What can we learn from cultural group selection and co-evolutionary models?*

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*Comment on Joseph Henrich, "Cultural group selection, coevolutionary processes, and large-scale cooperation."

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The main thesis of Joseph Henrich's paper is that an understanding of cultural group selection and the coevolution of genes and culture will promote our understanding of human psychology and preferences. This is an important and, in our view, correct assertion. While we agree with the basic thrust of the argument, however, we have a different perspective on some of its particulars. First, we believe it is useful to distinguish between unconditional altruism and reciprocity, both because the empirical implications of the two behaviors are quite different, and because reciprocity can evolve in a much larger class of environments than altruism. Second, we argue that Henrich's criticisms of some of the evolutionary models of "pro-social" behavior in the literature, particularly signaling models, are misplaced. Third, we disagree with the notion that pro-social preferences form the basis for the large-scale cooperation among non-kin which characterizes human societies.

Economists have long operated on the assumption that the hypothesis of material self-interest is an adequate approximation to human motivation in economic decision-making. This hypothesis has recently come under fierce challenge from experimentalists, who have documented robust and systematic departures from self-interest in controlled laboratory settings (see, for instance, Fehr and Gächter, 2000). Rejection of self-interest as a governing hypothesis does not, however, entail an embrace of altruism. Experimental subjects tend to care about fairness and efficiency as well as their own self-interest, but also reveal a strong propensity to reward generosity and punish opportunism on the part of others. Such preferences for reciprocity can indeed result in greater efficiency in some environments, but can also reduce efficiency in others. For instance, reciprocity tends to raise aggregate payoffs in public goods games with punishment, while it lowers aggregate payoffs in ultimatum games. It is not pro-sociality with which humans are endowed, but rather a predilection for reciprocity which, given the right context, can have pro-social effects. It is the predilection itself, rather than its consequences in particular environments, that evolutionary models should account for.

An important feature that distinguishes preferences for reciprocity from altruistic preferences is the fact that under rather general conditions, the presence of people with such preferences, if observable, can induce opportunistic individuals to act pro-socially. They do so at some cost to themselves, but avoid the greater cost of being punished. The fact that the presence of reciprocators in a group induces all group members to act pro-socially can allow preferences for reciprocity to survive and spread in competition with self-interested preferences *even in the absence of assortative interaction.* This occurs because reciprocators do better when matched with opportunists in mixed groups than opportunists do when

matched with each other. The presence of reciprocators in a group induces opportunists to take group-beneficial actions, leading to higher payoffs for all group members, while groups consisting solely of opportunists are subject to the free-rider problem. When the population share of reciprocators is small, most opportunists find themselves matched with other opportunists and hence their mean payoff, averaged across the entire population, is lower than that obtained by reciprocators (Gintis 2000, Sethi and Somanathan 2001a).

This argument relies on preference observability and is therefore vulnerable to the 'green beard' critique which Henrich raises. What prevents opportunists who manage to be perceived as reciprocators from entering and dominating the population? The answer is that, in order to do so, the entrant must be able to mimic reciprocators perfectly. When imitation is imperfect, individuals are forced to make probabilistic assessments of the nature of those with whom they are interacting, based on the noisy signals that they receive. The conditions for the survival and spread of reciprocity are accordingly more stringent. The results obtained under complete preference observability can be recovered, however, if signals convey enough information (Sethi and Somanathan 2001b). Furthermore, any informative signal, no matter how weak, can result in the survival of reciprocators if interactions are repeated sufficiently many times (Guttman, 2002). Nothing in this argument requires that signals be costly. Models that require signals to be differentially costly for different types of agents do so only because they endow all types with the ability to produce exactly the same signal at all times.

The green beard criticism is that one cannot simply assume away a mutant self-interested type who copies the signal exactly. Whether or not such a perfect mimic arose in the course of human evolution is, of course, an empirical question. The fact that humans are skilled at forming strong (and sometimes mistaken) impressions of others based on the most fleeting and superficial interactions suggests to us that people do carry informative signals. The experimental literature is replete with evidence that face-to-face communication does indeed change behavior, and it is impossible to escape the conclusion that people's appearance and demeanor convey information that is put to use by others. Moreover, the fact that reciprocity is observed even in anonymous experimental settings with no scope for signalling does not in any sense weaken the case for a signalling approach to the evolution of reciprocity. Laboratory subjects are aware that there are reciprocators in the population of players facing them even if they cannot see their signals. How they got there, whether by evolution through informative signals, or by cultural group selection, is irrelevant to their decision problem.

If signaling explains cooperation in humans, then why, asks Henrich, don't we see more

cooperation in chimpanzees, elephants, and dolphins? We maintain that most large-scale human cooperation depends not on pro-social preferences, but rather on incentive structures in organizations which animals with binding cognitive limitations have been unable to develop. The idea that large-scale cooperation, at the level of the nation-state or the conglomerate firm, should be explained by pro-social preferences will strike most economists as quaint. Clearly, it is the differences in organization and incentive structures between say, the United States and Somalia, not differences in pro-social preferences, which explain the differences in the economic performance of these two societies. It is true, of course, that preferences for reciprocity can contribute to the efficient functioning of organizations. Markets with asymmetric information, and labor markets in particular, are affected by the presence of people motivated by reciprocity. Such preferences can allow equilibrium contracts that are Pareto-superior to the contracts that would be observed if all agents were self-interested (Fehr and Schmidt, 2000). But note that reciprocal preferences do not have to be directed towards large groups to play this role. It is quite enough that reciprocity plays a role in horizontal interactions among small groups of workers or vertical interactions between workers and their immediate supervisors. Economic and political organization, in fact, often seems to take advantage of the pro-social behavior that emerges in small group settings (Richerson and Boyd, 1999). Pro-social behavior directed towards society at large is, in our view, a less economically and socially important phenomenon than pro-social behavior directed towards small groups.

None of these considerations should detract from Henrich's basic point, that cultural group selection is an underexplored and potentially valuable component of any evolutionary account of human motivation. The models of cultural group selection and gene-culture coevolution that he exposits are persuasive because they fit with some robust features of human behavior. Perhaps the most important of these is the tendency to acquire group identities and to be xenophobic. Cultural evolution is required to explain this since the actual identities that individuals take on vary enormously. Genetic evolution in response to cultural variation seems plausible since the behavior appears so universally. The application of such ideas to economic problems is just beginning (Rubin and Somanathan 1998).

Henrich's account of conformist transmission and prestige-biased transmission draws our attention to how much of human behavior is drawn from cues that are given by other people. This deserves further investigation in the realm of preferences for consumption, leisure, and other goods. How do these evolve with the economy? What does this imply for welfare? These are important questions, the answers to which may very well lie in a more complete

understanding of cultural evolution.

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