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Darwinian Economics

Darwin's Conjecture: The Search for General Principles of Social and Economic Evolution. Geoffrey M. Hodgson and Thorbjørn Knudsen. University of Chicago Press, 2013. 304 pp., illus. $27.50 (ISBN 9780226005782 paper).

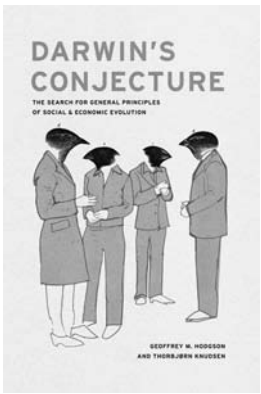
From Pleasure Machines to Moral Communities: An Evolutionary Economics without *Homo Economicus*. Geoffrey M. Hodgson. University of Chicago Press, 2012. 328 pp., illus. $45.00 (ISBN 9780226922713 cloth).

General Darwinian principles, and the contemporary elaborations of those principles, can be fruitfully applied to the study of social evolution—such is the basic premise of two recent titles by Geoffrey M. Hodgson, *Darwin's Conjecture: The Search for General Principles of Social and Economic Evolution*, coauthored with Thorbjørn Knudsen, and *From Pleasure Machines to Moral Communities: An Evolutionary Economics without* Homo Economicus. Although the ideas presented in both volumes relate to social evolution in general, an emphasis is given to how the concepts of evolutionary biology apply to economics. Both Hodgson and Knudsen are economists by training: Hodgson is a research professor in business studies at the University of Hertfordshire, and Knudsen is a professor of organization and design at the University of Southern Denmark. Biology and economics, both considered to be evolving, complex systems, share an intellectual history dating back to Charles Darwin and Thomas Robert Malthus.

Since the publication of his seminal book, *Economics and Evolution* (1993), Hodgson has been a champion of bringing contemporary ideas from biology back into economics. This is not an easy task. As a social scientist, Hodgson recognizes the danger of overgeneralizing biological analogies and the opposite pitfall of flatly rejecting anything hinting of biological determinism. As both Hodgson and Knudsen would argue, the connection between biology and economics eroded steadily in the twentieth century with the ascendance of general equilibrium economics, which emphasizes mathematical tractability over real-world relevance. With the growing influence of behavioral economics, evolutionary approaches are now once again coming into favor (Wilson DS and Gowdy 2013).

In *Darwin's Conjecture*, Hodgson and Knudsen cogently present their argument for generalized Darwinism—namely, that the core principles of variation, selection, and inheritance (or replication) can be successfully applied to social evolution. Two points are made early in the book: The standard economic model of computable general equilibrium (CGE), with its core assumptions of self-regarding rational actors and perfect competition, is obsolete, and evolutionary theory can provide a new framework for the study of social and economic systems. Hodgson and Knudsen recognize that Darwinian principles operate at a high level of generality and that many differences exist between the biological and the social mechanisms through which variation appears, is selected, and is then inherited. Nevertheless, generalized Darwinism can be one of the foundations of a new science of evolutionary social change.

The book begins with a history of ideas of social evolution, including group selection and social replicators. Darwin accepted the idea of group selection and discussed it in relation to human groups. Other early commentators had the idea of social evolution as the replication of social units. The towering figure in social evolution at the turn of the twentieth century was Thorstein Veblen, who, in many ways, anticipated the current behavioral revolution in economics. Topics covered in the early chapters include the decline of Darwinism, beginning in the early 1900s, and the rejection of the importance of natural selection by such luminaries as Alfred Russel Wallace and Thomas Henry Huxley.



A critical turn for social science came with the reaction against social Darwinism, which ushered in a dark age for evolution in the first half of the twentieth century. Evolution reappeared as an organizing principle in the social sciences in the 1950s, when economists such as Armen Alchian and Milton Friedman used a survival-of-the-fittest argument to promote the ideal of efficiency in competitive markets. A milestone in evolutionary economics was the publication of Nelson and Winter (1982). However, Darwin's name appeared only once in that book, partly because of the generally hostile public reaction to E. O. Wilson's (2000) *Sociobiology*, which was originally published in 1975. Hodgson and Knudsen give a welcome defense of E. O. Wilson, but they do

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not discuss his recent contributions to social evolution, which have moved far away from genetic explanations of social behavior. The major competing alternatives to generalized Darwinism are discussed (and dismissed), including *self-organization* (higher-level organization arising from the spontaneous interaction of lower-level components), the *continuity hypothesis* (i.e., that causal relationships exist between biological evolution and later economic evolution), and *Lamarckism* (the idea that acquired characteristics are inherited). As Hodgson and Knudsen point out, these ideas are important as observations, but they are not alternatives to Darwinism in the social domain.

In *Darwin's Conjecture*, the key concepts behind Hodgson and Knudsen's model of social evolution are the replicator–interactor distinction and social group selection. Following the definitions of Richard Dawkins and David Hull, Hodgson and Knudsen use the term *replicator* to refer to heritable developmental instructions, in which "*inheritance* and *replication* are synonymous" (p. 86). An *interactor* is an entity that interacts with its environment so that replication is differentiated. It is a more general term than *phenotype* and is meant to include both social and genetic expression. Like phenotypes, interactors are the objects of selection. The crux of Hodgson and Knudsen's conception of social evolution is that replicators (e.g., entities such as habits and routines) exist above the level of genes. The replicator–interactor framework extends the biological model to social evolution.

The replicator–interactor distinction is a difficult concept, because of the unsettled nature of some basic issues in evolutionary biology and the ambiguity of extending these issues to the social sciences. Hodgson and Knudsen observe that the terms *variation*, *selection*, and *retention* are frequently used without being defined or without an appreciation of their complexity. The traditional models based on a one-to-one relationship between genes and traits have broken down, and the complexities of reality are sweeping aside mathematical tractability in evolutionary biology and in economics. Genes do not have a fixed selective value independent of environmental context, and the expression of replicators through interactors depends on cultural context.

Fitness is another term that seems straightforward but becomes murky when it is operationalized. Hodgson and Knudsen define *fitness* as the propensity of a replicator to produce copies of itself. In social evolution, *fitness* is the propensity of a social replicator (a habit or routine) to make copies of itself and to increase its frequency in the population. *Generative replicators* are a special class of replicators with the potential to increase the complexity of their replicants. This term replaces the vague concept of the *meme*. Habits and routines are socially transmitted dispositions that qualify as generative replicators.

Darwinian principles operate at a high level of generality, and many differences exist between biological and social mechanisms… Nevertheless, generalized Darwinism can be one of the foundations of a new science of evolutionary social change.

Adhering closely to the words of American geneticist George R. Price, Hodgson and Knudsen define the term *selection* as follows: "Selection involves an anterior set of entities that is somehow being transformed into a posterior set, where all members of the posterior set are sufficiently similar to some members of the anterior set, and where the resulting frequencies of posterior entities are correlated positively and causally with their fitness in the environmental context" (p. 92). The definition encompasses two different types of selection processes. *Subset selection* is the selection of elements from a set and does not produce new variation. This type of selection is what Vrba and Gould (1986) called *sorting*, and it lies behind Sober's (1993 [1984]) contention that natural selection itself cannot produce novelty. *Successor selection* includes variation and environmental interaction that can lead to a new variety. This type is close to Neander's (1988) concept of natural selection as a cumulative, channeled process that can create novelty. An important general observation is that *selection* neither implies progress nor excludes cooperation. Both subset and successor selection can be applied to the social domain, as when laws are repealed without substitution (subset selection) or when organizations give rise to new spinoffs and imitations (successor selection).

A number of biologists who embrace developmental systems theory do not use the replicator–interactor framework but focus on the entire development system. Hodgson and Knudsen's insistence on precise definitions is admirable, but the discussion gets bogged down at times. (Distinctions between dialectical and overlapping phenomena can easily be pushed too far.) Words and concepts that seem perfectly reasonable by general definition (e.g., *fitness*, *entropy*, *information*) also lose a certain amount of their meaning when one attempts to measure them precisely.

Along with the replicator–interactor distinction, the concept of *group selection* is central to Hodgson and Knudsen's model of evolutionary change. Both books, in fact, contain excellent discussions of its history and meaning. In *Darwin's Conjecture*, a distinction is made between *genetic group selection* and *cultural group selection*, and applications of multilevel selection in biology and in social evolution are discussed. Group selection is tied to the definition of *interactor*, whereby *multilevel selection* means the selection of groups as interactors; that is, groups, like phenotypes, may be the focus of selection.

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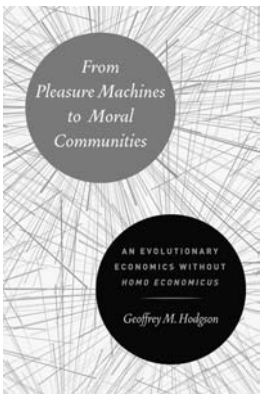
To be sure, the development of the *interactor* concept allows for a more precise consideration of group selection—one that excludes simple duplication and implies causality. As Hodgson and Knudsen note, the group selection literature has, for the most part, ignored the detailed mechanisms and structures that make the group a coherent and competitive unit. The field of cultural group selection is rapidly maturing, however, and Hodgson and Knudsen's definition of *interactor* fits nicely with D. S. Wilson's notion of *trait group selection* (Wilson DS and Sober 1994). A number of researchers have used the *trait group* concept to examine particular instances of cultural evolution, such as the origin of warfare.

One problematic statement in *Darwin's Conjecture* is that group selection must bestow some fitness advantage over individuals (p. 156). In the case of *ultrasocial societies* (see below), a term that was defined by Campbell (1983) to include agricultural ant, termite, and human societies, selection "for the good of the group" does not necessarily mean selection for the good of most individuals within the group (Gowdy and Krall 2013).

Hodgson and Knudsen's discussion of six major transitions in social evolution is the most ambitious chapter in the book and also the least satisfactory. Given the caliber of discussion throughout the volume, one would expect a more nuanced selection of sample transitions—those based on quantifiable outcomes, perhaps. The emergence of the social brain and that of agriculture are two possible examples of transitions with both antecedents in the nonhuman world and empirically measureable consequences.

Similar to *Darwin's Conjecture*, *From Pleasure Machines to Moral Communities* begins with a critique of the methodological individualism embedded in the economic model of CGE. There is a current debate, central to the rise of behavioral economics, as to whether the individual must be the ultimate unit of analysis. In the CGE model, the self-regarding rational actor is a necessary assumption, because, without it, the mathematical proof of the efficiency of competitive markets (the ideological core of the model) is impossible. In light of advances in the study of social behavior, Hodgson concludes that preferences are "other-regarding," and that social phenomena above the level of the individual must also be considered. This criticism is not restricted to economics.

Hodgson then considers the nature and evolution of morality as a way to move beyond purely hedonistic concepts of human behavior. In standard economics, morality is reduced to differences in tastes or preferences and is therefore doubly degraded. First, moral judgments are on par with any other kind of preference; second, it is impossible to claim that one system of morality is superior to any other. The alternative is to construct a theory of morality based on evolutionary principles. The rich literature on moral evolution is discussed in this book, as is how moral evolution relates to the evolution of the human social brain.



The second half of *From Pleasure Machines to Moral Communities* offers four case studies of morality and public policy that involve cooperation in business, economic corruption, health economics, and ecological economics. These chapters serve well as applications of the principles developed in the first half of the book.

One topic missing from both volumes is the consideration of ultrasociality, a subject directly relevant to human social evolution, the economy, and public policy. The notion that humans are an ultrasocial species—characterized by a complex division of labor, a dominance over their ecosystems, and a subjugation of the individual for the good of the group—has been raised by a number of recent authors, most notably E. O. Wilson (2012). Ultrasociality does not fit neatly into the generalized Darwinian framework; selection operates at the level of the entire group, not only on trait groups. Ultrasociality also raises questions about human intentionality. In *From Pleasure Machines to Moral Communities*, Hodgson describes intentionality from the perspective of the individual, as a certain self-reflective control, using contemporary psychology and neuroscience. Human ultrasociality leads to the concept of cultural intentionality. Can cultures learn to change direction when it is clear that their cultural habits and routines have become an evolutionary mismatch (e.g., our use of fossil fuels, which is a major contributor to climate change; Gowdy and Krall 2013)?

Both *Darwin's Conjecture* and *From Pleasure Machines to Moral Communities* present a formidable challenge to the previous assumptions of CGE economics, which is currently under siege on a number of fronts. These books offer a plausible, coherent alternative based on perhaps the most powerful idea of the last two centuries: evolution by natural selection. Their approach fits nicely with the current sweeping unification of the social sciences, which is proceeding in much the same way as did the unification of the natural sciences in the last century (Gintis 2007). Both books are well argued, timely, and well written, but they are not breezy. The topics are difficult and unsettled in biology (e.g., both the units and the levels of selection) and are even more controversial in the social sciences. Nevertheless, these volumes provide essential reading for anyone with an interest in the new and vibrant field of evolutionary social change.

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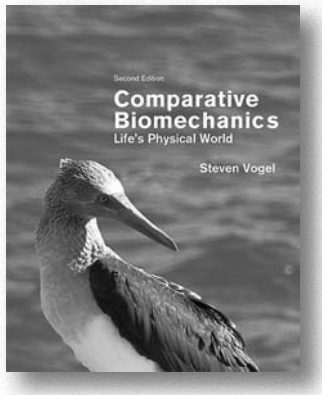
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