

27 Four Ways of “Biologicizing” Ethics

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I

In 1975, E. O. Wilson invited his readers to consider “the possibility that the time has come for ethics to be removed temporarily from the hands of the philosophers and biologicized” (Wilson 1975:562). There should be no doubting Wilson’s seriousness of purpose.¹ His writings from 1975 to the present demonstrate his conviction that nonscientific, humanistic approaches to moral questions are indecisive and uninformed, that these questions are too important for scholars to neglect, and that biology, particularly the branches of evolutionary theory and neuroscience that Wilson hopes to bring under a sociobiological umbrella, can provide much-needed guidance. Nevertheless, I believe that Wilson’s discussions of ethics, those that he has ventured alone and those undertaken in collaboration first with the mathematical physicist Charles Lumsden and later with the philosopher Michael Ruse, are deeply confused through failure to distinguish a number of quite different projects. My aim in this chapter is to separate those projects, showing how Wilson and his co-workers slide from uncontroversial truisms to provocative falsehoods.

Ideas about “biologicizing” ethics are by no means new, nor are Wilson’s suggestions the only proposals that attract contemporary attention.² By the same token, the distinctions that I shall offer are related to categories that many of those philosophers Wilson seeks to enlighten will find very familiar. Nonetheless, by developing the distinctions in the context of Wilson’s discussions of ethics, I hope to formulate a map on which would-be sociobiological ethicists can locate themselves and to identify questions that they would do well to answer.

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II

How do you “biologize” ethics? There appear to be four possible endeavors:

1. Sociobiology has the task of explaining how people have come to acquire ethical concepts, to make ethical judgments about themselves and others, and to formulate systems of ethical principles.
2. Sociobiology can teach us facts about human beings that, in conjunction with moral principles that we already accept, can be used to derive normative principles that we had not yet appreciated.
3. Sociobiology can explain what ethics is all about and can settle traditional questions about the objectivity of ethics. In short, sociobiology is the key to metaethics.
4. Sociobiology can lead us to revise our system of ethical principles, not simply by leading us to accept new derivative statements—as in number 2 above—but by teaching us new fundamental normative principles. In short, sociobiology is not just a source of facts but a source of norms.

Wilson appears to accept all four projects, with his sense of urgency that ethics is too important to be left to the “merely wise” (1978:7) giving special prominence to endeavor 4. (Endeavors 2 and 4 have the most direct impact on human concerns, with endeavor 4 the more important because of its potential for fundamental changes in prevailing moral attitudes. The possibility of such changes seems to lie behind the closing sentences of Ruse and Wilson 1986.) With respect to some of these projects, the evolutionary parts of sociobiology appear most pertinent; in other instances, neurophysiological investigations, particularly the exploration of the limbic system, come to the fore.

Relatives of endeavors 1 and 2 have long been recognized as legitimate tasks. Human ethical practices have histories, and it is perfectly appropriate to inquire about the details of those histories. Presumably, if we could trace the history sufficiently far back into the past, we would discern the coevolution of genes and culture, the framing of social institutions, and the introduction of norms. It is quite possible, however, that evolutionary biology would play only a very limited role in the story. All that natural selection may have done is to equip us with the capacity for various social arrangements and the capacity to understand and to formulate ethical rules. Recognizing that not every trait we care to focus on need have been the target of natural selection, we shall no longer be tempted to argue that any respectable history of our ethical behavior must identify some selective advantage for those beings who first adopted a system of ethical precepts. Perhaps the history of ethical thinking instantiates one of those coevolutionary models that show cultural selection’s interfering with natural selection (Boyd and Richerson 1985). Perhaps what is selected is some very general capacity for learning and acting that is manifested in various aspects of human behavior (Kitcher 1990).

Nothing is wrong with endeavor 1, so long as it is not articulated in too simplistic a fashion and so long as it is not overinterpreted. The reminders of the last paragraph are intended to forestall the crudest forms of neo-Darwinian development of this endeavor. The dangers of overinterpretation, however, need more detailed charting. There is a recurrent tendency in Wilson's writings to draw unwarranted conclusions from the uncontroversial premise that our ability to make ethical judgments has a history, including, ultimately, an evolutionary history. After announcing that "everything human, including the mind and culture, has a material base and originated during the evolution of the human genetic constitution and its interaction with the environment" (Ruse and Wilson 1986: 173), the authors assert that "accumulating empirical knowledge" of human evolution "has profound consequences for moral philosophy" (174). For that knowledge "renders increasingly less tenable the hypothesis that ethical truths are extrasomatic, in other words divinely placed within the brain or else outside the brain awaiting revelation" (174). Ruse and Wilson thus seem to conclude that the legitimacy of endeavor 1 dooms the idea of moral objectivity.

That this reasoning is fallacious is evident once we consider other systems of human belief. Plainly, we have capacities for making judgments in mathematics, physics, biology, and other areas of inquiry. These capacities, too, have historical explanations, including, ultimately, evolutionary components. Reasoning in parallel fashion to Ruse and Wilson, we could thus infer that objective truth in mathematics, physics, and biology is a delusion and that we cannot do *any* science without "knowledge of the brain, the human organ where all decisions . . . are made" (173).

What motivates Wilson (and his collaborators Ruse and Lumsden) is, I think, a sense that ethics is different from arithmetic or statics. In the latter instances, we could think of history (including our evolutionary history) bequeathing to us a capacity to learn. That capacity is activated in our encounters with nature, and we arrive at objectively true beliefs about what nature is like. Since they do not see how a similar account could work in the case of moral belief, Wilson, Ruse, and Lumsden suppose that their argument does not generalize to a denunciation of the possibility of objective knowledge. This particular type of skepticism about the possibility of objectivity in ethics is revealed in the following passage: "But the philosophers and theologians have not yet shown us how the final ethical truths will be recognized as things apart from the idiosyncratic development of the human mind" (Lumsden and Wilson 1983: 182–183).

There is an important challenge to those who maintain the objectivity of ethics, a challenge that begins by questioning how we obtain ethical knowledge. Evaluating that challenge is a complex matter I shall take up in connection with project 3. However, unless Wilson has independent arguments for resolving questions in metaethics, the simple move from the legitimacy of endeavor 1 to the "profound consequences for moral philosophy" is a blunder. The "profound consequences" result not from

any novel information provided by recent evolutionary theory but from arguments that deny the possibility of assimilating moral beliefs to other kinds of judgments.

III

Like endeavor 1, endeavor 2 does not demand the removal of ethics from the hands of the philosophers. Ethicists have long appreciated the idea that facts about human beings, or about other parts of nature, might lead us to elaborate our fundamental ethical principles in previously unanticipated ways. Card-carrying Utilitarians who defend the view that morally correct actions are those that promote the greatest happiness of the greatest number, who suppose that those to be counted are presently existing human beings, and who identify happiness with states of physical and psychological well-being will derive concrete ethical precepts by learning how the maximization of happiness can actually be achieved. But sociobiology has no monopoly here. Numerous types of empirical investigations might provide relevant information and might contribute to a profitable division of labor between philosophers and others.

Consider, for example, a family of problems with which Wilson, quite rightly, has been much concerned. There are numerous instances in which members of small communities will be able to feed, clothe, house, and educate themselves and their children far more successfully if a practice of degrading the natural environment is permitted. Empirical information of a variety of types is required for responsible ethical judgment. What alternative opportunities are open to members of the community if the practice is banned? What economic consequences would ensue? What are the ecological implications of the practice? All these are questions that have to be answered. Yet while amassing answers is a prerequisite for moral decision, there are also issues that apparently have to be resolved by pondering fundamental ethical principles. How should we assess the different kinds of value (unspoiled environments, flourishing families) that figure in this situation? Whose interests, rights, or well-being deserve to be counted?

Endeavors like the second one are already being pursued, especially by workers in medical ethics and in environmental ethics. It might be suggested that sociobiology has a particularly important contribution to make to this general enterprise, because it can reveal to us our deepest and most entrenched desires. By recognizing those desires, we can obtain a fuller understanding of human happiness and thus apply our fundamental ethical principles in a more enlightened way. Perhaps. However, as I have argued at great length (Kitcher 1985), the most prominent sociobiological attempts to fathom the springs of human nature are deeply flawed, and remedying the deficiencies requires integrating evolutionary ideas with neuroscience, psychology, and various parts of social science (see Kitcher 1987a, 1987b, 1988, 1990). In any event, recognizing the legitimacy of endeavor 2 underscores the need to evaluate the different desires and interests of different people (and, possibly, of other organisms), and we have so far

found no reason to think that sociobiology can discharge that quintessentially moral task.

IV

Wilson's claims about the status of ethical statements are extremely hard to understand. It is plain that he rejects the notion that moral principles are objective because they encapsulate the desires or commands of a deity (a metaethical theory whose credentials have been doubtful ever since Plato's *Euthyphro*). Much of the time he writes as though sociobiology settled the issue of the objectivity of ethics negatively. An early formulation suggests a simple form of emotivism:

Like everyone else, philosophers measure their personal emotional responses to various alternatives as though consulting a hidden oracle. That oracle resides within the deep emotional centers of the brain, most probably within the limbic system, a complex array of neurons and hormone-secreting cells located just below the "thinking" portion of the cerebral cortex. Human emotional responses and the more general ethical practices based on them have been programmed to a substantial degree by natural selection over thousands of generations. (1978:6)

Stripped of references to the neural machinery, the account Wilson adopts is a very simple one. The content of ethical statements is exhausted by reformulating them in terms of our emotional reactions. Those who assent to, "Killing innocent children is morally wrong," are doing no more than reporting on a feeling of repugnance, just as they might express gastronomic revulsion. The same type of metaethics is suggested in more recent passages, for example, in the denial that "ethical truths are extrasomatic" which I have already quoted.

Yet there are internal indications and explicit formulations that belie interpreting Wilson as a simple emotivist. Ruse and Wilson appear to support the claim that "'killing is wrong' conveys more than merely 'I don't like killing'" (1986:178). Moreover, shortly after denying that ethical truths are extrasomatic, they suggest that "our strongest feelings of right and wrong" will serve as "a foundation for ethical codes" (173), and their paper concludes with the visionary hope that study will enable us to see "how our short-term moral insights fail our long-term needs, and how correctives can be applied to formulate more enduring moral codes" (192). As I interpret them, they believe that some of our inclinations and disinclinations, and the moral judgments in which they are embodied, betray our deepest desires and needs and that the task of formulating an "objective" ("enduring," "corrected") morality is to identify these desires and needs, embracing principles that express them.

Even in Wilson's earlier writings, he sounds themes that clash with any simple emotivist metaethics. For example, he acknowledges his commitment to different sets of "moral standards" for different populations and different groups within the same population (1975:564). Population variation raises obvious difficulties for emotivism.

On emotivist grounds, deviants who respond to the “limbic oracle” by wilfully torturing children must be seen as akin to those who have bizarre gastronomic preferences. The rest of us may be revolted, and our revulsion may even lead us to interfere. Yet if pressed to defend ourselves, emotivism forces us to concede that there is no standpoint from which our actions can be judged as objectively more worthy than the deeds we try to restrain. The deviants follow their hypothalamic imperative, and we follow ours.

I suspect that Wilson (as well as Lumsden and Ruse) is genuinely torn between two positions. One hews a hard line on ethical objectivity, drawing the “profound consequence” that there is no “extrasomatic” source of ethical truth and accepting an emotivist metaethics. Unfortunately, this position makes nonsense of Wilson’s project of using biological insights to fashion an improved moral code and also leads to the unpalatable conclusion that there are no grounds for judging those whom we see as morally perverse. The second position gives priority to certain desires, which are to be uncovered through sociobiological investigation and are to be the foundation of improved moral codes, but it fails to explain what normative standard gives these desires priority or how that standard is grounded in biology. In my judgment, much of the confusion in Wilson’s writings comes from oscillating between these two positions.

I shall close this section with a brief look at the line of argument that seems to lurk behind Wilson’s emotivist leanings. The challenge for anyone who advocates the objectivity of ethics is to explain in what this objectivity consists. Skeptics can reason as follows: If ethical maxims are to be objective, then they must be objectively true or objectively false. If they are objectively true or objectively false, then they must be true or false in virtue of their correspondence with (or failure to correspond with) the moral order, a realm of abstract objects (values) that persists apart from the natural order. Not only is it highly doubtful that there is any such order, but, even if there were, it is utterly mysterious how we might ever come to recognize it. Apparently we would be forced to posit some ethical intuition by means of which we become aware of the fundamental moral facts. It would then be necessary to explain how this intuition works, and we would also be required to fit the moral order and the ethical intuition into a naturalistic picture of ourselves.

The denial of “extrasomatic” sources of moral truth rests, I think, on this type of skeptical argument, an argument that threatens to drive a wedge between the acquisition of our ethical beliefs and the acquisition of beliefs about physics or biology (see the discussion of endeavor 1 above). Interestingly, an exactly parallel argument can be developed to question the objectivity of mathematics. Since few philosophers are willing to sacrifice the idea of mathematical objectivity, the philosophy of mathematics contains a number of resources for responding to that skeptical parallel. Extreme Platonists accept the skeptic’s suggestion that objectivity requires an abstract mathematical order, and they try to show directly how access to this order is possible, even on

naturalistic grounds. Others assert the objectivity of mathematics without claiming that mathematical statements are objectively true or false. Yet others may develop an account of mathematical truth that does not presuppose the existence of abstract objects, and still others allow abstract objects but try to dispense with mathematical intuition.

Analogous moves are available in the ethical case. For example, we can sustain the idea that some statements are objectively justified without supposing that such statements are true. Or we can abandon the correspondence theory of truth for ethical statements in favor of the view that an ethical statement is true if it would be accepted by a rational being who proceeded in a particular way. Alternatively, it is possible to accept the thesis that there is a moral order but understand this moral order in naturalistic terms, proposing, for example, with the Utilitarians, that moral goodness is to be equated with the maximization of human happiness and that moral rightness consists in the promotion of the moral good. Yet another option is to claim that there are indeed nonnatural values but that these are accessible to us in a thoroughly familiar way—for example, through our perception of people and their actions. Finally, the defender of ethical objectivity may accept all the baggage that the skeptic assembles and try to give a naturalistic account of the phenomena that skeptics take to be incomprehensible.

I hope that even this brief outline of possibilities makes it clear how a quick argument for emotivist metaethics simply ignores a host of metaethical alternatives—indeed the main alternatives that the “merely wise” have canvassed in the history of ethical theory. Nothing in recent evolutionary biology or neuroscience forecloses these alternatives. Hence, if endeavor 3 rests on the idea that sociobiology yields a quick proof of emotivist metaethics, this project is utterly mistaken.

On the other hand, if Wilson and his co-workers intend to offer some rival metaethical theory, one that would accord with their suggestions that sociobiology might generate better (“more enduring”) moral codes, then they must explain what this metaethical theory is and how it is supported by biological findings. In the absence of any such explanations, we should dismiss endeavor 3 as deeply confused.

V

In the search for new normative principles, project 4, it is not clear whether Wilson intends to promise or to deliver. His early writing sketches the improved morality that would emerge from biological analysis.

In the beginning the new ethicists will want to ponder the cardinal value of the survival of human genes in the form of a common pool over generations. Few persons realize the true consequences of the dissolving action of sexual reproduction and the corresponding unimportance of “lines” of descent. The DNA of an individual is made up of about equal contributions of all the ancestors in

any given generation, and it will be divided about equally among all descendants at any future moment. . . . The individual is an evanescent combination of genes drawn from this pool, one whose hereditary material will soon be dissolved back into it. (1978: 196–197)

I interpret Wilson as claiming that there is a fundamental ethical principle, which we can formulate as follows:

W: Human beings should do whatever is required to ensure the survival of a common gene pool for *Homo sapiens*.

He also maintains that this principle is not derived from any higher-level moral statement but is entirely justified by certain facts about sexual reproduction. Wilson has little time for the view that there is a fallacy in inferring values from facts (1980a: 431; 1980b: 68) or for the “absolute distinction between *is* and *ought*” (Ruse and Wilson 1986: 174). It appears, then, that there is supposed to be a good argument to W from a premise about the facts of sex:

S: The DNA of any individual human being is derived from many people in earlier generations and, if the person reproduces, will be distributed among many people in future generations.

I shall consider both the argument from S to W and the correctness of W.

Plainly, one cannot deduce W from S. Almost as obviously, no standard type of inductive or statistical argument will sanction this transition. As a last resort, one might propose that W provides the best explanation for S and is therefore acceptable on the grounds of S, but the momentary charm of this idea vanishes once we recognize that S is explained by genetics, not by ethical theory.

There are numerous ways to add ethical premises so as to license the transition from S to W, but making these additions only support the uncontroversial enterprise 2, not the search for fundamental moral principles undertaken under the aegis of endeavor 4. Without the additions, the inference is so blatantly fallacious that we can only wonder why Wilson thinks that he can transcend traditional criticisms of the practice of inferring values from facts.

The faults of Wilson’s method are reflected in the character of the fundamental moral principle he identifies. That principle, W, enjoins actions that appear morally suspect (to say the least). Imagine a stereotypical postholocaust situation in which the survival of the human gene pool depends on copulation between two people. Suppose, for whatever reason, that one of the parties is unwilling to copulate with the other. (This might result from resentment at past cruel treatment, from recognition of the miserable lives that offspring would have to lead, from sickness, of whatever.) Under these circumstances, W requires the willing party to coerce the unwilling person, using whatever extremes of force are necessary—perhaps even allowing for the murder of those who attempt to defend the reluctant one. There is an evident conflict between

these consequences of W and other ethical principles, particularly those that emphasize the rights and autonomy of individuals. Moreover, the scenario can be developed so as to entail enormous misery for future descendants of the critical pair, thus flouting utilitarian standards of moral correctness. Faced with such difficulties for W, there is little consolation in the thought that our DNA was derived from many people and will be dispersed among many people in whatever future generations there may be. At stake are the relative values of the right to existence of future generations (possibly under dreadful conditions) and the right to self-determination of those now living. The biological facts of reproduction do not give us any information about that relationship.

In his more recent writings, Wilson has been less forthright about the principles of "scientific ethics." Biological investigations promise improved moral codes for the future: "Only by penetrating to the physical basis of moral thought and considering its evolutionary meaning will people have the power to control their own lives. They will then be in a better position to choose ethical precepts and the forms of social regulation needed to maintain the precepts" (Lumsden and Wilson 1983:183). Ruse and Wilson are surprisingly reticent in expressing substantive moral principles, apparently preferring to discuss general features of human evolution and results about the perception of colors. Their one example of an ethical maxim is not explicitly formulated, although since it has to do with incest avoidance, it could presumably be stated as, "Do not copulate with your siblings!" (see Ruse and Wilson 1986:183–185; for discussion of human incest avoidance, see Kitcher 1990). If this is a genuine moral principle at all, it is hardly a central one and is certainly not fundamental.

I believe that the deepest problems with the sociobiological ethics recommended by Wilson, Lumsden, and Ruse can be identified by considering how the most fundamental and the most difficult normative questions would be treated. If we focus attention, on the one hand, on John Rawls's principles of justice (proposals about fundamental questions) or on specific claims about the permissibility of abortion (proposals about a very difficult moral question), we discover the need to evaluate the rights, interests, and responsibilities of different parties. Nothing in sociobiological ethics speaks to the issue of how these potentially conflicting sets of rights, interests, and responsibilities are to be weighed. Even if we were confident that sociobiology could expose the deepest human desires, thus showing how the enduring happiness of a single individual could be achieved, there would remain the fundamental task of evaluation the competing needs and plans of different people. Sociobiological ethics has a vast hole at its core—a hole that appears as soon as we reflect on the implications of doomsday scenarios for Wilson's principle (W). Nothing in the later writings of Wilson, Lumsden, and Ruse addresses the deficiency.

The gap could easily be plugged by retreating from project 4 to the uncontroversial project 2. Were Wilson a Utilitarian, he could address the question of evaluating competing claims by declaring that the moral good consists in maximizing total

human happiness, conceding that this fundamental moral principle stands outside sociobiological ethics but contending that sociobiology, by revealing our evolved desires, shows us the nature of human happiness. As noted above in connection with project 2, there are grounds for wondering if sociobiology can deliver insights about our “deepest desires.” In any case, the grafting of sociobiology onto utilitarianism hardly amounts to the fully naturalistic ethics proclaimed in Wilson’s rhetoric.

If we try to develop what I take to be Wilson’s strongest motivating idea, the appeal to some extrasociobiological principle is forced upon us. Contrasting our “short-term moral problems” with our “long-term needs,” Ruse and Wilson hold out the hope that biological investigations, by providing a clearer picture of ourselves, may help us to reform our moral systems (1986:192). Such reforms would have to be carried out under the guidance of some principle that evaluated the satisfaction of different desires within the life of an individual. Why is the satisfaction of long-term needs preferable to the palliation of the desires of the moment? Standard philosophical answers to this question often presuppose that the correct course is to maximize the total life happiness of the individual, subject perhaps to some system of future discounting. Whether any of those answers is adequate or not, Wilson needs some principle that will play the same evaluative role if his vision of reforming morality is to make sense. Wilson’s writings offer no reason for thinking of project 4 as anything other than a blunder, and Wilson’s own program of moral reform presupposes the nonbiological ethics whose poverty he so frequently decries.

VI

Having surveyed four ways of “biologizing” ethics, I shall conclude by posing some questions for the aspiring sociobiological ethicist. The first task for any sociobiological ethics is to be completely clear about which project (or projects) are to be undertaken. Genuine interchange between biology and moral philosophy will be achieved only when eminent biologists take pains to specify what they mean by the “biologizations” of ethics, using the elementary categories I have delineated here.

Project 1 is relatively close to enterprises that are currently being pursued by biologists and anthropologists. Human capacities for moral reflection are phenotypic traits into whose histories we can reasonably inquire. However, those who seek to construct such histories would do well to ask themselves if they are employing the most sophisticated machinery for articulating coevolutionary processes and whether they are avoiding the adaptationist pitfalls of vulgar Darwinism.

Project 2 is continuous with much valuable work done in normative ethics over the last decades. Using empirical information, philosophers and collaborators from other disciplines have articulated various types of moral theory to address urgent concrete problems. If sociobiological ethicists intend to contribute to this enterprise, they must explicitly acknowledge the need to draw on extrabiological moral principles. They

must also reflect on what ethical problems sociobiological information can help to illuminate and on whether human sociobiology is in any position to deliver such information. Although project 2 is a far more modest enterprise than that which Wilson and his collaborators envisage, I am very doubtful (for reasons given in Kitcher 1985, 1990) that human sociobiology is up to it.

Variants of the refrain that "there is no morality apart from biology" lead sociobiologists into the more ambitious project 3. Here it is necessary for the aspiring ethicists to ask themselves if they believe that some moral statements are true, others false. If they do believe in moral truth and falsity, they should be prepared to specify what grounds such truth and falsity. Those who think that moral statements simply record the momentary impulses of the person making the statement should explain how they cope with people who have deviant impulses. On the other hand, if it is supposed that morality consists in the expression of the "deepest" human desires, then it must be shown how, *without appeal to extrabiological moral principles*, certain desires of an individual are taken to be privileged and how the conflicting desires of different individuals are adjudicated.

Finally, those who undertake project 4, seeing biology as the source of fundamental normative principles, can best make their case by identifying such principles, by formulating the biological evidence for them, and by revealing clearly the character of the inferences from facts to values. In the absence of commitment to any specific moral principles, pleas that "the naturalistic fallacy has lost a great deal of its force in the last few years" (Wilson 1980a:431) will ring hollow unless the type of argument leading from biology to morality is plainly identified. What kinds of premises will be used? What species of inference leads from those premises to the intended normative conclusion?

It would be folly for any philosopher to conclude that sociobiology can contribute nothing to ethics. The history of science is full of reminders that initially unpromising ideas sometimes pay off (but there are even more unpromising ideas that earn the right to oblivion). However, if success is to be won, criticisms must be addressed, not ignored. Those inspired by Wilson's vision of a moral code reformed by biology have a great deal of work to do.

Notes

1. Some of Wilson's critics portray him as a frivolous defender of reactionary conservatism (see, for example, Lewontin, Rose, and Kamin 1984). While I agree with several of the substantive points that these critics make against Wilson's version of human sociobiology, I dissent from their assessment of Wilson's motives and commitments. I make the point explicit because some readers of my *Vaulting Ambition* (1985) have mistaken the sometimes scathing tone of that book for a questioning of Wilson's intellectual honesty or of his seriousness. As my title was intended to suggest, I view Wilson and other eminent scientists who have ventured into human sociobiology as

treating important questions in a ham-fisted way because they lack crucial intellectual tools and because they desert the standards of rigor and clarity that are found in their more narrowly scientific work. The tone of my (1985) work stems from the fact that the issues are so important and the treatment of them often so bungled.

2. For historical discussion, see Richards (1986). Richard Alexander (1987) offers an alternative version of sociobiological ethics, while Michael Ruse (1986) develops a position that is closer to that espoused in Wilson's later writings (particularly in Ruse and Wilson 1986).

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