

Perspectives on Imitation

a point," as Evelyn Waugh might have put it). To the extent that they have, there has certainly been nothing inevitable about this, as Sugden's chapter convincingly demonstrates. And as Gambetta's chapter points out, such rationality can be deceptive and manipulative as well as cooperative. These two stimulating chapters remind us that human rationality underlies both our species' greatest triumphs and our most destructive excesses.

19.11 Proving Rationality

Mark Greenberg on Sugden

Conventional economic theory assumes that economic agents are rational decision makers in the sense that they act as if they were trying to maximize some one-dimensional criterion. A well-known body of experimental work has increasingly shed doubt on the assumption that human beings are rational in this sense, however. Recently, some economic theorists have tried to justify the assumption of rationality by appealing to a cultural analogue of natural selection. Robert Sugden's interesting chapter is highly critical of this strategy—the *evolutionary strategy*, for short. Indeed, some of Sugden's remarks might be read to suggest that Darwinian theorizing about cultural evolution is a sterile enterprise of "manipulating tautologies about replicators" (vol. 2, ch. 15, p. 316) that can have no relevance to the empirical question of whether human beings are rational. On this reading of Sugden's chapter, the evolutionary strategy is a failure, and, more generally, a Darwinian theory of cultural change—*meme theory*—can have no explanatory value. Sugden's arguments, however, do not warrant this dismissiveness toward the evolutionary strategy or toward meme theory. A better way to read his chapter, I suggest, is as a plea for empirical investigation *in addition to* relatively a priori theorizing. The larger interest of the chapter is less its criticism of a particular application of meme theory than its suggestiveness for further work in meme theory generally. Contrary to the implication of some of his remarks, Sugden's chapter itself illustrates that theoretical work on Darwinian theories of cultural change can fruitfully complement empirical investigation.¹⁶

19.11.1 The Evolutionary Strategy and Sugden's Response

Sugden focuses on a version of the evolutionary strategy, developed by Ken Binmore (1994, 1998), that relies on Richard Dawkins's (1976/1989) anal-

16. Sugden (2001), which I read after writing these remarks, suggests that, at least at that time, he would have been sympathetic to my preferred reading of his chapter. Sugden confirms that this reading is what he intends (personal communication).

ogy between cultural and biological evolution. Memes that are not good at influencing human behavior in a way that has the effect of propagating themselves will tend to be outcompeted by memes that are. Thus, according to the Dawkins-Binmore line of thought, in the long run, the memes found in our minds will tend to be ones that are very good at influencing their carriers to behave in a way that spreads those same memes. As a result, human beings will tend to act as if they are trying to spread the memes they carry—thus satisfying the assumption of conventional economic theory that economic agents act as if they are trying to maximize some one criterion (pp. 303–304).

Sugden's argument centers on two examples. The first involves a diploid species in which the action the agent chooses depends on the combination of genes the agent carries. Sugden shows, that under the right conditions, an action that does not have the greatest reproductive success can continue to be chosen at equilibrium (and can even continue to be chosen more often than actions with greater reproductive success). In the second example, a meme's likelihood of being replicated depends on the frequency of other memes in the population, with the result that there can be continuous cycling of the proportions of each meme and thus of the decision probabilities for each action. Sugden draws from his examples the conclusion that selection does not necessarily induce rationality *at the level of actors*. In equilibrium, Sugden argues, though *replicators* will behave as if they are trying to maximize their own reproduction, the consequence need not be behavior that appears rational from the perspective of the actors (pp. 310ff; 312ff).

19.11.2 How Well Do Sugden's Examples Address Binmore's Strategy?

In this section, I raise three questions about how well Sugden's examples are adapted for their purpose, and I also mention a concern about Binmore's strategy. First, Sugden's examples do not seem to squarely address the issue that is crucial to Binmore's evolutionary strategy—whether the consequence of Darwinian evolution will be that agents will act as if they are trying to maximize a single criterion—most relevantly, the reproduction of *the replicators they carry*. With respect to the diploid-species example, Sugden points out that although “it is as if the surviving *genes* are maximizing their own replication” (p. 312), “biological natural selection does not necessarily favor *actions* that maximize the reproductive success of *actors*” (p. 311). The relevant question, however, is whether agents maximize the reproduction of the genes or memes they carry, not whether they maximize their own reproductive success (in the sense of having the most descendants). Similarly, the second example shows that where the choices

available to an agent are characterized in a way that is independent of the replication of the memes the agent carries, the result of an evolutionary process can be intransitive preferences among those choices (p. 314). Again, however, the relevant question is whether the result of evolution will be that agents will act as if they are maximizing the spread of the memes they carry. We cannot get a clear view of that question by looking at how agents behave with respect to choices that are characterized without regard to the replication of memes. Sugden's examples do not allow clear evaluation of the relevant question because it is not clear in the examples what would count as the agents acting so as to maximize the reproductive success of the replicators they carry.

Second, for a different reason, Sugden's examples are not well designed to address whether an analogue of natural selection will have the consequence that agents will behave as if they are maximizing the spread of the replicators they carry. As noted, Dawkins's idea is that given variation in replicators, there will be evolution in the direction of replicators that are better at inducing the conditions for their own copying. Thus, the memes that are around in the long run will be ones that are relatively good at getting themselves copied. Sugden's examples, however, exclude by stipulation the possibility of new genes or memes coming into existence. And the examples are constructed in such a way that none of the original genes or memes can, in the long run, be more successful at reproducing themselves than others.

Third, Sugden's examples assume that the structure of memetic reproduction, whatever it may be, is fixed for all time. But as Dawkins has argued, what is fixed in the short run may not be fixed in the longer run (1982, pp. 34–35). Thus, not only may new replicators emerge, but the fundamental mechanisms of replication can themselves be modified by evolution. The history of biological evolution includes many examples of this, including the development of multicellular organisms and sexual reproduction. We thus have very general empirical grounds for being cautious about the idea that the mechanisms by which replicators reproduce might happen to be fixed in a way that obstructs the operation of selective forces.

I also want to raise a concern about the Binmore strategy that Sugden does not mention. In normal cases, the actions we take cannot favor some of our genes over others. Our genes are all in the same boat—except for meiosis, over which we have no control. Matters are very different with our ideas. We can choose actions that will predictably spread some of our ideas more than others. (Also, the ideas we carry change from moment to moment.) Thus, even if cultural evolution operates in a way that is parallel

to biological evolution, it is not clear that the consequence will be that humans will behave rationally in the relevant sense—i.e., as if they are trying to maximize a *one-dimensional* criterion of success.¹⁷

19.11.3 Empirical Questions and A Priori Theorizing

The most that Sugden's examples could show is that the evolutionary strategy depends on empirical assumptions; without an empirical showing that those conditions are not satisfied in the relevant cases, he could not hope to refute the evolutionary strategy. Now he is certainly correct that whether Darwinian evolution will occur (and whether it will have the claimed consequences for human rationality) depends on empirical conditions, in particular on "what memes actually are and how they in fact replicate" (p. 316). An important objective of theoretical work on Darwinian evolution, in both the biological and cultural domains, has been understanding the conditions needed for Darwinian evolution to occur or to take various directions (see, e.g., Gil-White, vol. 2, ch. 16). Indeed, as Sugden notes, economists who have appealed to an analogue of natural selection have hoped "to argue that rational-choice theory applies only in situations in which the relevant selection mechanisms are active. That might make it possible to define the domain of the theory in such a way as to include many forms of behavior in markets while excluding many laboratory experiments" (pp. 302–303).

Thus, it is actually important *to the evolutionary strategy* to claim that the relevant selection mechanisms operate only when certain empirical conditions are satisfied. It is therefore puzzling that Sugden thinks that his chapter argues "that this [evolutionary] strategy, in the form in which it has been used so far in economics, fails" (p. 301).

Some of Sugden's remarks seem to suggest that since it is an empirical question whether human beings are rational, it is pointless to engage in theorizing about cultural evolution. In the concluding words of his chapter:

Whether human decision-making behavior satisfies the rationality postulates of conventional choice theory is an empirical question. If it does, any explanation of that fact must depend on empirical propositions about how the world really is. Trying to find an explanation by manipulating tautologies about replicators is to attempt what is logically impossible. (p. 316)

Sugden is certainly right that empirical investigation is *necessary* to determine whether the conditions for the right kind of evolution are satisfied. It

¹⁷ Sugden (2001) makes a similar point.

does not follow, however, that empirical investigation is *sufficient* or that relatively a priori theoretical work cannot be helpful. After all, Sugden's chapter itself engages in a priori analysis that sheds light on the empirical conditions for Darwinian processes to take particular directions. Without such work, empirical investigators would not know what to look for.

19.11.4 Conclusion

Perhaps what Sugden should conclude is not that economists should give up the attempt to use the evolutionary approach. Instead, theorists have two tasks. They need to work out the conditions under which a Darwinian process would ensure rational behavior. And they need to investigate empirically whether those conditions are satisfied in the relevant cases. The first task is largely a nonempirical one. The second task is an empirical one, but it cannot be carried out without theorizing that identifies the conditions to be investigated.

Answering empirical questions tends to require empirical investigation. Darwinian explanations are no exception: they depend on empirical premises. It does not follow, however, that there is no explanatory work for a Darwinian theory of cultural evolution—that it is nothing but “the manipulation of tautologies.” Sugden's chapter itself is an a priori exercise in meme theory that is suggestive of potential directions for empirical work.¹⁸

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19.12 Even Deeper Misunderstandings of Memes

Susan Blackmore on Gil-White

Gil-White describes a memetics that I do not recognize. I will comment on just two of his main points.

First, he rejects three central concepts for memetics: replication, imitation, and selfish memes. He regards replication as a red herring, but he defines replication to mean copying with 100% fidelity and a replicator as something that is copied perfectly. This is not the usual definition of a replicator, and there could be no memetics if it were. In fact, the term

18. See relevant discussions in Gil-White, vol. 2, ch. 16; Greenberg, vol. 2, ch. 17; and Chater, vol. 2, ch. 18. ED.