarifying the relationship between ultrasociality and social complexity.

#### **Ultrasociality and Social Complexity**

Ultrasociality is the ability of humans to cooperate with huge numbers (millions and more) of genetically unrelated individuals. As far as we know, it

is unique to humans. Ultrasociality is the term used by evolutionary scientists; another closely related term is social complexity. These two concepts may in fact be thought of as simply different approaches to the same general phenomenon by different scientific disciplines: evolutionary science (ultrasociality) and anthropology/archaeology, as well as complexity science (social complexity). A third closely related approach within political science and history focuses on the rise and evolution of the state. In this discussion, I will use ultrasociality because it is the most clearly defined concept (there are many rival definitions of the state; a similar terminological uncertainty surrounds the concept of complexity, but it can be operationalized in the context of social evolution, as will be discussed below).

The defining feature of ultrasociality is the social scale (the size of the cooperating group), which raises the question of what sort of group we wish to address. At the most general level of inquiry, it is best to leave such issues unspecified, because we are interested in cooperation at many different levels involving many different kinds of groups: trading networks, ethnic diasporas, religious cults, alliances of states, as well as, at the highest level, the whole of humanity. For conceptual clarity and empirical relevance, however, I will focus on one kind of cooperating group: the polity.

*Polity* is defined as an independent political unit. Types of polities range from villages (local communities) to simple and complex chiefdoms to states and empires. A polity can be either centralized or not (e.g., organized as a confederation). What distinguishes a polity from other human groupings and organizations is that it is politically independent of any overarching authority; it possesses sovereignty.

Different types of polities have different characteristic sizes, so they can be arranged along an approximate scale (Table 4.1). At the higher end of the scale, “mega-empires” are instantiated by such polities as the Achaemenid Empire (550–330 BCE), Maurya Empire (322–185 BCE), Han Dynasty China (206 BCE–220 CE), and Roman Empire under the Principate (27 BCE–284 CE) with peak areas of 5–6 million km<sup>2</sup> and peak populations around 50–60 million (or somewhat fewer in the case of the Achaemenid Empire). While populations in tens of millions were characteristic of the largest empires during the ancient and medieval eras, several modern nation-states have populations in hundreds of millions (and in two cases even more than a billion).

The main message of Table 4.1 is that over the last 10,000 years, the scale of human polities has increased by six orders of magnitude, a truly astronomical number. Thus, the second phase of the evolution of human sociality (from small-scale to large-scale societies) actually involved several fairly major evolutionary transitions. The first one was the rise of centralized hierarchical societies, chiefdoms (first chiefdoms appeared around 7,500 years ago in the Near East). The second was the appearance of first urban state societies (ca. 5,000 years ago), followed by the rise of large multiethnic territorial states,

**Table 4.1** Social scales of political organization for agrarian polities. Note that population in the 1,000s could mean any number between 1,000 and 9,000. Furthermore, some simple chiefdoms could have populations above or below this range. A similar caveat applies to other levels.

Population	Area (km <sup>2</sup> )	Polities
10,000,000s	1,000,000s	Mega-empires
1,000,000s	100,000s	Macrostates
100,000s	10,000s	States (“archaic”), supercomplex chiefdoms
10,000s	1,000s	Complex chiefdoms, city states (“microstates”)
1,000s	100s	Simple chiefdoms, acephalic tribes
100s	–	Local communities (“villages”)

mega-empires (ca. 2,500 years ago). Finally, the last 200 years have seen the evolution of the modern nation-state.

### Ultrasocial Norms and Institutions

Although details of the social evolutionary transitions, discussed in the previous section, varied with locality and time period, they also shared certain generic features. This observation leads to the question: What is it that evolves? Cultural evolution can be defined analogously to biological evolution as the change with time in the frequency of cultural traits. Of particular interest to the question of the evolution of complex societies are such cultural traits as social norms and institutions.

*Institutions* are systems of culturally acquired rules that govern behavior of individuals in specific contexts. Individuals internalize aspects of these rules, termed *norms*. Institutions and norms are the foundation upon which a distinctively human form of society is based. Institutions can be thought of as self-reinforcing, dynamically stable equilibria that arise as individuals’ norms converge and complement each other over time (Richerson and Henrich 2012).

It is now well understood that sustained cooperation requires a solution to the collective action problem stemming from the tension between the public nature of benefits yielded by cooperation and private costs borne by cooperating agents. Social norms and institutions are among the most important ways of solving this problem.

Although the usual focus of theorists is on solving cooperative dilemmas within groups of individuals, collective action problems can arise at all levels of organization. For example, a complex chiefdom typically arises when several simple chiefdoms are unified (forcibly or otherwise). For the complex chiefdom to function well and preserve its integrity, its constituent units (formerly,

simple chiefdoms) must cooperate with each other and the center. This argument suggests the following definition:

*Ultrasocial institutions* are institutions that enable cooperation at the level of larger-scale human groups. They are characterized by the tension between benefits they yield at the higher level of social organization and costs borne by lower-level units.

Of particular interest are ultrasocial institutions which play a role in the integration of largest-scale human groups; institutions that enabled the transition from middle-scale societies (simple and complex chiefdoms) to archaic urban states and subsequently to large-scale empires and modern nation-states (and perhaps beyond, to such multinational entities as the European Union). The above definition implies an interesting diagnostic feature of ultrasocial institutions. Since their benefits are only felt at larger scales of social organization and costs are borne by lower-level units, fragmentation into lower-level units should typically lead to a loss of such institutions. For example, when a territorial state fragments into a multitude of province-sized political units (organized as complex chiefdoms), we expect that such ultrasocial institutions as governance by professional bureaucracies, or education systems producing literate elites, would be gradually depleted from the system. Since fragmentation into smaller-scale units is something that has occurred repeatedly throughout human history, this observation provides us with an empirical basis for distinguishing ultrasocial institutions from others. However, given that institutions are locally stable equilibria, we should not expect an immediate effect of fragmentation. Rather, loss of ultrasocial institutions should be a long-term and stochastic process, with different lower-level units “flipping” from one equilibrium to another at random times.

To make this discussion less abstract, as well as to guide future empirical research, the following examples of ultrasocial norms and institutions are provided.

### *Generalized Trust*

Propensity to trust and help individuals outside of one’s ethnic group has a clear benefit for multiethnic societies. However, ethnic groups among whom this ultrasocial norm is widespread are vulnerable to free riding by ethnic groups that restrict cooperation to co-ethnics (e.g., ethnic mafias). Other norms that have the same structure (providing a benefit for cooperation at large social scales, but costly for lower-level units) are willingness to pay national taxes, obeying laws even when there is no chance of being caught, refusing bribes and not offering bribes, and volunteering for military service in times of war. A more extended discussion of this point is made by Gintis and van Schaik (this volume).

*Government by Professional Bureaucracies*

One of the most thoroughly discussed institutions, government by professional bureaucracies provides the basis for a common definition of the state. The benefits for sustaining large-scale societies that result are generally accepted, by social scientists and nomadic conquerors alike. In fact, it is probable that no really large polity (with populations of over a million) has managed to maintain itself for any appreciable time (longer than a human generation) without acquiring bureaucracies. The costs are also significant. Some are direct (e.g., training and paying bureaucrats) but possibly a more important cost is indirect, stemming from the agent-principal problem. Thus, governing a chiefdom can be readily accomplished by the ruler with the aid of relatives, companions, and clients. The last thing such a ruler needs is to share power with a bureaucracy.

*Systems of Formal Education*

The benefits from this institution include supplying trained scribes, administrators, judges, priests, and other government specialists. In addition, this institution generates a common language as well as a common set of social norms, at least among the elites, if not throughout the population as a whole (Lieberman 2003, 2010). Examples include the Greek and Latin elite education system from Classical to early modern times in Europe, Islamic education from Medieval to modern times, the Mandarin educational system in China, and the modern mass-literacy educational systems. Costs of this institution may not appear to be very significant, because getting education confers individual-level rewards. However, many imperial collapses are followed by “Dark Ages,” so called because of the dramatic drop in degree of literacy and the rate of text production. In some cases, literacy has even been lost; for example, as in the loss of Linear A and Linear B during the Greek Dark Age (early first millennium BCE) and the general decrease of literacy following the disintegration of the Roman Empire in the West.

*Universalizing Religions and Other Ideological Systems*

Also known as “world religions,” such integrative ideologies first appeared during the Axial Age (ca. 800 to 200 BCE). They provided the basis for integrating multiethnic populations within first mega-empires, such as Achaemenid Persia (Zoroastrianism), Han China (Confucianism), and Maurya Empire (Buddhism). There is debate whether the presence of moralizing gods belongs here as well (see Norenzayan et al., this volume). My inclination, however, is to treat moralizing gods as a general prosocial institution, rather than a specifically ultrasocial one, because a moralizing god is useful to stabilize cooperation even at the village level, not only at the level of an empire. Costs: an argument can be made that smaller-scale units should abandon a universalizing

religion because it is likely to blur an ethnic boundary between it and other similar-sized societies with which they compete. Such abandonment does not need to involve conversion to a different religion, but perhaps development of a distinct sect. Thus, the splitting of Christianity in the post-Roman landscape into Monophysite and Chalcedonian varieties, with Chalcedonians later dividing into Catholics and Orthodox, may be an example of such a process.

Other examples of ultrasocial institutions may be ideological systems for legitimizing power and for restraining rulers to act in a prosocial manner and professional police, judiciary, military, and priesthoods. The latter can be thought of as variations on the theme of professional administrators (bureaucracy).

### **Cultural Multilevel Selection as the Theoretical Framework**

The final conceptual issue is to elucidate the mechanisms of the evolution of ultrasociality and, more specifically, the evolution of ultrasocial norms and institutions. It is not sufficient to point to their benefits for integration of large-scale societies. Such institutions have significant costs, and the historical record indicates that they repeatedly collapsed in past societies. In other words, we need an evolutionary mechanism to explain the spread of such traits despite the costs.

Although other approaches are certainly possible, I believe that the most fruitful avenue for resolving the puzzle of ultrasociality is provided by the theoretical framework of cultural group (or, better, multilevel) selection. MLS is a powerful theoretical framework for understanding how complex hierarchical systems evolve by iteratively adding control levels. It has been very productive as a research program aimed at the understanding of how cooperation in small-scale human societies evolved. Thus, it is a natural next step to apply this framework to evolutionary transitions that lead to large-scale hierarchical societies (Turchin 2011).

Cultural MLS is particularly appropriate for studying human large-scale societies because they have multilevel hierarchical organization (unlike large-scale societies of eusocial insects). This form of internal organization is partly due to the evolutionary history and partly due to the constraints on human cognitive abilities, which make hierarchies an efficient way of organizing human societies. Thus, in the simplest form of a centralized society, a simple chiefdom, the subordinate agent is a village (a local community) and the superior is a chiefly village, where the ruling lineage resides (Carneiro 1998). Adding more levels results in complex chiefdoms, states of various kinds, and empires. A review of such diverse historical states and empires, such as Ancient Rome and Egypt, Medieval France, and imperial confederations of Central Asian nomads, suggests that all of these polities arose in such a multilevel fashion (Turchin and Gavrillets 2009). In other words, lower-level units combined into higher-level units which themselves combined into yet higher-level units, and so on. Internal organization of states and empires often reflected this process

of multilevel integration, similarly to biological organisms retaining vestiges of their evolutionary history.

In the MLS framework the central question is: What is the balance of forces favoring cooperation of lower-level units and, therefore, their ability to combine into higher-level collectives? Here “units” and “collectives” are social groups at different levels of hierarchical complexity. For a society to grow in size, it has to make repeated transitions from the  $i$ -th to  $(i + 1)$ -th level. The success of each transition depends on the balance of forces favoring integration versus those favoring fission.

A major mathematical result in MLS theory, the Price equation, specifies the conditions concerning the structure of cultural variation and selective pressures that promote evolution of larger-scale societies. Cultural traits promoting cooperation at the  $i + 1$  level will spread if

$$\frac{V_{i+1}}{\bar{V}_i} > \frac{-\beta_i}{\beta_{i+1}}, \quad (4.1)$$

where  $V_{i+1}$  and  $V_i$  are, respectively, cultural variances between higher-level collectives and between lower-level units, respectively;  $\bar{V}_i$  indicates a weighted average over all groups. The coefficient  $\beta_{i+1}$  measures the strength of selection on collectives; similarly,  $\beta_i$  measures the strength of selection on lower units. According to the definition of an ultrasocial trait,  $\beta_{i+1} > 0$  and  $\beta_i < 0$ . Thus, evolution of traits promoting integration at the  $i + 1$  level is favored by (a) increasing cultural variation among collectives and decreasing variation among lower-level units (the left-hand side), and (b) increasing the effect of the trait on the fitness of collectives and reducing the effect at the lower level (the right-hand side).

The next step is to identify conditions under which the ratio on the left-hand side increases, while the ratio on the right-hand side declines. Ideally, we would like to measure directly the relevant quantities, but the historical record, unfortunately, is not detailed enough to enable us to do so. The alternative approach is to rely on proxies, which requires making assumptions about which observable variables are best correlated with the quantities of theoretical interest (cultural variation and selection coefficients). The general logic in this step is essentially Lakatosian: to test the theory empirically, we first need to construct the “protective belt of auxiliary hypotheses.”

Specifically, large states should arise in regions where very different people are culturally in contact, and where interpolity competition (i.e., warfare) is particularly intense. In previous work I have applied this insight to the period of human history from the Axial Age to the Age of Discovery (ca. 500 BCE–1500 CE). I argue that within Afro-Eurasia, conditions particularly favorable for the rise of large empires were obtained on steppe frontiers, contact regions between nomadic pastoralists and settled agriculturalists. An empirical investigation of warfare lethality, focusing on the fates of populations of

conquered cities, indicated that genocide was an order of magnitude more frequent in steppe frontier wars than in wars between culturally similar groups. Furthermore, an overall empirical test of the theory's predictions showed that over ninety percent of the largest historical empires arose in world regions classified as steppe frontiers (Turchin 2011). Thus, taking the abstract theory of MLS and constructing the auxiliary belt that relates it to concrete historical processes during the ancient and medieval periods of Afro-Eurasian history allows us to both generate specific predictions and test them with data.

### **Conclusion: War, Peace, and the Evolution of Social Complexity**

One of the principal threats to peace today originates from failed or failing states: since the end of the Cold War, such internal conflicts have claimed far more victims than old-fashioned wars between established states. Over the last two decades there has been a dramatic increase in the frequency of UN peace-keeping missions and U.S.-led multinational military interventions, while the roster of failed states has also increased. Increasingly, the goals of both peace-keepers and development programs have morphed into what is now called nation-building.

The track record of nation-building is, however, not particularly impressive. Why is it that what works in some countries fails in others? I suggest that a major part of the problem is the lack of a theoretical framework that could guide concrete actions. Here is where evolutionary science can be of tremendous use. We need to understand the nature and evolution of war better as well as its converse, large-scale cooperation. The focus on cooperation is important because peace is not simply an absence of war; lasting peace can be achieved only on the basis of humans cooperating with each other.

As a more robust theory of state formation (or, in more general terms, of organizational forms of large-scale social integration) is developed and tested with cross-cultural data, we will be able to answer such questions as: How do we fix failed states? How can we end civil wars and evolve political structures for nonviolent methods of resolving conflicts? How can we promote integration at the global level and stop interstate wars?

This focus on "nation-building" may strike some as misguided. Indeed, as acknowledged above, the track record of nation-building is not impressive. Yet, human suffering on a massive scale caused by state failure also cries for action. Thus, many a U.S. presidential candidate starts off by decrying nation-building during the election campaign, only to become enthusiastic nation-builders once in the Oval Office; George W. Bush exemplifies the most striking example of such a reversal. If we inevitably end up getting involved in nation-building, wouldn't it be a good idea to have a valid theoretical framework to guide practical actions and allow us to learn from previous mistakes?

Furthermore, “nation-building” is often thought of as something that external agents (formerly, imperial or colonial powers, today the “international community”) impose on societies who failed as states. An alternative approach (one with which I find myself in agreement) is that the proper way of doing nation-building is “auto-nation-building.” In other words, nobody has a better chance of building lasting structures of large-scale governance than the affected societies themselves. In such well-known examples of nation-building as the economic and political reconstruction of post-World War II Germany and Japan, there is little doubt that the primary role was played by the Germans and the Japanese themselves. However, these two nations had already evolved strong and well-functioning states before World War II and the military defeat which “decapitated” them. What about new nations, such as former Soviet Union republics, or failed states, such as Haiti or Somalia? These societies need to make a number of collective decisions. Should they adopt a parliamentary or a presidential form of governance? A confederated or a unitary state structure? These questions are really about what kinds of ultrasocial institutions work best at promoting cooperation at the scale of the whole polity/society. In other words, the research program on the evolution of ultrasociality can be of significant practical use in cases of “auto-nation-building.”

Finally, improved understanding of factors that enhance versus impair our ability to cooperate in large-scale societies has practical implication, not only for failed or failing states or for new countries emerging when larger states fragment, but also for established democracies. Just because the latter societies have functioned reasonably well since the end of World War II does not guarantee that they will continue to do so in the future (70 years is not a particularly long period by historical standards). It should be disquieting that according to a broad spectrum of measures, “social capital” (really, the capacity for cooperation) has been declining in the United States and several other old democracies (e.g., Putnam 2000). The reasons for this decline are not understood, and we have no idea how to reverse the trend.

Understanding conditions that either promote or inhibit human ultrasociality is not only a major theoretical puzzle. Such understanding is also highly relevant for addressing the challenges of large-scale cooperation (and its converse, large-scale conflict) in the modern world.

### **Acknowledgment**

I am grateful to several colleagues for discussions and comments on the manuscript: Joseph Bulbulia, Herbert Gintis, Joseph Henrich, Peter Richerson, and Polly Wiessner. This work was supported by an ESRC Large Grant (REF RES-060-25-0085) entitled “Ritual, Community, and Conflict.”

From “Cultural Evolution: Society, Technology, Language, and Religion,”  
edited by Peter J. Richerson and Morten H. Christiansen. 2013. Strüngmann Forum Reports, vol. 12,  
J. Lupp, series editor. Cambridge, MA: MIT Press. ISBN 978-0-262-01975-0.