

REPLY TO CRITICISMS

by *Martin Eger*

Abstract. Comments on my essay, "A Tale of Two Controversies," were made by Daniel R. DeNicola, Thomas F. Green, Mary Hesse, Holmes Rolston III, and Abner Shimony. This reply focuses first on three issues: that very recently moral philosophy has taken a turn toward a more traditional, particularistic approach, which could mitigate the problems I described; second, that because creationism is essentially antiscientific, my more philosophical concerns miss the mark; third, that the relativism of the "new philosophy of science" ought not be uncritically accepted. Finally, I compare Hesse's position with that of Shimony, indicating how the former implies a narrowing of distance between scientific *description* and moral *prescription*.

Keywords: creation/evolution; morals; philosophy of science.

I am of course gratified that so many outstanding scholars have engaged seriously with my essay. Their comments and criticisms clarify some important points, and in this brief response I would like to press further that clarification.

Thomas Green's belief (1988, 341) that an "impoverished conception" of moral education lies at the bottom of the controversies I describe is re-enforced by Daniel DeNicola, who reminds us that the formalist approach is not the latest word in moral philosophy. True, of the writers who have emphasized ethics of virtue, traditions, and contextualized life-stories, I mentioned only Alasdair MacIntyre. The reason is given by DeNicola himself: As yet, this work has had no influence on curricula. Nonetheless, I agree that my story is incomplete and that the situation would indeed be changed if this trend were translated into a new way of teaching. However, the formalist approach has had an impact on education not merely because of its prominence but because it *is* formalist. Three advantages immediately accrue at the pre-college level: It appears scientific, it offends no tradition by favoring none, and it is "teacher-proof." The last point means that the

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[*Zygon*, vol. 23, no. 3 (September 1988).]

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designers provide *systems* that need only be understood before they can be administered.

In contrast, the nonformalist philosophies DeNicola mentions offer little that can be packaged and handed over in a summer workshop. For example, Green's application of traditional thinking of this kind, which he calls "education of conscience" (Green 1985), stresses conscience of craft, membership, sacrifice, rootedness, and story-telling. It is impressive, far richer than the programs I discussed. Yet precisely because it is so rich, his "curriculum of moral competence" is *not* a curriculum in the sense that a teacher can "learn it and teach it." It is a broad framework, an orientation, that an entire school would have to adopt, that teachers would have to acquire from the inside, slowly, over time—and there lies the difficulty. If we change our moral philosophy and the corresponding pedagogy every twenty years, there is not enough time for even one generation of teachers to have been themselves educated in such a tradition. However, someone may show how it can be done nevertheless.

DeNicola also believes that my unfocused portrayal of creationism pays too much attention to its more acceptable guises but fails to highlight its true viewpoint "in opposition to science itself" (DeNicola 1988, 359). This requires clarification indeed, but first I must decline the credit for conceding that creationists "reject the whole enterprise and vision of science." I do not think this is, in general, true. Rather, perceptions of the situation have been distorted by an indiscriminate use of the term *creationists* for millions of very different sorts of people, of whom only a tiny fraction are the "creation scientists" or *creation activists* (as I prefer to call them) responsible for most of the news stories.

Within that larger population of creationists, active if at all only on the local level, I found—contrary to media impressions—that the prevailing attitude is surprisingly *respectful* of science, despite the fact that it is also suspicious of science. In this there is no contradiction. As American political conservatives are suspicious of government, but consider it a good thing when kept in bounds, so creationist parents suspect that when it comes to evolution something is being pressed on them in the name of science that actually *goes beyond science*. It is at this point that the question of the rationality of teaching enters. For many people, it becomes especially important to know what one *ought* to believe as a rational person, and what reason does *not* demand. These people do not wish their own views to be in conflict with science.

No doubt, as a maximum demand, most creation *activists* would like to see their beliefs studied in schools on equal footing. However, many *parents* would be content if, in their own district school, evolution were

taught in what they regard as a “less dogmatic” manner. This actually was the issue in the California controversy of the 1970s; and even Dorothy Nelkin, no friend of creationists, admits that some of the changes they proposed were in order (Nelkin 1982, 116). For another large group of parents and students, creationism is a starting point, a *preconception*;¹ evolution appears improbable, but there is room for discussion. Finally, there is also a small number of scientifically trained people among the creationists, who have tried to offer serious, technical critiques of theories of pre-biotic evolution (see Thaxton & Bradley 1984). Because creationism does come in many varieties, I would caution against the kind of language that needlessly places large populations “out of court”—including intelligent, educated men and women who are open to dialog. The sorts of people I describe, not members of the creation institutes, are the ones who actually interact with schools.

My own opinion is this: From the point of view of science, of philosophy, or of education, there is nothing *in principle* wrong with discussing creationist arguments alongside evolution. This is a minority position, but not just my own. Some philosophers and some evolutionists (see Shimony 1988, Alexander 1978) are essentially in agreement. Because such discussions ought to give each view the weight called for by the evidence, by history, and by its role in society today, creationism cannot receive equal weight. Moreover, if it is discussed at all, it must certainly be taken seriously *a priori*, not used merely as an example of “antiscience” (a good analogy is Ptolemaic theory)—because it is a part of the history of science, because it is a widely held preconception, and because without such seriousness the discussion would be spurious. If questions are raised about extrapolation, about degrees of certainty, about differences between theory and fact, such questions are perfectly natural in this context and might offer opportunities for teaching something about the nature of science, although this may be more than the students (and teachers) can handle. However, as Abner Shimony comments, perhaps the whole theory of evolution is “ill suited . . . for elementary instruction” (Shimony 1988, 338). Therefore I agree completely with DeNicola that more specific educational (and social) considerations ought to decide *whether*, in a particular school or course, such discussion of creationism should be undertaken.

Concerning the philosophy of science Shimony feels I am too tolerant of the relativism and of some other disturbing features in recent work. Since my purpose was not to analyze critically the various schools of philosophy, but only to describe the present situation in relation to teaching, Shimony’s criticism must first be reformulated. The relevant question is, I think, whether my portrayal overemphasized the radical components in post-positivist philosophy of science, and thereby un-

duly narrowed the difference between science and morals. Fortunately, in this regard I am spared the need to amplify at length. This issue of *Zygon* includes very incisive but quite different evaluations of the role of the new philosophy by two prominent scholars in the field: Mary Hesse and Abner Shimony.

Shimony, who has criticized Kuhnian views deeply, sees the new elements as a contribution or amendment to the much weightier realist tradition which I included in my catch-all category "older." Therefore, to the extent I did not discuss the continuing strength of that tradition, Shimony's comments make up the deficit. Hesse, on the other hand, as a contributor to the new, sees in it a major departure, resting on considerable historical and analytical support. In a sense, both these philosophers are talking about the same half-full glass: Shimony emphasizes that empirically *and* conceptually the scientific theories that succeed one another approximate one another *in most respects*. There is direction in the process, suggesting a convergence on *truth*. Hesse, however, wishes us to note well that in *some other important respects* the *concepts* of a new theory do *not* approximate or resemble the concepts they displace. The elaboration of this point, a major feature of the new philosophy, leads to the thesis of conceptual nonconvergence, and does encourage a certain degree of relativism. Some consequences of this were discussed by Hesse; but in regard to education and the science/ethics distinction, I would like to point out an additional implication.

Shimony believes that the gulf between science and ethics is still wide primarily because science attempts to describe an objective domain of entities which is "there to be found out" (Shimony 1988, 337). Hesse, however, distinguishes between a stable, growing core of successful, "localizable predictions" on the one hand, and on the other the larger "pictures of the world" which are models and which "show no convergence to a unique theoretical truth" (Hesse 1988, 330). On this view, the localizable particulars resemble entities in that objective domain Shimony posits, but the high-level theories are indeed relative to the present moment in history, the present state of knowledge, ever subject to drastic (not just minor) change. True, the theories are far from arbitrary: They are constrained by lower-level particulars; but, to use language Shimony reserves for ethics, it is by no means clear that such constraints uniquely determine an optimum high-level theory.

These two differing pictures suggest different possibilities in our cognitive relation to science. Holmes Rolston points out that the idea of *responsibility* is often used to distinguish the ethical from the scientific: "People are responsible for their values as they are not for their science" (Rolston 1988, 351). Note that this way of putting things refers

implicitly to an account such as Shimony's. If all science is a process of discovery of entities in an objective domain, then everyone is bound to accept the established results, and no one can be held responsible. We are not responsible for the temperature at which copper melts.

On the other hand, if Hesse's account is accepted, then the high-level theories are not part of that objective domain, which means there is a certain freedom in *the way we appropriate them* and the way we assimilate them in our self-understanding. We may choose to take these theories literally or we may take them metaphorically. We may regard them as good approximations or as purely methodological devices for giving form to the localizable particulars. We may place greater or smaller significance on the thought that the ultimate form may be radically different. Clearly such freedom implies responsibility; so in this sense we *are* responsible for "our" science.

The appropriation of the intellectual products of science still differs from moral choice in one respect: Few individuals are in a position to exercise this freedom in the domain of scientific theories. The manner of appropriation is generally guided by societies, groups, institutions, and especially educational institutions—which brings us back again to the rationality of teaching and the role of authority. Even in science, teaching is rarely a pure transmission of content, free of all directives about sense or significance. In the quotation from the encyclopedia, for example, given by Rolston (1988, 352), it is made clear enough that Darwinism is to be understood as *contradicting* "scriptural legends." Evolution and the "legends," the reader must assume, refer to the same realm and should be taken literally.

A difference between science and ethics remains not only in Shimony's account but also in Hesse's, as it does in mine. However, I take it that in the newer accounts, such as Hesse's, this difference is reduced. *Some* high-level theories of natural science—in biology, brain research, cosmology—impinge more strongly on human self-understanding than others such as electromagnetism. At the same time, like all high-level pictures, these humanly more relevant theories are subject to choice regarding their role in the cognitive ecology.² We have the freedom, for example, to determine whether preconceptions are totally replaced by newly learned theories or whether they are moved, reconfigured, and assume new relations to the rest of that ecology. Therefore, in teaching *these* aspects of science to the next generation, we are in a position partially resembling the teaching of morals: We are *responsible*, that is, for the direct and indirect philosophical messages, transmitted along with the theories, that indicate to the learner *how* the content is to be understood.

Summing up, then, in regard to the question of the "gulf" between natural science and moral thinking, it is a question of degree and of

emphasis; few of us deny there is a difference. However, because of trends in the philosophy, history, and sociology of science, more scholars now claim that this difference has been exaggerated, that the resemblances deserve greater attention. Thus as Hilary Putnam says, "we tend to be too realistic about physics and too subjectivistic about ethics, and these are connected tendencies" (Putnam 1981, 143).

NOTES

1. Recent research has revealed that students do not come to science without any notion at all of how bodies move, what heat is, and so on. Instead they have *preconceptions* based on intuition or other sources, which are at variance with present-day science yet persist even after the relevant science course has been taken. See Helms and Novak (1983) for many papers on this subject. An interesting point is that a number of studies have identified some of these preconceptions as *Aristotelian*, that is, resembling the science of Aristotle.

2. Cognitive or conceptual ecology is a term adapted to education by Kenneth Strike (1982, 54-61).

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