

There is an elephant in the roomful of scientists who are trying to explain the development of life. The elephant is labeled “intelligent design.” To a person who does not feel obliged to restrict his search to unintelligent causes, the straightforward conclusion is that many biochemical systems were designed. They were designed *not* by the laws of nature, not by chance and necessity. Rather, they were *planned*. The designer knew what the systems would look like when they were completed; the designer took steps to bring the systems about. Life on earth at its most fundamental level, in its most critical components, is the product of intelligent activity.

The conclusion of intelligent design flows naturally from the data itself—not from sacred books or sectarian beliefs. Inferring that biochemical systems were designed by an intelligent agent is a humdrum process that requires no new principles of logic or science. It comes simply from the hard work that biochemistry has done over the past forty years, combined with consideration of the way in which we reach conclusions of design every day.

What is “design”? Design is simply the *purposeful arrangement of parts*. The scientific question is how we detect design. This can be done in various ways, but design can most easily be inferred for mechanical objects.

Systems made entirely from natural components can also evince design. For example, suppose you are walking with a friend in the woods. All of a sudden your friend is pulled high in the air and left dangling by his foot from a vine attached to a tree branch.

After cutting him down you reconstruct the trap. You see that the vine was wrapped around the tree branch, and the end pulled tightly down to the ground. It was securely anchored to the ground by a forked branch. The branch was attached to another vine—hidden by leaves—so that, when the trigger-vine was disturbed, it would pull down the forked stick, releasing the spring-vine. The end of the vine formed a loop with a slip-knot to grab an appendage and snap it up into the air. Even though the trap was made completely of natural materials you would quickly conclude that it was the product of intelligent design.

Intelligent design is a good explanation for a number of biochemical systems, but I should insert a word of caution. Intelligent design theory has to be seen in context: it does not try to explain everything. We live in

a complex world where lots of different things can happen. When deciding how various rocks came to be shaped the way they are a geologist might consider a whole range of factors: rain, wind, the movement of glaciers, the activity of moss and lichens, volcanic action, nuclear explosions, asteroid impact, or the hand of a sculptor. The shape of one rock might have been determined primarily by one mechanism, the shape of another rock by another mechanism.

Similarly, evolutionary biologists have recognized that a number of factors might have affected the development of life: common descent, natural selection, migration, population size, founder effects (effects that may be due to the limited number of organisms that begin a new species), genetic drift (spread of “neutral,” nonselective mutations), gene flow (the incorporation of genes into a population from a separate population), linkage (occurrence of two genes on the same chromosome), and much more. The fact that some biochemical systems were designed by an intelligent agent does not mean that any of the other factors are not operative, common, or important.

## Conclusion

It is often said that science must avoid any conclusions which smack of the supernatural. But this seems to me to be both bad logic and bad science. Science is not a game in which arbitrary rules are used to decide what explanations are to be permitted. Rather, it is an effort to make true statements about physical reality. It was only about sixty years ago that the expansion of the universe was first observed. This fact immediately suggested a singular event—that at some time in the distant past the universe began expanding from an extremely small size.

To many people this inference was loaded with overtones of a supernatural event—the creation, the beginning of the universe. The prominent physicist A. S. Eddington probably spoke for many physicists in voicing his disgust with such a notion:

Philosophically, the notion of an abrupt beginning to the present order of Nature is repugnant to me, as I think it must be to most; and even those who would welcome a proof of the intervention of a Creator will probably consider that a single winding-up at some remote epoch is not really the kind of relation between God and his world that brings satisfaction to the mind.

of our cognitive faculties is improbable or unknown relative to that theory, whereas theism underwrites cognitive reliability. Fales argues, to the contrary, that neo-Darwinism provides strong reasons for expecting general cognitive reliability, whereas the likelihood of that relative to theism is unknowable.

In "Plantinga's Probability Arguments against Evolutionary Naturalism," philosophers Branden Fitelson and Elliott Sober focus on the probability arguments Plantinga gives for his conclusion. In a preliminary argument, Plantinga tries to show that the conjunction of evolution and naturalism is probably false, given that our psychological mechanisms for forming beliefs are generally reliable. In a second argument, he tries to show that the conjunction of evolution and naturalism is self-defeating. Fitelson and Sober show that both arguments contain serious errors.

## Methodological Naturalism?

Alvin Plantinga

Unmatched for sweep and eloquence, St. Augustine's *De Civitas Dei* is a magnificently powerful expression of a view of human history that has been taken up by a host of later Christians.<sup>1</sup> According to that view, human history involves a struggle, a contest, a battle between what he calls the *Civitas Dei*, the City of God, on the one hand, and, on the other, the City of the World or the City of Man. The former is devoted to the worship and service of the Lord; the latter serves quite a different master. Augustine believes that all of human history is to be understood in terms of this struggle, and nearly any cultural endeavor of any size or significance is involved in it. Now modern natural science is an enormously important aspect of contemporary intellectual life. There are of course those naysayers who see in it no more than technology, no more than a means of serving such practical ends as fighting disease and building bridges or space vehicles. But surely they are wrong. Science has indeed done these important things, but it has done more: it has also given us powerful insights into ourselves and into the world God has created. Science has transformed our intellectual landscape; it is difficult even to imagine what our intellectual life would be without it. If we follow Augustine, we should therefore expect that science, too, plays an important role in the contest he describes.

According to an idea widely popular ever since the Enlightenment, however, science (at least when properly pursued) is a cool, reasoned,

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wholly dispassionate<sup>2</sup> attempt to figure out the truth about ourselves and our world, entirely independent of ideology, or moral convictions, or religious or theological commitments. Of course this picture has lately developed some cracks. It is worth noting, however, that sixteen centuries ago Augustine provided the materials for seeing that this common conception cannot really be correct. It would be excessively naive to think that contemporary science is religiously and theologically neutral, standing serenely above that Augustinian struggle and wholly irrelevant to it. Perhaps *parts* of science are like that: the size and shape of the earth and its distance from the sun, the periodic table of elements, the proof of the Pythagorean Theorem—these are all in a sensible sense religiously neutral. But many other areas of science are very different; they are obviously and deeply involved in this clash between opposed worldviews. There is no neat recipe for telling which parts of science are neutral with respect to this contest and which are not, and of course what we have here is a continuum rather than a simple distinction. But here is a rough rule of thumb: the relevance of a bit of science to this contest depends upon how closely that bit is involved in the attempt to come to understand ourselves as human beings. Perhaps there is also another variable: how “theoretical” the bit in question is, in the sense of being directed at *understanding* as opposed to control.

It would be of great interest to explore this area further, to try to say precisely what I mean in saying that science is not religiously neutral, to see in exactly what ways Christianity bears on the understanding and practice of the many relevantly different sciences and parts of science. The first is not the focus of this paper, however; and the second question (of course) requires vastly more knowledge of science than I can muster. That is a question not just for philosophers, but for the Christian community of scientists and philosophers working together. What I shall do instead is vastly more programmatic. I shall argue that a Christian academic and scientific community ought to pursue science in its own way, *starting from* and taking for granted what we know as Christians. (This suggestion suffers from the considerable disadvantage of being at present both unpopular and heretical; I shall argue, however, that it also has the considerable advantage of being correct.) Now one objection to this suggestion is enshrined in the dictum that science done properly necessarily involves “methodological naturalism” or (as Basil Willey calls it)

“provisional atheism.”<sup>3</sup> This is the idea that science, properly so-called, cannot involve religious belief or commitment. My main aim in this paper is to explore, understand, discuss, and evaluate this claim and the arguments for it. I am painfully aware that what I have to say is tentative and incomplete, no more than a series of suggestions for research programs in Christian philosophy.

### Weak Arguments for Methodological Naturalism

The natural thing to think is that (in principle, at any rate) the Christian scholarly community should do science, or parts of science, in its own way and from its own perspective. What the Christian community really needs is a science that takes into account what we know as Christians. Indeed, this seems the rational thing in any event; surely the rational thing is to use *all* that you know in trying to understand a given phenomenon. But then in coming to a scientific understanding of hostility, or aggression, for example, should Christian psychologists not make use of the notion of sin? In trying to achieve scientific understanding of love in its many and protean manifestations, for example, or play, or music, or humor, or our sense of adventure, should we also not use what we know about human beings being created in the image of God, who is himself the very source of love, beauty, and the like? And the same for morality? Consider that enormous, and impressive, and disastrous Bolshevik experiment of the twentieth century, perhaps the outstanding feature of the twentieth century political landscape: in coming to a scientific understanding of it, should Christians not use all that they know about human beings, including what they know by faith?

True: there could be *practical* obstacles standing in the way of doing this; but in principle, and abstracting from these practical difficulties (which in any event may be more bark than bite), the right way for the Christian community to attain scientific understanding of, say, the way human beings are and behave, would be to start from what we know about human beings, including what we know by way of faith. Hence the sorts of hypotheses we investigate might very well involve such facts (as the Christian thinks) as that we human beings have been created by God in his image, and have fallen into sin. These “religious” ideas might take a place in our science by way of explicitly entering various hypotheses.

They might also play other roles: for example, they might be part of the background information with respect to which we evaluate the various scientific hypotheses and myths that come our way.

I say this is the natural thing to think: oddly enough, however, the *denial* of this claim is widely taken for granted; as a matter of fact, it has achieved the status of philosophical orthodoxy. Among those who object to this claim are Christian thinkers with impressive credentials. Thus Ernan McMullin:

But, of course, methodological naturalism does not restrict our study of nature; it just lays down which sort of study qualifies as *scientific*. If someone wants to pursue another approach to nature—and there are many others—the methodological naturalist has no reason to object. Scientists *have* to proceed in this way; the methodological of natural science gives no purchase on the claim that a particular event or type of event is to be explained by invoking God's creative action directly.<sup>4</sup>

Part of the problem, of course, is to see more clearly what this methodological naturalism *is*. Precisely what does it come to? Does it involve an embargo only on such claims as that a particular event is to be explained by invoking God's creative action *directly*, without the employment of "secondary causes"? Does it also proscribe invoking God's *indirect* creative action in explaining something scientifically? Does it pertain only to scientific *explanations*, but not to other scientific assertions and claims? Does it also preclude using claims about God's creative action, or other religious claims as part of the background information with respect to which one tries to assess the probability of a proposed scientific explanation or account? We shall have to look into these matters later. At the moment however, I want to look into a different question: what reason is there for accepting the claim that science does indeed involve such a methodological naturalism, however exactly we construe the latter? I shall examine some proposed reasons for this claim and find them wanting. I shall then argue that nevertheless a couple of very sensible reasons lie behind at least part of this claim. These reasons, however, do not support the suggestion that science is religiously neutral.

Well then, what underlies the idea that science in some way necessarily involves this principle of methodological naturalism? First, and perhaps most important: this conception of science is an integral and venerable

part of the whole conception of faith and reason we have inherited from the Enlightenment. I do not have the space to treat this topic with anything like the fullness it deserves; but the central idea, here, is that science is objective, public, sharable, publicly verifiable, and equally available to anyone, whatever their religious or metaphysical proclivities. We may be Buddhist, Hindu, Protestant, Catholic, Muslim, Jew, Bahai, none of the above: the findings of science hold equally for all of us. This is because proper science, as seen by the Enlightenment, is restricted to the deliverances of *reason* and *sense* (perception) which are the same for all people. Religion, on the other hand, is private, subjective, and obviously subject to considerable individual differences. But then if science *is* indeed public and sharable by all, then of course one cannot properly pursue it by starting from some bit of religious belief or dogma.

One root of this way of thinking about science is a consequence of the modern foundationalism stemming from Descartes and perhaps even more importantly, Locke. Modern classical foundationalism has come in for a lot of criticism lately, and I do not propose to add my voice to the howling mob.<sup>5</sup> And since the classical foundationalism upon which methodological naturalism is based has run aground, I shall instead consider some more local, less grand and cosmic reasons for accepting methodological naturalism.

### Methodological Naturalism Is True by Definition

So *why* must a scientist proceed in accordance with methodological naturalism? Michael Ruse suggests that methodological naturalism or at any rate part of it is *true by definition*:

Furthermore, even if Scientific Creationism were totally successful in making its case as science, it would not yield a *scientific* explanation of origins. Rather, at most, it could prove that science shows that there can be *no* scientific explanation of origins. The Creationists believe that the world started miraculously. But miracles lie outside of science, which by definition deals only with the natural, the repeatable, that which is governed by law.<sup>6</sup>

Ruse suggests that methodological naturalism is true by definition of the term "science" one supposes; Ruse apparently holds there is a correct definition of "science," such that from the definition it follows that science deals only with what is natural, repeatable, and governed by law. Note that this claim does not bear on the suggestions that a Christian

scientist can propose hypotheses involving such “religious” doctrines as, say, original sin, and can evaluate the epistemic probability of a scientific hypothesis relative to background belief that includes Christian belief.) Ruse’s claim apparently rules out hypotheses that include references to God: God is a supernatural being, hypotheses referring to him therefore deal with something besides the natural; hence such hypotheses cannot be part of science.

Three things are particularly puzzling about Ruse’s claim. First, enormous energy has been expended, for at least several centuries, on the “demarcation problem”: the problem of giving necessary and sufficient conditions for distinguishing science from other human activities.<sup>7</sup> This effort has apparently failed; but if in fact there *were* a definition of the sort Ruse is appealing to, then presumably there would be available a set of necessary and sufficient conditions for something as being science. Ruse does not address the many and (I think) successful arguments for the conclusion that there is no such set of necessary and sufficient conditions, let alone such a definition of the term “science”; he simply declares that—by definition—science has the properties he mentions.

Second, Ruse here proposes three properties that he says are by definition characteristic of any bit of science: that bit deals with things that (a) are repeatable, (b) are merely natural, and (c) are governed by natural law. But take repeatability, and consider this passage by Andrei Linde speaking of the Big Bang, he says, “One might think it very difficult to extract useful and reliable information from the unique experiment carried out about  $10^{10}$  years ago.”<sup>8</sup> According to Linde, the Big Bang is unique and therefore, presumably, unrepeatable—at any rate it *might* turn out to be unrepeatable. If so, would we be obliged to conclude that contemporary cosmological inquiries into the nature of the Big Bang and into the early development of the universe are not really part of science?

Consider next the property of being governed by law. The first point here, would be that the very existence of natural law is controversial. Bas van Fraassen, for example, has given an extended and formidable argument for the conclusion that there are no natural laws.<sup>9</sup> There are *regularities*, of course, but a regularity is not yet a law; a law is what is supposed to *explain* and *ground* a regularity. Furthermore, a law is supposed to hold with some kind of *necessity*, typically thought to be less stringent than broadly logical necessity, but necessity nonetheless.<sup>10</sup> This

idea of lawfulness, I think, is an inheritance of Enlightenment deism (see below); and perhaps here as elsewhere Enlightenment deism misses the mark. Perhaps the demand for law cannot be met. Perhaps there are regularities, but no laws; perhaps there is nothing like the necessity allegedly attaching to laws. Perhaps the best way to think of these alleged laws is as universally or nearly universally quantified counterfactuals of divine freedom.<sup>11</sup> So suppose van Fraassen is right and there are no natural laws: would it follow by definition that there is not any science? That seems a bit strong. Further, it could be, for all we know, that there are some laws, but not everything is governed by them (or wholly governed by them). Perhaps this is how it is with earthquakes, the weather, and radioactive decay. Would it follow that one could not study these things scientifically?

The third puzzling thing about Ruse’s claim: it is hard to see how anything like a reasonably serious dispute about what is and is not science could be settled just by appealing to a *definition*. One thinks this would work only if the original query were really a *verbal* question—a question like *Is the English word “science” properly applicable to a hypothesis that makes reference to God?* But that was not the question: the question is instead *Could a hypothesis that makes reference to God be part of science?* That question cannot be answered just by citing a definition.

#### “Functional Integrity” Requires Methodological Naturalism?

Diogenes Allen, John Stek, and Howard Van Till give answers of that sort. According to Van Till, God has created a world characterized by “functional integrity”:

by this term I mean to denote a created world that has no functional deficiencies, no gaps in its economy of the sort that would require God to act immediately, temporarily assuming the role of creature to perform functions within the economy of the created world that other creatures have not been equipped to perform.<sup>12</sup>

Note first that Van Till seems to be directing his fire at only one of the several ways in which Christians might employ what they know by faith in pursuing natural science; he is arguing that a scientific hypothesis cannot properly claim that God does something or other *immediately* or *directly*. (Note also that the claim here is not that such a hypothesis

11. That is, propositions that state how God (freely) treats the things he has made, and how he would have treated them had things been relevantly different. "Nearly universally quantified": if we think of them this way, we can think of miracles as going contrary to law without thinking of them (inconsistently) as exceptions to some universal and necessary proposition.
12. H. J. Van Till, "When Faith and Reason Cooperate," *Christian Scholar's Review* 21 (September, 1991): 42.
13. See, for example, W. P. Alston, "Divine and Human Action," in *Divine and Human Action: Essays in the Metaphysics of Theism*, edited by T. Morris (Ithaca: Cornell University Press, 1988), 257–80.
14. D. Allen, *Christian Belief in a Postmodern World* (Louisville: Westminster/John Knox Press, 1989), 45.
15. J. H. Stek, "What Says the Scriptures?" in *Portraits of Creation: Biblical and Scientific Perspectives on the World's Formation*, edited by H. J. Van Till, R. E. Snow, J. H. Stek, and D. A. Young (Grand Rapids: William B. Eerdmans Publishing Company, 1990), 261.
16. I do not mean to suggest that one who espouses or advocates God-of-the-gaps theology herself believes in God only as such a hypothesis: that is quite another question.
17. In addition, most medieval Christian thinkers have also insisted on a separate divine activity of God's; any causal transaction in the world requires his *concurrency*. Problems arise here; to some ears it sounds as if this doctrine is motivated less by the relevant evidence than by a desire to pay metaphysical compliments to God.
18. See my "Is Theism Really a Miracle?" *Faith and Philosophy* 3, no. 2 (1986): 132ff.
19. A further problem with this way of thinking: as science explains more and more, the scope for God's activity is less and less; it is in danger of being squeezed out of the world altogether, thus making more and more tenuous one's reasons (on this way of thinking) for believing that there is such a person as God at all. (Of course it must also be acknowledged on the other side that things sometimes go in the opposite direction; for example, it is much harder now than it was in Darwin's day to see how it could be that life should arise just by way of the regularities recognized in physics and chemistry.)
20. Further, Newton seems to me to have suffered a bum rap. He suggested that God made periodic adjustments in the orbits of the planets: true enough. But he did not propose this as a reason for believing in God; it is rather that (of course) he already believed in God, and could not think of any other explanation for the movements of the planets. He turned out to be wrong; he could have been right, however, and in any event he was not endorsing any of the characteristic ideas of God-of-the-gaps thought.
21. P. Duhem, (1906) *The Aim and Structure of Physical Theory*, translated by P. P. Wiener, with the foreword by Prince Louis de Broglie (Princeton: Princeton University Press, 1954).
22. A. Rey, "La Philosophie Scientifique de M. Duhem," *Revue de Métaphysique et de Morale* 12 (July, 1904): 699ff.
23. See the appendix to *The Aim and Structure of Physical Theory*, which is entitled "Physics of a Believer" and is a reprint of Duhem's reply to Rey; it was originally published in the *Annales de Philosophie Chrétienne* 1 (October and November, 1905): 44f. and 133f.
24. Duhem, 278.
25. Duhem, 10–18.
26. Duhem, 10.
27. Duhem, 10.
28. This would not preclude, of course, employing such ideas in theories proposed, not as true, but only as empirically adequate.
29. The Principle of Indifference is non-Duhemian, but it is not easy to find other examples. (I am assuming that *interpretations* of quantum mechanics [as opposed to quantum mechanics itself] belong to philosophy rather than physics.)
30. Though not always: if the question is "Why was there such a thing as WW II?" the answer is not "Because it pleased God to do things that way." God of course *permitted* World War II to take place; but it was not pleasing to him.
31. Why could a scientist not think as follows? God has created the world, and of course has created everything in it directly or indirectly. After a great deal of study, we cannot see how he created some phenomenon P (life, for example) indirectly; thus probably he has created it directly.
32. See Aristotle, *Posterior Analytics*, bk. I, 1–2, 4, where Aristotle declares that *scientia* is a matter of seeing what necessarily follows from what one sees to be necessarily true. (Of course Aristotle's own practice is not always easy to square with this suggestion.)
33. Of course, this is at best a rough and general characterization: we can obviously learn of necessities a posteriori (for example, by using computers to prove complicated theorems) and perhaps also of contingencies a priori. This question of the connection between the a priori and the necessary, on the one hand, and the contingent and the a posteriori on the other (the question of the relationship between the a priori/a posteriori distinction and the necessary/contingent distinction) is as deep as it is fascinating.
34. Stek, 260–1.

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