

Darwin's Conjecture: The Search for General Principles of Social and Economic Evolution.

Geoffrey M. Hodgson and Thorbjørn Knudsen. Chicago: University of Chicago Press, 2010. 290 pp. \$ 45.00.

Philosopher Daniel Dennett (1995) famously likened Darwin's theory of evolution to a "universal acid" that has slowly but inevitably been eating its way through virtually all fields of human inquiry since the publication of *The Origin of Species* in 1859. A little over a century and a half later, there are few fields that have not in some way been affected by the theory of evolution through natural selection. For instance, philosophy, psychology, anthropology, and economics have all developed fruitful evolutionary research programs. In organization science, work that has taken inspiration from evolutionary theory includes the assimilation and extension of insights about organizational routines and capabilities from evolutionary economics and the research program of population ecology. Despite the obvious impact of evolutionary theory outside biology, however, there are still a lot of misunderstandings about what evolutionary theorizing in the social sciences could, or should, entail. In *Darwin's Conjecture*, Hodgson and Knudsen set out to clear up these misunderstandings and develop a meta-theory to ground explanations of socio-economic change.

The cover of *Darwin's Conjecture* shows four individuals in business attire with each of their faces replaced by the head of one of the species of finches that Darwin brought back from the Galapagos Islands. The message is clear: humans are biological organisms. Yet the book is not about the genetic basis of human behavior. It is rather about the application of evolutionary principles to social phenomena at levels of analysis above the individual, such as the evolution of firms. The conjecture in the title of the book refers to hints in Darwin's work that he thought his theory of evolution might also apply to social phenomena: he mentioned the evolution of language but also suggested that selection might operate on variations among the ethical principles of tribal groups. This invites the question of whether a similar logic also might apply to, say, the differing fates of banks during the financial crisis.

Over the last century and a half, many social scientists have followed up on Darwin's conjecture that the logic of his theory might apply more widely. However, as Hodgson and Knudsen show in their first chapter, the history of applying Darwinian ideas to social phenomena is rather unfortunate. In fact, for most of the twentieth century, the social sciences have been hostile to evolutionary ideas. Part of this hostility can be explained by the abuse of pseudo-Darwinian ideas in eugenic social policies in Nazi Germany and elsewhere. But the authors offer three additional explanations: first, a general weariness among social scientists in general, and sociologists in particular, to import ideas from biology; second, misunderstandings of what Darwinism entails; and, third, lack of a proper generalization of Darwinism, so that its application in the social sciences has been limited to constructing analogies between biological and social evolution. While the book addresses each of these three issues, it is primarily motivated

by the third. The starting point of the authors' endeavor is the assumption that evolutionary processes in the socio-economic sphere are not just analogous to biological evolution but that social and biotic evolution share fundamental "ontological communalities." The corollary of this assumption is that there must be general principles of evolution that apply equally to biological and socio-economic evolution. The main purpose of the book is to specify these principles by generalizing Darwin's theory of evolution.

The book brings together and extends earlier work by the authors on generalized Darwinism, a project they launched some ten years ago in the field of evolutionary economics, where it has since attracted substantial attention and generated some heated debate. Evolutionary economists typically see their approach to studying socio-economic phenomena as a superior alternative to the equilibrium modeling that dominates mainstream neoclassical economics. This superiority derives from a more realistic view of human nature, a more explicit recognition of the importance of institutions, and a better appreciation of the dynamics, path dependence, and historical specificity of socio-economic change. At the same time, evolutionary economics has never developed a generally accepted theoretical framework to challenge neoclassical orthodoxy. At heart, the project of generalized Darwinism is an attempt to do just that. Yet not all evolutionary economists agree with the idea that evolutionary theorizing in economics necessarily should be grounded in Darwinism. Opponents fear that generalized Darwinism may replace the "physics envy" that led neoclassical economics down the dead end of general equilibrium modeling with a "biology envy" that ultimately also may do more damage than good to our understanding of socio-economic phenomena. Hodgson and Knudsen's book should first and foremost be understood as an attempt to convince skeptics within evolutionary economics of not just the value but also the inevitability of a Darwinian approach to understanding socio-economic evolution.

At the same time, it is clear that generalizing Darwinism to ground theories of socio-economic change is a project with a significance that extends well beyond evolutionary economics. In Hodgson and Knudsen's words, "We suggest that generalized Darwinism could become the backbone of a unified evolutionary framework for the social and behavioral sciences" (p. 3). In view of this ambitious claim, the book is targeted at anyone with an interest in evolutionary theorizing in the social sciences. The authors develop three main messages: first, that socio-economic evolution is a Darwinian process that involves variation, selection, and inheritance mechanisms; second, that these mechanisms can be defined in generic ways that abstract from specific biological content; and third, that the resulting generalization of Darwin's explanatory scheme can be meaningfully applied to the evolution of social entities above the individual level, such as groups, firms, states, and scientific institutions.

The first message of the book, that socio-economic evolution is a Darwinian process, is developed in chapters 2–4, in which the authors address a number of common misunderstandings about what it means to say that an evolutionary process is

Darwinian. For instance, they convincingly argue that Darwinism does not imply genetic reductionism; that it does not necessarily lead to a view of cultural evolution in which "memes" are the analogue of genes; that notions of self-organization are compatible with Darwinism but fall short of offering an alternative explanation of adaptive complexity; and that insisting that social evolution is Lamarckian rather than Darwinian is a red herring on the road to rigorous theorizing about socio-economic evolution. Readers who think that applying Darwinism to the social sciences must be either biological imperialism in disguise or a blatant denial of the role of human intentionality in socio-economic evolution will likely come away bereft of these ideas after reading these chapters. The essence of Darwinism according to the authors is the recognition that complex entities evolve as the result of "the development, retention, and selection of information concerning adaptive solutions to survival problems faced by [these] entities in their environment" (p. 42). Whether or not intentional behavior plays a role in this process is an important empirical question but does not change the fact that the process is subject to the principles of evolution that were originally uncovered by Darwin.

Chapters 4–7 discuss the nature of these principles and develop the second message of the book, that Darwinian principles can be defined in generic ways that abstract from specific biological content. These various chapters take the reader deep into the philosophy of biology and will give those who are interested in foundational issues in evolutionary theorizing much food for thought. Chapter four includes a discussion of the logical imperative of the genotype-phenotype distinction for evolutionary explanations in biology and develops the notions of replicator and interactor as a way to generalize this distinction. Chapter 5 discusses the central role of selection in evolutionary explanations and builds on the Price equation to offer a generalization of this crucial concept. Chapter 6 discusses the concept of replication in relation to complexity and develops the authors' novel concept of "generative replication." Finally, chapter 7 offers a very useful discussion of group selection and applies this concept to socio-economic evolution.

By the end of chapter 7, the authors have offered their readers an impressive "tour d'horizon" of both the older and more recent history of ideas with respect to evolutionary theorizing in philosophy and the social sciences. Moreover, they have added their own insights and suggestions about what rigorous evolutionary explanations of socio-economic phenomena should entail. Up to this point in the book, much of their discussion is relatively abstract, although a number of boxes scattered throughout the different chapters make links to organizational phenomena. These various boxes, but especially chapter 8, go beyond abstractions and contain the authors' third message: that a generalization of Darwinism can be usefully applied to explaining the evolution of social entities. They argue that generalized Darwinism offers a meta-theory that is a crucial foundation for evolutionary theorizing in the social sciences but that will always require auxiliary theories to fill in the details of the explanation of a

specific economic phenomenon. Chapter 8 is an exercise along these lines and sketches how social evolution has given rise to ever greater complexity as the result of the emergence of culture, tribal customs, symbolic systems, judicial law, and the institutionalization of science and technology.

Darwin described the *Origin of Species* as “one long argument.” His argument, of course, was that life evolved by way of variation, selection, and inheritance. *Darwin’s Conjecture* offers another long argument: that socio-economic evolution involves the same generic principles. Hodgson and Knudsen have written a thoughtful book that combines an impressive breadth of scholarship with provocative suggestions for an evolutionary turn in the social sciences. Of course, there is room for disagreement about the details of their suggestions. For instance, a generalization of Darwinism that would entirely avoid concepts with biological connotations like replication and inheritance may be more likely to convince skeptics of the value of generalizing Darwinism for the social sciences. Also, when they apply their evolutionary principles to socio-economic change, the connections between abstract principles and concrete real-world phenomena are still rather loose. But these are possible objections of which Hodgson and Knudsen are well aware. They emphasize that generalizing Darwinism is an ongoing project that has so far largely proceeded at the meta-theoretical level, the level on which they also focus in their book. As they note, the important contribution of the project to date is to offer an emerging meta-theoretical framework that serves as a powerful “positive heuristic” for rigorous theory development and empirical research about socio-economic phenomena. Using this framework to build middle-range theories of specific socio-economic phenomena like organizational evolution is an important next step, if only because it may in turn contribute to even more fruitful generalizations of Darwinism. This next step in the project of generalizing Darwinism may be especially interesting for organizational scholars, and those who are interested in moving beyond the analogical use of evolutionary concepts in theorizing about organizations may want to join the project of getting Darwin’s universal acid into sharper focus.

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