

Group Selection and Methodological Individualism:

Reply to Comments

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I thank all of the discussants for their comments, which have helped me to sharpen my understanding of the issues. With a few caveats, all the discussants appear to agree with my central thesis: that methodological individualism (MI) and some form of group selection (GS) are compatible. Here, I will focus on those aspects of their comments I found most provocative – in either the positive or negative sense of that term.

Response to Langlois

Langlois agrees with my position – or perhaps I should say, given the order of our publications, that I agree with his. I accept his taxonomy of methodological positions and agree that position 2 is correct.

Langlois also makes an important observation about Hayek’s theory of cultural evolution argument: that excessive, not insufficient, group solidarity often poses the greatest threat to the emergence of beneficial institutions like property rights and markets. In order for an open society to emerge, Hayek argues, cultural evolution must overcome certain instincts built up by humans’ prior evolution (both biological and cultural). Interestingly, those instincts may have resulted, in part, from GS. It is probably an overstatement, however, to say that the actual conflict is “exactly opposite to that envisioned by biologists” (Langlois 2004, p. XX). The institutions of the open society also require some level of individual sacrifice for group benefit. The institution of private property, for instance, requires that individuals sometimes forgo an opportunity to help themselves to the fruit of others’ labor, even though doing so would benefit the taker. The imposition of sanctions on violators might also require some amount of

sacrifice – e.g., forgoing trade with someone who has been ostracized. Thus, Hayek’s theory does not really rely on the weakening of GS relative to individual selection, but rather the replacement of old group-beneficial norms with new group-beneficial norms by means of GS.

Response to Zywicki

Zywicki also *appears* to agree with me in most respects. However, two of his statements give me pause:

- “As Whitman observes, the argument between group selection and methodological individualism in the social sciences mirrors in many ways the argument between group selection and individual selection in biological and cultural evolution” (Zywicki 2004, p. XX).
- “Note, however, that it may be difficult to meet these conditions [for GS to work] in practice, precisely because the forces identified by the methodological individualism model are so powerful” (Ibid., p. XX).

Both of these statements point to a tension between MI and GS – not a logical tension, but an empirical one. If I read him correctly, Zywicki’s view is that MI applies in some circumstances and GS applies in others, much as (for example) a competitive model applies in some markets and a monopoly model in others. And to extend the analogy, there exist circumstances where both MI forces and GS forces are at work, just as there exist markets where both competitive and monopolistic forces are at work. Thus, he resolves the alleged logical contradiction between MI and GS by transforming it into an empirical one.

That is not, however, the way I attempt to resolve the contradiction. I do not treat MI and GS as competing models; indeed, MI is not a model at all, but a methodological condition that models must satisfy. I argue that GS *does* satisfy that condition, once MI and GS are understood properly. My argument relies, in part, on distinguishing between MI and individual-level selection (IS); note that Zywicki's first quotation above appears to equate the two. To see why they are different, suppose we wish to model a human society that includes some individuals with altruistic preferences. MI requires that our predicted social outcomes result from the choices of its members, including the altruists. That alone is enough to satisfy MI. We might also choose as modelers to recognize the existence of an IS mechanism that disadvantages the altruistic members of the society, possibly reducing their representation in future generations. That might be a sensible thing to include in our model (depending on the environment the society faces), *but it would not be required by MI*. In short, MI is *not* equivalent to the notion that less "fit" individuals will be weeded out of the population.

I may have misconstrued Zywicki's position, but I hope the clarification above will still prove helpful. I also want to thank Zywicki for drawing my attention to a statement from Hayek (1972, p. 44) that I had not noticed before, and that indicates Hayek's understanding of the issues involved was even better than I had thought. It addresses the relationship between MI and GS more directly than any other statement by Hayek (that I know of), and it is perfectly consistent with my own position.

Response to Gifford

Gifford agrees with my position that the new GS (that is, the trait-group model) is consistent with MI. His critique is that the new GS is not really GS. For those who agree with Gifford's position, the moral of my original article could be restated thus: "The trait-group model of selection, which has sometimes been misleadingly characterized as group selection, is consistent with methodological individualism."

However, I think there is justification for considering the trait-group model a form of GS. The issue here is not *merely* semantic, because, as Okasha says, "In devising concepts with which to describe the world, we must therefore select some similarity relations as salient, and ignore others" (Okasha 2001, cited in Gifford 2004). To put it another way, some definitions gloss over relevant or useful distinctions, whereas other definitions highlight them.

In the case of GS versus IS, there does exist a way to conceptualize the difference between them so as to rule out GS from the get-go. Here is how: define IS as *any* process by which some traits increase in frequency relative to other traits in a population over time, where frequency is measured as the fraction of individual organisms with the trait. That, in essence, is what Gifford does when he refers to individual offspring as the "common currency" of success and regards this as evidence of an IS process.

But defining IS in this way elides an important distinction between two different *reasons* a trait might prosper relative to other traits. Is it more fit because it enhances the ability of an individual organism to produce offspring relative to other individuals in the same group, or because it enhances the ability of the members of a group to produce offspring relative to members of other groups? For the evolutionary theorist to ignore

this distinction would be as misleading as for an economist to ignore the difference between private goods and public goods.

Gifford cites two articles by Bergstrom (2002, 2003), which show that if intra-group interactions have the form of a prisoner's dilemma, some kind of *assortative* grouping is necessary for an altruistic (cooperative) trait to prevail over a selfish (defecting) trait. In this context, "assortative" means that any given cooperator has a greater chance of being grouped with cooperators than does a defector, which could not be the case if the grouping process were purely random. Thus, I was incorrect to say that, for small enough group size, chance alone would produce sufficient variation among groups to allow the survival of altruism.¹

One might conclude that assortative grouping is a necessary condition for GS. That conclusion is unwarranted, as two cases argue otherwise. First, there are situations in which intra-group interaction is not a prisoners' dilemma, but wherein IS alone would nonetheless eliminate the group-beneficial trait. Suppose some trait creates a reproductive benefit for *each* group member of B, and a cost to the individual organism of C, with $B > C$. There is no prisoners' dilemma, since having the trait increases the organism's *absolute* fitness. But the trait would vanish from the group over time, because it creates a greater *relative* fitness for the other group members who do not incur the cost (Bergstrom 2002, p. 76). Yet if groups were embedded in a process in which groups periodically dispersed into the general population from which new groups were formed, then cooperation could emerge as the dominant trait after all.

Second, there are situations in which multiple, Pareto-ranked equilibria exist. In such a situation, GS can play a role in determining which equilibrium prevails. Since a

repeated prisoners' dilemma has multiple equilibria (the Folk Theorem at work), the applicability of this result is not limited to simple coordination games. Bergstrom (2002, p. 81) makes essentially the same point.

Response to Sober & Wilson

Sober and Wilson agree with my position that GS is compatible with MI – which I consider an important victory – but they resist MI on other grounds. Although my paper was not intended as a comprehensive defense of MI, their objections to it are well worth considering.

“Direct Observation” of Social Wholes

Sober and Wilson take issue with my claim that “we cannot, in fact, observe [social] wholes directly; we infer their existence [only] through the apprehension of particular events and phenomena” (Sober and Wilson 2004, p. XX). They adduce some examples of social wholes and generalizations about them that allegedly can be observed, but their examples strengthen my point. Their first example is suicide rates and their correlation with factors such as the time of year (or, they might have added, gender, nationality, occupation, and so on). Note, however, that a suicide rate is simply a mathematical computation of the number of individuals in a small group (those who commit suicide) divided by the number of individuals in a large group. There is thus no suicide rate independent of “particular events and phenomena” – the specific acts of

suicide. More importantly, suicide is not an unambiguous category. Does it include individuals who kill themselves gradually with cigarettes or unhealthy diets? Does it include individuals who die as a result of deliberately chosen high-risk activities such as skydiving? Ultimately, suicide is defined by reference to the intentions or at least knowledge of the individuals involved – a problem that afflicted Durkheim’s sociological analysis of suicide from the start:

Durkheim's initial effort at such a definition indeed followed common usage, according to which a “suicide” is any death which is the immediate or eventual result of a positive (e.g., shooting oneself) or negative (e.g., refusing to eat) act accomplished by the victim himself. But here Durkheim immediately ran into difficulties, for this definition failed to distinguish between two very different sorts of death: the victim of hallucination who leaps from an upper story window while thinking it on a level with the ground; and the sane individual who does the same thing *knowing* that it will lead to his death. The obvious solution – i.e., to restrict the definition of suicide to actions *intended* to have this result – was unacceptable to Durkheim for at least two reasons. First, ... Durkheim consistently tried to define social facts by easily ascertainable characteristics, and the intentions of agents were ill-fitted to this purpose. Second, the definition of suicide by the end sought by the agent would exclude actions – e.g., the mother sacrificing herself for her child – in which death is clearly not “sought” but is nonetheless an inevitable consequence of the act in question, and is thus a “suicide” by any other name. (Jones 1986, p. 82-3)

Eventually, Durkheim settled on the definition, “*Suicide is applied to all cases of death resulting directly or indirectly from a positive or negative act of the victim himself, which he knows will produce this result*” (Jones 1986, p. 83, emphasis in original). Yet even this definition requires reference to the mental state of *knowledge*. In addition, it leaves unspecified the certainty required (is a 75 percent chance of death high enough?). It also excludes attempted suicides of all kinds, even those that failed only because the knowledge of the attempter was faulty (“I thought it was poison!”). One way or another, the definition – and therefore identification and measurement – of suicide is inevitably theory-laden.

Even once we have agreed upon a definition of suicide, we can still only make generalizations about its relationship with other variables whose definitions are also theory-laden (“nation,” “society,” “religion,” “divorce,” etc.). The generalizations might even hold true over time, giving us some degree of confidence in them. Sober and Wilson therefore ask, “Why couldn’t data on suicide rates in one or more societies convince us that there is a general pattern here, even if we have no very plausible explanation of why the pattern obtains?” We can, now that we have defined our terms. But an observed pattern is not the same as a theory. The object of social science is to explain the pattern. If we wanted a satisfying theory of suicide, we would presumably ask about the factors that influence individual decisions to end their own lives. The creation of that theory might even lead us to modify our definitions, to collect data differently, or to collect different data.

Durkheim's work on suicide is an excellent example of the sort of theorizing that MI urges us to avoid. Durkheim strove to avoid explanations that relied upon individual psychology, and as a result he posited the existence of a society-level "suicidogenic currents" whose source and laws of motion were unclear at best.

It is not mere metaphor to say of each human society that it has a greater or lesser aptitude for suicide; the expression is based on the nature of things. *Each social group really has a collective inclination for the act, quite its own, and the source of all individual inclination, rather than their result.* It is made up of the currents of egoism, altruism or anomy running through the society under consideration with the tendencies to languorous melancholy, active renunciation or exasperated weariness derivative from these currents. These tendencies of the whole social body, by affecting individuals, cause them to commit suicide. (Durkheim 1951 [1897], p. 299-300; emphasis added)

Durkheim's most persuasive explanations, ironically, were those making oblique reference to the mental states of individuals; for example, that some people commit suicide because they cannot find any goal in the world worth committing themselves to (what Durkheim called "egoistic" suicide) (Durkheim 1951 [1897], p. 152ff.).

The Explanatory Power of Macro Properties

Sober and Wilson argue that “macro properties” are sometimes superior to “micro properties” in their explanatory power. There is a sense in which this is true. If workers renegotiating their wage contracts regard the Consumer Price Index (CPI) as a good measure of the cost of living, then it will assuredly affect the negotiations. There is nothing un-MI about this. The notion that CPI measures the cost of living is a constitutive idea held by individuals, and the labor economist can recognize it without committing himself to the meaningfulness of the CPI. But if he wished to explain the level of the CPI and show that it does indeed correspond to the cost of living, the macro property called CPI is no longer part of the explanation, *it is the thing to be explained*. The economist would have to ask how CPI is constructed and how it is affected by micro phenomena in the economy, such as changing relative consumer demands for products. He would also have to define “cost of living,” a term both theory-laden and far from self-evident.

Macro properties of social systems are not self-evident, but require social scientific explanation themselves. If we employ them without scrutinizing their micro foundations, we run a serious risk of unconsciously incorporating popular but wrong theories as part of our explanations.

Generality and Specificity

Finally, Wilson and Sober conflate the distinction between MI and non-MI with the distinction between specificity and generality. “Although generality is often a virtue of explanations, it is not the only one; detail is often valued as well. The point is that

these virtues are in conflict...” (Sober and Wilson 2004, p. XX). It is true that generality is sometimes preferable to specificity, and sometimes the reverse. It is untrue, however, that MI is associated only with the latter. MI theories need not dwell on minute details; indeed, the most powerful MI theories can generate interesting conclusions from a relatively spare set of assumptions about individual psychology. For example, microeconomic theory predicts downward-sloping demand curves under very broad and abstract assumptions about consumer preferences; specific information about each and every consumer is not required. MI constrains the locus of our assumptions, not their generality or specificity.

General Comments

Considering all of the comments, if I were to rewrite my original article, I would place less weight on the secondary public good argument, and more weight on the game theoretic argument at the end of section 4. (I presented the two arguments together, but now I would choose to distinguish them.) As Zywicki and Gifford both emphasize, solutions to prisoners’ dilemmas, such as public good problems and tragedies of the commons, often rely on mechanisms to limit free riding, such as reputation, policing, and ostracism of violators. To the extent that such mechanisms are available, a repeated prisoners’ dilemma is actually a coordination game with multiple Pareto-ranked Nash equilibria. Given that many Nash equilibria are possible, what reason (if any) do we have to believe the best of these equilibria will in fact occur?

One possible answer is GS. If some societies happen, possibly by accident, to develop better norms (i.e., find a superior equilibrium), they will grow larger and faster. As a result, more future individuals will find themselves in societies with such norms. To the extent that societies with better norms are more likely to attract immigrants, an IS process reinforces the GS process. The immigrants will fall in line with the norms of their adopted societies for the same reason that Americans visiting England drive on the left: given the existence of an equilibrium, they have an individual incentive to follow it. Other societies with inferior norms will grow less quickly or even shrink, in part through the loss of emigrants.

The process I've just outlined does, in my opinion, constitute a GS story, because the group-level properties of the superior norms explain the evolutionary performance of the societies that have them. It is also an MI story, because individuals act according to their preferences subject to the constraints they face – including the equilibrium behavior of other individuals. It is even, in Gifford's language, a strong-MI story – that is, a story that satisfies MI (as I have defined it) *and* the additional requirements of self-interest and (bounded) rationality. While other forms of GS in cultural evolution might also work, the kind just described is the one I find most plausible.

Endnotes

¹ I resisted this conclusion at first, as Bergstrom's (2002, p. 71-2) proof appears to neglect Simpson's paradox. However, Bergstrom (2003) gives a more explicit proof that demonstrates the point.

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