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Introduction to the Special Issue on the Evolution of Institutions

MARK BLYTH
The Watson Institute, Brown University, Providence, Rhode Island, USA

GEOFFREY M. HODGSON*
University of Hertfordshire Business School, Hatfield, Hertfordshire AL10 9AB, UK

ORION LEWIS
Rohatyn Center for International Affairs, Middlebury College, Middlebury, Vermont, USA

SVEN STEINMO
European University Institute, Florence, Italy

Abstract: How can evolutionary ideas be applied to the study of social and political institutions? Charles Darwin identified the mechanisms of variation, selection and retention. He emphasized that evolutionary change depends on the uniqueness of every individual and its interactions within a population and with its environment. While introducing the contributions to this special issue, we examine some of the ontological positions underlying evolutionary theory, showing why they are appropriate for studying issues in economics, political science and sociology. We consider how these ideas might help us understand both institutional change and the formation of individual preferences.

1. Introduction

In recent years there has been an explosion of interest in evolutionary theory in a wide variety of scientific domains.[1] In fields as diverse as computer science, philosophy, economics, sociology, psychology, biology and anthropology, 'evolutionary thinking' has come to the forefront of each discipline. Although the term 'evolution' takes on a number of different meanings, prominent contributors to the current 'evolutionary turn' in the social sciences have explicitly or implicitly deployed concepts redolent of the Darwinian principles of variation, retention and selection (Campbell, 1965; Tilly and Ardant, 1975; Hayek and Shenfield, 1983; Nelson and Winter, 2002). In this introductory essay we explore some of

*Email: office@vivarais.co.uk

1 Four of papers published in this special issue – by Eric Beinhocker, Robin Dunbar, Elinor Ostrom and Xavier Basurto, and Ugo Pagano – derive from a conference on 'Do Institutions Evolve?' held at the European University Institute in Florence in May 2009. The authors thank Jens Beckert, Robert Jervis, Edgar Kiser, Freidrich Kratokwil, Tom Pepinsky, Bo Rothstein, Kathleen Thelen and Stefan Svalforss for very helpful comments on this introduction. All errors in fact and interpretation remain our own.

the key insights suggested by evolutionary theorists across several disciplines and examine how they may help us better understand key conundrums confronted in political science and economics.

The analysis is divided into three main parts. In part 2, we present a basic overview of some of the key concepts in evolutionary theory. We show how evolutionary theory has built on and developed Charles Darwin's key propositions that point to variation, retention and environmental selection as the key mechanisms of change. In part 3, we highlight the distinctive ontological and epistemological positions necessary for evolutionary theories. Whereas much social science assumes 'equilibrium', evolutionary theory is explicitly dynamic and is specifically interested in interdependent relationships and the emergent characteristics of complex interactions. In part 4, we apply this evolutionary framework to two key questions of interest to social scientists. First, we explore the implications of evolutionary theory for our understandings of human preferences. We contend that evolutionary theory holds out the possibility of synthesizing micro-level approaches, rooted in assumptions about 'human nature', as well as macro-level structural accounts that argue that preferences are shaped and constrained by institutions. Second, we consider the implications of evolutionary theory for the study of institutional change. From genes, which are rules governing cell behavior, we move to political institutions, which involve rules governing political behavior.

2. Evolutionary principles

Rather than seeing life on earth divided into distinct categories (species), in which all members of a population were both immutable and alike, Darwin saw phenomenal variation within species and he conceptualized variation as a key component of change. Darwin argued that the key mechanism was 'natural selection'. Darwin saw that species, and even populations, were not fixed and absolute categories – populations were composed of varied individuals. This is known today as 'population thinking' (Mayr, 1982). Some individuals possess traits that give them an advantage in their environment and in the competition for resources and mates. Consequently, they would have more offspring than others and ultimately increase those traits within the population. Thus, in evolutionary terms, certain traits are *selected* because they are more successful in a given environment. In this way, species evolved to have different traits over time. In some cases this would mean that the entire population would change. In other cases, especially in instances of geographic isolation (allopatry), populations would diverge to such an extent that new species and categories ultimately emerged. The key features of Darwinian theory have long been matters of discussion for biologists and philosophers of biology (Price, 1970, 1995; Mayr, 1982, 1988, 2001, 2004; Sober, 1984; Hull, 1988; Dennett, 1995). A consensus

exists that Darwinism rests on the three central principles of variation, retention and selection. Darwin (1859) himself highlighted them in his final paragraph of *The Origin of Species*.

After Darwin, a succession of authors suggested that his ideas might apply to other evolving systems, particularly culture and political and economic institutions (Bagehot, 1872; Ritchie, 1896; Veblen, 1899; Keller, 1915). However, these early attempts were sidelined as the social sciences rejected any connection with biology in the wake of justifications of war in terms of the 'survival of the fittest', rampant racism, widespread eugenics, Nazism and other horrors of the twentieth century. Consequently, the idea of generalizing and extending Darwinian principles remained underdeveloped until it was revived much later by Donald T. Campbell (1965), Richard Dawkins (1976) and others. Although some aspects of this project to generalize Darwinism remain controversial, the Darwinian principles of variation, retention and selection are evident in many 'evolutionary' contributions in the social sciences.

Indeed, that may result from the nature of the phenomena under investigation. Darwin's theory addressed populations of entities, where there was variation among individuals, each individual faced immediately scarce resources, information relevant to survival could be inherited in some way, and circumstances cause some entities to prosper more than others. Human institutions are populations of entities that fit this abstract description. Hence, although Darwin developed his principles in a biological context, they apply to populations of social entities as well.

Eric Beinhocker (2006: 12) puts it this way: 'Modern evolutionary theorists believe that, like gravity, evolution is a universal phenomenon meaning that no matter whether the algorithm is running in the substrate of biological DNA, a computer program, the economy, or the substrate of an alien biology on a distant planet, evolution will follow certain general laws in its behavior.' Beinhocker (2011) himself makes an important contribution in this special issue by showing that Darwinian evolution, in whatever domain, is essentially an informational process.

This generalization of Darwinian principles does not mean that we attempt to explain social phenomena in biological terms, or uphold that biological evolution and social evolution are identical processes. On the contrary, the generalization of Darwinian principles depends on some ontological communality at an abstract level, not at the level of detail. It is a matter of neither biological analogy nor biological reductionism (Aldrich *et al.*, 2008; Hodgson and Knudsen, 2010).

Today there is fairly widespread agreement among many evolutionary theorists that there are *multiple* levels of selection. Of course, scientists have different emphases, but few reject the idea that selection operates at the levels of genes, organisms, populations and (more controversially) species. This opens the door to higher-level selection processes at the social level, involving social institutions.

3. Ontological and epistemological assumptions in evolutionary theory

At the root of evolutionary biology is the assumption that the objects of analysis – living organisms – are fundamentally different from inanimate matter. More generally, evolution is a function of environmental constraints, interactions between entities and a code carried by their replicators. This duality is also evident in the institutionalist literature, as seen in debates about the relative importance of micro-level motivations and macro-level structure (Sewell, 1992).

Second, evolutionary theory is the study of 'complex adaptive systems' (Holland, 1992). This notion accepts the importance of *emergent properties* and specifically attempts to understand the ways in which entities interact with one another and their environment in a dynamic process. The character of the whole population is distinct from that of its constituent units: interaction is the key aspect of such an emergent system.

An illustration of emergence is found in the essay in this issue by Scott Carson (2011), who seeks to find the relationship between height (as a proxy for fitness conditions) and periods of institutional change (institutions of Slavery and Post-War reconstruction in 19th-century Tennessee). Carson introduces the additional independent variable of proximity to the Mississippi river, which may be either welfare enhancing or decreasing through the net import, or export, of goods. In particular, eastern Tennessee slaves were sheltered from the net export effects of trade. Carson finds that while the statures of African Americans declined over time, the statures of white Tennessee residents declined by twice as much. Stature was sensitive to proximity to water in general, but overall 'statures reflected a complex set of economic, social, and biological factors' (Ibid.: 14).

The implications are significant. Instead of viewing the world as a product of linear relationships between constant variables, understanding emergence allows us to understand how contingency is embedded within the system itself. Change is no longer simply the product of external shocks, but embedded within evolutionary history.

This 'interactionist' model of science suggests a very different scientific epistemology. Much experimental research in biology deals with proximate causation (i.e., how the genetic code causes different characteristics or behaviors). Similarly, experimental research in economics and political science focuses on how decisions are made at the individual level. In contrast, evolutionary biology focuses on ultimate causation – how environment and history have exerted an influence on the way that individuals adapt and change over time.

This leads to a major difference between the physical and natural sciences on the question of prediction. In a definite or probabilistic sense, and analytically or through iterative computations, prediction is often possible in the physical sciences using the laws of physics. In contrast, the complexities of the interacting populations of evolutionary theory make meaningful prediction much more difficult and often impossible.

Finally, both positive feedbacks and the complexities of fitness landscapes mean that history matters. Consequently, a key method of analysis is that of *historical narrative* that describes the influence of historical contingency and environmental factors on outcomes (Mayr, 1988). Rather than predicting the future, the goal of evolutionary theorists is to understand the forces and dynamics that have shaped the world as we know it. Specifically, they are interested in understanding how and why some entities adapt, prosper, and some die out.

Evolutionary theorists are unable to predict distinct future evolutionary adaptations because evolutionary theory accepts that accidental variations or bifurcations within complex systems can set development along totally new and unpredictable paths.[2] For these reasons, evolutionary scientists are necessarily engaged in path analysis. They are interested in both explaining adaptations and understanding the consequences of those adaptations.

This epistemological framework might raise a number of objections from social scientists accustomed to standards of science derived from Newtonian physics. For example, if explanations are constructed *post hoc* and cannot be falsified via experimentation, then how can they be falsified? We reply that although falsification is a worthy goal, the simple fact is that some research questions defy these standard models of scientific study. Once again, given a macro-level emphasis on the interaction of complex systems, it is impossible to reduce these events to basic covering laws. This may explain why Karl Popper himself argued that 'as a philosophy, reductionism is a failure ... we live in a universe of emergent novelty; of a novelty which, as a rule, is not completely reducible to any of the preceding stages' (1974: 281). Consequently, theory construction in evolutionary biology resembles a process of comparative historical analysis, rather than experimentation and falsification. While 'just so' stories can be problematic, they can be 'tested' against the historical record and the probability that any particular theory is correct can constantly be updated against new evidence.

4. Evolutionary theory and institutions

Before entering into the discussion of how evolution applies to human institutions, we address one of the most prominent critiques of such an analysis: that humans are unique creatures and that theories applied to the rest of the biological world do not apply to human beings. The crux of this argument is that humans are sentient beings. Humans can intentionally change their own history. The critics conclude that human social evolution is qualitatively distinct from the

2 The huge literature dealing with these puzzles includes Futuyma and Slatkin (1983), Mayr (1988), Holland (1992), Jervis (1997), Hoffman and Riley (1999), Pierson (2000), Zimmer (2001), Kerr (2002) and Ridley (2003).

evolution of other organisms. As such, evolutionary theories and insights should have no relevance or applicability to the human experience.

Of course, humans have evolved the most complex brains on this planet. Our large cerebral cortex co-evolved with the development of social interaction and sophisticated languages, as Robin Dunbar (1996, 2011) elaborates in this special issue and elsewhere. Humans are unique, but so too are gorillas, honeybees and *E. coli*. The key difference between humans and other living creatures is that humans have developed the most powerful cognitive capacities, with complex levels of self-reference and pre-figuration, sophisticated systems of information retention and communication, and the most complex social organizations. But this does not rule out the existence of abstract ontological communalities with other evolving systems. At a highly abstract level, similar evolutionary principles will apply. Hence, it is reasonable to suggest that human society, politics and institutions are the products of evolutionary processes.

Indeed, once one adds intelligence into a system, both its complexity and adaptive capacity increase dramatically. If agents can intelligently anticipate the effects of their actions, even if they are spectacularly wrong about those intended consequences in some cases, then the effects of evolution on social systems is tied in with the evolution of the expectations themselves. Agents' interactions with their environments are interdependent with their understandings of those environments.[3] In short, human intelligence may well *enhance* the evolutionary capacities of human social organization. Instead of suggesting an exception to the rules of evolution, human intelligence and cognitive abilities help explain why human social organizations evolve quite quickly.[4] As George Modelski argues: 'Where "natural" selection acts via genetic material, and must necessarily take time, "social" selection is faster, involves cultural transmission, and acts upon clusters of human behavior embodied in policies and strategies' (2007: 1).

Jamie Morgan and Wendy Olsen's (2011) essay in this special issue on rules and rule-governed behavior speaks directly to this point. Examining the concept of rules and rule systems, and drawing on both John Searle and Ludwig Wittgenstein, Morgan and Olsen argue that some conceptions of rules are too constraining. As well as constraining behavior, rules and the interdependencies between them create complex webs of possible actions and permissions. In this way they create the potential for agency, but that agency is an emergent and creative force that evolves in relation to the 'fluidity' that rule sets permit. Morgan

3 Richard Nelson makes a similar point when he argues, 'I want to highlight that my insistence that human purpose and intelligence often plays a major role in the evolution of culture does not mean that the process is not evolutionary. The clear fact that scientists, and technologists, carefully consider what they do does not mean that progress in science and technology can be understood as the result of a coherent plan. But a serious theory of the evolution of human culture cannot assume that humans can not think ahead, and often with considerable sophistication' (Nelson, 2007: 87).

4 For an interesting analysis of the evolutionary character in the interactions between humans and their ecology, see Liu *et al.* (2007).

and Olsen argue for a world that is computable in the sense that humans can make sense of 'what to do in context X given rule Y' by social processing via shared knowledge. As such, although a taxonomy of rule forms may help specify both what is possible and even permissible in a given environment, the precise outcome is a function of its 'practical dynamism . . . how a rule may be broken, bent, innovated or transformed' with 'Rules, themselves [being the] expressive aspect of the inter-subjectivity or reality'. This entire conception is consistent with an evolutionary framework involving selection, variation and retention.

In a multi-level selection framework there is significant competition between individuals, organizations, societies and political systems, which can be seen as evolutionary processes. War and business rivalry are obvious manifestations of this competition, but populations compete for resources in many other ways.

The search for a better understanding of human preferences is one of the most pressing issues in the social sciences. In political science, Peter Katzenstein noted that one of the key differences between rational choice and historical institutionalism is that the former assumes a constant and universal set of preferences whereas historical institutionalists are critically interested in explaining why preferences vary across time and space (Steinmo *et al.*, 1992).[5] More recently, Ira Katznelson and Barry Weingast have admitted that, 'preferences are foundational for any theory that relies on agency,' but, 'we know too little about preferences, where they come from, or how they are generated' (Katznelson and Weingast, 2005: 2).

Evolutionary theory can help us explain human preferences. All living things – including humans – try to survive. Successful entities develop quite complicated and highly regulated behavioral strategies (rules), which facilitate success in the context in which they live. All social creatures *inherit* the desire to follow social rules and be parts of social groups, and all social beings adopt social or cooperative strategies in order to survive and reproduce. What matters is not only the survival of the individuals but also *the survival of the institutions* that enable individual interaction, cooperation and reproduction.

Dunbar (2011) argues that cognitive limits (very roughly related to brain size) have very significant implications for both the size of traditional communities and the structure of larger and larger social organizations that we have managed to construct as societies have become more complex. Drawing from a variety of substantive examples and research, he demonstrates that human social structures will have remarkably specific organizational structures. Certainly, human institutions have developed enormous complexity and involve massive numbers of individuals, but when understood in the light of Dunbar's analysis of human cognitive limitations we have a much greater understanding of why

5 Sophisticated rational-choice theorists have backed off the narrow assumption that human motivations can be reduced to simple, self-interested, *Homo economicus*. See North (1992), Levi (1997), Elster (1998, 2000), Bowles and Gintis (2005, 2011) and Weingast (2005).

certain kinds of human social structures evolve and persist while others seem virtually impossible.

Recalling Darwin's basic insight that variation is the key to evolutionary processes, we note that there can be an enormous diversity of individual preferences even when the whole species is motivated by a shared preference for reproduction. Preferences are the product of both evolutionary adaptations to previous environments and our individual development. Once again, history, nature and nurture fundamentally shape the preference structure of every individual.[6]

Because preferences grow from personal experience and species history, we should expect the following propositions to hold: different populations will develop different preference clusters; there will be significant variation within populations; and individuals may have multiple and often conflicting preferences. Even if our most basic motivation is to survive to pass on our genes and reproduce, then many different behaviors may result. In part these outcomes depend on the structure and resilience of social groups, where the survival of the individual depends on the survival of the group. Consequently, as Darwin (1871) himself noted, a society made up of purely selfish individualists could not last long. Real human societies are composed of individuals possessing a variety of preferences and motivations, ranging from extreme selfishness to inspiring altruism.

There is very strong empirical and theoretical support for the propositions that human beings have dispositions to cooperate as well as to show self-interest in particular circumstances (Henrich *et al.*, 2001; Thayer, 2004; Bowles and Gintis, 2005, 2011). Recent work shows that there are specific parts of the human brain that influence these basic preferences (Knoch *et al.*, 2006). Equally interestingly, these parts in the brain also seem to be related to the sections of the brain that stimulate preferences for reciprocity and fairness in individuals (Fehr, 2006). There are booming literatures in evolutionary biology, psychology, anthropology and economics that are converging on the argument that the human brain has evolved to advantage cooperation.[7] The human mind is neither a 'blank slate' nor a purely strategic calculative computer.[8] This insight turns the rationalist's dilemma (how is it possible that humans ever built social institutions in the first

6 As Alford and Hibbings (2004) show in their study, identical twins separated at birth appear to share some predilections, but it is impossible to predict their personalities.

7 See, for example, Dawkins (1982), Barkow *et al.* (1992), D'Andrade and Strauss (1992), D'Andrade (1993), Hartung (1995), Shore (1996), Lakoff and Johnson (1999), Nelson and Winter (2002), Wheeler *et al.* (2002), Hammerstein (2003), Fehr and Fischbacher (2004), Bowles and Gintis (2005, 2011), Gureck *et al.* (2006), Knoch *et al.* (2006) and Nelson (2007).

8 For a summary of evolutionary psychology and its implications for social science, see Cosmides and Tooby (1997). Anthropologists have their own debates over the origins of cooperation, individual self-interest and preferences for sociality. See Boyd and Richerson (2005a, 2005b), Richerson and Boyd (2005) and Sperber and Claidière (2006).

place?) into a non-problem: the primates from which *Homo sapiens* evolved were already a social species, replete with social rules, norms and behaviors. Humans thrived precisely because their genetic capacities and their preferences for cooperation advantaged them over their competitors.

If certain types of political institutions advantage or favor particular behaviors and attitudes, then institutional differences may have more long-run evolutionary consequences than the simple fact that certain political strategies are chosen in one context over another (Sardemov, 2007). Political institutions are created and evolve. Institutions are created and changed by individuals who have preferences of their own and basic suppositions about how other people behave. If their preferences are products of both their genetic inheritance and their social experience, then it makes sense to consider *who* created (or changed) specific institutions and *why* they constructed the institutions they did.

In this special issue, Elinor Ostrom and Xavier Basurto (2011) address the evolution of rules and norms directly, building particularly on empirical studies of the management of common-pool resources. They argue that most previous analytical tools in the social sciences address static situations, but these are inadequate to understand dynamic situations – particularly institutional change. Analytical tools must help the analyst to record the processes of change in multiple specific settings so that lessons from such settings can eventually be integrated into a more general theory of institutional change.

Notably, almost every political constitution begins with broad statements about 'human nature' that are based in different assumptions about human *natures* (Ehrlich, 2000). The evolutionary point is that these different institutional designs may ultimately structure different human natures. If so, they have far more important implications than simply constraining strategic behavior. If they advantage certain types of individuals over others (e.g., rationalists over contextualists, or systemizers over empaths), then they may also have the evolutionary effects of shaping who wins, who loses, who reproduces and who does not, and what we prefer.

Many social scientists today are groping for a better understanding of origins and mechanisms of institutional and political change. The problem is that most social science models assume fixed mechanisms. We are told that variable X affects variable Y causing outcome Z. This kind of analysis can be extremely useful to explain the proximate outcome Z, but it is necessarily limited in its ability to explain change in Z other than to demonstrate that it must be related to a change in X or Y. What such approaches cannot do, and perhaps are not interested in, is explain why there is a change in X or Y.

Traditional rational choice theory assumes that actors maximize their utility, with given utility functions.[9] Thus, any given institutional setting will eventually

9 Some choice theorists appear to have backed away from these assumptions (Greif and Laitin, 2004; Weingast, 2005; Levi, 2006; North, 2006).

reach an equilibrium in which 'no one has the incentive to change his or her choice' (Levi, 1997: 27). Subsequently, the only source of change is exogenous. As Levi argues, 'it is obvious that choices change regularly and constantly. ... To understand these changes requires a set of hypotheses concerning what exogenous shocks or alterations to the independent variables will have what effects on the actions of the individuals under study' (Levi, 1997: 28).[10]

In political science, the 'historical institutionalists' have had the most success in exploring the mechanisms of political change (Steinmo *et al.*, 1992; Pierson, 2000, 2004; Thelen, 2004; Streeck and Thelen, 2005). The importance of time, path dependence, increasing returns and institutional layering are widely accepted as central to a better understanding of political change (Pierson, 1993, 2000, 2004). Institutional economists have explored similar themes. For example, in this issue Ugo Pagano (2011) underlines the importance of institutional complementarities, which sometimes prevent marginal adjustments in the system from one configuration to another. Institutional complementarities dispose the system to a path dependent and possibly suboptimal evolutionary track.

Wolfgang Streeck and Kathleen Thelen (2005) make a major breakthrough in our understanding of institutional change. They asked policy experts from around the world to examine cases of policy change and specifically explore the endogenous sources of this change. 'A general problem in contemporary institutional analysis,' they correctly note, is that it has 'always emphasized structural constraints and continuity.' Institutions, effectively, are seen as 'frozen residues, or "crystallizations", of previous political conflict' (Ibid., 2005: 6).[11] These writings offer healthy antidotes to institutionalists' reliance on 'punctuated equilibrium' models to explain institutional change by making a case for what they call 'gradual transformational change'. Curiously, they argue that theirs is not a model of 'adaptive change'. They state, 'We ask how we may distinguish "real" change from "superficial", merely adaptive change, and how to detect change in the absence of disruptive events leading to institutional breakdown' (Ibid.: 2).

The key problem for Streeck and Thelen's analysis is that they do not have a theory of evolution. They nicely typologize different forms of institutional change but lack an explanation for these mechanisms. Nevertheless, a careful reading of their volume suggests that they are in fact pointing towards a model of

10 The recent 'historical' turn in rational choice theory is an example. The key point for these scholars is to show that the theorized relationship between actors holds in a wide variety of places and times. See Levi (1988), Lichbach (1995), Fiorina (1995) and Bates *et al.* (1998). For a frank discussion of the epistemological issues dividing political science, see Wallerstein (2001).

11 Evoking further an evolutionary theory, Streeck and Thelen (2005: 16) argue that institutions involve continuous interaction between rule makers and rule takers, during which new interpretations (mutations?) of the rule will be discovered, invented, rejected and maybe adopted.

evolutionary change, precisely what evolutionists would call 'adaptive change'.[12] This is reminiscent of the debate between Steven J. Gould and the 'adaptionists' noted above, but in the case of political scientists it appears that the arguments have been reversed. Evolutionary theory since Darwin has argued that the major changes in history have been the product of small adaptations, the cumulative effects of which have been immense. Gould's (1989) central argument was that life is conservative and the really big changes in life's history (usually extinctions) are the products of massive environmental shocks that 'punctuate' the 'equilibrium' of life.

The standard model in political science has been closer to Gould's. We have even borrowed his terminology of 'punctuated equilibrium' (Krasner, 1984; Steinmo *et al.*, 1992). Having adopted the equilibrium view, political scientists end up being stuck with static models of life – only to be saved from the outside. Increasingly though, theorists (such as Lieberman, 2002; Greif and Laitin, 2004; Blyth, 2006; Levi, 2006; Steinmo, 2008) and many others argue that 'exogenous' models of change are insufficient, similar to most evolutionary theorists. Today, as we noted above, it is widely accepted that *both* adaptation and punctuation are important parts of the evolutionary account (Mayr, 2001).[13]

There is no perfectly static state in the history of life. Change is the norm. Sometimes change can occur quite rapidly, such as when after an asteroid impact the sun is blotted out for several days. But such events are rare. Most change is gradual. However, adaptation should be understood as exogenous. There is an interactive and dynamic relationship between organisms and their environment. What is true for organism and environment is true for institutions as well: institutions are not independent of their environment (Steinmo, 2010). Our environment is constantly changing, and we are constantly changing our environment. This is not confined to climate change – consider the relationship between the media, elections and technology. These factors are highly interdependent.

Evolutionary theory offers a framework for understanding sources of endogenous *and* exogenous changes. It also provides an explicit theoretical framework for understanding how these sources of change interact in an incremental process. Evolutionary theorists point to replication as a primary source of novelty. Just as genes are not replicated perfectly, the replication of institutional rules is a highly imperfect process.

As noted above, one of the unique features of human evolution is that humans have highly developed cognitive capacities. We are self-conscious and capable of building and sustaining highly complex social organizations. Many animal species learn and can even copy behaviors of others, but humans appear to

12 Thelen's (2004) award-winning book uses the term 'evolution' in its title, 34 times in the first chapter, and each substantive chapter is titled 'The Evolution of. . .' but she never actually defines 'evolution'.

13 Even Gould seems to have moved in this direction in the last years of his life (Gould, 2002a, 2002b).

have the most developed capacities for learning from one another. Perhaps this is why institutional evolution appears to accelerate as our communicative technologies expand. Clearly, some institutions provide individuals with competitive advantages, the most obvious example of which would be military strength, and these institutions can be copied by other groups.[14]

We are led to a different ontological position. Rational choice theorists must recognize that preferences are not as stable as they often assume. Historicists must accept that history and exogenous structures are not as stable as they assume. In short, both preferences and situations vary, and their interplay is characteristic of evolution (Steinmo, 2010).

5. Conclusion: social science, physics envy and the evolutionary advantage

Mainstream economics and political science have emulated the hard sciences of physics and chemistry. Economics has even borrowed some of the mathematical formulations of nineteenth-century physics (Mirowski, 1989). According to James Farr (1995), political science's move in this direction was the result of a broader intellectual movement in the social sciences, which began early in the twentieth century. This led to a conception of scientific methodology involving the reductionist and predictive models that characterize Newtonian physics. In so doing, it was hoped that models would be developed that would uncover the general laws of economics and politics. Farr (1995: 203) summarizes that 'the very aim of science, it was argued, was to discover laws or law like generalizations that organized and explained the facts'. Zuckerman (1997: 279) concurs, 'the established goals of comparative politics reflect these standards. As comparativists propose cross-national generalizations, they posit covering laws'.[15]

This emulation of physics misled political scientists and economists. Physics addresses the constant laws of the physical world. By contrast, human society exhibits different institutions and mechanisms, ever-changing in time and space, and hence some theories may have to change to address the new phenomena (Hodgson, 2001). The life sciences are a more appropriate inspiration for the social sciences. From such a perspective, efforts to create deductive models of political activity are inadequate because both context and time matter (Pierson, 2004) and mechanical models do not help us to understand iterative and dynamic relationships between preferences, behavior and outcomes.

Evolutionary theory promises a dynamic theory of institutions. Evolution assumes change and the transience of equilibrium. An evolutionary focus offers the chance to account for both micro- and macro-level dynamics and therefore

14 For example, Gureck *et al.* (2006) have shown that humans adapt their institutions and behaviors when they see other groups that use strategies or institutions that yield higher payoffs.

15 See also the critiques of Blyth (2006) and Lewis and Steinmo (2010).

even holds out the possibility of reconciling some long-standing debates within the field, because it can explain why humans behave egoistically in some settings and altruistically in others. Evolutionary analysis holds out the possibility of uniting different subfields as well as different social sciences under a framework incidentally derived from the natural sciences but of greater theoretical generality. Evolutionary theory offers more than an interesting metaphor. While human institutions evolve in ways very different from biological organisms, human social institutions – just like humans themselves – are products of evolutionary forces and processes, considered at an abstract level. We need to take evolution seriously.

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