

Intelligent Design: How Much Faith Should We Have in Science?

J. Britt Holbrook
Department of Philosophy and Religion Studies
University of North Texas
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Thank you for having me here tonight to discuss with you a subject that I believe has important ramifications for science, for society, and for the relationship between the two. The controversy sparked by efforts to undermine the teaching of evolution in the public schools in the United States, efforts that in their current form appeal to the notion of Intelligent Design (ID) as a scientific theory on a par with the theory of evolution, affords us an opportunity to examine aspects of science and the relationship between science and society that might otherwise go unexamined – except perhaps by that rather strange species of philosophers known as philosophers of science. Scientists care about the theory of evolution, scientists perceive attacks on the theory of evolution as attacks on science itself, and scientists are thus perhaps a bit more willing than they otherwise might be to listen to what philosophers have to say on the subject – or even, as Professor Braterman demonstrated in his lecture last Thursday, to engage in a bit of philosophical reflection of their own. This is not at all to suggest that philosophers know more about science than scientists do – this is in fact a notion of which I hope to disabuse you all, in particular those of you in the audience who are philosophers. In general, however, I think it is fair to say that philosophers are more interested in science than scientists are in philosophy – but that this state of affairs ought to change is a notion of which I hope to convince you all, in particular those of you in the audience who are scientists.

My own interest in the controversy sparked by efforts to undermine the teaching of evolutionary theory in the public schools has more to do with my

desire to open up new possibilities of enquiry for the Humanities in general, and for Philosophy in particular, than with any desire to defend the theory of evolution, or science itself, against attack. To be clear and to let everyone know from the beginning where I stand – I am not an advocate for the theory of evolution. Nor am I, however, an antagonist of the theory of evolution, and I am certainly not an adversary of Professor Brateman. I will not be arguing *against* Professor Brateman; I will not be arguing *against* Darwin; I will not be arguing *against* the theory of evolution; and I will *not* be arguing *for* Intelligent Design. Instead, I hope to use the opportunity provided by the ID controversy to help us understand some things about science, about society, and about the relationship between the two; and in doing so I hope to show that philosophy can benefit both science and society, if only by offering new ways of seeing some of the important issues that arise in the area of science policy.

Philosophers have not exactly remained silent about the controversy over evolutionary theory, but it is far from clear that what philosophers have said heretofore has been of any real benefit, either. Philosopher of science Michael Ruse appeared in 1981 as an expert witness for the plaintiffs in their case against Arkansas Act 590, which required teachers to give “balanced treatment” to creation-science and evolution (see Ruse, 1982). In his testimony, Professor Ruse provided five criteria by which to distinguish science from non-science, and the judge in the case actually used those criteria to help in his decision that creation-science was not, after all, science, but was instead religion. What those criteria are is unimportant for our purposes here tonight, for supplying a set of criteria drawing a line separating science from non-science is an old and abandoned project, and there is general agreement amongst philosophers of science that attempting to solve the venerable “Problem of Demarcation” – drawing a strict boundary between science and non-science – is a dead-end. In fact, the philosopher of

science Larry Laudan published a scathing critique of the judge's decision in which he argued that providing a set of criteria demarcating science from non-science was not only bad philosophy, but also it provided anti-evolutionists with a strategy for their next challenge to the theory of evolution: all they would have to do, suggested Laudan, is to modify creation-science in such a way that it would meet all the criteria laid out in the judge's decision (Laudan, 1982). Laudan's worry was that if we lay out a set of criteria for what counts as science and what does not, and if, in order to include everything we think is science we need to make those criteria pretty weak (i.e., pretty easy to meet), then it will be a simple matter for creation-scientists to modify their position to meet those criteria and thus to appear to be science.

In fact, one of the key claims of Intelligent Design theorists today is that ID *is* science. ID theorists spend a lot of time trying to distinguish ID from creation-science, but whether ID is just another version of creation-science or is actually science-science is irrelevant to the issue of whether ID should be taught in the public schools as a scientific theory on a par with the theory of evolution. Nevertheless, it seems that the legal issue boils down to whether ID is a religious view or a scientific theory – a fact that distracts both advocates of evolution and advocates of ID.

Advocates of evolution, like Eugenie Scott, executive director of the National Center for Science Education, and Alan Leshner, chief executive of the American Association for the Advancement of Science, will tell you that ID is anything *but* science. A recent story by MSNBC reporter Alex Johnson (<http://www.msnbc.msn.com/id/9444600/>) paraphrases their view of an Intelligent Designer as follows: “You can teach such concepts, Leshner and Scott say; indeed, you *should* — just do it in philosophy and religion and literature classes.

Don't do it in science classes, because, by definition, that's religion. It isn't science."

Meanwhile, advocates of ID insist on arguing that ID is a scientific theory. Some particularly sophisticated advocates of ID, like Stephen Meyer, director and Senior Fellow of the Center for Science and Culture at the Discovery Institute – and, by the way, a Ph.D. in the History and Philosophy of Science from Cambridge University – go so far as to argue that there are no good reasons for refusing to recognize the scientific character of ID, in part because the demarcation criteria used to discredit the claims of ID to be a scientific theory have themselves been discredited (for Meyer's argument against the use of demarcation criteria, see: <http://www.idthefuture.com/index.php?p=936&more=1&c=1&tb=1&pb=1#more936>). In fact, Meyer cites the disagreement between Laudan and Ruse over the Arkansas case, mentioned above, for support.

I stated earlier that whether ID is just another version of creation-science or is actually science-science is irrelevant to the issue of whether ID should be taught in the public schools as a scientific theory on a par with the theory of evolution, and you might be wondering on what basis I make such a claim. After all, the legal question turns on whether ID is a scientific theory or a religious view: presumably, if it can be established that ID is religious, it can be legally prohibited from being taught in the public schools. So, why not just bet the farm on the legal decision? In fact, it is precisely for this reason that the cleverest advocates of ID (e.g., the Discovery Institute, which funds ID research) have suggested that ID ought not yet be included in school curricula – they don't want to bet the farm on this issue. But if they are so convinced that ID is science and not religion, why not?

The answer is that *even if ID is a scientific theory, it is certainly not a scientific theory on a par with the theory of evolution.* That is, even if we were to

grant scientific status to the theory of Intelligent Design, that would not automatically raise ID to the level of the theory of evolution. Well, why not? If something is a scientific theory, then it is a scientific theory, right? Moreover, if we call something scientific, then we are calling it good, or at the very least objective. How could anyone possibly grant such status to a theory that is so obviously *not* objective?

If you find yourself asking these questions, then you, too, have become distracted from the issue at hand. The issue is *not* whether ID is a scientific theory. The issue is *whether ID should be taught as a viable alternative to evolutionary theory*. Presumably, unless ID really is a viable alternative to evolutionary theory, it should not be taught as such. So, the issue now becomes whether ID is a viable alternative to the theory of evolution. The best way to address the issue of whether ID rises to the level of evolutionary theory is not to argue about whether ID is a scientific theory at all, but rather to compare the theory of Intelligent Design with the theory of evolution to determine which theory is better.

The idea that we should compare evolutionary theory with ID theory to determine which theory is better may sound like music to the ears of the ID theorist. In fact, this is exactly the course of action proposed by Stephen Meyer, who, as I mentioned above, is an advocate of ID. Meyer notes that many proponents of evolutionary theory want to exclude ID as a scientific theory on the basis of methodological naturalism: “Methodological naturalism asserts that, as a matter of definition, for a hypothesis, theory, or explanation to qualify as ‘scientific,’ it must invoke only naturalistic or materialistic entities. On that definition, critics say, the intelligent design hypothesis does not qualify as a scientific theory” (Ibid.). Critics of ID claim that science allows only naturalistic or materialistic explanations, and insofar as ID appeals to a supernatural or immaterial explanation, it cannot count as science. Meyer uses several arguments

to undermine the appeal to methodological naturalism. First, insofar as methodological naturalism is a demarcation criterion, and insofar as philosophers have generally agreed to give up on the problem of demarcation, Meyer suggests that we ought not to pay it any mind. Second, the fact that *not all* scientists have *always* accepted methodological naturalism shows, according to Meyer, that the methodological norms of science change over time. Finally, Meyer argues that the status of methodological naturalism as a valid norm for science is part of what is at stake in the debate between evolutionist and IDers: “Darwinists say it should remain normative; design theorists dispute this. Thus, critics of intelligent design can’t settle the debate about whether the theory of intelligent design should be permitted as a scientific hypotheses by invoking the principle of methodological naturalism because the principle is itself a large part of what the controversy is about” (Ibid.). This last argument of Meyer’s is the most telling, for it charges advocates of evolution with the cardinal philosophical sin of *begging the question*. Of course, advocates of ID cannot claim that another norm, let’s call it methodological supernaturalism, should replace methodological naturalism without also begging the question. At this point, we appear to have arrived at an impasse – we seem to have two competing theories about the mechanism of natural selection, one of which assumes that only naturalistic explanations ought to count and the other of which assumes that supernaturalistic explanations ought to count. Moreover, we seem to be left with no non-question-begging way to resolve the dispute. Myer does offer one more argument against methodological naturalism, an argument I think worthy of quoting at length. Myer writes:

Treating methodological naturalism as a normative principle for all of science has an intellectually stifling effect on the practice of certain scientific disciplines, especially the historical sciences. In historical biology or origin-of-life research, for example, methodological naturalism artificially restricts inquiry and prevents scientists from

seeking some hypotheses that might provide the most likely, best, or causally adequate, explanations. To be a truth-seeking endeavor, the question that historical or evolutionary biology must address is not “Which materialistic scenario seems most adequate?” but rather “What actually caused life to arise on earth and to develop into new forms of life?” Clearly, one possible answer to this question is: “Life was designed by an intelligent agent that existed before the advent of humans.” If one accepts methodological naturalism as normative, however, scientists may never consider the design hypothesis as possibly true. Such an exclusionary logic diminishes the significance of any claim of theoretical superiority for any remaining hypothesis and raises the possibility that the best “scientific” explanation (as defined by methodological naturalism) may not be the best in fact. (Ibid.)

The problem with this last argument, of course, is that no one who accepts methodological naturalism as a valid scientific norm would agree with the claim that a possible scientific answer to the question of what caused the origins of life on Earth includes an appeal to a supernatural Intelligent Designer. In other words, Meyer’s last argument suffers from the fatal flaw of begging the question. Once again, we seem to have arrived at an impasse.

I promised at the beginning of my talk to show that philosophy can benefit both science and society; but so far, it seems, the contributions of the philosophers I’ve mentioned have served only to confuse matters. One of the main problems with the philosophy of science that dominated roughly the first half of the 20th century – logical empiricism – is that it sort of ignored the actual practice of science. In 1962 Thomas Kuhn published *The Structure of Scientific Revolutions*, and his historical approach to science helped undermine the rather idealized picture we had gained from the logical empiricists. However, Kuhn’s approach sort of ignored the relationship of science to society. Only recently have philosophers of science turned their attention toward the relationship of science to society, and of those who have done so, very few indeed have brought their philosophical

attention to bear on questions of science policy. Whether ID should be taught as a scientific theory on a par with the theory of evolution is just such a question of science policy, and the remainder of my talk will be devoted to a philosophical resolution of this issue.

In 1990 philosopher of science Helen Longino published *Science as Social Knowledge*, a book in which she provides an account of scientific enquiry that will help us resolve the difficulties with which we are presented by the conflict over ID. Recall that we seemed to have arrived at an impasse – how could we, without begging the question, judge between ID theory (with its norm of methodological supernaturalism) and evolutionary theory (with its norm of methodological naturalism)? One of the theses about scientific enquiry defended by Longino is that what counts as evidence for a particular hypothesis depends on one's other beliefs or background assumptions (Longino, 1990, p.p. 38-48). It is possible, on Longino's account of evidential reasoning, for two people to look at exactly the same state of affairs in the world and yet to take that state of affairs as evidence for conflicting hypotheses. {State of affairs = red spots on belly. Background assumption that red spots are a symptom of measles allows one to see the red spots as evidence of measles. Background assumption that red spots are a symptom of a gastric disorder allows the one to see red spots as evidence of a gastric disorder.} Now, let's apply this notion of evidential reasoning to the dispute between ID theorists and evolutionary theorists. Let's take exactly the same state of affairs in the world – the presence of a bacterial flagellum. Among the various background beliefs of an evolutionary theorist is that only materialistic or naturalistic causes count. So, our evolutionary theorist will interpret the presence of the bacterial flagellum as evidence for the hypothesis that the flagellum developed as a result of natural selection. In contrast, among the various background beliefs of our ID theorist is that supernaturalistic causes count (in addition, our ID theorist has a

background belief that certain things that are “irreducibly complex” could not have arisen due to purely naturalistic causes). Our ID theorist thus interprets the flagellum as evidence of an Intelligent Designer.

What Longino’s account of evidential reasoning provides is a way to describe how values enter into scientific reasoning. This may be of little comfort to scientists, since another common background assumption of most scientists is that values ought not to enter into scientific reasoning, and that insofar as scientific reasoning is contaminated with values, it counts as “bad” science. Their reasoning seems to be that values are subjective, whereas science is objective; and insofar as science is objective, it cannot involve subjective values. So, what Longino would need to do is to offer an account of objectivity that resolves this objection.

As luck would have it (or perhaps by design), the next step in Longino’s argument is to develop an account of objectivity that incorporates subjectivity rather than directly opposing subjectivity to objectivity. Longino argues that science is primarily practiced not by scientists as individuals, but rather by scientists as members of social groups (Ibid., chapter 4). It is the social character of scientific enquiry that allows us to treat the results of scientific enquiry as objective knowledge. How can this be? According to Longino’s view, scientific enquiry is not adequately characterized as the sum of the products of individual scientists’ investigations added up into one whole. Instead, what characterizes scientific enquiry is that an individual scientist’s products are subjected to a process of critical evaluation and modification by the rest of the scientific community. Before a scientist’s work becomes an accepted part of science, it has to undergo this process of critical scrutiny and emendation by the larger scientific community. During the course of this process, however, the individual’s subjective preferences get filtered out. We can see this in the case of the theory of evolution. As Professor Braterman noted, the theory of evolution that he called the

“standard view” cannot be simply identified with the thinking of Charles Darwin. I believe that I am not totally inaccurate to paraphrase him as suggesting that Darwin is a pretty easy target for anti-evolutionists. Since Darwin published *The Origin of Species*, the theory of evolution has been subjected to just the sort of critical emendation Longino describes. As such, what is now taken to be the “standard view” of evolution ought not to be identified with the thinking of the individual scientist Charles Darwin. Instead, the “standard view” of the theory of evolution is the standard view precisely insofar as it represents the view of the scientific community as a whole, a view that has transformed Darwin's subjective account of the origin of species into the scientific community's objective opinion known as the theory of evolution.

One consequence of Longino's account is that objectivity must be seen as a matter of degree. She writes: “A method of inquiry is objective to the degree that it permits *transformative* criticism” (Ibid., p. 76 – emphasis in original).

According to Longino, transformative criticism requires the satisfaction of four criteria: (1) there must be recognized avenues for the criticism of evidence, methods, assumptions, and reasoning; (2) there must exist shared standards for criticism; (3) the community as a whole must be responsive to criticism; and (4) authority must be shared equally amongst qualified practitioners (Ibid.).

Longino's account of science as social knowledge gives us a way to compare ID with evolutionary theory that does not rely on specific demarcation criteria, but that also avoids the impasse in which we seemed caught when we faced the question-begging characterization of the competing background assumptions regarding the validity of material v. immaterial causes. Of course, one might insist that insofar as ID theorists continue to assert the validity of immaterial causes, they do not share the standards of the rest of the scientific community, which tends to assert that only material causes count. However, this

insistence on the lack of shared standards overlooks the fact that ID claims to be a scientific theory. As such, ID theorists must adhere to at least some standards shared with the rest of the scientific community. Insofar as ID appeals to a standard *not* shared by the rest of the scientific community in order to criticize it, such criticisms will fall on deaf ears. So, if ID theorists really want to criticize evolutionary theory, they will have to do so on the basis of whatever standards they *do* share with the larger scientific community. Moreover, insofar as ID theory is supposed to be scientific, ID theorists ought to be able to participate in the recognized avenues for criticism, i.e., journals, conferences, etc. If ID theorists participate in these ways (i.e., by appeal to shared standards and within recognized avenues) in the critical discussion of the scientific community, and if the scientific community still fails to respond to the criticisms, then proponents of ID will have a genuine beef.

Longino's major weakness is that she tends to view her own account of science as a species of epistemology – the theory of knowledge. As a result, it is unclear what ramifications she thinks her view might have for the actual guidance of the formation of science policy. I have a few general suggestions:

- (1) Scientists – as well as the rest of society – should resist the urge to think that everything scientific is objective as opposed to everything else, which is supposedly subjective. Appealing to “the world” – what Professor Braterman characterized as “the facts” as oppose to “words” – makes science empirical, but not objective. What makes science objective is its critical social character (Ibid., p.75);
- (2) The members of the scientific community ought to discuss not only scientific evidence, hypotheses, theories, etc., but also their background beliefs and, when they become aware of them, their assumptions;

- (3) The scientific community ought to recognize that membership in the scientific community should be extended to include some individuals or groups not traditionally included. Members of traditionally under-represented groups should be encouraged to become scientists – their different background beliefs and assumptions could be expected to contribute new ways of seeing things. Moreover, presumably some of us traditional non-scientists share enough standards with the scientific community to participate, at least in some limited way, in the overall discussion. Some of us tend to be rather skilled in identifying and discussing background beliefs;
- (4) Scientists ought to realize that scientific autonomy is guaranteed by the fact that the shared standards of the scientific community are determined by the scientific community, but that this is different from the idea that science ought to be totally independent of the concerns of the larger society;
- (5) The larger society ought to rely less than we do on science to solve all our problems; we ought to feel like we can call on science when we need it, but we also ought to recognize when we need science and when we need to think things through on our own without simply calling for further scientific study.

Finally, let me add that with regard to the specific issue we are discussing, namely whether ID ought to be taught in as a scientific theory on a par with the theory of evolution, the answer is: No. Within the scientific community, ID does not enjoy the level of critical acceptance accorded the theory of evolution. This is not to suggest that evolution must be true in any absolute sense: Professor Braterman's fallibilism is highly compatible with Longino's notion that the scientific community must be responsive to criticism. However, Longino's account allows

us to believe that the theory of evolution is objective, and not merely the result of a particular prejudice in favor of material causality. To the extent that science is objective, we ought to place our faith in it.

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