IS SOCIAL DARWINISM SCIENTIFIC?

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ABSTRACT: The article by Green (1995) in a previous issue of this journal is laudable in its attempt to make social science more scientific by giving it a stronger grounding in evolutionary theory. Regrettably, three major shortcomings in Green's arguments make his article both less rigorous and less palatable to social scientists than would be necessary. These three errors are 1) exaggeration of the degree to which the incorporation of evolutionary theory into social science will make social science more scientific; 2) oversimplification of the conceptual links connecting evolutionary principles with human behavioral tendencies; and 3) even granted Green's implication of unqualified individual selfishness, dubious conclusions concerning the implications of that selfishness for political consensus. These shortcomings are addressed, and an alternative account of the relation between social sciences and evolutionary theory is provided.

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Most social scientists are reluctant to embrace evolutionary theory as the basis of their thinking, or even as a component of it. Works such as Pierre van den Berghe's (1981) book The Ethnic Phenomenon, which develops a theory of ethnic conflict based on the principles of evolutionary biology, remain rare. The reasons for most social scientists' mistrust of evolutionary thinking are not always apparent, but one of the concerns appears to be a widespread belief that using evolutionary theory in formulating hypotheses is tantamount to endorsing the principles of social Darwinism as a guide to human conduct.

This state of affairs is unfortunate, because evolutionary theory has the potential to offer a great deal to the social sciences. Indeed, given the massive social problems which plague western (and other) societies, it would seem that the incorporation of evolutionary theory into the social sciences could also be important from a purely pragmatic point of view, in order to improve the predictive power of the social sciences and hence their practical utility as means of improving society.

It appears that Green (1995) had this praiseworthy goal in mind when he wrote his article "Is social science scientific?" Unfortunately, this article is likely to fail in its goal of luring social scientists into the evolutionary camp, because its conclusions are likely to confirm many of their worst fears. Green claims that many social scientists believe that adopting an evolutionary perspective will force them to abandon many of their cherished ideals. He also asserts that they are correct in this belief. In particular, Green asserts that egalitarianism is based on a collectivist ideology which becomes untenable when examined in the light of selectionist logic. Once social scientists embrace this logic, they will no longer be able to help justify government in its task of redistributing wealth.

If Green is correct in his assertions, then his paper's likely failure as a means of persuading social scientists to adopt evolutionary thinking can not be seen as a shortcoming on Green's part. In fact, social scientists' lack of response to his call would

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help confirm one of his main theses, namely that the reason for social scientists' failure to embrace evolutionary thinking is their realistic fear that such thinking will undermine their own prized ideologies. If, on the other hand, some of Green's assertions on the effect of evolutionary thinking on political ideology are in error, then his errors in reasoning also become errors in persuasive rhetoric, and do a disservice to the cause of bringing social science closer to evolutionary theory.

The thesis of this paper is that Green has in fact made three fairly serious errors in reasoning, and that when these errors are corrected, his implication that evolutionary thinking inevitably leads to a highly individualistic code of morality loses its basis. These three errors are as follows. First, Green draws an excessively sharp distinction between social science which is not based on evolutionary theory (but rather some sort of ideology) and social science which is based on evolutionary theory. Green (1995) considers the former unscientific and the latter scientific. Second, he moves directly from the principle of "selectivity" as an evolutionary principle to "selectivity" as a guiding principle in human psychology, without considering the complexity of the processes by which natural selection has molded human psychological functioning. Third, he uses a distorted image of the wealth distribution of western economies to assert that, given a high degree of individual selfishness, a majority of members of western societies will find the government's role in redistributing wealth counterselective. The present paper will deal with these three errors in order.

Error One
Exaggeration of the Gulf between Non-Evolutionary and Evolutionary Social Science

Green is enthusiastic about the degree to which evolutionary theory can make social science more scientific. "Natural selection is a positive organizing principle which is (1) founded on observed regularities and (2) independent of any ideology entailing moral judgments about possible outcomes" (Green, 1995, p. 6). While it is true that natural selection has proven to be a very useful as an organizing principle for biology, one cannot see this principle as a simple outgrowth of biological observations, but must see it instead as being primarily a logical system. Crawford and Janicki (1996) for example, summarize the principles of natural selection as a system of five assumptions and three inferences:

> Assumption 1: All species are capable of overproducing offspring....
> Assumption 2: The population size of organisms remain relatively constant over time....
> Assumption 3: Resources for supporting individuals are limited....
> Inference 1: A struggle among individuals for existence exists....
> Assumption 4: Each individual is unique in its ability to survive and reproduce....
> Assumption 5: Some of the variation among individuals is heritable....
> Inference 2: Differential contribution of offspring to the next generation by individuals of different genotypes occurs....
> Inference 3: Through many generations, evolution of adaptations will occur as a result of natural selection.

(Crawford and Janicki, 1996, pp. 26-28.)

It cannot be doubted that all five of the assumptions are consistent with a large body of empirical observation. Unfortunately, these propositions are about as general and mundane as the Marxian observation that, in capitalistic society, the owners of the means of production are generally not the same individuals as the people that actually do the producing. Thus, if evolutionary "science" differs fundamentally from Marxist "ideology," this difference cannot lie in the degree to which their fundamental assumptions are grounded in empirical observation. (It must be admitted that capitalist society has changed a good deal since Marx formulated his theses, whereas fundamental biological processes have likely changed very little, but this does not affect the overall argument).

Indeed, the aspect of the theory of natural selection which has been so important for biology is in fact the third inference, along with its concomitant concept of the adaptation. The concept of adaptation has indeed served as both a guide to the organization of existing biological knowledge and as a heuristic for the development of new biological hypotheses. Once again, it is difficult to see how this fundamentally differs from the role which inferences about (for example) class struggle play in Marxist social science. This is not to deny that Marxists have been known to fall into a rigid ideological stance and refuse to revise their opinions in the light of new evidence, but this difference is due to individual Marxists' lack of commitment to unconstrained empirical inquiry, rather than to any feature inherent in the organizing principles which guide their thought.

If the feature of being founded in observed regularities does not separate natural selection from the principles which lie at the base of ideologies, then perhaps the other feature Green cites, namely the assertion that natural selection is "independent of any ideology entailing moral judgments about possible outcomes," (p. 6) fares better. It is true that Marxism does make moral judgments, often thinly disguised as statements of historical necessity. However, Green himself devotes much of his paper to demonstrating that the principle of natural selection is incompatible with moral judgments in favor of collectivism. Regardless of the merits of Green's argument, it is obviously inconsistent to assert that natural selection is independent of an ideology entailing moral judgments, and then to assert that it undermines an ideology entailing moral judgment, unless one uses the word "independent" in a very idiosyncratic way.

The claim which is made that natural selection as an organizing principle is absolutely scientific and other, "ideological" principles are absolutely unscientific must be scaled down. The real virtue of the principle of natural selection is that it, particularly those aspects of it relating to adaptations, has long been useful both in organizing old biological knowledge and as a heuristic for generating new hypotheses. Given the fact that human beings are also biological organisms, it seems likely that the principle of natural selection will also be useful for organizing social scientific knowledge and for generating new hypotheses in the social sciences. Any claim that goes much beyond this is mere pretension.

Error Two
Neglect of the Idea that the Effect of the Principle of Selectivity on Human Behavior Must Be Mediated through Psychological Adaptations

Green's second error lies in his explanation of social scientists' resistance to the application of a selectionist analysis to the social sciences. He bases his claims on the assertion that embracing a selectionist analysis would be counterselective for social scientists. For example, he states that: "[t]o characterize the propositions that undergird a moral system in relative terms compromises people's selectivity.... Separation of the study of social issues from social ideology thus has met and will meet fierce resistance on grounds readily explainable in terms of natural selection." (Green, 1995, p. 6).

The unspoken assumption of this analysis is that the selective effects of an action or state of affairs have a direct motivational influence on human behavior. Thus, this analysis implies that human beings directly perceive and act upon fitness considerations. No reputable evolutionary psychologist holds this view; instead, natural selection's effect on behavior is generally thought to be mediated by psychological adaptations. That is, animals' genes direct the development of nervous system structures, which in turn create propensities to behave in different ways (and learn on the basis of certain types of cues), and it is these behavioral propensities which are actually exposed to natural selection. Cosmides and Tooby (1995) propose that the focus in evolutionary psychology should be neither on the genesis of nervous structure from genes, nor on the relation between nervous structure and behavioral propensities, but rather on the behavioral propensities themselves, which can be thought of in information processing terms as algorithms. Because these algorithms are what are actually subject to selection pressures, they can form the focus of an analysis in terms of fitness.

If we focus our analysis on the nature of these Darwinian algorithms, there are three broad possibilities in terms of the way these algorithms could potentially be organized. The first possibility is a general-purpose learning mechanism coupled to a number of specific biological drives, the second is a fairly large number of special-purpose algorithms, and the third is a general-purpose rationality coupled to a simple general fitness-enhancement algorithm.

The first possibility I would like to discuss is that psychological adaptations could consist of a few general biological drives, and then a general associative learning mechanism which allows the learning of complex behaviors in terms of their abilities to reduce drive states. Thus, each coupling of a given behavior with a subsequent reduction in drive state can be said to be reinforcing, and hence to increase the probability that this behavior will be repeated when the organism once again finds itself in a similar drive state. This is the model which became popular in the middle of the century among psychological behaviorists such as Clark Hull (1943). Though this model has lately fallen into disfavor due to its poor ability to explain such complex phenomena as language learning (Chomsky, 1959), I will nevertheless deal with it briefly here.

Clearly, a cognitive system such as that outlined above would not result in any direct ability to perceive the fitness consequences of actions; it would simply result in the repetition of action sequences which in the past had resulted in the fulfillment of biologically significant needs. Such a cognitive system would not be likely to result in the rejection of ideologies because they had potentially negative fitness consequences; instead, as was already seen by Hobbes (1651/1962) more than three hundred years ago, it would be more likely to result in the upholding of conventional morality because the endorsement of such morality and compliance to its norms would result in praise (which is, in behaviorist terms, a secondary reinforcer).

The second possible form which psychological adaptations could take, and the one which dominates modern evolutionary psychological theorizing, is that of a fairly large number of relatively special-purpose Darwinian algorithms. These algorithms perform specific information-processing functions that were adaptive in the ancestral environment (Cosmides & Tooby, 1995). It is easy to assume that all of these mechanisms must have included a core of unbridled selfishness; however, because humans lived in small, stable groups in the ancestral environment, the potential existed for the evolution of Darwinian algorithms for regulating the creation of cooperative alliances based on reciprocal altruism (Cosmides & Tooby, 1989). Such a social cooperation algorithm would not use information about the fitness effects of continuing to cooperate (because such information about future reproductive success is not directly available) but would instead be steered by cues which, in the ancestral environment, would have been correlated with inclusive fitness. At the present, it is not known what all these cues are (though there is evidence indicating that certain cues which furnish evidence that others are cheating the system are very important, Cosmides & Tooby, 1989), but there is certainly no special reason to expect that any of them are related to collectivist ideology, as Green (1995) would imply.

The third possibility as to the nature of human psychological adaptations, the one which seems closest to Green's (1995) position, is that of a general human rationality coupled to a very basic motivation to enhance inclusive fitness. This is not an idea which has been seriously put forward by any reputable evolutionary theorist, and indeed, it is difficult to see how such an architecture could evolve without some sort of pre-existing cognitive mechanism for making judgments about inclusive fitness, and it is in turn very difficult to see how such a mechanism could evolve (see Cosmides and Tooby, 1995, for a thorough discussion of this issue). Nevertheless, let us assume for the sake of argument that human cognition does indeed follow this pattern. Even given this dubious premise, Green's argument founders on his third error, his misrepresentation of the nature of the economy in industrial nations.

Before turning to Green's third error, I would like to discuss a second way in which Green uses the word "selectivity." Green himself makes this distinction quite explicitly:

> "That relevance [of the principle of selectivity] operates at two levels. First, without direct or collateral descendants, the genetic information unique to an individual will disappear. Second, to the degree the cultural information created and/or carried by the individual is inconsistent with human survival and reproduction, that information is less likely to be expressed as a cultural trait." (Green, 1995, pp. 2-3).

Clearly the discussion of cognitive adaptations above is relevant to the first of Green's levels, not the second. However, the second level does not help bolster Green's argument about why social scientists have not adopted an evolutionary perspective, because this level works very slowly. This level of selectivity could only inhibit the incorporation of evolutionary theory into social science as fast as natural selection caused evolutionary social scientists to die and fail to produce evolutionary social scientist offspring. Clearly, in order to assert that this level of selectivity plays a role in social scientists' failure to adopt evolutionary theory, one must also assert that social scientists

who do convert to this point of view have a markedly greater tendency to drop dead (and/or be shot by religious fundamentalists) than those who do not adopt those views. This seems somewhat implausible.

Error Three
Misleading Characterizations of the Nature of the Economy (or Possibly the Nature of Ideological Justification) in Industrial Societies

Even if we allow Green's (1995) belief that selectivity has a direct effect on people's adoption of ideologies, there is still a weak link in his argument. He argues that social scientists fail to adopt evolutionary ideas because it would be counterselective for them to reject an ideology of the organic wholeness of society. This ideology, according to Green, serves as a justification for the role of government in redistributing the income of its constituents. Social scientists, claims Green, reject evolutionary theory because its emphasis on individual selection would undermine the collectivistic underpinnings of their ideology. The implication of this is that majority opinion cannot be mobilized in favor of income redistribution based on arguments of individual (as opposed to collective) benefit.

This argument is in turn based on certain economic assumptions, which can be summarized by saying that the argument assumes that no scheme for the redistribution of wealth which is based on categorization can possibly benefit more individuals than it injures. The most explicit reference Green (1995) makes to this assumption occurs on page 11: "their [social scientists'] social ideology lacks credibility among the people who count, those who create more selective value than they consume."

It is extremely difficult to say just what the phrase "create more selective value than they consume" really means. At first blush, this would appear to refer to those who improve the fitness either of themselves or of others. However, because fitness can only be measured in terms of reproductive success, and because industrial society has a low enough mortality rate that mortality plays a negligible role in creating the variance in reproductive success, this would seem to indicate that the people who are referred to in this phrase are those who do the most to foster human reproduction. Thus, this category would include such people as religious leaders who oppose birth control, antiabortion activists, manufacturers of defective condoms, and so forth. It seems unlikely that this is the group Green is referring to.

Perhaps those who "create selective value" are those who create the goods which, by providing the essentials of life to other people, allow them greater control over the forces which influence their own selective value. Thus, this group would contain in its first rank farmers, followed in no particular order by truck drivers, contractors who build housing, manufacturers of clothing, medical doctors, and other groups whose activities directly contribute to the health and well-being of others. Unfortunately, this heterogeneous group also does not well fit Green's (1995) description of these as the "people who count" (p. 11), that is, people who set the social policy agenda.

It is difficult to escape the conclusion that the phrase "create more selective value than they consume" is really a code for "lose more money to government taxation than they gain from government transfers." This would presumably include those who gain their wealth from such selectively dubious activities as advertising, or who derive their

income in the form of what economists call rents. If we perform this translation of "selective value" into "money", it is still difficult to figure out who this refers to, unless one wishes to completely neglect the value of such government services as education, police protection, and so forth. As a rough guideline, though, we can infer that the group Green is referring to consists of those people who earn large enough incomes that progressive taxation results in a substantial proportion of their incomes being taken in by the government.

Green (1995) asserts that these net producers "assert that the proper role of government is to regulate markets, to enforce laws against predation, and to add selective value through useful public works projects; they deny that the proper role of government is resource redistribution" (p. 12). As an empirical statement about what a majority of wealthy and upper middle-class Americans believe, this is probably accurate. However, the mere accuracy of this statement as an empirical claim does not justify Green's implication that these beliefs are not only held by such people, but also that these beliefs are justified by the logic of natural selection. At the very least, these value judgments are informed by the norm of fairness, which is no more derived from the concept of natural selection than is the norm of relative income equality which is used to justify government redistribution of wealth.

If the norm of fairness is rejected as not being derived from natural selection, then Green's objection that government's role as a redistributor of wealth cannot be justified on the grounds of natural selection becomes untenable. It may be true that the current scheme for the redistribution of wealth which is used by the US government is counterselective for more people than it is for those for whom it is selective, but it is easy to demonstrate that there are schemes of redistribution which would benefit more people than they would damage.

The key to this demonstration is the observation that income distribution in the United States and most (probably all) other industrial democracies is positively skewed (The Economist, 1994a; 1994b; Braun, 1991). In other words, the margin by which the well-off earn more than the average income is greater than the margin by which the poor earn less than the average income. Thus, the mean income is higher than the median income, which means that more than half the people have incomes below the mean. This means that there is at least one categorically-based form of redistribution which would benefit more people than it would injure, namely that of giving everybody exactly the same income. Needless to say, this particular redistribution scheme would probably play havoc with the incentive structure of the labor market, but this is a point which concerns the society as a whole, not individual decision makers within that society. According to Green (1995), such considerations of overall social welfare should not be taken into account by the individual fitness-maximizer.

Perhaps Green would be willing to allow that such considerations concerning the large-scale society to play a role in the fitness calculations of those who are deciding whether or not they support government redistribution of resources. If Green were to do this, though, he would be invoking the principle that "[i]ndividuals... advance their own interests by advancing the general interests of the group to which they belong and to which the moral system in question applies" (Green, 1995, p. 4). This he cannot do, because the central tenet of his paper is that an analysis based on natural selection undermines this very principle.

In sum, then, it can be seen that Green's murky exposition of the reasons why a fitness-based analysis would undermine the justification for government redistribution of wealth is based on at least one of three dubious premises: 1) the premise that the norm of fairness or equity is based on natural selection but that the norm of equality is not 2) the premise that industrial democracies consist of large numbers of net producers who all earn roughly the same amount of money, and who are subsidizing the existence of a smaller number of parasitic net consumers; or 3) the logically incoherent claim that it is permissible for individuals to base their desire for government to abstain from redistributing wealth on considerations of the effect of such policies on the larger society, but that it is not permissible for them to base their desire to allow government to redistribute wealth on the same types of considerations.

Green's Errors: Conclusion

For purposes of exposition, the logical weakness of Green's (1995) arguments has been described as a set of three errors. However, these three errors can also be seen as manifestations of a single error, of the type which is usually called "the naturalistic fallacy" (Crawford and Janicki, 1996). This is the fallacy of deriving moral norms from empirical generalizations.

It may appear that Green (1995) does not engage in this fallacy because his paper concerns the empirical question of why social scientists do not incorporate the principle of natural selection into their thinking, and thus derives one empirically testable set of generalizations from another set of empirical generalizations. This is superficially true, but the meat of his argument is that social scientists refuse to adopt selectionist thinking because it is incompatible with their moral principles. This implies the claim that moral norms of equity can be derived from the tenets of natural selection, but that moral norms of equality cannot be so derived. This is indeed a way of arguing that moral norms are directly related to empirical generalizations.

An Alternative Account of the Failure of the Social Sciences to Make Use of Evolutionary Theory

Given that Green's (1995) account of the reasons for social scientists' failure to accept evolutionary theory has serious faults, it would be desirable to produce at least the outline of an alternative account. I would like to suggest that at least two different factors contribute to this lack of acceptance.

The first of these factors is doubt as to the heuristic value of evolutionary theory to the social sciences. As one of my colleagues put it, "Genes are necessary but not sufficient to produce behavior" (C. McQuarrie, personal communication). This doubt as to the heuristic value of evolutionary theory may even be encouraged by evolutionarily informed social science books such as The Ethnic Phenomenon (van den Berghe, 1981), which begin with elaborate explanations of how evolutionary theory can explain a given human behavioral tendency (in this case that of ethnocentrism), but which scarcely mention evolutionary principles once specific cases of that behavior are analyzed. Such works give the impression that evolutionary ideas can be used to formulate grand sweeping theories about human social life, but not to clarify the detailed workings of specific social situations.

The second factor which may contribute to social scientists' lack of interest in evolutionary theory is actually quite similar to the one postulated by Green (1995), but with a difference. It is probably true that a majority of social scientists are apologists for government's role in leveling distinctions in wealth, as Green claims. It is probably also true that they feel evolutionary theory may threaten the justifications for such government policy, and that the only moral system compatible with active use of evolutionary theory is some form of social Darwinism. The difference between Green and myself is that Green believes that social scientists' fears are well founded, while I believe that these fears are primarily grounded in the naturalistic fallacy, and are therefore baseless. To the extent that Green (1995) furthers the impression that acceptance of Darwinian premises necessitates the adoption of a social Darwinist morality, he does a grave disservice to the cause he claims to promote, that of encouraging the use of the concept of natural selection by social scientists.

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