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An evolutionary approach to complex hierarchical societies

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ABSTRACT

Evolutionary anthropologists have been remarkably successful in developing 'dual inheritance' theories of gene/culture coevolution that analyze the interaction of each of these factors without reducing either one to the other's terms. However, efforts to extend this type of analysis to encompass complex, class-divided hierarchical societies, grounded in formal laws, political institutions, and trajectories of sustained economic development have scarcely begun. This article proposes a provisional framework for advancing such a multi-level co-evolutionary analysis that can encompass multiple forms of social organization from simple hunting/foraging groups to agrarian states and empires, up through the global capitalist system of our own day. The article formulates tools to conceptualize some of the ways in which 'selection' and 'adaptation' operate at every level to bring genes, cultures, states, and market exchange into provisional alignment with one another. It considers some of the ways in which modes of production', 'modes of coercion' and 'modes of persuasion' interact complexly, at different societal levels.

How far can human nature, history, and society be explained in evolutionary terms? The question has long been controversial and has generated some of the most heated debates in the history of the social sciences. During the nineteenth century, many grandiose, sweeping claims were made in the affirmative, only to see the influence of such views decline in subsequent decades. Criticized for the racist, sexist, and elitist assumptions in which they were grounded, such evolutionary theorizing was further undermined by the modern synthesis in twentieth century biology, which focused on the role of genetics in shaping physical characteristics, implicitly leaving the study of human social behavior, social development, and organization to the non-evolutionary social sciences. During the 1960s and 70s, the rise of sociobiology threatened to up-end this consensus by proposing genetic explanations for behavior, but the biological reductionism of its leading promoters was vigorously resisted, and the traditional division of labor between the sciences of nature and of nurture continued to prevail. In evolutionary psychology and in human behavioral ecology, Darwinian processes are widely invoked, but in the remainder of the social sciences little attention to them is paid (Kevles, 1985; Degler, 1991; Segerstråle, 2000).

A major exception to this generalization can be found among a group of self-styled evolutionary anthropologists, who have devised a hybrid paradigm for bio-social theory that promises a completely novel way of restoring the evolutionary approach to human affairs. Eschewing any unilateral recourse to biological determinism, these evolutionary anthropologists have focused on the ways in which culture and biology interact. While certainly recognizing that human behavior is rooted in our heredity, they are concerned to understand how culture has co-evolved with our innate psychology, and how the two have mutually constructed one another in a manner that is unique among life forms. As they have pioneered this new approach to the nature/nurture conundrum, the evolutionary anthropologists have given us the opportunity to break through a major impasse that has habitually tripped social scientists up. When we begin to apply their methods to the study of complex, hierarchical societies, however, (such as those in which most humans through recorded history have lived) certain key modifications will need to be made. In this paper, I briefly outline these modifications and explore some of the ways in which they may be able to fortify the foundations on which a comprehensive evolutionary social science could be built.

1. The challenge of evolutionary anthropology

The key innovation of the new evolutionary anthropology is the insight that the Darwinian and neo-Darwinian models of variation, reproduction, and selection, which were originally designed to explain the evolution of genes, can be adapted to explain the evolution of culture from one generation to the next. Just as natural selection leads to the differential survival of *physical* and *behavioral* characteristics, so cultural selection leads to the differential survival of *customs*, *values*, *technologies*, and *norms*. The two evolutionary processes are seen as separate, but analogous, in a manner that potentially allows researchers

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to test hypotheses about respective patterns of genetic and cultural change. Further studies can then trace the ways in which these patterns interact: Just as an appropriate genetic foundation is necessary for the development of culture, certain cultural changes in the evolution of our species have had a significant impact both on our genes, and on the ways in which they have been phenotypically expressed.

This contemporary paradigm of evolutionary anthropology emerged in the early 1980s, when a series of pioneers (Cavalli-Sforza, Feldman, 1981; Lumsden, Wilson, 1981; Boyd, Richerson, 1985; and Durham, 1991) each proposed 'dual inheritance' models that sought to juxtapose and ultimately to integrate the two processes of genetic and cultural evolution. In each case, an analogue to the Darwinian process of genetic evolution was offered that entailed the variation, reproduction, and selection of cultural units (variously termed memes, culturgens, or cultural traits), as cultures were transformed through alterations in the distribution of units composing them. Needless to say there was considerable disagreement at the level of detail as to how these cultural units were to be identified and defined. Debate continued over the exact mechanisms of transmission or modification, and the relative roles of isolation, competition, and emulation in explaining the distribution of cultural variation that has actually been encountered through empirical study (See Henrich et al., 2008 and also Sperber, 1996). Nevertheless, since encultured individuals (in contrast to other biological organisms) can alter their cultural beliefs as a result of experience, each of these accounts acknowledged that cultural evolution (unlike its genetic counterpart) could proceed deliberately and rapidly by 'Lamarckian' means.

While all of these accounts have made valuable contributions, the work of Boyd and Richerson, (1985; Richerson and Boyd, 2006) has been most effectively sustained. Over the course of three decades, it has inspired a veritable school of further expositors, which has extended their ideas, refined their original concepts, and applied the paradigm to actual evidence from the ethnographic record (Mesoudi, 2011; Lewens, 2015; Henrich, 2016; Laland, 2017). Adapting population level models originally derived from mathematical genetics, these researchers have shown how the models can be retooled to explain cultural variation and adaptation as well. Because gene/culture co-evolution has shaped us into a species with a remarkable capacity for intelligence, humans exhibit a unique propensity towards cultural choice. Yet, although we have the ability to select some elements of our own culture, in the aggregate, individual choices tend to play out through statistical patterns, and do not reflect the conscious design of any particular person or group. Over the long-run, a vast accumulation of inventions have enabled humans to improve technology and to adapt successfully to ecological change. However, in the short run, specific innovations (much like genetic mutations) often prove to be maladaptive (Richerson and Boyd, 2006). Since modeling shows that misguided novelties can prove to be socially costly, short-term cultural adaptation has been more often facilitated by certain forms of imitation and social learning that co-evolution has equipped our species to undertake. Conformity bias (following the most common practice), content bias (following the most effective practice), prestige bias (imitating those with highest status), in addition to intentional teaching (organized education), all predispose us to reproduce and shape cultures that are functionally adaptive. Cultural evolution always combines forces of continuity with dynamics of change. Vertical (inter-generational) transmission usually operates to fix viable traditions, while horizontal (intra-generational) transmission and migration usually work to proliferate advantageous cultural change. Divergent ecologies result in adaptive radiation, while random drift, and geographical isolation, introduce divergent elements that account for much of the cultural diversity that exists in the world today (Richerson and Boyd, 2006).

While the human capacity for culture has clearly been built upon a biological foundation, the new cultural evolutionism has also begun to demonstrate many of the ways in which this capacity for culture has operated to change our biology over the long-run, making us into a species that is very different from both our nearest primate relatives, and from our distant hominid ancestors. Big brains, language capacity, pair bonding, concealed ovulation, and extended immaturity are all likely physiological consequences of early Homo's increasing dependence on culture for survival (Henrich, 2016; Laland, 2017). Group selection, which plays only a limited role in biological evolution has almost certainly figured much more centrally in shaping human cultures, and this in turn – as Samuel Bowles and Herbert Gintis have argued – has fed back in re-shaping the human genome to produce individuals naturally prone to far more cooperation with non-related fellows than mere self-interest, kin selection, or reciprocal altruism would predict. The downside of this human predisposition towards in-group altruism, as Bowles and Gintis suggest, may be the intensified impulses towards out-group hostility that have fuelled so much of the tribal warfare, racism, inter-ethnic conflict and demonization of others that has darkened the record of human affairs (Bowles and Gintis, 2011).

While the work of these cultural evolutionists has had some effect on a few social science disciplines, generating productive dialogue with evolutionary psychologists, archaeologists, human behavioral ecologists, and economists willing to question dogmatic assumptions about rational choice, it has had little impact in other precincts of social science. It has largely been ignored by sociologists, historians, political scientists and mainstream cultural anthropologists. There are several reasons for this surprising neglect: The blinding effect of hyper-specialization and disciplinary insularity has clearly been a barrier to interdisciplinary interchange, while persisting fears that evolutionary perspectives inevitably entail biological determinism contributes to wariness among practitioners who are determined to insist on the autonomy of the social and cultural realms.[1] If anything, the gap between C.P. Snow's "Two Cultures" (Snow, 1998) has actually widened over the past half-century, reinforced by a retreat from quantitative methods in fields influenced by postmodernism, which have taken the "hermeneutic," "linguistic," or "interpretive" turns. Nevertheless the dearth of

[1] One of the greatest barriers impeding receptivity to evolutionary perspectives in the humanities and mainstream social sciences is the association of evolutionism with a spurious belief in 'progress'. Because nineteenth century evolutionary theories were fatally inflected with such unwarranted presumptions – that were racist, imperialist, and gynocentric in effect – it is taken for granted that any twenty-first century effort to reconstruct social evolutionism risks reviving the pernicious Social Darwinism that was expunged a century ago, and the Eurocentrism that still lingers even today. This belief, in my view, is a serious mistake. Social Darwinism is now dead beyond any possibility of serious revival, and the greatest potential benefit of evolutionism is now to reinforce a global perspective that will put the history of Europe in its proper global place. The 'progressive' assumptions of the nineteenth century evolutionists were the products of the biologically reductionist perspectives characteristic of that period – reinforced by a hubristic assurance of white, male, Western superiority – which no longer hold any intellectual credibility, and have been abandoned by most serious scholars today (Bury, 1960; Nisbet, 1980; Ruse, 1996). Our relativistic recognition of the power and autonomy of culture insures that we will no longer mistake our local habits for the pinnacles of human achievement (and if any of us are ever inclined to fall into this error there are now enough scholars operating from different cultural traditions to remind us of our mistake). For all these reasons we need no longer fear the ethnocentric cult of 'progress', but may aspire to a more measured, comprehensive, and objective assessment of the trajectory of human affairs. Viewed from this more detached, less ideological perspective, it is scarcely possible to doubt that humans have achieved accelerating levels of technological mastery, but this has not made us happier or wiser, and it is not tantamount to 'progress' in any more general sense. On the contrary, it has often led to devastating wars, environmental degradation, and barbaric genocides that make a mockery of ideological hopes for inevitable 'progressive' advance. Even the presumption that we now lead lives of greater ease than those enjoyed by our farmer or hunter-gatherer ancestors has been dispelled by careful archaeological and ethnographic research (Sahlins, 1974; Scott, 2017). Yet, valorizing the simpler ways of the pre-industrial peasant, or the pre-agrarian forager, can produce romantic distortions in the opposite direction. How many of us would really be willing to give up our creature comforts and our intellectual sophistication for the freer, more holistic lives that we have lost? The various social arrangements that humans have made for themselves at various stages in their historical development are neither superior nor inferior, better nor worse. They are simply different. The benefits and advantages of any particular historical life-world must be set against the costs and challenges that necessarily follow in its wake.

any sustained encounter between the new cultural evolutionism and these more traditional, established social science disciplines is regrettable. For the new evolutionary perspective has much to contribute to sociology, history and political science, while a reformulation of the concerns and findings of historians, sociologists and political sciences can contribute much to rectifying some of the limitations of the cultural evolutionary theories that have been advanced hitherto. (Suggestive approaches to transdisciplinary integration are offered by Wilson, 2002; and Smail, 2008.).[2]

As William Durham (1991, 181-2, 198-99) has pointed out, the work of the Boyd/Richerson school tends to suffer from two shortcomings that reflect its relatively circumscribed disciplinary foundations: 1) Relative disinterest in the ideational content of the cultural choices that individuals make, and 2) Neglect of the fact that throughout most of human history individuals have had relatively little scope for making such choices, since cultural selection has, to a considerable extent, been imposed by coercive powers from above. Needless to say, this is a fact of which mainstream sociologists, historians, and political scientists are well aware. Their widespread aversion to evolutionary theorizing, however, has forestalled any serious effort to incorporate such insights into formulations that can engage with the agendas of the evolutionary anthropologists. In this paper, I will try to identify some of the ways in which the study of complex hierarchcal society can be brought back within an evolutionary framework, in a manner that can both enhance the intellectual content of such mainstream social science disciplines, while also rectifying some of the deficiencies of the new evolutionary anthropology, by bringing a more comprehensive understanding of the human experience into its phylogenetic analytical frame.

2. Understanding complex, hierarchical society in evolutionary terms

We may begin by building on the one extant effort in this direction that has already been undertaken: W.G. Runciman's monumental attempt to reconstruct sociological theory in a non-reductive neo-Darwinian frame. Since the 1980s, Runciman has been steadily advancing this ambitious endeavor, and his most recent formulations have sought to bring it into alignment with the cultural evolutionism of the Boyd/Richerson school (Runciman, 1983, 1989, 1997, 2009). In essence, Runciman is proposing a 'triple inheritance' model of three-way co-evolution, in which 'society', with its power asymmetries, complex structures, and formal institutions is placed atop the cultural and genetic levels, which can continue to be studied in the previously specified ways. Where the cultural evolutionists would abstract power relations out of their analyses, or fold them in as peculiar features of culture, Runciman insists that the introduction of power requires conceptualization of an additional "social" evolutionary level, in which "mechanisms of heritable variation and competitive selection are very different," so that cultural and social evolution "are not at all the same thing" (Runciman, 2009, 3). Thus, while Runciman sees these levels as operating together to produce unitary results, he formulates each as a *distinctive* process that needs to be kept separate in analytical terms. Where behavior is *evoked* in human organisms by genes, in his formulation, memes are *acquired* by individuals to constitute cultures, while rule-driven practices are *imposed* by the role-players who shape societies (Runciman, 2009, 3,8).

While Runciman's pioneering work is a towering achievement, I believe it has both strengths and deficiencies as an explanatory tool. His focus on 'roles', 'institutions', and 'practices' is a necessary addendum, given that the addition of 'power' to the evolutionary equation forces us to look beyond the specific people, values, and behaviors that directly interact in cultural terms. "Conformity is no longer a matter of cultural conventions and personal sanctions, but of obedience to [imposed] rules." What individuals do "is no longer just a matter of imitation or learning," since enforcement of the rules is one of the intrinsic features of complex societal life (Runciman, 2009, 38-9). Yet, Runciman's exposition of these general principles is excessively formalistic, illustrated by examples randomly chosen from different times and places. His presentation leaves the impression of an abstract and rigid framework that lumps together many types of complex societies whose fundamental structuring and power asymmetries are not necessarily the same. All too readily, the author loses sight of the fact that the structuring rules and roles have been created by actual groups and individuals, who are competing or cooperating with one another either to maintain some status quo, or to force some structural change. Agency and intentionality are ignored in this schema, as is anything deemed to be maladaptive, which is dismissed as irrelevant 'noise' (Koditschek, 2017).

Moreover, Runciman's eagerness to invoke the Darwinian analogy obscures the degree to which the character of complex societies are fundamentally different from the simple, unitary cultures specified by the evolutionists previously discussed. To make sense of the evolution of a complex society, it is sometimes necessary to depart from the simple framework of random variation, reproduction and selection that Darwinism offers. For, in complex societies, it is rarely entirely straightforward exactly who (or what) is doing the selecting, since the imposition of practices and the creation of institutions is usually the result of a more entangled process of negotiated adaptation between various interested parties, all operating (potentially at cross-purposes) in a shared ecological milieu. For this reason, the application of models and statistical methods is a good deal more problematic at this level, since many of the idiosyncratic vicissitudes and the contingent bargains factored out by statistical averaging become part of the problem that the model must explain. If these challenges are not daunting enough, it is often unclear exactly where one society begins, and its predecessor leaves off. Since the very distinction between ontogeny and phylogeny tends to become blurred at this level, it seems best to recognize that evolutionary competition and transformation may unfold within the life of a given society, as often as it may entail the replacement of one society by the next.

Nevertheless, despite these formidable impediments, I believe that much of Runciman's agenda may prove to be achievable if we maintain the spirit of his audacious endeavor, but change the way in which his approach to multi-level co-evolution is designed. In particular, he has made a major breakthrough in his insistence that the evolution of complex societies be traced through the interaction of the 'modes of production', 'modes of coercion', and 'modes of persuasion', (of which, more, later) which such societies share (Runciman, 2009). We can however go beyond Runciman's agnosticism about the general relationship between these three societal modes, if we recognize that the advent of 'society' is an *historical* as well as a *logical* phenomenon. By this I mean that fundamental social forms are not merely static, synchronic, and structured but also dynamic, diachronic, and ultimately pregnant with emergent properties that transform their very character.

[2] The remarkable success of the social science disciplines, as they have been practiced over the past century, has largely come from 'black-boxing' everything that they find outside the confines of their distinctive empirical/theoretical domains. Thus, evolutionary psychologists tend to black-box cultural, social, and historical factors, so as to concentrate on the impact of our Pleistocene genetic heritage on modern behavior. Evolutionary anthropologists black-box power relations, complex institutions, and political economy, in order to understand how gene/culture co-evolution works. Mainstream sociologists black-box evolutionary processes and hereditary influences in order to avoid biological reductionism and to understand social systems in their own terms. Historians often black-box all forms of overt theorizing in order to do justice to contingent richness and empirical complexities of the events that they study and the stories that they tell. To open all these black-boxes simultaneously would doubtless release the Pandora of intellectual confusion. But if we want to avoid the distorted picture produced by our separate tunnel visions, we need find ways of communicating more effectively across our disciplinary divides. The value of exercises such as this present issue of *Behavioural Processes* will perhaps be measured by its utility as an exercise in mutual translation: How far will it help us to understand (and appreciate) what the others are doing in the different languages that they speak?

Just as a uniquely hominid sequence of biological transmutations led to the emergence of a creature with culture, so a particular sequence of cultural transformations led to the emergence of more complex societal forms. Indeed, the central thesis of this paper is that social evolution has proceeded through a series of overarching dynamic sequences that have entailed the emergence, not of *one* additional level above the gene/culture foundation, but of *two*. If we recognize that societal evolution is an historical process, we can see that throughout much of the Pleistocene period, 'culture' did indeed set the limits for most human collective organization. Local cultures were the basic units into which humans were integrated, and above these cultures there really were no other forms of society. However, sometime in the early Holocene (~4000 BCE) a new higher level of societal organization, grounded in what I will call 'the logic of domination', emerged. Then sometime much later (~1870 CE), yet another fundamental level arose on top of the three already extant, grounded in the logic of capitalism, which is only just now achieving full-blown globalized form in our day.

One way to explain this formulation is to note its parallels with that of John Maynard Smith and Eörs Szathmáry in *The Major Transitions in Evolution* (Maynard Smith, Szathmáry, 1995). In their rendition of the history of life, the advent of replicating DNA was built on an 'RNA world' of organic chemicals and, once replicators appeared, natural selection pushed the process gradually through the successive levels of prokaryotes, eukaryotes, and finally complex organisms, each of which was built on the organization of its predecessor, and ultimately subsumed those predecessors into a more complex ensemble of nested organizational forms. In a sense, I am arguing very much the same: Just as cultural organization was built upon the human heredity bequeathed by natural selection, so the organization grounded in 'domination' arose upon this ensemble, and that grounded in 'capitalism' arose upon the pre-existing organizational frames of all three levels below. In each case the new level emerged *both* as an evolutionary solution to problems that had been building in the previous levels, combined with the contingent ecological vicissitudes that enabled a shift to the new level to take place. As in the body, where organs are composed of cells, and cellular metabolism is driven by the interaction of proteins with DNA, so the more elementary levels of social and cultural organization continue to operate within the larger, encompassing units. As in the body, with its organs and cells, conflicts between the interests of local culture and larger social units must be mediated if the fully articulated organism is to thrive and cohere. Social evolution then becomes, like its biological counterpart, a complex process in which trade-offs must constantly be adjudicated between the fitness of the whole and its constituent parts.

3. The logic of domination

The question of exactly why and how societies of domination first appeared is too complex to be answered in a short paper, yet it cannot be entirely dismissed nor ignored. For the evidence suggests that before ~4000 BCE most human life was lived out in small scale hunting, foraging and/or horticultural communities, which might develop provisional hierarchies and informal chieftainships, but in which a generalized spirit of egalitarianism prevailed. While some higher-level social organization and wealth stratification has evolved spontaneously through patrilineal inheritance in this manner, without bureaucracy, technologies of control (e.g. writing), and substantial division of labor, there seem to be natural limits to this process, which is subject to reversal when environmental conditions dictate.[3] (Currie et al., 2010; Bowles et al., 2010; Johnson and Earle, 2000). The moment, therefore, at which these changes became irreversible marked a major turning point in human affairs. Clearly, the advent of agriculture, domestication, and sedentarism were important precipitating factors in this great transition, as was the concomitant increase in demographic density and a corresponding rise in economic inequality. War almost certainly factored in the intensification and institutionalization of political inequality (The literature is massive, but Carniero, 1970; Service, 1975; and Johnson and Earle, 2000 are starting points).

Since the evidence is fragmentary and open to variable interpretation, it is difficult to determine which is the chicken here, and which is the egg. Simple egalitarian cultures, with only informal institutions cannot efficiently manage the challenges of such multi-faceted environments, and it was necessary for those that entered these new self-constructed habitats to develop rules and roles to maintain order and stability. The informal sanctions that egalitarian communities use to encourage collective cohesion, punish transgressors, and deter free-riders, are simply too unwieldy to work when communities pass beyond a certain threshold of complexity and size. Formal laws and institutions of enforcement provide much more efficient methods of accomplishing the same purposes, and communities that fail to adopt them when they have been introduced by others, are unlikely to prevail in the geo-political struggles that inevitably follow from contentious encounters between competing communal groups. Moreover, once laws and institutions of socio-political complexity are introduced, competition between societies activates a dynamic process, which places them all under certain pressures for complexity, concentration of power and authority to increase. Villages give way to city-states, city-states give way to empires, and empires grow ever more expansive, intrusive, and multi-ethnic in character, at least over the very long-run (Finer, 1997; Mann, 1986; McNeill, 1991).

It is my contention that the origins of this entire dynamic can be traced to the trigger of one quite specific historical episode (a 'singularity')[4] in which the following sequence can be discerned: First, during the very early Holocene, (~15–6 kya) a series of new developments – incipient horticulture, domestication, sedentarism, social stratification and demographic increase – can be viewed in retrospect as pre-adaptations for the emergent phenomenon of 'domination'. Although these developments appeared separately in many places (partly precipitated by a warming climate) it was in one particular locale (Mesopotamia) that they came together in a uniquely synergistic way (Mithen, 2003; Scott, 2017).

Secondly, it was in the settlements of the Sumerian river valleys (~5.7–4.7 kya), that all these factors united in a self-reinforcing self-sustaining process that resulted in an irreversible dynamic of fundamental societal change: The dynamic seems to have begun in Temple complexes, where 1) food surpluses were concentrated, 2) agriculture was intensified through irrigation, 3) community resources were redistributed via worship rituals, and 4) embryonic urban production and trade was promoted through craft specializations and divisions of labor.

[3] Evolutionary anthropologists such as Currie et. al (2010); Mathew and Boyd (2011); Watts et al. (2015), Watts et al. (2016) have argued that fairly substantial levels of social, political and economic complexity are possible even without the bureaucratic and military apparatus of the state. The potential difficulty with such claims is that the modern non-state peoples on whom they are based may have been influenced by the surrounding state-saturated environment in subtle ways. Certainly, any time such peoples rely on modern technologies such as literacy or firearms they are deploying instruments that would have been unavailable to our Pleistocene ancestors. Even without these technologies, however, there are reasons to suspect that even the remotest tribes have been impacted, if only indirectly, by western (or other state) penetration in ways that have biased their political organization to greater complexity than they would have exhibited in complete isolation.

[4] Despite its somewhat pretentious or faddish association (Hawking, 1988; Shanahan, 2015), I employ the term 'singularity' because it effectively captures the precise combination of features that I see at work in the transitions between the different evolutionary levels that this paper identifies: A chronological discontinuity that begins in one particular time/place – A Rubicon that once crossed, precipitates a chain reaction of novel consequences that ultimately materializes into a runaway (autocatalytic) process, which generates emergent properties that are sufficiently unprecedented and significant as to be treated as a new level of societal organization. Unlike the 'singularities' of physics (and in ways that the AI appropriators of the term have inadequately considered) the levels above and below the singularities, which I identify as having actually transpired in human history, do interact with one another in complex and mutually consequential ways.

All this then led in turn to 5) administrative centralization and 6) taxation, facilitated by 7) record-keeping, 8) the invention of writing, and 9) the appearance of a cadre of managerial specialist-priests. As levels of social inequality rose, these nodes of ritual, production, exchange, and administration became increasingly militarized and projected outwards to expand territorial control through war and conquest, as the spoils of conquest were fed back into reinforcing the power of the now incipient theocratic-aristocratic elites (Adam, 1966; Crawford, 2004).

Although the process was slow and intermittent by conventional historical timelines, once set in motion, this dynamic of ever more extensive (and ever more intensifying) domination became a runaway process that could no longer be entirely reversed. Polities emerged, they conquered other polities, and were then conquered in turn, as the same dynamics that enabled states to dominate and exploit other states through tribute-protection systems also enabled some of those exploited, peripheral states and peoples to replace the central authorities, and reconfigure the polities (eventually becoming empires) that had originally brought them under initial control. A symbiotic relationship developed between the urban imperial centers, agriculturalists of the hinterlands, and pastoral peoples on the margins of states and empires. Engaged in persistent patterns of trading and raiding, the latter were sometimes recruited to police frontier regions, and at other times turned on the center to set themselves up as a new aristocratic elite (Scott, 2017). Of course, if we view this process from the 'high resolution' of decades and centuries, what we see (at the historian's level of detail) is many invasions that fail, conquests that are reversed, dynasties that are overthrown, and local communities and ethnicities that resist the pressures of external domination. But, if we view it from the 'low resolution' optic of centuries and millennia, we are struck by the steady (if still uneven) advance of organized domination and political power.[5] Thus, we need not enter the debate as to whether the exact sequence occurred independently, in multiple times and places, or whether it is best seen as a continuous (albeit uneven) process that eventually spread political organization over much of the globe. Collins's (1981) effort to capture this entire process in a single algorithm [imperial expansion is fuelled by war success, tempered by logistical limits, but reinforced by marchland opportunities] may be carrying the low-resolution optic to a formulaic extreme. Yet, there can be no doubt that this new reality of inter-polity competition, expansion, and rearrangement has fundamentally changed the framework of social organization under which most humans lived.

4. Domination in its cultural context (and vice versa)

As this logic of domination proceeded, however, the underlying human dependence on culture has not gone away. Tribes, clans, kin and community networks continued to subsist everywhere below the level of central political control, each with its own distinctive culture, which must now be conceived not only as an extra-genetic system of inheritance, but as a concrete social unit that interacts with the polities above it (as well as the individual constituents who compose it) in complex ways. In the larger encompassing polities, these local cultural units remained indispensible receptacles of human consciousness and vehicles for collective engagement, which continued to function at the local level, and therefore constituted an enduring social reality with which all polities have had to come to terms.[6] Just as genes continue to operate in shaping the behavior of encultured humans, so cultures continue to operate in setting constraints on the way that polities exert their power. In their efforts to integrate communities over increasingly wide geographical distance polities have encountered serious problems of coordination and resistance, especially so long as the technologies of communication and information management remained relatively primitive. Writing and record keeping raised the ante at an early stage in this development, but bottlenecks accumulated for millennia thereafter, until the advent of printing, firearms, steam transport and electromagnetic transmission (still later) raised the bureaucratic threshold again – and laid the foundations for the modern nation-state.

At the same time, as the sophistication of socio-political organization expanded, the cultural units contained within polities were obliged to adjust to the new landscape of power. In the face of the power-aggrandizers who would dominate and corral them, local communities have often reacted to defend their unique, indigenous cultures, frequently forcing the rule-making aggrandizers to show some respect for their autonomy. Socio-political organization sometimes disintegrated into chaos or feudalism, but once order was eventually re-established, a balance between local (cultural) autonomy and central (socio-political) organization had to be sought. Indeed, as states have accommodated themselves to local cultures, cultural forms have been reshaped by the need to operate in the new environment of competing states. Even before the advent of state organization, cultural units could be stretched beyond kin networks, and the advent of literacy and communication

[5] Historians, sociologists and political scientists, whose work focuses on detailed empirical examination of complex and intricate micro-processes, are often inclined to be dismissive of very 'big picture' evolutionary perspectives, whose low resolution optic is blind to the detailed complexities that form the basis of their painstaking professional work. As a practicing historian, I share this impatience with crude, formulaic approximations of large-scale social transformations that trade in superficial generalizations about the character of societal change. However, I would submit that there is room for a different kind of 'low resolution' evolutionary analysis that does not replace the 'high resolution' studies of working historians and social scientists. Its task is rather to supplement this work with different kinds of knowledge, looking for theoretically unifying principles, and for *longue durée* macro-historical regularities beneath the surface vicissitudes of micro-development and change. Explanation initially means something different at the micro and macro levels, but results can gradually be approximated into a common frame, especially when explicit modeling allows comparisons to be made. The ultimate goal is that the different modes of analysis will flow seamlessly and become one and the same. For a considerable time, however, they are likely to remain complementary rather than convergent exercises that are properly conducted with different tools, at different levels of resolution. During the 1960s and 1970s, when social historians were cognizant of the need to reconcile the study of conjunctures with deeper longue durée structures, several techniques to bridge the gap between the two were explored – e.g. micro-historical investigations of macro-processes through local case studies, or comparative framing of general problems through juxtaposition of individual cases (Braudel, 1972; Stone, 1972; or Skocpol, 1979, to cite some well known examples of the latter). Since the 1980s, interest has waned in the longue durée perspective, and recent commentators have begun to note some of the consequences of this neglect (Guldi and Armitage, 2014). If there is to be any hope of success for the program advocated in this paper, it will be necessary to reactivate this abandoned agenda, and re-engage with it in novel and historiographically relevant ways. For present purposes, the optic I have adopted in these pages is an extremely 'coarse grained' analysis, at a very low-resolution, in order to capture the entire evolutionary vision from a very 'high altitude' stance. Nevertheless, in section 5, "Multi-Level Social Evolution in Pre-Modern Europe," I do make some effort to zoom in to the middle grained level, in order to consider one particular millennium long cycle (c.500 to 1500 in Western Europe), which might be approached at mid-resolution with an analysis that incorporates the kind of micro-historical evidence and interpretation that professional historians generate in their academic work. The point of such an exercise would simply be to shed some light on whether any particular practice was broadly adaptive or maladaptive in light of the manifold 'selection' pressures exerted at multiple levels (political, cultural, and genetic), and the interests/motives of the various parties involved. Such an analysis, however, is not designed to 'explain' specific events, which are always partly products of contingent indeterminate circumstances, which no theoretical framework will be able to calculate precisely.

[6] Up to this point in the paper, I have tried to use the term 'culture' more less in the manner of the evolutionary anthropologists, as a system of memetic variation and inheritance that co-evolves with individual human organisms and genes. While hoping to preserve the understanding gained through this approach, my usage from this point onward must also accommodate the fact that within polities (and later within capitalist societies) specific cultures have become units, which are themselves subject to selection on the basis of their adaptive fitness in the larger units within which they have been captured, and must henceforth function. Needless to say, this is likely to have a significant impact on the selection of specific variants (memes) that individual participants in any given culture are likely to make. So, for example, the peasants in a village that transitions from a free community into a feudal manor that must pay taxes to a king and/or rents to lord, might well change the customs of field rotation, land inheritance, marriage, and other matters, to adapt to the new conditions in which their community (cultural unit) must operate.

technologies enabled them sometimes to 'scale-up' into tribes and tribal confederations organized along ethnic, linguistic, or religious lines (Smith, 1986; McElreath et al., 2003). Sometimes these cultural amalgamations were inspired by elite state-building initiatives. But, at other times they percolated up from below (especially when invoked by ethnic or religious minorities) as resistances mounted against the intensification of central power. Within polities, class divisions gradually hardened into antithetical aristocratic-commoner subcultures while, in other cases, external conquest by 'barbarian' pastoralists brought class exploitation under the thumb of a new cultural elite. Turchin (2003) has even proposed an ambitious general model, which locates the origin of new polities in this experience of intense inter-ethnic competition in the frontier zones of an older generation of (now declining) imperial states.

When considering the maintenance and renewal of socio-political order, it is important to keep in mind that polities have rarely been (except perhaps at their earliest stages) truly voluntary solutions to problems of coordinating large groups. Whether exploitation comes from within or without, order has been generally imposed by a small elite, which has succeeded (through control of bureaucratic and military apparatus) in enforcing its power on everyone else.

This aspect of social organization is very imperfectly registered by Runciman, who treats coercion as merely one of the three main instruments (with persuasion and production) by which this higher coordination can be achieved. But the history of early political organization (and of much political order ever since) tells a very different story. For the most part, it has been not the result of deliberate rational planning, but the byproduct of successive power grabs by groups and individuals who have sought to establish themselves in positions of *domination*, and have committed the formidable resources at their disposal to this end. (Engels, 1942; Adam, 1966; Fried, 1967).

Exactly how this happened varied according to local circumstances, but the net result in most cases has been eventually to establish distinct, hereditary property classes, as well as increasingly well-articulated status hierarchies. In contrast to the dominance hierarchies of chimpanzees, these human status systems depend on forms of symbolic and linguistic representation that formerly promoted equality among the original hunter-foragers, but which the rulers of states have appropriated (especially in their new written form) to institutionalize a permanent condition of inequality. Boehm (1999; Scott, 2017). Moreover, insofar as the aristocratic class of ruling elites evolved into a distinctive sub-culture, it tended to refine (internally) ever more articulated techniques of rule through the very processes of cultural transmission and mutation (e.g. individual/social learning through the imitation and improvement of previous practice) that the cultural evolutionists identify as patterns in the culture as a whole. Indeed, since the rulers of rival states and empires were constantly watching, copying, and trying to best one another, we might well consider them almost as a 'virtual culture' of dominators, in a larger sense.[7]

Through whatever techniques of rule they have mastered, the elites who dominated polities and empires were able to put the subordinated majority of the population in a curious bind. On the one hand, ordinary people depended on their social superiors to maintain social order, to protect them from outside invaders, and to cushion the worst effects of material insecurity. As population thickened, with the intensification of agricultural production, it became difficult or impossible to revert to the older foraging ways. In that sense, complex social organization quickly became a container from which there was no escape (Giddens, 1987). Yet, the now entrapped subordinates had to play by rules that were not of their own making, and that reflected first and foremost the interests of those above them in the class hierarchy. *In extremis*, they could revolt, abscond, or engage in lesser forms of resistance, but ultimately, their welfare depended on the maintenance of exploitative practices and institutions that were designed to serve the interests of others (Giddens, 1987; Scott, 2017).

One possible outcome of this situation was that ruling elites might try to take advantage of their dependents' vulnerability and attempt to rule through coercion alone. This approach was most attractive in polities based on slavery or serfdom, but evidence of it can also be seen in other cases, where the power disparities between rulers and ruled were less extreme. Nevertheless, absolute coercion, while sometimes viable in the short run, was not an effective way to create a stable socio-political order over the long run. Ordinary people could organize to defend their interests and to do so they would naturally draw on the elements of inherited culture. If that culture had been destroyed, they would band together to create new indigenous cultures of their own. The result was usually a tacit negotiation in which local custom and culture was allowed to retain some autonomy, albeit within a framework constrained by imposed systems of law and ideology.

Under these circumstances, as I have already indicated, cultural evolution played out differently than it did in the absence of state dominance. The colossus of the state had now arisen as a major environmental condition to which its constituent cultural units had to adapt, and vice versa. The 'fitness' of the larger social organism now depended to a considerable extent on the coordination of all these multi-layered entities, even as their separate interests might often conflict. It was then, I would argue, that to press the states' advantage in this negotiation with local cultures that elites in early polities began to supplement their modes of coercion with modes of persuasion. The goal here was simply to attempt to enlist local cultures into their political agendas, and to bring the subordinated population into line, as far as possible by voluntary means. These modes of persuasion were, in that sense, derivative, and yet they have had an increasingly important ideological (and regulatory) role to play. For social structures that are grounded in extreme inequality will almost always prove to be ultimately unstable unless the mass of the population is effectively persuaded that such inequality is somehow justified (Weber, 1978, I, 311-38, 399–528). That the modes of coercion and of persuasion involve different functions is evidenced by the fact that ruling cadres, from the later Mesopotamian polities onwards, have generally been differentiated into two distinct classes; aristocrats and priests. While it is the job of aristocrats to fight and rule, it is the job of priests to convince the mass of the population that this state of affairs is the way of the world, and the will of God(s). This need not be an exercise in cynical manipulation, since they will be more persuasive if they actually believe their own rhetoric (Adam, 1966).

Local indigenous cultures may not capitulate easily to these efforts at persuasion, and one of the weaknesses of the early empires (up to and including the early Roman Empire) was that their ideological apparatus was relatively threadbare, and was unable to foster sustained systems of

[7] The class dichotomy between elites and subjects presented so far in my examination of exploitation within polities is, at least in one respect, too crude. It fails to distinguish between elites as a *class* (whose privileged propertied status, gives them, by definition, access to all or part of the surplus that the subjects produce), and that subset among elites of high-status individuals (usually male) who are empowered to make *decisions* about how the polity as a unit is to be ruled, both internally, and in its competition with rival polities. Obviously the 'constitution' that defines and specifies the powers of these political 'selectors' varies greatly from case to case. Such constitutions range from formal, written documents (like the US Constitution) that specify very precisely exactly where and how political power is legally distributed, to less formal 'unwritten constitutions' (like the Roman, or English/British Constitutions) which evolve informally through an accretion of sub-constitutional decrees, legislative acts, and judicial rulings that are conceived as endowing the underlying 'Constitution' with concrete embodiment at any given moment in time. In the most extreme cases, of unstable, (e.g. feudal) polities there may be no meaningful constitution, but rather an uneasy coalition of warlords who dominate peasant communities, and contend with one another, while maintaining loose coalitions to engage in conflicts with other polities. From this it should be clear that the role of 'selector' under systems of domination can be highly metamorphic and often unclear.

(*footnote continued*)
Nevertheless, the basis for calling any such unit a 'state' or 'polity' (rather than just a condition of anarchy) is the presumption that – even in the absence of formal sovereignty – there are *some* rules and roles that regulate the practices of its constituents.

hegemonic rule (i.e. grounded in the acquiescence of the ruled). Central priests were generally pumped-up tribal diviners, and diverse forms of pagan custom and ritual persisted unchecked in indigenous communities at the local level. Efforts to suppress these customs and rituals often led to revolt (McNeill, 1991, 3–245). A major breakthrough occurred, however, with the advent of universalizing world religions of conversion – Hinduism, Zoarastrianism, Confucianism, Christianity, Islam, Buddhism – during what has come to be known as the "Axial Age'. Before this time, State-Temple religions depended primarily on spectacle and monumental architecture to awe worshipers. Universalizing religions, however, provided a wider range of ideological tools for the governing strategies of ruling elites. Based on sacred books, and supporting their own complex institutional infrastructure, these religions had a staying power and an impact that the earlier official cults had lacked. Reaching accommodation (not always easy) with aristocratic secular authorities, they provided a level of cultural stability that often reinforced the central powers of coercion, and maintained a broad environment of geographically expansive cultural unity, even when (as under European feudalism) central political authority was lost (Eisenstadt, 1986).

Nevertheless, though these world religions of conversion were greatly superior to their predecessors, none of them were able to have the mode of persuasion entirely to themselves. Offering vast ethical/explanatory systems that reconciled ordinary people to their diminished opportunities, they sought to provide comprehensive accounts of the way the world works, with extensive creeds and theologies that explained the ways of God and nature to man. Yet, they too have had to compromise with local customs, spiritual initiatives, and pagan survivals at the community level. The result has been to forge a hybrid culture of hegemonic authority, in which dominant political elites are allowed to exercise power monopolies, while subjects are permitted a certain amount of local cultural autonomy, so long as they remain reconciled to their assigned social place in the hierarchy of coercion (Thompson, 1991; Koditschek, 2013). While this order has broken down from time to time, it has remained remarkably durable for nearly two millennia, and has persisted in modified form even into the modern capitalist age.

5. Multi-level social evolution in pre-modern Europe: coercion, persuasion, and production

One important effect of the supplementation of regimes of coercion by instrumentalities of persuasion has been to facilitate the cultural 'scaling-up' referenced earlier, and to bring it to new levels of internal complexity and geographical extension. World religions, such as Christianity, or Islam, laid the foundations for vast regional ecumenes that knit together a host of local subcultural units into single large confessional confederations. Imperial states could appropriate these large cultural agglomerations, but they would also be endangered when political rule had to bridge the ethnic and linguistic fissures that confessional enculturation brought in it wake. Thus, for example, Christianity began as a network of local cultural resistance to central power within the Roman Empire, but was eventually appropriated by Roman central authorities as the basis for organizing a more stable trans-imperial cultural ecumene. After the breakdown of central authority (often along the lines of ethnic and religious division), it was the Church that survived as a cultural carapace within which a new cycle of state political formation could be forged.

In Christian Europe of the ~500–1500 CE era, the Catholic Church set itself the task of converting vast swaths of pagan populations, while maintaining a reciprocal arrangement with secular authorities, whereby the latter were able to fight, govern, collect revenues, and engage in conspicuous consumption, in return for permitting the Church a monopoly on the mode of persuasion. Given their higher levels of literacy, churchmen were even at times able to supply many of the personnel for the secular bureaucracy. This monopoly formed an essential power base that enabled the Church to embark on its mission of cultural 'scaling-up': The task of coordinating a host of diverse local cultural units, many of which were deeply rooted in the history and prehistory of indigenous peoples, and which had to be brought, at least nominally, into the over-arching Christian universal frame (Bede, 1968). Over the centuries, as Church authorities became more adept at these practices, they developed a sophisticated repertoire of tools to accomplish their task. Pagan survivals could be Christianized in sacred iconography, Saint's Days, and the ritual of the Mass. Deliberate ambiguity of meaning enabled priests and people to interpret the communion exercises that united them in somewhat divergent terms. Priests and people would agree to disagree. When priestly authorities pressed too hard to standardize practice, they risked resistance or revolt. Yet, if they allowed local practice to depart too far from the orthodox norm, they risked losing control of local culture entirely, and thus failing to perform their 'persuasive' role (Southern, 1970; Davis, 1975; Obelkevich, 1976; Leroy Ladurie, 1978; Burke, 1978; Le Goff, 1992).

While the Church was not the sole agent of persuasion, and the secular state sometimes provided material benefits such as infrastructure, policing, and welfare, many of these activities were eventually organized through the Church. Because massive amounts of data have survived in many parts of Europe, generated by clerical, tax, and manorial records during these periods, it should be possible to conduct close and extensive empirical studies of the ways in which the intervention of organized social authorities influenced the course of cultural evolution at the local level. Conversely, we might learn much about the ways in which local cultural evolution constrained and sometimes reshaped the course taken by social organization at the higher level. Assuming that this data can be organized persuasively into analytical categories, it should be possible to produce studies that take a quantitative form. The relations between clerical and secular authorities could be probed, to determine how well they worked together, how far they respected the division between the functions of coercion and persuasion, and under what circumstances they encroached on one another's terrain – with what consequences for the cohesion of society at large (Strayer, 1970; Dickinson, 1979). Investigations could be undertaken into relations between priests and people, to see how far the priests were able to draw on the forces that cultural evolutionists have identified as promoting spontaneous community cohesion – social learning, conformist bias, and prestige bias to direct culture in the manner that higher authorities approved. At the same time, it will be interesting to see what happened when these forces flowed in directions that ran counter to elite agendas, and then how clerical authorities responded, either persisting in unpopular measures, or beating a hasty retreat. Customs of marriage and inheritance might prove to be particularly fertile territory for juxtaposing the influence of local cultural traditions against the agendas of clerics and the authority of the state (Davis, 1975; Stone, 1977; Gillis, 1985; Macfarlane, 1986; Duby, 1994).

What makes the European case particularly intriguing is that all of the proximate pre-modern equilibria that were established between central domination and local cultures – involving negotiated compromises between people, priests, and aristocratic elites – proved to be unstable over the long-run (i.e. after ~1650). This was due to changes in 'Production', Runciman's third domain of complex society, which took on a degree of dynamism in Western Europe that was initially less evident in other parts of the globe. While the material technology of mankind has certainly improved over the millennia, in most traditional societies this advance has been slow, because both elites and people recognized that rapid economic change would be socially destabilizing and would likely empower *parvenu* groups that were threatening to both. For complicated reasons, these barriers were already being transgressed in Western Europe during the late middle ages, as political authority was dispersed, trade and commerce gained new openings, and monarchs came to depend on merchants and bankers to finance state activity. (Anderson, 1974; Braudel, 1982;1984; Findlay and O'Rourke, 2007). With new communication technologies, and windfalls gained

from the wealth of the new world, a system of mercantilist capitalism was established from the sixteenth century onward, that expanded trade and commerce beyond mere service to the agrarian sector, and increasingly reshaped the orientation of the major West European states (Wallerstein, 1974; 1980; Hilton, 1976; Aston and Philpin, 1987; Duplessis, 1997; Pomeranz, 2000).

These developments – the advent of mercantilism, the creation of a fully intercontinental system of commerce and commodity exchange, the rise of transoceanic empires, and the emergence of a European state system of competing sovereignties – can all be seen in retrospect as pre-adaptations for the 'take-off' into industrial capitalism, which began in Britain between 1780 and 1880. As with the ancient singularity that created a new level (and logic) of domination during the fourth millennium BCE, this modern singularity opened up yet another level (and logic) that achieved the irreversibility of a new self-sustaining, self-reinforcing process during the nineteenth century. As economic growth rates steadily accelerated in Britain from the 1840s onward, the political system was repeatedly reformed and democratized, while class relations began to assume a fully modern capitalist form (Rostow, 1990; Perkin, 1969; Koditschek, 1990). Per capita growth rates jumped from .3% per annum to 1.3% per annum sometime in the first three decades of the nineteenth century, when total factor productivity rose from 0.2% to 1.3% per year (Feinstein, 1978). Gradually, through a process that was admittedly convoluted and complex, other states joined Britain in this increasingly liberal economic order, as their polities, social structures and internal cultures were correspondingly transformed. The US passed the abovementioned growth rate threshold shortly after Britain, while Germany and France followed suit in the 1870s. Due to persistent backwardness and imperialist underdevelopment, 'take-off' was slower in other parts of globe but, by the 1950s, world per capita growth rates finally passed the 1.3% annual benchmark. Capitalism had become a fully autocatalytic process from which no one on the planet was exempt, or could escape (Rostow, 1990; Maddison, 2006).

6. The logic of capitalism in a culturally saturated, politically dominated world

This advent of capitalism as a self-reinforcing dynamic system, and its expansion ~1870 onto an increasingly globalized stage has thus marked an even more recent major transition in the human experience, which has added a yet another layer onto the genes/culture/polity foundation. This has insured that, henceforth, evolutionary equilibria would have to be established in entirely novel ways. Whereas the dynamic of evolutionary change under the domain of domination had centered on a political 'arms-race' of ever better organized centralized states, under capitalism the 'arms-race' shifted to a hyper-dynamic of ever increasing economic development, since without this constant augmentation of wealth production, the capitalist system as an organizing framework will internally collapse. (Marx and Engels, 1948; Marx, 1859, 19–23; Marx, 1867). Whereas the competition between polities for domination usually plays out over decades or centuries, the economic competition within capitalism plays out at a much faster pace. This imposes on polities the necessity of adapting to globalizing capitalism, much as local cultural units were earlier obliged to adapt to the power of the state. Failure to promote their own economic development c. 1870–1970 left many traditional polities under imperialist subjugation to the leading capitalist powers. Those that succeeded in the new global political economy have had to find ways of securing their market place (Moore, 1966; Wolf, 1982).[8]

As with the 'singularity' that created state-level political organization, this new singularity, which engendered a novel system of (so far) sustained economic growth, has created new ways of living and new layers of human organization that appear to be irreversible (except by utter catastrophe). Capitalism has broken through the Malthusian cycles that regulated preindustrial demography, and the rise/fall alternations of traditional imperial states. It has unleashed a cornucopia of material goods and consumer products, even as it has created new 'business cycles' with devastating recessions, as well as other vulnerabilities in its wake. Capitalism vaunts its character as a self-regulating system, but it often requires outside intervention to resolve its internal imbalances, and its very development has precipitated dangerous ecological stresses/constraints (Marx and Engels, 1948; McKibben, 2006). If 'fitness' and 'equilibrium' are difficult to maintain under the logic of domination, they are even more difficult to achieve under the logic of capitalism. For capitalist equilibria are inherently dynamic. They are punctuated by repeated bouts of "creative destruction" in which "all fixed fast-frozen relations, with their train of ancient and venerable prejudices, and opinions, are swept away, and all new ones become antiquated before they can ossify" (Schumpeter et al., 1942; Marx and Engels, 1948). While individual capitalists may count for little in the face of state authority, Capital as a collective force in international markets, has come to exert sufficient power to bring Governments down. Thus we are in a paradoxical situation: On the one hand, the existing world of nation-states and of national and local cultures needs to accommodate itself to the faster moving logic of Capital, and yet the stability of capitalism depends on its success in accommodating and absorbing those pre-existing social realities of state power and cultural continuity on which its ability to sustain a humanly habitable existence depends. The failed seventy-year experiment with communism suggests that there may be no simple opting out of capitalism's logic, and yet, that logic remains subject to both internal contradictions, as well as to external resistances from older social forms that may sometimes be destabilizing, but are at other times restorative in their effects (Polanyi, 1944).[9]

The first point that must be emphasized in this regard is that while all states have lost some degree of autonomy under capitalism, neither their institutions nor their sovereignty have entirely disappeared. As a

[8] The mechanics of selection under the logic of capitalism are somewhat more straightforward than under the logic of domination, as described, above. Individual capitalists of course make their decisions based on self-interest (usually profit maximization) in the context of the market. In a fully capitalist society however, everyone else (laborers, consumers, landlords, etc.) are also compelled (or at least strongly incentivized) to base his/her decision-making on the same market considerations of rational choice. In (*footnote continued*) practice, of course, specific decisions will also be shaped by political biases introduced from the domain of the state, as well as by value orientations brought to bear from the cultural realm. Unlike the polity, which requires well-elaborated constitutional rules to produce consistently coherent acts of collective 'selection' for the state as a whole, the open market automatically aggregates the sum of its individual constituent actions to produce a composite outcome through its supply demand/mechanisms. Yet, here too, we need to keep in mind that the 'open market' is an abstraction, which cannot actually exist in a vacuum outside favorable contexts provided by the culture and the state. For the open market needs political rules to define property, enforce contract, and keep it 'open' in other respects. The state is the only entity available to do this job. Moreover, states can be expected to regulate the market in ways that reflect their own interests (or even their perceptions of the interests of market stabilization) as well as to reflect the underlying values on which the practice of market competition must be based (for example, determining what entities – i.e. humans, or other things deemed sacred – may not be treated as commodities to be bought and sold in the capitalist market).

[9] One objection to the social evolutionary approach is that it tends to 'naturalize' the social systems that it analyzes, making them seem inevitable, irresistible structures that cannot be altered by any collective effort of human will. This is a hasty and superficial conclusion. While neither culture, domination, nor capitalism has ever been eliminated, each has been modified by its relations with the others, and by the appearance of new levels and logics of human development as our species has proceeded on its planetary career. While it was an error to think that capitalism could be easily replaced or overthrown, its recent advent is not likely to be the final chapter of history, and it is not inconceivable that some fresh singularity may produce yet another level and logic for the conduct of human affairs. Even as we acknowledge the power that capitalism exercises over us, we may hope and work for a different kind of society that draws its energy from the more democratic, egalitarian, and altruistic aspects of our nature. History has thrown cold water on the dream that human nature can be engineered at will, to make any of these qualities triumph unconditionally, but this does not mean that future social systems could not put them together in ways that are better suited to our global condition.

result, the art of domination has evolved into a complex 'trialectic' between the interacting interests of capitalists, polities, and cultures, in which each element is potentially destabilizing of the ensemble, but is also available for adaptations that will operate to reinforce stability between the three legs of the stool. Full analysis would require close, fine-grained examination of historical detail, but a few broad patterns may be provisionally laid out: Whereas Britain and the United States possessed internal cultures that generally conduced to the acceleration of this industrial capitalist transformation, other states such as Germany and France (for rather different reasons) harbored internal cultures that tended (in the German case) to resist the liberal character of the new order and (in the French case) to slow the entire process of industrial capitalist transformation down. (Moore, 1966; Weber, 1976; See Blackbourn and Eley, 1984 for caveats). Thus, when global capitalism descended into crisis during the 1930s, state sovereignty was widely exercised in anti-competitive directions that impeded the process of global integration. The result was Depression and World War. However, after 1945, state sovereignty in the victor nations was reconfigured to reinforce the (market) expansion of the global capitalist economic order, and to insure that all nation-states (even those that were formerly communist) were drawn into its gravitational field. Capitalism tamed the regulatory impulses of the old aristocratic state, even as a new welfare state came to provide the essential safety net without which capitalism could not be stabilized (Kindleberger, 1986; Maier, 1987).

Yet, none of these solutions proved to be permanent, as the conditions of competition and wealth creation changed. In the post-1975 period, full-scale globalization has unleashed forces that are now generating both massive economic growth, and also new types of destabilizing crisis. World trade and real Gross World Product have tripled during this period, approximately doubling real global per capita incomes during a period when the rate of population increase has been slowing down. At the same time, these gains have been distributed very unevenly, as wages of less skilled workers in the developed countries have stagnated, pools of deep poverty and underdevelopment continue to fester (especially below the equator), and even in the richest countries, some 20% of the national income, and 35% of the national wealth, is monopolized by the top one percent. On every continent, irresistible surges of de-regulation and regressive taxation have jeopardized the viability of the welfare state, even as vast waves of migration have roiled labor markets everywhere around the globe. The result has been to exacerbate previous inequalities, and to disempower organized labor, pitting workers against one another, and fuelling the cultural politics of conflicting religions, ethnicities, and identities. Both dramatic economic growth and spectacular social dislocation have, over the past generation, become the orders of the day (Piketty, 2014; Stiglitz, 2017; Data from *Wikipedia* entries on 'World Population', 'Gross World Product', and 'Wealth Inequality in the United States').

One of the most unexpected features of the current era of global capitalism is the prominent role that culture has come to play in the arenas of global politics and economics – arenas where it has hitherto been largely ignored as an extraneous factor. One of the advantages of the evolutionary perspective here on offer is its promise to bring all three of these arenas together into a common analytical frame. Like the state, culture must adapt to the dynamic of capitalist development, which must itself also be rendered compatible with the cultures it contains. Indeed, the earliest stages of capitalist development were accompanied by a veritable cultural revolution in the Netherlands and in Britain (associated initially with Reformation Calvinism, later with Revolutionary Nationalism) in which *some* local cultural units that had hitherto been sources of resistance to central domination, suddenly switched to becoming active agents of national political and economic change (also becoming essentially national cultures along the way). Yet, this scaling-up of culture from the local to the national level occurred unevenly in different parts of the world. In other (less developed) places (where traditional social relations stood their ground) local cultural units remained fonts of anti-central resistance, now reinforced by the redoubled pace of political and economic change (Tilly, 1964; Walzer, 1973; Weber, 1958).

This diversity in the form and function of culture under capitalism, has meant that 'culture' itself as a category has undergone yet another fundamental change. Indeed, as the efficacy of local resistance has steadily weakened, it is increasingly difficult to talk about local or even regional cultures, since globalization is rapidly obliterating them. Yet, because the human need for cultural identity has not gone away, global capitalism is replacing local cultural units with open-ended 'imagined communities' in which individuals can establish virtual bonds with distant others on the basis of abstract identity categories, (e.g. religion, nationality, generation, sexual identity) rather than on the embededness in local relationships that had formerly prevailed. (Anderson, 1983; Gellner, 1983; Hobsbawm, 1990). This scaling-up of culture to the national (or in some cases, even globalized) level has in many respects changed the ways in which cultural allegiance operates. It has given contemporary culture a curiously voluntaristic character that, for many, represents the only source of freedom in a universe constrained by market economic inequalities and state political controls. As global capitalism eats away at traditional loyalties, and weakens protective institutions, cultural identity has emerged as a fundamental mechanism through which individuals seek to integrate into the larger society. Yet, cultural loyalties are often fickle and volatile, since they provide a good deal less in actual benefits and protections now that they are far less connected to the actual bonds of local communities. Moreover, even when these new forms of culture bring a sense of personal empowerment, they rarely succeed as arenas for the expression of individual agency, since they are now subject to manipulation by organized opinion makers and entrenched economic/political elites. The advent of electronic media in which memes can go viral – cinema, radio, television, and most recently the internet – has greatly increased opportunities for manipulating the public. In a population already prone to conformist bias, the impact of advertising, and propaganda has intensified, playing on the passivity and information dependence that advanced consumer capitalism has left in its wake. (Postman, 2005; Lears, 1994)

The short lesson here is that once we enter into the terrain of modern capitalist society, all the relevant categories of social analysis – culture, polity, and economy (including demographic factors) – become mutually interdependent and highly metamorphic in a manner that only very complex models would be able to trace. How far such models can actually be made operational remains an open question, nor can we say how much of our complex reality such models would actually explain. It is very likely that accurate prediction – the gold standard of science – will be, for the foreseeable future, beyond their reach. Nevertheless if anticipating the future is beyond our current capabilities, the evolutionary perspective teaches us that we can gain some of its benefits by understanding how multi-level forces interacted in the past. It is indeed through this type of retrodictive evolutionary modeling that we might be able to gain significant insight into what the future has in store. In the beginning the models will be crude and indefinite, generating only a very coarse-grained analysis. As they are refined, they might become more precise and genuinely informative, with a sharper focus that is more reflective of a social reality in which a multitude of factors are at work on a multitude of levels – all of which are mutually co-variant.

Would such an exercise be entirely formalistic or superfluous, as Fracchia and Lewontin (1999) complain? Or could it generate practically useful insights and results? I believe that as it gained in realism and refinement it might well help us to wrestle with some of the most challenging societal conundrums of our time: Why has the *de facto* weakening of state sovereignty in the era of fully globalized capitalism tended to generate social movements (sometimes of accommodation, more often of resistance) no longer grounded in programs of political transformation, but now in categories of cultural identity (e.g. race, religion, nationality, gender, and sexuality)? Why did early industrial

capitalism generate a strong (albeit race and gender exclusionary) labor movement, while conditions of postindustrial, massively inegalitarian capitalism – which might seem even more conducive to a class-based response – seem unpropitious to the types of collective working class organization that proved to be so effective during the nineteenth and twentieth centuries? What explains the revolt of postmodern intellectuals against master-narratives and universal enlightenment values at the very moment when the universalization of capitalism has been finally accomplished, and yet 'enlightenment universalism' has been identified as a parochial ideology of the West? We all have our subjective reactions to these developments. But if we seek more effective ways of understanding what is to be done about them, we must seek objective and comprehensive accounts of how they came to be.

7. Conclusion

Of course, we cannot yet know whether the research program proposed in this paper would generate results commensurate the effort. All that can be done here is to sketch out some of the ways in which a sophisticated multi-level co-evolutionary analysis might shed some light on issues that are of interest to both the historian, the social scientist, and the contemporary political analyst alike. As the lustre of grand explanatory theories such as Modernization and Marxism has faded, and as academic research descends into ever narrower, hyper-specialized disciplinary grooves, it is easy to abandon the large intellectual ambitions that once motivated social scientists. In the face of the complexities with which we are dealing it is all too easy to acquiesce in today's conventional disciplinary limits and conclude that the intuitive methods of the historian and the current analytic methods of the social scientist are the best we have for comprehending large scale, sweeping societal change. These conventional approaches must and will always continue, but this paper explores the possibility that by turning to the evolutionary perspective, we might re-engage with the intellectual ambitions that motivated our forebears, without sacrificing the precision that the contemporary disciplines have achieved.

It would indeed be no small accomplishment if the evolutionary perspective succeeded in making sense of any substantial part of our complex social world by drawing strategically on elementary underlying concepts that have their roots in robust principles of scientific explanation. If there is some family resemblance between the nested, emergent levels of human organization identified in this paper, then it might be possible to specify analogous modes of *variation*, *selection*, and *reproduction* that function in all four developmental domains. While it is vain to hope for some overarching system of universal bio-social inheritance, there may be a kind of loose consilience between the natural and cultural *selection* that operates at the first two levels, and the institutionally-embedded *selection* by dominating elites in a world of warring, rivalry-ridden states, as well as the market *selection* through capitalist competition in an interconnected global universe (desperately in need of some countervailing social democratic justice and functioning under ever more severe ecological constraints). At every level, *unit* selection proceeds in the context of higher-level *group* selection that feeds-back to reshape the selective pressures operating at the level directly below: Genes produce cultures that reshape the human genome. Cultures engender states that favor certain cultures at the expense of others. Capitalism breaks through the confines of state circumscription, only to reshape states and cultures in accordance with internal dynamics and contradictions all its own.

Quite apart from the intellectual elegance that might be derived from coordinating these frameworks, pursuing their parallels – if the analogies between them can be made to work – might bring practical benefits to practitioners in a range of diverse disciplinary fields. To the historian and conventional social scientist, the evolutionary approach that has been sketched out in this paper might provide more rigorous and comprehensive (perhaps quantitative) accounts of matters that are conventionally handled in impressionistic (usually qualitative) ways. Of course, it is true that much of history is simply the result of contingency and/or path dependent developments that might have played out differently. But, it is legitimate to ask why some paths were followed rather than others, and why they were cut in particular ways. Hypotheses drawn from social-evolutionary theory might reveal some underlying adaptive landscapes whose contours might explain how the paths were shaped. Events and processes that many treat as merely random and contingent, might disclose an underlying logic and significance by being placed in an overtly evolutionary (adaptationist/maladaptationist) frame.

Because the evolutionary perspective must take account of all the relevant social institutions, actors, and levels, it offers a way of going beyond the limited purview that usually constrains economists, sociologists, political scientists, and anthropologists (or economic historians, social historians, political historians, and cultural historians) when they attack such problems with their more limited disciplinary equipment. The perennial divide between structure and agency (objective forces vs. acting subjects) can be approached in new and creative ways. Agents must act within the constraints of existing structures, but these structures can be understood as the products of agent actions, and are themselves subject to constant modification by further agency. As equilibria grow ever more dynamic and unstable, increasingly robust systems of regulation and counter-balance are required. But these do not appear, automatically, out of nowhere, since it is only through human initiative that they are devised and implemented.

For the new breed of (usually quantitative) evolutionary social scientists, there is also much to be gained from this enlarged, multi-level structure/agent based approach. The incorporation of socio-political and socio-economic levels (with their new forms of agency) into the existing practices of gene-culture co-evolutionary modeling could offer a path to a more comprehensive and realistic understanding of how human relations actually operate – not merely within the confines of hunter-forager communities, but in all the diverse social arrangements in which humans have lived. Richerson's and Boyd's examination of contemporary cultures, for example, would be enriched by attention to the added analytical levels which this paper has discussed. In *Not by Genes Alone*, their presentation of the contrast between American 'Yeoman' peasant farmers, 'Yankee' agrarian entrepreneurs, and adherents to a 'Southern' culture of honor would be further illuminated with a diachronic dimension, when one considers the historical origins of the European cultural sources from which they came. Whereas the first was transplanted to the US from a series of authoritarian pre-capitalist states (German) that harbored cultures of peasant autonomy, the second was transplanted from a proto-modern capitalist state (Britain) where agriculture had already been subsumed within a market system, while the third was derived from a series of marginal regions (Scotland and Northern Ireland) where central authority was weak, and kin groups provided the first line of social protection. To see these cultures in *evolution*, we would do well to go beyond a single snapshot, looking backwards to the previous multi-level co-evolutionary selective processes that shaped them.

A similar point can be made with regard to the 'demographic transition', which Richerson and Boyd treat as the case of a mismatch between an ascendant modern culture that is maladaptive in genetic terms. Yet, if we re-frame this demographic transition in a multi-level co-evolutionary perspective, it will not appear to be maladaptive as an adaptation to the conditions of capitalism. For, under capitalism, the pursuit of status optimization does not generally lead to reproductive maximization, but to acquisition of property, consumer goods, and the rearing of a small number of children who are well-nurtured, highly educated, and endowed with the resources they will need to succeed in postindustrial life. Richerson and Boyd astutely associate this change in fertility practices with a corresponding shift in social learning strategies. Yet, we might go farther in acknowledging that it has become much less adaptive to learn from one's parents once capitalism ramps up the pace of social change. For a planet whose carrying capacity is

finite, such cultural change should be seen as profoundly functional, since limiting aggregate population growth has become an urgent necessity on ecological grounds.

It may well be that the quest to enhance one's status is encoded irrevocably in our genes. However, unlike the case with every other mammalian species this impulse need not manifest itself directly in maximization of reproduction. It must be mediated by encultured, discursive forms that will be differently directed to meet the needs of divergent types of society. Where chimpanzees dominate through sheer physical intimidation, humans do so through linguistically mediated social/institutional structures – egalitarian bands for hunter-foragers, power roles in state polities, and wealth maximization strategies in the capitalist world. Competition, which is directed outward in a world of contending cultures and polities, is directed inward by unitary capitalism, where it becomes constrained by the 'property' rules of the market game. Cooperation, which provides the primordial cohesion for culture, is harnessed by political authorities for state-interest under regimes of domination, and becomes an object of suspicion under capitalist individualism, which simultaneously confines it to the 'natural' relations of the family, and then diverts it into the impersonality of legal-contractual frames.

Competition, cooperation, selfishness, altruism, imitation, and innovation are all qualities that form the palate of human nature. It is utopian to think that any of them can ever be entirely extirpated from our behavior, but all the experience of history shows that they can be mixed and melded into a variety of intermediate shades. "When we are asked where is the state of nature to be found, we may answer 'it is here'" Adam Ferguson speculated 250 years ago. "It matters not," he continued, "whether we are understood to speak in the Island of Great Britain [then on the cusp of industrialization], at the Cape of Good Hope [among itinerant pastoralists], or the Straits of Magellan, [among simple foragers]" or, for that matter, in the global cities of our own postindustrial age (Ferguson, 1995). Only now, at the beginning of the twenty-first century, are we in a position to turn Ferguson's brilliant insight into a concrete research program. It is my hope that this article will convince some readers that the effort is worth a try.

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