SCIENTIFIC IMPERIALISM AND BEHAVIORIST EPISTEMOLOGY

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ABSTRACT: E.O. Wilson and B.F. Skinner have argued for an evolutionary ethics that allows what *ought to be* to be derived from what *is*—ethics from science. Evolution is inherently unpredictable, however, and some practices whose benefits cannot be proved might nevertheless turn out to be good for the survival of a culture or the race. Other practices that seem to be good might turn out to be bad. Consequently, the evolutionary argument implies that a successful culture will believe some things that cannot be proved, and it tells us that we cannot know in advance what those things will be.
Key words: evolutionary ethics, epistemology, E.O. Wilson, B.F. Skinner

It is widely believed in the academy, and not rarely beyond, that science provides, or will provide, a *complete guide to action*. Obviously science can and should guide action in many respects. It tells us how to build a bridge or a plane, how to cure many diseases (physical and, occasionally, mental), how to grow crops, and how to lay bets in games of chance. However, some questions, typically those termed "ethical" or to do with morality, have usually been regarded as beyond the limits of science. This separation of "ought" from "is" is less observed now than it was a few years ago. Even as general knowledge of science has declined in Western cultures (a substantial percentage of Harvard graduates apparently believe that the seasons are caused by changes in the Earth's distance from the sun, according to a recent survey, for example), and even as criticism of the objective basis for science has gained currency in humanities departments, *faith* in science as the ultimate arbiter of everything continues to increase. *Scientific imperialism*[1]—the idea that all decisions, in principle, can be made scientifically—has become, in effect, the religion of the intellectuals.

A particularly clear statement of this view was provided recently by the eminent biologist E.O. Wilson, the Aristotle of sociobiology, a lucid and persuasive writer and masterful chronicler of the behavior and taxonomy of ants. In a book that "proposes. . .a grand, coherent conception encompassing the sciences, the arts, ethics, and religion" that is breathlessly reviewed as "a work to

[1] This idea is sometimes also termed *scientism*, which continues to come under attack from time to time. I should emphasize that my criticisms of scientific imperialism have little in common with the "anything goes" Marxist polemics of the most famous critic of science, Paul Feyerabend. Feyerabend (1975) contends that "The assertion. . .that there is no knowledge outside science—*extra scientiam nulla salus*—is nothing but another and most convenient fairy-tale." I argue that there are truths undiscoverable by science—or anything else, which is not the same thing. Feyerabend says "We know more than science"; I say "We must sometimes act on beliefs whose truth we cannot know."

be held in awe" and "a book of immense importance" (from the dustjacket), Wilson argues that science can indeed solve all problems, including ethical ones. He writes, "If the empiricist world view is correct, *ought* is just shorthand for one kind of factual statement. . ." (Wilson, 1998, p. 251).[2]

Wilson was preceded in this view by behaviorist B.F. Skinner. As I have pointed out elsewhere (Staddon, 2001), Skinner usually just *assumed* an ethical basis for his societal prescriptions without being very specific about what it was or where it came from (e.g., one of his many memorable phrases, "To confuse and delay the improvement of cultural practices by quibbling about the word *improve* is itself not a useful practice" [Skinner, 1955/1961, p. 6]), but at other times he discussed three bases for ethics. One was just conventional practice. Ethical behavior was behavior that was reinforced by the community; unethical behavior was punished by the community. Another was simple hedonism: "good" is what feels good (i.e., "is reinforcing") and "bad" is what feels bad. The third basis anticipated Wilson: "good" is what has been—and will be—selected for during genetic and, especially, cultural evolution.

Skinner's approach was through *evolutionary epistemology*, a position that first came to prominence during the nineteenth and early twentieth centuries, when it contributed to social Darwinism and other controversial movements. Evolutionary epistemology has now returned to fashion along with *evolutionary psychology*. In this article I will look again at Skinner's and Wilson's approach to evolutionary epistemology to see how successful it is in converting "ought" to "is." I will argue that in difficult ethical cases it fails. Skinner and Wilson are both wrong, I believe, and for reasons that would have been obvious if both had not been so anxious to change the world in the direction they both *knew* to be right. I will argue that rational analysis alone shows that there will be areas forever and in principle closed to science. In these areas people may reasonably follow other systems of belief—religious, humanistic, philosophical—to aid them in making decisions that can never, even in principle, be based on scientific proof.

The Darwinian Metaphor

In a 1966 paper entitled "The Phylogeny and Ontogeny of Behavior" (Skinner, 1966; see also 1981) Skinner turned to a view of reinforcement that was quite different from the "strengthening" metaphor he had inherited from Thorndike. According to Darwin, nature acts to favor certain individuals for survival and reproduction—to *select* individuals. Nature does not, as was previously believed, actively strengthen their adaptive characteristics. Cuvier's "Law of the Conditions of Existence," which seemed to attribute adaptation to the

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[2] It is interesting that this belief is close to the perspective of the noted *religious* philosopher Alasdair MacIntyre, who in *After Virtue* (1984) compares modern moral discourse to a degenerate future world in which the dissociated remnants of a destroyed science are taught, detached from the rational-empirical structure that originally gave them meaning. For MacIntyre, as for Wilson, true ethics is a matter of fact, but for MacIntyre the source is religious and for Wilson it is perhaps also religious, though named *evolution* by him.

direct action of the environment, was "fully embraced by the principle of natural selection" (Darwin, 1872/1951, p. 217). In the same way, argued Skinner, reinforcement does not directly strengthen behavior, as older views implied. Instead reinforcement *selects* behavior in a quasi-Darwinian fashion. Just as adaptation in nature can be traced to selection rather than direct environmental action, so (Skinner claimed) adaptation to contingencies of reinforcement reflects the selective action of reinforcement.

The basic idea of evolution by natural selection is that some process creates a set of variants, individual organisms that differ in various ways. Some of these variants are more successful than others in giving rise to progeny. If the critical differences between successful and unsuccessful individuals are *heritable*, that is, if they are passed on without undue dilution, then the next generation will be that much "fitter" than the one that went before. Darwin's insight was to see that across geological time these small generational changes might accumulate not just to modify a species but, eventually, to differentiate one from another, to create new species.

When he first heard Darwin's idea, T.H. Huxley is reported to have exclaimed "How extremely stupid not to have thought of that!"—because it is a very simple idea that, once understood, is immediately persuasive to most people. We can see the actual reproducing units, the *phenotypes*. We know more and more about the heritable characteristics, the *genotypes*, that are associated with different phenotypes and about the processes of *development* that translate a fixed genotype into a range of possible phenotypes. We can see in the way that each organism interacts with its environment, in its ecological niche, just why it is that "fitter" animals are in fact more successful. Faster horses do better than slower because they are less subject to predation; sharper claws are better for catching prey; lighter bones are better for flying, etc. We can see, in short, what *selective factors* are at work. Adaptation—The Law of Conditions of Existence—becomes the outcome of a process, not the fulfillment of a design.

All of these features are much attenuated when the Darwinian idea is applied to reinforcement learning. What is the behavioral analogue to the genotype, for example? To the phenotype? How are we to compare a set of activities extending over time, a *repertoire*, to the tangible phenotypes that are the units of natural selection? What, in the selection of behavior, corresponds to differential reproduction? To heritability? What corresponds to selective factors in a niche? Where are the masses of facts—about geographical distribution, about the relations between development and descent, about the structure of the geological record, about the "affinities of organic beings" and how they are explainable by descent with modification—that Darwin used so persuasively to support his theory? This lack of a rich matrix of supporting data is the main reason that "selection" is less compelling as an explanation for learning than it is as an explanation for the origin of species. It is why the parallel between learning and evolution is a metaphor, not a fact.

This lack of a supporting cast is also why I believe that Richard Dawkins' (1976) idea of a *meme* is largely empty. A meme is an idea or a fashion or an

invention—anything that can be culturally transmitted. *Meme* is a meme. Dawkins suggested, and many agree (e.g., Blackmore, 1999; Dennett, 1995; but see Aunger, 2001), that memes are like genes in that they can be selected so that some propagate more than others: "I think that a new kind of replicator [the meme] has recently emerged on this very planet. . .still drifting clumsily about in its primeval soup, but already it is achieving evolutionary change at a rate which leaves the old gene panting far behind" (Dawkins, 1976, p. 206).

But we do not know either what is selected (the meme equivalent of a gene) or why it is selected (the meme equivalent of adaptiveness). Darwin was ignorant of genes, but the factors that contribute to adaptiveness were all around him and formed the major supports for his theory. The meme theory lacks anything corresponding to adaptiveness, so the concept of meme is in fact guilty of something of which natural selection is sometimes wrongly accused—it is circular. Memes that spread are fitter than those that do not; fitter memes are those that spread.

Memes (for Dawkins) and operants (for Skinner) have a similar conceptual status in the Darwinian metaphor, but the operant is at least traceable to the action of reinforcement, a partially understood process that depends on measurable variables like delay and contingency. We do have some idea of what makes a given operant "adaptive." A "fitter" operant is closer in time to the reinforcer; it "predicts" the reinforcer better than other potential operants, etc. . .but the selective factors acting on memes remain wholly a matter for conjecture.

The Darwinian metaphor includes both variation and selection. Skinner largely ignored behavioral variation, however, emphasizing almost exclusively the selective effects of reinforcement. He was fundamentally uninterested in the mechanisms of variation. Indeed, in his famous simile "operant conditioning shapes behavior as a sculptor shapes a lump of clay" (Skinner, 1953, p. 91) he implies that "moment-to-moment variation is small in magnitude, and essentially random. . .in direction" (Staddon & Simmelhag, 1971, p. 31). Like Darwin, Skinner was a gradualist, but unlike Darwin, who was well aware of the existence of large and often directional phenotypic changes from generation to generation, Skinner never seriously considered the possibility that variation might follow principles of its own that were at least as orderly and important as those he studied as the mechanism of selection. No matter—the hegemony of the Darwinian approach seemed assured. The next step was to apply it to knowledge and to culture.

Evolutionary Epistemology

Skinner's commitment to the Darwinian metaphor implies allegiance to evolutionary epistemology, the notion that knowledge is entirely a product of our evolutionary history.[3] *Truth* is what worked in evolution. Evolutionary

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[3] Evolutionary epistemology is a broad topic that I do not have the space to review here. I present what I take to be the strongest version of this view, which differs in some respects from the views of others such as Popper and Campbell.

epistemology is thus a variant of *pragmatism*, the philosophy proposed by Harvard philosopher and logician Charles Sanders Peirce and promoted by psychologist–philosopher William James. For all varieties of pragmatism, truth equals functional utility—truth is what works. Evolutionary epistemology adds the phylogenetic dimension: what works, yes, but not just during your lifetime, also during the lifetimes of your ancestors.

Natural selection is *contingent*, that is, it depends on both *chance* and *necessity* in Monod's (1971) memorable phrase on the vagaries of variation and the steady push of selection. Nothing is *certain*—not even logic, or the hand in front of your face, or the flying saucer in the Nevada sky. "Truth" is not absolute. Everything we appear to know is the outcome of millions of years of natural selection and thousands of years of cultural selection. Thus, we believe in logic not because logic is "true" in some essential, Platonic sense, but because those individuals and cultures that failed to believe in logic lost out in the struggle to reproduce. We say that something is "true" not because it really is, but simply because it has survived in a quasi-Darwinian struggle for intellectual existence. Just like Skinner's (incorrect) interpretation of the pigeon in the "superstition" experiment, we may believe in superstitions if the right variant (idea) fails to occur. If no one has the idea that the earth circles the sun, rather than the other way around, the consequences of that idea cannot be tested and it cannot prevail—and, like Skinner's pigeon, we will misbelieve. If the "correct" idea does not occur, it cannot be selected, so that what occurs will not accurately represent the world. A consistent evolutionary epistemologist would go on (as Campbell, 1975 did) to contend that ancient value systems and religious beliefs have also survived a Darwinian history and should on that account be granted some degree of "truth," but this step was not taken by Skinner or E.O. Wilson.

Evolutionary epistemology is not solipsistic. Although it denies us access to absolute truth, the existence of some more or less stable "external reality" within which natural selection can take place is tacitly assumed. There has to be something that does the selecting, and the assumption is that that "something" has fixed properties; however, this belief in a fixed external reality is, and must be, just that, a *belief*, not something provable as fact. To acknowledge that belief in a stable (if largely unknowable) external world is both unprovable and necessary to almost any epistemology is just another way of acknowledging the force of David Hume's argument against induction. We cannot *prove* that the sun will rise tomorrow, but we must believe it (and in the essential regularity and persistence of the natural world) if science is to proceed. After all, if the laws of nature can change capriciously from day to day, why should any test be decisive?

There is a second reason to affirm a faith in the existence and stability of nature, in the idea of "truth," and that is a political and moral one. If there is no truth, issues of fact might be decided in ways other than by test and rational argument—by politics, ideology, or force, for example (cf. Lysenko in Soviet Russia, anti-blasphemy laws in some Islamic countries, etc). I think this would be undesirable, although I cannot prove the point scientifically.

Perfection—access to the absolute truth—is not necessary to believe in truth as an ideal. For evolutionary epistemology the "truth" of any proposition *is relative to the challenges it has successfully met*. Thus, an unquestioned belief is likely to be less "true" than one that has emerged unscathed from numerous tests. There are a few beliefs, like the laws of logic or arithmetic (e.g., the belief that the chair I am sitting on is real, etc), that survive every conceivable test. Such beliefs are the best kind of truth we have. When we ask of some new proposition "Is it true?" all we mean is "Will it be as resistant to disproof as the laws of logic?" In effect, those beliefs that are most resistant to disproof become the standard by which the truth of others is judged. To the extent that it espouses a kind of evolutionary pragmatism, the epistemology of radical behaviorism is hard to fault.

Truth as a Consequence: The Genetic Fallacy

The epistemology of radical behaviorism is subject to a subtle error, however, an updated version of something long recognized in philosophy as the *genetic fallacy*: confusion of the reasons for a *belief* with the reasons for *its truth*. Passionate Democrats tend to think ill of a Republican president, for example, just because he is not a Democrat. They might be right, but the fact that he is not of their party is not a sufficient reason to accept their verdict. The source of their belief has no necessary bearing on its truth. Some reasons for belief are generally persuasive because we see them as speaking to truth; others are not because they do not.

For operant psychologists, the problem can also be illustrated by analysis of operant conditioning in animals. There is an old Columbia *Jester* cartoon from the heyday of Skinnerian influence that shows a rat pressing a lever in a Skinner box. "Boy have I got this guy conditioned!" the rat explains to his companion, "Every time I press the lever he gives me a pellet!" The epistemological relativist—and some varieties of Skinnerians—contend that the rat is mistaken because they know that his behavior is simply a consequence of a certain history of reinforcement. In other words, they argue that because they know the *process* by which the behavior came about, the behavior—belief—has no truth-value. However, as human beings who know what is actually going on, we know that the rat's belief is in fact largely correct. The apparatus, if not the experimenter, is indeed "conditioned" to present a pellet every time the bar is pressed, and the way the rat "knows" this is via its history of reinforcement: pressing the bar yields food and other activities do not. In short, not only does knowing the process *not* invalidate this particular belief, it is the reason and justification for the belief. It is only in this rather benign sense that science is "socially constructed." It by no means justifies statements of this sort: "It has thus become increasingly apparent that physical 'reality,' no less than social 'reality,' is at bottom a social and linguistic construct; that scientific 'knowledge,' far from being objective, reflects and encodes the dominant ideologies and power relations of the culture that produced it" (Sokal, 1996[4]). Truth-value and

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[4] This quote is not, in fact, from a social constructionist but from a paper by New York physicist Alan Sokal that has become perhaps the most famous academic hoax of the twentieth century. Sokal's

"reinforcement history" are not antithetical; one is the product of the other. That is what (scientific) *truth* means.

Skinner sometimes seems to agree: "The truth of a statement of fact is limited to the sources of the behavior of the speaker. . .A scientific law is. . .limited by the repertoires of the scientists involved" (1976, p. 136). When truth is defined in this way, however, there is no contradiction between tracing a belief to a particular "reinforcement history" and evaluating it as true or false. Some histories—those that involve a sufficient "repertoire" of test and evaluation—tend to lead to true beliefs; others lead to beliefs that are either false or of unknown truth-value. Robert Downey Jr. might believe that the end of the world is at hand because he had close encounter with a controlled substance; an astronomer in nearby Pasadena might believe the same thing because she just measured the velocity of an approaching asteroid. Both beliefs are products of particular histories, but some histories are better than others.

In the next section I show how philosophical errors contributed to Wilson's and Skinner's scientific imperialism.

Values: The Naturalistic Fallacy

Skinner devoted an entire chapter in *Beyond Freedom and Dignity* to *values*. He was well aware that people would look to his philosophy for a guide to "the good." He was also aware that values are a no-go area for science: "Questions of this sort. . .are said. . .to involve 'value judgments'—to raise questions. . .not about what man can do but about what he ought to do. It is usually implied that the answers are out of the reach of science. . .It would be a mistake for the behavioral scientist to agree" (Skinner, 1971, p. 97). The hypothesis that what *ought to be* (in the moral sense) can be inferred from *what is* was termed the *naturalistic fallacy* by G.E. Moore. Obviously, Skinner did not believe it to *be* fallacy, and neither does E.O. Wilson: "I find it hard to believe that had Kant, Moore, and Rawls known modern biology and experimental psychology they would have reasoned as they did" (1998, p. 249). Philosopher Max Hocutt (2000) agrees with him: "There is no fallacy in it. Moore's belief that there is a fallacy is a product of his Platonic conviction that the normative is determined not by the actual but by the ideal" (2000, p. 51). If I understand him correctly, Hocutt seems to be finessing the problem by adopting a thoroughgoing moral relativism: "the good" is simply what people believe to be so, and that's it. The idea that there is some universal good, or that the *real* good has some basis other than common practice, is a chimera.

Whether moral relativism is correct or not, I don't know. But certainly it provides no explanation for the origin of current ethical beliefs and no guide to which beliefs are correct. Perhaps for this reason, Skinner and Wilson are unwilling to give up the idea of moral absolutes. The solution on which they agree is a biological and evolutionary one: they contend that human psychobiology can provide us with an objective way to estimate the value of actions.

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article, which was full of nonsense physics laced with constructionist cant like this, was assumed to be a serious contribution and was published in a leading humanist journal.

The Evolutionary Escape Hatch

"The ultimate sources [of values] are to be found in the evolution of the species and the evolution of the culture" (Skinner, 1971, p. 157). In other words, "survival"—of the culture or the species—is offered as a superordinate value from which all others can be deduced. This is the only ultimate value Skinner explicitly defends in his utopian writings. It is hard to quarrel with "survival" as a value. Few would defend a belief or custom that is bound to cause the downfall of the culture that gives rise to it. On the other hand, the view that "survival" is *the* primary value is not itself provable. It offers the possibility of consensus—but no escape from the naturalistic fallacy.

Moreover, even if we accept "survival" as the sole primary value, there are problems in acting on it. If evolutionary survival is the aim, why not plan for it explicitly via eugenics? Once accepted in the United States, eugenics is now highly controversial. As I will show in a moment, planning explicitly for survival may lead humankind in surprisingly unappetizing directions.

An obvious difficulty is that if "survival" is to be our guide we must be able to predict, at least in broad outline, the course of biological and cultural evolution. Is might right or will the meek in fact inherit the earth? The assumption that history is predictable is closely related to the doctrine of *historicism*, espoused most famously by Karl Marx. It was devastatingly criticized by Karl Popper, who wrote: "Marx may be excused for holding the mistaken belief that there is a 'natural law of historical development'; for some of the best scientists of his time (e.g., T. H. Huxley; cf. his *Lay Sermons*, 1880, p. 214) believed in the possibility of discovering a *law of evolution*. But there can be no empirical 'law of evolution'" (1950, p. 665; see also Popper, 1962 on the uncertainty of prophecy in social science). Skinner's survivalist principle shares with historicism the idea that the course of history is predictable. It differs from the most famous form of historicism, Marx's belief in the inevitable trajectory of history, in the role it assigns to human action. For Marx (early Marx at any rate) the course of history was fixed. Human action could perhaps slow it down or speed it up, but the direction of change could not be altered. Wilson and Skinner claim that science can predict the long-term consequences of our actions. History is not only predictable; we can alter its course. Because these gentlemen had no difficulty telling good consequences from bad, and because science will tell us what actions lead to what consequences, to do good it is necessary only to choose the right actions.

There are two serious problems with this point of view. First, looking to evolution for answers to ethical questions will often point to conclusions that conflict with values that are now deeply held. Are we to abandon them? Second, there are very many cultural and genetic "fitness" questions that simply cannot be decided at all.

First, the problem with "survival" as a value is that it provides little or no practical guidance in difficult cases. It is precisely as true, and as helpful, as the advice to a young investor "buy low, sell high." Well, yes, but…What *is* "low"? What *will* conduce to the survival of the race or the culture? Some will object that

the consequences of social action and moral principles are much less inscrutable than the course of the stock market, but a little thought shows that it ain't so. For example, alcohol is a poison. Hence, cultures that use alcohol and tobacco are surely less "fit" (in the Darwinian sense) than cultures that do not. But are they? There might be hidden benefits to one or the other that we cannot now foresee. The Puritan consensus was that alcohol was an unmitigated evil. The social benefits associated with moderate drinking were assumed to be outweighed by its many evil effects. Yet alcohol ingestion is a custom common to the majority of cultures, and now it turns out that there might even be health benefits to moderate drinking, so the evolutionary balance sheet on alcohol is not yet closed. This example also illustrates the second problem: the argument from evolutionary survival very quickly comes up against many traditional beliefs.

Some more examples: alcohol might be controversial, but smoking is certainly bad—isn't it? This is not so clear either. Some smokers (by no means all) die from lung cancer and emphysema, usually in unpleasant ways, which is unquestionably bad. However, smoking-induced illnesses generally do not kill until their victims reach their fifties and sixties, after their productive life is almost over and before they become a burden to their children and to society. It is an evolutionary truism that life history is determined by adaptive considerations, and a short but productive life is often "fitter," in a natural-selection sense, than a longer and less productive one. Perhaps a society that encourages smoking—which yields a generally short but productive life—will be more successful in the long run than one that discourages smoking and has to put up with a lot of unproductive old people.

A callous suggestion, perhaps—but not one that can be dismissed out of hand. Indeed, the Philip Morris company recently sponsored a study for the Czech Republic that showed that in a socialist economy, in which the state must pay pension, health care, and housing expenses, a population of smokers will cost less than a population of nonsmokers because the reduced pension and housing costs for the smokers more than compensates for their increased medical costs. The benefit amounts to $1227 per cadaver, says the *New York Times* ("Death Benefit," July 29, 2001). Whether or not reduced financial cost corresponds to evolutionary advantage is of course not known, but an inverse relation between cost and "fitness" is perhaps more likely than not.

Even obvious virtues like safety and the emancipation of women may be questioned by a thoroughgoing evolutionary ethicist. Is it really adaptive to outfit 4-year-olds on tricycles with crash helmets so they grow up timid and unadventurous, or to festoon our cars with air bags and seat belts so that the reckless and inept are protected from the consequences of their actions? And does it make evolutionary sense to encourage the brightest young women to delay, and thus limit, childbirth so they can spend the prime of their lives as physicists and investment bankers rather than mothers? Lee Kuan Yew, President of Singapore, thought a few years ago that it did not. He was pilloried for providing maternal incentives to well-educated women. But surely a conscientious evolutionary ethicist should applaud him?

The problem of what *really* conduces to the "fitness" of a culture has become especially acute with advances in medicine. Should parents be allowed to control the sex and other characteristics of their children? Should human cloning be permitted? What extraordinary measures are justified to keep a sick person alive? Kidney transplants, yes. Heart transplants, yes, perhaps—but what if the patient is already old or has other ailments? When should a sick person be allowed to die? What *is* the "optimal lifespan"? We know that lifespan is a heavily selected variable, so there must be an optimal—in the sense of most favorable to the continuation of the species—lifespan. What is it? What if it is shorter than the current average in the West?

Politics are not immune from evolutionary optimality. What is the best political system? Most Americans assume that hierarchy is bad and the American Constitution enshrines democracy and the rights of the individual. However, the most stable (i.e., evolutionarily successful) societies we know were not democratic and egalitarian but hierarchical and authoritarian. The ancient Egyptian culture survived substantially unchanged for thousands of years. The Greeks, the inventors of democracy, survived as a culture only for two centuries and were defeated by the highly undemocratic Romans, who lasted three or four times as long. The oldest extant democracy is less than 300 years old. In the animal kingdom, the ants and bees, with built-in hierarchies, have outlasted countless more individualistic species. The attempt to base values on evolutionary success very soon raises questions about traditional beliefs, albeit in an inconclusive way (see J.Q. Wilson, 2000, for an accessible account of some of these issues).

That is the problem with "survival of the culture" as a value: it requires reliable knowledge of the future if it is to be a general guide. While some customs are clearly maladaptive under most imaginable circumstances, others are more contingent. The problem is that most of the prescriptions of traditional morality fall in the latter class. We simply do not know, belief by belief, custom by custom, rule by rule, whether or not our culture would, in the long run, be better off with or without them.

It is certain that some cultures will survive longer than others. It seems very likely, moreover, that the ones that survive will have many beliefs that were in fact essential to their survival, but the importance of at least some of those beliefs *could not have been foreseen*, even in principle. This is the fatal flaw in Skinner's belief and E.O. Wilson's (1998) claim that the fact of evolution allows all morality to be reduced to science. A comprehensive evolutionary ethics is impossible. Scientific imperialism is simply false.

Furthermore (and this will not please your average atheistic social scientist), the argument that demolishes evolutionary ethics also provides a rational basis for *faith*—although not, I hasten to add, for any faith in particular. The reason is not that any particular faith is true in the scientific or any other sense. The reason is that for a society to function at all, rules seem to be necessary, even in cases like the examples I have given, in which certainty is (and perhaps must be) lacking. We deter smoking, outlaw some drugs, emancipate women, and preserve life at almost any cost, even though the evolutionary consequences of these decisions are

unknown and probably unknowable. If rules must exist—even for situations in which science provides no clear basis for choosing them—then some other basis for choice is necessary. That basis is, by definition, a matter of faith. Because scientific knowledge is lacking, it cannot be otherwise.

Thus, the evolutionary approach to the problem of values promises more than it can deliver. Skinner and E.O. Wilson did not notice because they (and most other scientific imperialists) are not really interested in the problem of values. They know what they believe. For them the real task is *implementation*. They believe, with Karl Marx, that while philosophers may seek to understand the world, the real task is to change it.

Conclusion

Skinner committed radical behaviorism to an evolutionary epistemology that is, in effect, a generalized version of the pragmatism of C.S. Peirce. Skinner extended the "successful working" of pragmatism from the life of the individual to the evolution of the race: actions not traceable to personal reinforcement ("ontogenic selection") must be "instincts" ("phylogenic selection") traceable to natural selection across generations.

Evolutionary epistemology is not free of unprovable assumptions, however. It cannot provide a comprehensive "naturalistic ethics," nor can it do without some belief in reality. To seek for laws of nature is to assume, implicitly, that they exist and that they do not change from day to day. Our grasp on nature and her laws must necessarily be imperfect because the process of selection— natural selection or the selective process termed *reinforcement*—is always limited by the range of behavioral or genetic variation: "A scientific law is. . . limited by the repertoires of the scientists involved." Evolutionary epistemology must assume that an external world exists.

E.O. Wilson and B.F. Skinner both believed that evolution of the species and of the culture provides a way around the naturalistic fallacy. They claimed that what *ought to be* can be derived from what *is* (ethics from science), but evolution is inherently unpredictable. Some practices whose benefits cannot be proved might nevertheless turn out to be good for the survival of a culture or the race. Others that seem to be good might turn out to be bad. Consequently, the evolutionary argument implies that a successful culture will believe some things that cannot be proved. It also tells us we cannot know in advance what those things will be.

References

Aunger, R. (Ed.). (2001). *Darwinizing culture: The status of memetics as a science*. Oxford University Press.

Blackmore, S. (1999). *The meme machine*. Oxford, UK: Oxford University Press.

Campbell, D. T. (1975). On the conflicts between biological and social evolution and between psychology and moral tradition. *American Psychologist*, *30*, 1103-1126.

Darwin, C. (1951). *The origin of species* (6th ed.). Oxford, UK: The University Press. (Original work published 1872)

Dawkins, R. (1976). *The selfish gene*. Oxford, UK: Oxford University Press.

Dennett, D. C. (1995). *Darwin's dangerous idea: Evolution and the meanings of life*. New York: Simon & Schuster.

Feyerabend, P. (1975). *Against method*. Humanities Press.

Hocutt, M. (2000). *Grounded ethics: The empirical bases for normative judgments*. New Brunswick, NJ: Transaction Publishers.

MacIntyre, A. (1984). *After virtue: A study in moral theory*. Notre Dame, IN: University of Notre Dame Press.

Monod, J. (1971). *Chance and necessity: An essay on the natural philosophy of modern biology*. New York: Knopf.

Popper, K. R. (1950). *The open society and its enemies*. Princeton, NJ: Princeton University Press.

Popper, K. R. (1962). *Conjectures and refutations: The growth of scientific knowledge*. New York: Basic Books.

Skinner, B. F. (1953). *Science and human behavior*. New York: Macmillan.

Skinner, B. F. (1961). Freedom and the control of men. In *Cumulative record* (pp. 3-18). New York: Appleton-Century-Crofts. (Original work published 1955)

Skinner, B. F. (1966). The phylogeny and ontogeny of behavior. *Science*, *153*, 1205-1213.

Skinner, B. F. (1971). *Beyond freedom and dignity*. New York: Knopf

Skinner, B. F. (1976). *About behaviorism*. New York: Vintage Books.

Skinner, B. F. (1981). Selection by consequences. *Science*, *213*, 501-504.

Sokal, A. D. (1996). Transgressing the boundaries: Towards a transformative hermeneutics of quantum gravity. *Social Text*, *46/47*, 217-252 (spring/summer). (See also http://www.physics.nyu.edu/faculty/sokal/lingua_franca_v4/lingua_franca_v4.html)

Staddon, J. E. R., & Simmelhag, V. (1971). The "superstition" experiment: A reexamination of its implications for the principles of adaptive behavior. *Psychological Review*, *78*, 3-43.

Staddon, J. (2001). *The new behaviorism: Mind, mechanism and society*. Philadelphia, PA: Psychology Press.

Wilson, E.O. (1998). *Consilience: The unity of knowledge*. New York: Alfred Knopf.

Wilson, J. Q. (2000, March). Democracy for all? *Commentary*, *109(3)*, 4, 25 (Internet edition).