
Replacing Methodological Naturalism

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REPLACING METHODOLOGICAL NATURALISM

Richard Dawkins, during a recent interview about his new book, *The God Delusion*, proclaimed “[T]he big war is not between evolution and creationism, but between naturalism and supernaturalism.”¹ I agree with Dawkins to the extent that naturalism, whether we are talking about metaphysical naturalism or methodological naturalism, is one of the primary barriers to fruitful dialogue between science and religion and to the interdisciplinary synthesis of knowledge in general. This is because naturalism seems to prevent scientific discussion of many important topics, including: human freedom, morality, purpose in nature, and God.

Although this problem is not new, Alvin Plantinga discussed it in some detail ten years ago in an article titled *Methodological Naturalism?*, it has not been resolved and it has not gone away.² The recent battles over supernatural causation and the definition of science, as seen in the case of the Kansas Board of Education and in the District Court case in Pennsylvania, *Kitzmiller v. Dover*, are evidence of this.³ In addition, as if to add fuel to the fire, some scientists are now openly calling for attacks on religion and the supernatural. For example, at a recent conference on science and religion called *Beyond Belief: Science, Religion, Reason and Survival*, which was held at the Salk Institute in California, Steven Weinberg, a Nobel laureate in physics, said “Anything that we scientists can do to weaken the hold of religion should be done and may in the end be our greatest contribution to civilization.”⁴ In *The God Delusion*, Dawkins is clear that anything supernatural is the object of his attack: “I am attacking God, all gods, anything and everything supernatural, wherever and whenever they have been or will be invented.”⁵

The time is ripe, then, to revisit the issue of naturalism. In this paper I focus on methodological naturalism with the goal of demonstrating why the scientific community should abandon it and replace it with a new methodological principle. I accomplish this by performing four tasks. First, I analyze different formulations and justifications of methodological naturalism that have been put forth by scientists and philosophers of science. Second, I show how all of these formulations and justifications have serious problems and therefore the principle of methodological naturalism should be abandoned. Third, I argue that a new methodological principle needs to take its place. I propose and defend such a principle, which I call the principle of methodological neutralism, with two goals in mind. The first goal is that it will be acceptable to the scientific, religious, and philosophical communities. The second goal is that it will allow for greater dialogue (or at least the possibility of greater dialogue) between science and religion and for greater interdisciplinary synthesis in general. Fourth, and finally, I reply to some objections that might be raised against my view.

Before we can move to our first task, we must clarify briefly what naturalism is. Naturalism is a metaphysical view that denies the existence of supernatural entities. Usually this view amounts to a kind of materialism and therefore it denies the existence of non-material beings such as God. Some scientists hold that naturalism is a necessary condition of science. For example, Arthur Strahler, a geologist, said: “The naturalistic view is that the particular universe we observe came into existence and has operated through all time and in all its parts without the impetus or guidance of any supernatural agency. The naturalistic view is espoused by science as its fundamental assumption.”⁶

Is Strahler correct? Should naturalism be a necessary condition of science? Philip Johnson, who is part of

the Intelligent Design movement, has argued that the answer is “no” for several reasons.⁷ First, naturalism is not a scientific view based on empirical evidence. Second, naturalism is an unproven philosophical view that persons accept or reject as a matter of choice. As Johnson puts it, naturalism is “a dogmatic statement about the nature of the universe.”⁸ But dogma does not belong in science.

However, not everyone holds that naturalism is a necessary condition of science. For example, Robert T. Pennock, a philosopher of science, agrees that “If science assumed [metaphysical naturalism] ... then Johnson’s charge of scientific dogmatism might have some merit.”⁹ Instead, Pennock agrees with Michael Ruse, another philosopher of science, that science only assumes methodological naturalism.¹⁰ Methodological naturalism is an epistemological principle that governs how science is practiced. It prohibits the use of supernatural explanations in science. However, unlike metaphysical naturalism, it does not make any claims about the existence or non-existence of supernatural entities. As Ruse explains: “[I]n no sense is the methodological naturalist ... committed to the denial of God’s existence. It is simply that the methodological naturalist insists that, in as much as one is doing science, one avoid all theological or other religious references.”¹¹

But should methodological naturalism be a necessary condition of science? Against Ruse, Plantinga has argued that the answer is “no.”¹² Who is correct? To answer this question we must first answer a more basic question: What is the proper understanding of science? Unfortunately, there is no universally accepted definition of science. In fact, some philosophers of science have argued that all known attempts to distinguish science from non-science have failed.¹³ This makes our task more difficult and we cannot get around this difficulty by merely stipulating that science should be defined to include (or to exclude) methodological naturalism. Such a stipulation would beg the question at hand. Therefore, if we wish to justify the use of methodological naturalism in science, a different type of argument must be given. For example, Niall Shanks, a philosopher of science, argues that methodological naturalism is “an inductive generalization derived from 300 to 400 years of scientific experience.”¹⁴ Inductive arguments, however, do not demonstrate their conclusions with certainty; therefore this is not enough to justify its use as a necessary condition of science.

Although I will spend some time discussing realist and antirealist conceptions of science, I do not have enough space here to defend in detail what I think properly constitutes science. Instead, the bulk of my efforts will be aimed at demonstrating why methodological naturalism should be abandoned by the scientific community. To accomplish this requires that we examine methodological naturalism more closely. Let us turn to that task now.

I. Varieties of Methodological Naturalism

Unfortunately, one problem that complicates our task is that there is some division within both the scientific and philosophical communities on the topic of methodological naturalism. There are differences both in the terminology used and in the definitions put forth. There are also differences with respect to the role the principle plays in science and in the arguments that have been used to justify its use in science.

For example, with respect to terminology, Eugenie Scott, an anthropologist who works for the National Center for Science Education, calls the principle ‘methodological materialism.’¹⁵ In contrast, Nancy Murphy, a professor of Christian Philosophy, calls the principle ‘methodological atheism.’¹⁶ However, both of these terminological choices have disadvantages. In the case of Scott, the word ‘materialism’ might be misinterpreted by some as excluding electro-magnetic fields, space-time, and other things scientists discuss. In the case of Murphy, scientists would need to have a clear understanding of God in order to understand what ‘atheism’ meant. Unfortunately, there are many different philosophical and theological conceptions of God. Which one would scientists pick and why? To avoid all of these problems, I use the phrase ‘methodological naturalism’ exclusively throughout the paper.

Despite these terminological differences, Scott and Murphy agree on the general meaning of the principle. Scott explains it this way: “[S]cience acts as if the supernatural did not exist.”¹⁷ Murphy understands it to

mean that “scientific explanations are to be in terms of natural (not supernatural) entities and processes.”¹⁸ They also agree that the use of the principle in science is legitimate despite being members of different disciplines (science and philosophy) and different religious persuasions (Scott is an atheist and Murphy is a Christian). To determine if they are correct we need to examine the role that the principle plays in science.

When we examine Scott’s view of methodological naturalism more closely we see that the prohibition against the supernatural is both *a priori* and necessary. It is *a priori* because she defines science this way: “By definition, science cannot consider supernatural explanations.”¹⁹ And it is necessary because any discipline that rejects the principle is not scientific as the following passage makes clear: “Defining science as an attempt to explain the natural world using natural processes and mechanisms allows us to say to creationists like Henry Morris that ‘God did it’ is not science.”²⁰ I will demonstrate later on that her understanding of the principle is incompatible with a realist conception of science.

Not all scientists, however, agree with Scott. For example, Massimo Pigliucci, a professor of ecology and evolution who is not sympathetic to intelligent design, holds that methodological naturalism is provisional and *a posteriori*. It is *a posteriori* because it is arrived at due to lack evidence: “Since there is no evidence of any [G]od or supernatural design in the universe, the *scientifically-informed* conclusion has to be that there is none.”²¹ It is provisional because he claims “falsification of the naturalist paradigm is indeed possible.”²² In other words, if the naturalist paradigm were ever falsified science as a discipline would continue but without the principle of methodological naturalism. I will argue later on that we do not have to wait until the naturalist paradigm is falsified in order for scientists to abandon methodological naturalism. I will also argue that the correct scientific stance on the supernatural should be neutrality, not denial of existence—even if it is a provisional denial—as Pigliucci claims.²³

There have also been related disagreements within the scientific community about God and the supernatural. For example, some scientists such as the late Stephen Jay Gould, a paleontologist and evolutionary biologist, have argued that science and religion are completely separate. “Non-overlapping magisteria” (NOMA) was the phrase he used.²⁴ His point was that scientists, speaking as scientists, cannot comment on God and supernatural. In opposition to Gould, Dawkins, an evolutionary biologist and an ardent atheist, has declared that “[T]he existence of God is a scientific hypothesis like any other.”²⁵

Clearly, the scientific community is not speaking with one voice to the public and this is not helpful to the ongoing cultural and legal battles concerning science and religion. Indeed, in *Kitzmiller v. Dover*, Judge John E. Jones III ruled that Intelligent Design was “a religious view ... and not a scientific theory” because, among other reasons, Intelligent Design failed “to meet the essential ground rules that limit science to testable, natural explanations.”²⁶ The requirement that science only use natural explanations is precisely the injunction of methodological naturalism. What we must determine is if the use of methodological naturalism in science is justified. Let us turn, then, to the task of evaluating the arguments that have been put forth for prohibiting the supernatural in science.

II. Prohibitions of the Supernatural

As I mentioned earlier, Scott calls the principle ‘methodological materialism.’ This suggests that we should understand the natural as matter and the supernatural as non-matter. However, in order to prohibit the supernatural, which is understood as the non-material in this case, we would need to have a clear conception of what matter is so we could negate it. The problem is that recent discoveries in science, for example quantum theory and dark matter, have made matter as a general concept more of a mystery than a well-formed concept. For example, dark matter is invisible and at least some of it is non-baryonic and thus of a composition unknown to us.²⁷ When dark matter is combined with dark energy, which is also of a composition unknown to us, we realize that we do not understand about ninety percent of the universe.²⁸ The lesson here is that scientists cannot know what they are going to discover about reality prior to investigation. I call this the principle of discovery and methodological naturalism violates this principle because it does not allow for the possibility of discovering the supernatural.

The principle of discovery is related to what I call the principle of evidence, which states that scientists in their search for truth should follow the evidence wherever it leads. Methodological naturalism violates this principle because no matter what evidence we might gather we are never allowed to follow it to a supernatural cause. Recently, Antony Flew, a philosopher famous for his atheism, stated that he now believes in some kind of God based on scientific evidence about the origin of life and the complexity of nature. Had Flew strictly followed the principle of methodological naturalism he could never have reached this conclusion. However, Flew stated that his “whole life has been guided by the principle of Plato’s Socrates: Follow the evidence, wherever it leads.”²⁹

The principle of discovery and the principle of evidence are both part of the view that science is a type of realism. Realism, roughly speaking, is the view that science aims at discovering objective truths about reality, where reality is understood as that which exists independently of our minds. Realists recognize that achieving this aim is difficult. Humans have limitations and often make mistakes. Theories are always underdetermined by data and thus are never proven true in an absolute way; instead, they are always tentative and thus subject to future revision. Even so, real progress has been achieved. For example, the transition from Newtonian physics to Einstein’s relativity has brought us closer to the truth.

Realism in one form or another has been the dominant view of science for most of history and it is currently the dominant view among philosophers of science.³⁰ What is essential to realism is that our theories must conform to reality in order to be true. If we gather evidence that conflicts with a theory we must modify or abandon that theory. This is the principle of self-correction. But methodological naturalism potentially jeopardizes this principle as Del Ratzsch, a philosopher of science, explains: “[I]f part of reality lies beyond the natural realm, then science cannot get at the truth without abandoning the naturalism it presently follows as a methodological rule of thumb.”³¹

Methodological naturalism is opposed to realism because it violates the principles of discovery, evidence, and self-correction. Scientists opposed to realism are called antirealists. Methodological naturalism is closest to the idealist kind of antirealism. This is because in idealism reality must conform to ideas instead of ideas conforming to reality. Methodological naturalism is guilty of idealism because the interpretation of evidence and the construction of theories must conform to a naturalistic framework since supernatural explanations are prohibited.

Unless scientists are willing to abandon realism, they have only two options: (1) abandon methodological naturalism, or (2) argue that there is no conflict between methodological naturalism and the principles of discovery, evidence, and self-correction because there is something else about the supernatural that justifies its exclusion from science. I will argue for the first option later, but let us examine the arguments of those who have chosen the second option.

A. The Supernatural is Not Empirical

One argument for excluding the supernatural from science is the claim that the supernatural is not empirical. According to Strahler, “supernatural forces, if they can be said to exist, cannot be observed, measured, or recorded by the procedures of science—that’s simply what the word ‘supernatural’ means.”³² The problem with this argument is that Strahler simply assumes that the existence of supernatural causes cannot be arrived at indirectly through empirical means. But why assume that? As Ratzsch explains:

Within the scientific context, all that is required for something to be a legitimately empirical matter is for it to have appropriately definable, theoretically traceable empirical consequences or effects or connections. Those connections can be exceedingly indirect, and they typically are not direct consequences just of the theoretical matters in question, but only of those matters in conjunction with a variety of other principles (sometimes referred to as “auxiliary” or “bridge” principles). It is by that means that even such exotica as quarks and the deep past get included within the empirical realm. But although a supernatural being could obviously have untraceable effects on nature, surely it cannot be claimed that a supernatural being simply *could not* have traceable effects upon empirical matters.³³

B. The Supernatural is not Testable

Another reason for excluding the supernatural from science is the argument that claims concerning supernatural causes are not testable. One understanding of testability is controllability. Scott makes this point by saying, “you can’t put God in a test tube.”³⁴ But, as Ratzsch remarks, by this logic we should also exclude things like supernovas and the Big Bang from science, since we cannot produce and control them in a lab.³⁵

A second understanding of testability is falsifiability, a point made famous by Karl Popper.³⁶ According to Popper, a theory, hypothesis or assertion was scientific only if empirical data could show it to be false. Using this, one could argue that the existence of God is not a scientific question since no empirical data could show it to be false.

However, there are several problems with using falsifiability to exclude the supernatural from science. First, falsifiability, if strictly adhered to, has the unwelcome result that almost every existential claim becomes unscientific. Roger Penrose, a physicist, gives the example of Dirac’s monopole theory to show that falsifiability, is too stringent a criterion:

[Dirac’s argument was that] the mere existence of a single magnetic monopole somewhere in the cosmos could provide an explanation for the fact that each particle in the universe has an electric charge that is an integral multiple of some fixed value (as is indeed observed). The theory which asserts that such a monopole exists *somewhere* is distinctly un-Popperian. That theory could be established by the discovery of such a particle, but it appears not to be refutable, as Popper’s criterion would require; for, if the theory is wrong, no matter how long experimenters search in vain, their inability to find a monopole would not disprove the theory! Yet the theory is certainly a scientific one, well worthy of serious consideration.³⁷

Second, William A. Dembski, a philosopher and part of the Intelligent Design movement, has argued that, strictly speaking, no scientific theory is empirically falsifiable in a definitive way because one can always add auxiliary hypotheses to harmonize the discordant data with the theory.³⁸ Penrose gives an example that illustrates Dembski’s point.³⁹ The example is supersymmetry in modern physics. Supersymmetry predicts the existence of superpartners for all observed fundamental particles of nature but so far none have been found. The reason given for not finding them is that very large amounts of energy are needed to create them and the current technology in our particle accelerators cannot generate enough energy. But suppose we built more powerful accelerators and we still did not detect superpartners. According to Penrose, “It could (and probably would) be argued that there had simply been too much optimism about the smallness of the degree of the symmetry breaking, and even higher energies would be needed to find the missing superpartners.”⁴⁰ And that is Dembski’s point: auxiliary hypotheses can always be added to harmonize the discordant data.

As a result of the above, Dembski argues that the main point of Popper’s criterion is not about demonstrating falsehood. Instead, it is about eliminating theories because of new evidence. Dembski uses the word ‘refutable’ to denote this difference in meaning. He argues that if refutability, instead of falsifiability, is a necessary condition of science then Intelligent Design should not be considered unscientific because it is refutable:

If it could be shown that biological systems that are wonderfully complex, elegant and integrated—such as the bacterial flagellum—could have been formed by a gradual Darwinian process . . . then intelligent design would be refuted on the general grounds that one does not invoke intelligent causes when undirected natural causes will do. In that case Ockham’s razor would finish off intelligent design quite nicely.⁴¹

Barbara Forrest, a philosopher of science and a critic of Intelligent Design, seems to have acknowledged Dembski’s point about refutability when she said “[S]hould life be genuinely created in the laboratory from the non-organic elements which presently comprise living organisms, this discovery would add tremendous

weight to philosophical naturalism.”⁴² In other words, the creation of life in a lab would make the appeal to supernatural causation to explain life superfluous.

However, while intelligent design could be refuted in this way, Dembski claims that Darwinian evolution is irrefutable.⁴³ This is because even if all of the currently known Darwinian mechanisms fail to account for the complexity of life Darwinists will merely respond that there must be some undiscovered mechanism that will eventually explain it. But why assume that? For some, it is because they assume methodological naturalism. If only natural causes are allowed in scientific explanations then we are forced to explain the complexity of life through them. Methodological naturalism forces evolution to be interpreted naturalistically. But this leads to a third problem.

If scientists assume methodological naturalism as a necessary condition of science then the naturalistic interpretation of evolution is neither falsifiable nor refutable and therefore should be rejected as unscientific. Scientists can only avoid this objection by either rejecting refutability as a necessary condition of science, which is very unlikely, or by holding that methodological naturalism is only a provisional principle and thus subject to abandonment. As we have already seen, some scientists, such as Pigliucci, have taken the second option.

Fourth, and finally, in a way somewhat similar to Dembski’s refutability, Ratzsch mentions another way that the supernatural can be empirically eliminated. He notes that in the history of science non-empirical philosophical prescriptions such as the requirement that proper scientific explanations must be deterministic have been abandoned because of empirical data. The outcome of various experiments lead to quantum mechanics, which made the scientific community abandon the non-empirical requirement of determinism. Thus it is possible that the same can happen with the supernatural:

[G]iven the nature of science and its operations, and the interconnectedness of the empirical and the nonempirical with the scientific context, the nearly inescapable conclusion is that the empirical can not only come to some sort of grips with some nonempirical matters, but can trigger changes in scientifically incorporated nonempirical positions, and can do so in circumstances and by means which make it proper to say that the nonempirical positions in question were empirically at risk. And being empirically at risk is all that is required for something to be both falsifiable and testable.⁴⁴

C. The Supernatural Violates Natural Laws

Another reason for excluding the supernatural from science is the argument that the supernatural violates natural laws. Pennock raises this objection:

Lawful regularity is at the very heart of the naturalistic world view and to say that some power is supernatural is, by definition, to say that it can violate natural laws. ... Controlled, repeatable experimentation ... would not be possible without the methodological assumption that supernatural entities do not intervene to negate lawful natural regularities.⁴⁵

There are, however, several problems with this view. First, if we were to hold that the laws of nature were purely deterministic (something along the lines of what Pierre-Simon Laplace had in mind) then we would exclude from science many things considered scientific such as quantum mechanics and the social sciences. Indeed, some have argued that the discovery of quantum theory, which shattered the Laplacian view, allows for the compatibility of physical science and divine intervention.⁴⁶

Second, let us suppose, for sake of argument, that quantum theory is false and thus the laws of nature are purely deterministic. Even in this extreme scenario, William P. Alston, a philosopher, has argued that divine intervention would be compatible with physical science—except if we were to make the unwarranted assumption that the universe is a closed system of laws:

If we suppose that divine intervention in a physical process would involve a violation of physical law, it is

because we are thinking of physical laws (of a deterministic form) as specifying *unqualifiedly* sufficient conditions for an outcome. ... [For example:] A man standing upright in the middle of a deep lake without sinking would be a violation of [the law of hydrostatics] ... But we are never justified in accepting laws like this. The most we are ever justified in accepting is a law that specifies what will be the outcome of certain conditions *in the absence of any relevant factors other than those specified in the law*. The laws we have reason to accept lay down sufficient conditions only within a “closed system,” that is, a system closed to influences other than those specified in the law. None of our laws take account of all possible influences. ... Since the laws we have reason to accept make provision for interference by outside forces unanticipated by the law, it can hardly be claimed that such a law will be violated if a divine outside force intervenes; and hence it can hardly be claimed that such laws imply that God does not intervene, much less imply that this is impossible.⁴⁷

Dembski seems to echo Alston’s point commenting that: “[I]ntelligent design does not require miracles in the sense of violations of natural law. Just as humans do not perform miracles every time they act as intelligent agents, so too there is no reason to assume that for a designer to act as an intelligent agent requires a violation of natural laws.”⁴⁸ Thus intelligent design is compatible with natural laws.

However, Dembski makes an additional claim that I think is mistaken. He claims that “Design has no prior commitment against naturalism or for supernaturalism.”⁴⁹ However, if the activity of design presupposes freedom then it cannot be performed by entities that exist exclusively within a realm of deterministic law. Even the randomness of quantum theory does not seem to be enough for genuine freedom. Free agents would have to be forces existing (at least partially) outside of the natural laws if they are to produce things that natural causes alone could not (such as a Boeing 747 jet aircraft). This explains why many materialists deny human freedom. They view humans as located exclusively in the same realm as carbon and electricity. It also explains why religious believers have had much less of a problem with human freedom. For the religious it is the spiritual soul that is the source of our freedom and dignity.

Even though Dembski makes this mistake, it is not fatal. It would only preclude Intelligent Design from being scientific if the various arguments used above to justify the prohibition of the supernatural in science worked. However, I have shown that all of those arguments have serious problems. Therefore the prohibition of the supernatural is not justified and the principle of methodological naturalism should be abandoned. Something, however, will have to replace it, which brings us to our next task.

III. Replacing Methodological Naturalism

Although my arguments above are not exhaustive, for example I did not consider pragmatic objections to the supernatural, I believe they provide strong reasons for the scientific community to abandon methodological naturalism.⁵⁰

This is especially the case for scientists who hold a realist conception of science. When methodological naturalism is understood as a necessary condition of science it is incompatible with realism and its principles of discovery, evidence, and self-correction. We do not know what we are going to discover in advance, but methodological naturalism does not allow for the possibility of discovering the supernatural. We do not know where the evidence we will gather will lead us, but no matter what that evidence is methodological naturalism will not allow us to follow it to a supernatural cause. Even the principle of self-correction is potentially jeopardized because if part of reality is supernatural methodological naturalism does not allow us to correct for this and thus it could prevent us from knowing the truth. The only way methodological naturalism would not be in conflict with these three principles is if the supernatural does not exist. But we do not know if that is the case. Therefore the use of methodological naturalism as a necessary principle within a realist conception of science is unjustified.

Even if we understand methodological naturalism as a provisional principle, its use within a realist conception of science is unjustified for at least two reasons. The first reason can be expressed as a question: Why should we pretend that the supernatural does not exist when we are unsure? The more rational

approach is to be neutral, meaning we neither affirm nor deny the existence of the supernatural.

The second reason is as follows. If we could find a methodological principle that was more in harmony with the principles of discovery, evidence, and self-correction, then that principle would be preferable to the principle of methodological naturalism. I hold that there is such a principle and thus that it should replace methodological naturalism. I call it the principle of methodological neutralism.

The principle of methodological neutralism states that scientists should simply search for causes without setting any *a priori* conditions on what ontological status those causes must have. By not setting any *a priori* conditions with respect to ontological status the principle of discovery is not jeopardized in any possible way. By not setting any *a priori* conditions with respect to ontological status we can follow the evidence wherever it might take us. Finally, by not setting any *a priori* conditions with respect to ontological status we can make any corrections necessitated by new evidence. Since the principle of methodological neutralism is more in harmony with the three principles above it should be preferred over methodological naturalism within a realist conception of science.

I will explain how the principle of methodological neutralism works in greater detail later on, but I wish to note that there is still one way that scientists can keep the principle of methodological naturalism if they choose. They can do this if they reject realism and choose to limit themselves to the natural world alone and to natural explanations exclusively. This would not be a realist position because realists want to study the *actual world*, whatever it contains. However, choosing to limit themselves only to the natural world and only to natural explanations would have at least four implications.

The first implication is that science could say nothing about the supernatural since it has been excluded both from its object of study and from its use in explanations. Scott recognizes this: "If science is limited to explaining the natural world using natural causes, and thus cannot admit supernatural explanations, so also is science self-limited in another way: it is unable to reject the possibility of the supernatural."⁵¹ Thus if scientists choose this option, they must start policing renegade scientists, such as Richard Dawkins, who attack God and religion in the name of science.

The second implication is that science could not present some of its theories as facts. Take, for example, evolution. There are two aspects to evolution. First, there is the historical event of evolution. The fossil record gives very strong evidence that life forms started off as simple and became more complex over time. Second, there are the causes of evolution. Were random variation and natural selection the exclusive causes of evolution? This *causal account* could not be taught as a fact if scientists choose to limit themselves only to the natural world and only to natural explanations because this would imply that it is a fact that supernatural causes were not involved in evolution. As Ratzsch explains: "[S]tipulating that science consider only natural theories, while simultaneously teaching students that the results of any such scientific investigation are true (and the mere fact of teaching them tacitly implies that to most reasonable students), is to implicitly presuppose philosophical [metaphysical] naturalism."⁵²

The third implication is that if scientists choose to limit themselves only to the natural world and only to natural explanations they must disclose this philosophical bias to the public. This would be an ethical obligation since science is supposed to be a type of open and free inquiry. To his credit, Richard C. Lewontin, an evolutionary geneticist, has disclosed his bias:

We take the side of science *in spite* of the patent absurdity of some of its constructs, *in spite* of the failure to fulfill many of its extravagant promises of health and life, *in spite* of the tolerance of the scientific community for unsubstantiated just-so stories, because we have a prior commitment, a commitment to materialism. It is not that the methods and institutions of science somehow compel us to accept a material explanation of the phenomenal world, but, on the contrary, that we are forced by our *a priori* adherence to material causes to create an apparatus of investigation and a set of concepts that produce material explanations, no matter how counterintuitive, no matter how mystifying to the uninitiated. Moreover, that materialism is an absolute, for we cannot allow a Divine Foot in the door.⁵³

The fourth implication is that even the disclosure of this bias to the public, including students, would not solve the battle over how science is taught in public schools. That is because students would only be getting a biased—not a balanced—view of things. Fights would ensue over how to correct this situation because something would have to be done.

Ultimately, then, the scientific community is faced with a dilemma. Either it abandons methodological naturalism or it abandons realism. A choice must be made. My suggestion is that they abandon methodological naturalism and replace it with the principle of methodological neutralism.

This new principle also has some added bonuses. First, it should be acceptable to the scientific, religious, and philosophical communities. Second, it should also allow for greater dialogue between science and religion. Methodological naturalism made science appear, at best, dismissive of religion and, at worst, hostile to it. But methodological neutralism would not have this effect. Lifting the ban on the supernatural would probably encourage religious people to learn more about science and, perhaps, to pursue science as a career. There is also the possibility for greater interdisciplinary synthesis since members of diverse fields would be freer to engage in dialogue with science about various metaphysical possibilities.

IV. Objections

In closing, I would like to reply briefly to some objections that can be raised against my view and in doing so I hope to further clarify my position.

The first objection can be stated as a question: “Are you merely replacing one bias, a naturalistic bias, with a new bias in favor of supernaturalism?” The answer is “no” for several reasons. First, the principle of methodological neutralism is not a metaphysical principle and so it makes no claims about the existence or the non-existence of the supernatural. It is a provisional methodological principle and so it too is subject (at least in principle) to abandonment. Second, it prevents scientists prior to investigation from putting any *a priori* conditions on what ontological status the causes they are seeking must have. So it is not biased in favor of natural or supernatural explanations. It is, instead, neutral. However, once evidence is gathered scientists can lean in favor of a cause being natural or supernatural as the evidence indicates. However, even this is only tentative as new discoveries might cause scientists to change their view about a particular cause’s ontological status. Scientists must always be willing to consider opposing evidence that could affect ontological status.

The second objection can be stated as follows: “Are you taking the position that Intelligent Design is genuine science since your principle opens the scientific door to it?” Intelligent Design is still in its infancy. All I have done was to remove the unjustified supernatural prohibitions that prevented Intelligent Design from having a *chance* to become science. There is still no guarantee that it will become science. For example, perhaps no one will be able to come up with a reliable way of detecting supernatural design. I do not know and thus I am neutral on this issue. We will just have to wait and see.

The third objection can be stated as follows: “You did not consider pragmatic prohibitions of the supernatural. For example, allowing supernatural explanations might encourage scientific laziness and might make scientists give up the search for natural explanations too soon.” It is true that I only focused on theoretical prohibitions of the supernatural. One reason for this is that pragmatic prohibitions of the supernatural are weak in the sense that they are not inviolable. However, if any principle is guilty of promoting laziness, it is the principle of methodological naturalism. This is because it excludes many possibilities. Consider, for example, the comments of Sir John Maddox, a physicist: “An explanation of the mind, like that of the brain, must ultimately be an explanation in terms of the way that neurons function. *After all, there is nothing else on which to rest an explanation.*”⁵⁴ In contrast, the principle of methodological neutralism does not promote laziness or “giving up” for at least three reasons. First, it is open to more possibilities, which entails more investigatory work. Second, simply positing a supernatural cause is not allowed. Strong evidence is required for that and even then the conclusion is tentative. New

evidence might cause a change in view about a particular cause's ontological status. Third, competition among different teams of scientists will ensure that giving up will not happen easily.⁵⁵

NOTES

1 Gary Wolf, "The Church of the Non-Believers," *Wired* (November 2006): 182-193, p. 186.

2 Alvin Plantinga, "Methodological Naturalism?" *Facets of Faith & Science, Vol 1: Historiography and Modes of Interaction*, ed. Jitse M. van der Meer (New York: University Press of America, 1996), pp. 177-214; a shortened version was reprinted in *Intelligent Design Creationism and Its Critics: Philosophical, Theological, and Scientific Perspectives*, ed. Robert T. Pennock (Cambridge, Massachusetts: MIT Press, 2001), pp. 339-361. All references to this article are to the shortened version.

3 On November 8, 2005 the State Board of Education in Topeka Kansas voted 6-4 to adopt new Kansas Science Standards, which included the following definition of science: "Science is a systematic method of continuing investigation that uses observations, hypothesis testing, measurement, experimentation, logical argument and theory building to lead to more adequate explanations of natural phenomena." On February 13, 2007, a new Kansas Board replaced the 2005 Standards, inserting a more naturalistic view of science: "Science is a human activity of systematically seeking natural explanations for what we observe in the world around us." For a comparison of the 2005 and 2007 Science Standards see the Kansas State Department of Education website: <<http://www.ksde.org/Default.aspx?tabid=144>> and make sure to download this file: ScienceSTdComp011907.pdf. For the Pennsylvania district court case see *Kitzmiller v. Dover Area Sch. Dist.*, 400 F.Supp.2d 707 (M. Dist. Penn. 2005).

4 George Johnson, "A Free-for-All on Science and Religion," *The New York Times*, (Late Edition (East Coast)), 21 November, 2006, sec. 5, pp. F1, F6.

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6 Arthur N. Strahler, *Understanding Science: An Introduction to Concepts and Issues* (Buffalo, NY: Prometheus Books, 1992), p. 3.

7 Philip E. Johnson, "Evolution as Dogma: The Establishment of Naturalism" *First Things* 6(1990): 15-22, reprinted in *Intelligent Design Creationism and Its Critics*, pp. 59-76.

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9 Robert T. Pennock, "Naturalism, Evidence and Creationism: The Case of Phillip Johnson" *Biology and Philosophy* 11 (1996): 543-559, reprinted in *Intelligent Design Creationism and Its Critics*, p. 78. I use the phrase 'metaphysical naturalism' for what Pennock calls 'ontological naturalism.'

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