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The evolution of social and moral behavior: Evolutionary insights for public policy☆

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ABSTRACT

This paper explores the evolution of humans as social beings and the implications of this for economic theory and policy. A major flaw in Walrasian economics is the assumption of "self-regarding" agents—economic actors make decisions independently of social context and without regard to the behavior of other consumers and firms. Truly other-regarding behavior, such as altruism and altruistic punishment, cannot be fully captured in the standard economic model. Standard economic assumptions about human behavior make pure altruism an irrational "anomaly" that cannot survive the evolutionary selection process. However, recent findings from neuroscience, behavioral economics evolutionary game theory and animal behavior have paved the way for a realistic, science-based, and policy-relevant foundation for economic theory. Other-regarding emotions such as altruism, love, and envy are an essential part of the human experience. We use the Price equation, showing the feasibility of the evolution of group selection of altruistic preferences, to explore some of the implications of this phenomenon for economic theory and policy. We explore evidence that the human capacity for empathy evolved from primates and suggest that this was the precursor for human morality. We suggest that if we drop the assumption that fitness is equated with the consumption of market goods, pure altruism is no longer fitness reducing, particularly in western societies. We also examine individual preferences for altruism in terms of their effect on well being.

1. Introduction

Some of the basic ideas of neoclassical economics—the notion of natural harmony, narrow self-interest as the prime motivator for human action, and "natural man" as free of social constraints—have a pedigree going back hundreds of years (Sahlins, 1996). However, the rigid requirements of *Homo economicus* came only after the wholesale adoption of the mathematics of thermodynamics in the 1870s (Mirowski, 1989, chapter 5). The mathematical requirements of that model necessitated the assumptions of self-regarding[1] agents, transitivity, integrability and so on. Although the "Marginalist revolution" of the 1870s seemed to be a continuation of the Classical focus on individual self-interested behavior, the equilibrium-in-a-field-of-forces model treated the actors in the economy not as sentient individuals but rather as particles in a purely mechanical system. As Walras (1977[1926], 71) put it "the pure theory of economics is a science which resembles the physico-mathematical model in every respect."

The assumption of self-regarding, atomistic agents is the glue that holds the Walrasian system together. The mathematics of the Walrasian system requires that the actions of

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[1] The term "self-regarding" is preferable to "selfish" since it excludes not only altruistic behavior but also behavior considered to be negative such as envy and punishment.

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one agent are not influenced by the actions of others. Attempts to analyze observed other-regarding preferences and behaviors within the Walrasian model are forced to "explain away" and "sterilize" actions motivated by sincere caring and love rather than narrow self-interest. Becker (1974), for example, uses the standard model to examine "social" phenomena like family organization, addiction, discrimination and crime, but these cases are all treated as being the result of atomistic agents maximizing utility over time. The only difference in Becker's framework is that the autonomous "family" becomes the unit of analysis rather than the individual. As Becker (1974, 1079) puts it "In this sense, then, a family with a head can be said to maximize 'its' consistent and transitive utility function of the consumption of different members subject to a budget constraint defined on family members." Buchanan's (1965) "theory of clubs", like Becker's theory of the family, also depends on individual agents coming together for mutual benefit (to share the club good). Individuals relate to each other only in sharing of the costs and benefits of the club good. The optimal size of the club is derived directly from the members' self-regarding utility functions.

Attempts to analyze the provision of public goods within the Walrasian system are also forced to "explain away" the possible existence of truly other-regarding preferences such as deep caring for others.[2] Lindahl's (1958 [1919]) method for providing public goods depends on perfect knowledge of the demand functions of all individuals for public and private goods, and the ability to determine each person's marginal willingness to pay for public goods. If a tax is imposed equal to each person's marginal willingness to pay, the result is a public good equilibrium based on the isolated decisions of atomistic agents. But Lindahl's solution depends on dropping the assumption that public goods are non-excludable, one of the two characteristics that defines a public good (see the discussion in Mas-Colell et al., 1995, 363–364).

The upshot is that attempts to realistically take into account any interaction between agents, let alone interactions motivated by love and caring, are doomed to failure within the Walrasian system. If the self-regarding assumption is dropped, the basic requirement for Pareto efficiency—equality of the rates of commodity substitution among consumers—is not met (see the proof in Henderson and Quandt, 1971, 268) and Pareto efficient general equilibrium cannot be attained. As a result, behaviors that appear to be other regarding have to be explained away as ultimately self-interested or ignored as irrational anomalies. An irony is that, far from establishing a theoretical edifice for Adam Smith's invisible hand, Walrasian economics casts the dynamic energy of capitalism into a sterile mechanical calculating machine. In the standard economic model "perfect competition" is defined as the complete absence of competition—the actions of one firm are independent of the actions of other firms. The two classic problems of the provision of public goods—free riding and the tragedy of the commons—appear insurmountable because social solutions to these situations are ruled out. Forgotten in the analysis is that even Adam Smith grounded his faith in markets on the belief that people are not entirely self-interested. Smith believed that love of family and duty to others are fundamental characteristics of human civilization (Folbre, 2001, xiii).

In this paper we present theoretical insights and evidence from evolutionary biology and related fields to argue for a social conception of utility and self-interest. We use the Price equation to show the evolutionary feasibility of the selection of altruistic behavior. We explore evidence that the human capacity for empathy is an evolved trait present in other species and we suggest that this was the precursor for human morality. We critically examine the assumption in economics that altruistic behavior is irrational in the sense that it is "fitness reducing" for the individual. Altruism is typically assumed to be fitness reducing because it is often consumption reducing. There is now a large and growing literature advocating the use of direct measures of well being (instead of per capita consumption) as a guide to economic policy (Gowdy, 2000, 2005; Kahneman and Sugden, 2005). We suggest that subjective well being—which encompasses much more than the consumption of economic goods—is a more appropriate measure to use in examining altruism in human behavior. Finally we argue that recognizing that pro-social behavior (e.g., altruism, altruistic punishment, love, caring) is ubiquitous in human societies is necessary for formulating realistic economic and environmental policies.

2. Group selection and the evolution of moral behavior

In the 1970s many economists became enamored with the "selfish gene" idea in biology (Dawkins, 1976). It seemed to offer a "natural", "scientific" justification for rational economic man and for free market economic policies. At that time theories of group selection in biology were in disfavor because there seemed to be no way around the fact that altruistic behavior made an organism less fit compared to its non-altruistic competitors. But gradually biologists came to realize that pure altruism could emerge if such behavior gave a competitive advantage to a particular group. Price (1970, 1972) presented a mathematical formula that decomposed changes in gene populations into two effects; between group and within group selection. Once it was established that cooperative behavior (pure altruism) could have an evolutionary advantage, theories of group selection once again became acceptable to biologists (Wilson and Hölldobler, 2005).

Group selection refers to a process of natural selection that favors traits that increase the fitness of one group relative to other groups (Wilson, 1997). Every member of the group depends on a common characteristic not isolated in a single individual. Such behavior is the result of Darwinian "selection" but not selection rooted solely in the characteristics of individuals (Richerson and Boyd, 2005). Group selection depends on *other-regarding interaction* among individuals, and is thus incompatible with isolated, self-referential interaction

[2] Group selection in biology was slow to be accepted because it was thought to be explained away by kin selection or reciprocal altruism, two kinds of self-interested behavior. Recent work in biology has shown that group selection is possible even without invoking self-interest (Sober and Wilson, 1998; van den Bergh and Gowdy, 2003; van den Bergh and Stagl, 2003).