



Economic cosmology and the evolutionary challenge

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ABSTRACT

The intellectual histories of economics and evolutionary biology are closely intertwined because both subjects deal with living, complex, evolving systems. Because the subject matter is similar, contemporary evolutionary thought has much to offer to economics. In recent decades theoretical biology has progressed faster than economics in understanding phenomena like hierarchical processes, cooperative behavior, and selection processes in evolutionary change. This paper discusses three very old “cosmologies” in Western thought, how these play out in economic theory, and how evolutionary biology can help evaluate their validity and policy relevance. These cosmologies are: (1) “natural man” as a rational, self-sufficient, egotistical individual, (2) competition among individuals can lead to a well-functioning society, and (3) there exists an ideal optimal state of nature. These correspond to Colander et al. (2004) “holy trinity of orthodox economics”, rationality, greed, and equilibrium. It is argued below that current breakthroughs in evolutionary biology and neuroscience can help economics go beyond these simple cosmologies.

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1. Introduction

Theoretical controversies in biology and economics are remarkably similar: This is so because of the similarity of the subject matter of the two disciplines (evolving complex systems), and because both fields have implicitly adopted core beliefs embodied in “Western Cosmology” (Sahlins, 1996)¹ that have preoccupied theologians, philosophers and social theorists for millennia. However, the last thirty years have seen a revolution in thinking about evolution in biology and in relation to our own species (Hodgson, 1993; Rosser, 2011; Boehm, 2012; Henrich, 2004; Henrich et al., 2004; Jablonka and Lamb, 2006; Manner and Gowdy, 2010; Nowak and Highfield, 2011; Richerson and Boyd, 2005; Wilson, 2012a). The purpose of this special issue of JEBO is to show how these developments can offer guidance for rethinking economic theory. The role

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¹ The term “cosmology” is used by Sahlins and other anthropologists to define a level of analysis that lets us at least partially escape the confines of a highly evolved “mother culture.” Applbaum (1998, p. 325) writes: “[T]he term ‘cosmology’ appears a more flexible and inclusive substitute for culture, indicating a totalizing framework in which culture is given historical and manipulable dimensions while retaining both its totalizing quality and its subjective interpretability through ‘key symbols’”.

of this article within the special issue is to show how the developments can help to overcome the limitations and biases implicit in the core beliefs of Western Cosmology. These beliefs include the view that (1) “natural man” is a self-regarding, egotistical individual free from the bonds of human society, (2) despite the self-interest of its members, qua competition among them, society can function well, and (3) there exists an ideal, optimal state of nature.

These three features of the Western cosmology are reflected in canonical economic theory in the form of the self-interested, rational actor assumption, the invisible hand conjecture, and the belief in the existence of a general market equilibrium, respectively. The same three features are reflected in the history of evolutionary biology. Adaptation and natural selection have often been framed in terms of individual self-interest. Higher-level units such as single-species, social groups, and multi-species ecosystems have been assumed to function well, despite the self-interest of their members. And much ecological and evolutionary modeling has assumed the existence of a general equilibrium.

While both economic and evolutionary theory have been influenced by the three cosmologies, evolutionary theory has arguably made more progress going beyond them during the last thirty years. The individual is no longer regarded as a privileged level of the biological hierarchy. Contrary to the invisible hand metaphor, individual self-interest frequently undermines societal welfare unless special conditions are met. And most ecological and evolutionary systems are in a state of disequilibrium.

In the subsequent sections of this article we will explore the three cosmologies in relation to economics and evolution in more detail. One of our goals is to show how both bodies of knowledge have been influenced by ideas that precede them by centuries and even millennia. Another of our goals is to use the advances in evolutionary theory to help economic theory move beyond the three cosmologies. Accordingly, in Section 2 we discuss the concept of individual self-interest a grand explanatory principle. Section 3 is devoted to exploring the notion of the invisible hand, which supposes that societies can function well without members of the society having its welfare in mind. In Section 4 we turn to the idea of the existence of a socially optimal state represented in economics by the general, competitive market equilibrium and discuss how it influences economic policy recommendations. Section 5 concludes.

2. Individual self-interest as a grand explanatory principle

It is always disconcerting to discover that ideas we think are new and fresh have in fact been in the air for hundreds if not thousands of years. [Sahlins \(1996\)](#) refers to this as “intellectual vertigo.” The ideas discussed below have been central to the Judeo-Christian world for millennia and are encapsulated and reincarnated in economic theory. These ideas and their associated assumptions continue to shape, and sometimes cloud, our understanding of economy, society, and the relationship of humans to the natural world. A first core belief of the Western cosmology relates to the question of how to interpret human nature, particularly with respect to selfishness. Already in 1431 [Lorenzo Valla](#) wrote:

“And what is the aim of friendship? Has it been sought for and so greatly praised by all ages and nations for any other reasons than the satisfactions arising from the performance of mutual services such as giving and receiving whatever men commonly need? . . . As for masters and servants, there is no doubt their only aim is common advantage. What should I say about teachers and students? . . . What finally forms the link between parents and children if it is not advantage and pleasure?” (quoted in [Sahlins, 1996](#), 399)²

In this view, other people are merely a means to enhance individual utility.³

In this logic, the autonomous, self-interested individual is the natural unit of analysis as it was put center stage in economics in the so-called marginalist revolution of the 1870s while abandoning the earlier psychological connotations (see [Bruni and Sugden, 2007](#)). Pareto was explicit about this: “It is an empirical fact that the natural sciences have progressed only when they have taken secondary principles as their point of departure, instead of trying to discover the essence of things. . . Pure political economy has therefore a great interest in relying as little as possible on the domain of psychology” (quoted in [Busino, 1964](#)). By relying on an economic model composed of self-regarding rational individuals, economics could be reduced to the study of “the mechanics of utility and self-interest” ([Jevons, 1871](#), p. 90).

This cosmological element is enshrined in canonical economic theory to the present day. A necessary feature of the Walrasian model is the self-regarding consumer whose utility function is not affected by the utility of others ([Walras, 1874](#)). If this is not assumed, the mathematical proof of the efficiency of competitive equilibrium breaks down ([Gowdy, 2004b; Henderson and Quandt, 1980](#), p. 297).⁴

² As [Lovejoy \(1936\)](#) argues, this conception of man has divine origins. He quotes Aristotle ([Lovejoy, 1936](#), p. 42) as follows: “One who is self-sufficient, can have no need of the service of others, nor of their affection, nor of social life, since he is capable of living alone. This is especially evident in the case of God. Clearly he is in need of nothing, God cannot have need of friends, nor will he have any.”

³ The term “reciprocal altruism” was coined by [Trivers \(1971\)](#). [Fehr and Schmidt \(1999\)](#) distinguished between “reciprocal altruism” which can be attributed to self-interest and “pure altruism” which cannot. This was criticized by [Binmore and Shaked \(2010\)](#). See the response by [Fehr and Schmidt \(2010\)](#).

⁴ To be clear about this, one could certainly construct a utility function where the well-being of consumer A depends on the well-being of consumer B, as in $U_A = F(X, Y, U_B)$. But this form does not lead to the result that the marginal rates of substitution for commodities are the same for the two consumers and thus one cannot go on to prove the Pareto efficiency of competitive exchange ([Henderson and Quandt, 1980](#), p. 297)—the major result of canonical welfare economics—the First Fundamental Theorem of Welfare Economics. Utility functions can include “altruism” but they must still be self-regarding—altruism gives *me* utility.

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