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## *Does Evolutionary Science Rule Out the Theistic God?* The Johnson–Pennock Debate

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Phillip Johnson, in a number of recent writings, most notably in his 1991 book, *Darwin on Trial*, has called into question the whole of evolutionary science by arguing that it is based on the philosophical system of naturalism which assumes without justification that God plays no part in the process by which living things come to be.<sup>1</sup> The philosopher, Robert Pennock, in his recent book, *Tower of Babel: The Evidence against the New Creationism*, defends science against Johnson's charge, arguing first that naturalism is not atheistic and so does not deny God, and second, that the principle naturalism uses to keep God out of science is adopted for good methodological reasons.<sup>2</sup> I want to enter into this discussion between Johnson and Pennock about the relation between (naturalistic) evolutionary theory and theism. I will ask: Does evolutionary naturalism rule out the theistic God? If so, how? Is the ruling out a *metaphysical* claim (that God does not exist) or merely a *methodological* rule that disallows supernatural explanations? Is the ruling out logical or probabilistic? Other points of disagreement between Johnson and Pennock I will consider, although less fully, are framed by questions such as the following: Can the two explanatory

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<sup>1</sup> Phillip E. Johnson, *Darwin on Trial* (Washington, DC: Regnery Gateway, 1991); 2nd ed. (Downers Grove, IL: InterVarsity Press, 1993). The second edition includes in its epilogue a response to the reviewers and critics of the first edition. References to this work (abbreviated *DT*) are included in text and are to the second edition.

<sup>2</sup> Robert T. Pennock, *Tower of Babel: The Evidence against the New Creationism* (Cambridge, MA: The MIT Press, 1999). References to this work are abbreviated in text as *TB*. The work incorporates the essentials of an earlier critique of Johnson: "Naturalism, Evidence and Creationism: The Case of Phillip Johnson," *Biology and Philosophy* 11 (1996): 543-59; Johnson responds in "Response to Pennock," *Biology and Philosophy* 11 (1996): 561-3.

"hypotheses" (God and evolutionary principles) be made compatible (for example, in the way that *theistic evolutionists* have tried to combine them)? Is Johnson right that there is a fundamental opposition between them? Can the theistic hypothesis be brought into science and be part of a *scientific* explanation of life-forms (as Johnson thinks), or does religion belong wholly to another sphere of life outside of science (as Pennock thinks)? Lastly, how should theologians think of the theistic God and its activity in relation to the natural order that science describes?

Does evolutionary theory rule out the theistic God? Johnson's answer is a resounding Yes. To understand this, we need, first, to see what Johnson means by the theistic God. Although he does not adhere to a strict definition, we can tell contextually that he is referring to a being (a) who creates the natural order; (b) guides it according to a plan or purpose; (c) enters into meaningful relationships with his creatures; and (possibly) (d) intervenes in nature's processes in order to effect his purposes.

To see why Johnson thinks that evolutionary science conflicts with this God, we have to look at his philosophical argument against naturalism. Pennock has brought out nicely that Johnson attacks science on two fronts, the philosophical and the empirical, and while Pennock responds to both arguments, he thinks the philosophical charge is innovative and "does the real work" (TB, 188). In this discussion, I am going to focus mainly on Johnson's philosophical arguments against naturalism.

The philosophical charge begins with the idea that science as a whole rests on the philosophical system of *naturalism*. The basic "assumption" of this naturalistic system is that natural causes are ruled in, and the supernatural God is ruled out. That is, it is just assumed, a priori (as Johnson often puts it), that God is not causally active in the natural process and so is excluded from consideration as a possible explanation of natural events. And the special science of evolutionary biology, based on this same naturalistic system, similarly rules out God as a possible explanation of biological phenomena.

Further, naturalism adopts a particular *metaphysical* system that holds that matter and energy are "all there is." On this interpretation, which we might call *strong naturalism*, God is ruled out not only as an explanatory entity, but as an existing entity.

According to naturalism, what is ultimately real is nature, which consists of the fundamental particles that make up what we call matter and energy, together with the natural laws that govern how those particles behave. Nature itself is ultimately all there is, at least as far as we are concerned. To put it another way, nature is a permanently closed system of material causes and effects that can never be influenced by anything outside of itself—by God, for example.<sup>1</sup>

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<sup>1</sup> Phillip E. Johnson, *Reason in the Balance: The Case against Naturalism in Science, Law, and Education* (Downers Grove, IL: InterVarsity Press, 1995), 37-8.

In this passage we can see Johnson trying to hold together two very different views of what naturalism implies about God. The strong naturalistic claim is atheistic and flatly denies that any supernatural being exists. But a more moderate naturalistic claim is suggested that God may exist outside of nature, but whether he does or not makes no difference to humans since, as far as our knowledge is concerned, he does not (or cannot) intervene in the natural realm. It is clear that Johnson often describes naturalism in a way that runs together these two incompatible versions of it. This may be because he tends to equate evolutionary naturalism with the views of some atheistic critics of creationism, such as Richard Dawkins. Be that as it may, Johnson does in some places admit that "naturalism does not explicitly deny the mere existence of God" (DT, 116-17), and so in this discussion we will take him to be arguing against the moderate form of naturalism which allows that a God may exist in some form. However even the moderate form seems to have no place for the *theistic* God which is conceived as taking an active part in nature and in human affairs.

What is most important about naturalism then, for Johnson, is the principle or premise that allows only certain kinds of materialistic causal explanations and disallows all supernatural ones.<sup>4</sup> Moreover, Johnson thinks that this exclusionary principle is itself a *metaphysical* or *philosophical* assertion without any basis in fact. It is an *a priori* assumption—not in the philosophical sense of being grounded in reason alone, but in the popular sense of being arbitrary or reflecting an individual's (or a group's) subjective preferences or prejudices. It is a "doctrine" or "dogma" or "ideology" and thus ultimately not open to rational debate. Furthermore, Johnson believes that if evolutionary theorists would only disabuse themselves of this exclusivist principle and open themselves to the possibility that God is the cause of complex biological phenomena, they would then be able to see that the observable evidence runs against them, and rather points in the direction of an intelligent cause.

Johnson thinks that the metaphysical assumptions of naturalism extend even further into evolutionary theory and include the basic principles of mutation and natural selection. The claim that these principles are metaphysical and nonempirical is meant to bolster his empirical argument that they are not supported by observational evidence.

Natural selection exists, to be sure, but no one has evidence that it can accomplish anything remotely resembling the creative acts that Darwinists attribute to it. . . . As an explanation for modifications in

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<sup>4</sup> It is not important for Johnson what material things science posits as ontologically real—for example, whether they include particles, forces or fields. Nor does he develop the implications for theism of the fact that only material or physicalistic things are posited. All that matters to him is that these things do not include supernatural beings.

populations, Darwinism is an empirical doctrine. As an explanation for how complex organisms came into existence in the first place, it is pure philosophy. (DT, 117)

The philosophically important part of the Darwinian theory—its mechanism for creating complex things that did not exist before—is therefore not really part of empirical science at all, but rather a deduction from naturalistic philosophy. (DT, 158)

Unfortunately, Johnson does not go on to specify *how* the “mechanism for creating complex things that did not exist before”—the mechanism of chance variation and natural selection is a “deduction from naturalistic philosophy.” Darwin’s chosen mechanism certainly could not be deduced from the assumption that life forms have a naturalistic and not a supernaturalistic explanation. But in other places, Johnson formulates the point differently:

The conflict between Darwinism and theism arises because the [evolutionary hypothesis] is a product of naturalistic philosophy, not observation or experiment. . . . [W]e have no good reason to suppose that Darwinian selection was the mechanism of creation unless we make the naturalistic assumption that nature had to do its own creating.<sup>1</sup>

The idea is that since God was ruled out, then evolutionary theorists had to operate on the assumption that *nature had to do its own creating*, and so they devised the principles of mutation and natural selection. The point seems most plausible if construed as a claim about what motivated the originator(s) of the theory. Possibly Johnson is arguing that Darwin himself cast aside the intelligent-designer hypothesis that was prevalent in the theologically-based science of his time, and then searched for a different one to take its place. On this view, Darwin’s entire project stems from his initial assumption that God’s intentions and special acts should *not* be allowed as explanations of natural life. We can imagine Darwin approaching his data with this dangerous idea in mind: how is it possible to explain the development of species without bringing God’s special acts into our account? He then generates his novel explanatory idea.

Historically, Darwin’s project does seem to fit this description; Darwin did make a conscious and deliberate effort to find fully naturalistic explanations of life-forms, and consistently repudiated any attempt to bring God into the picture to supplement his theory. He viewed appeals to God as obstructing science and standing in the way of finding natural causes. Further, these naturalistic explanations were supposed to explain everything pertaining to the development of species that God’s acts of special creation

<sup>1</sup> Phillip E. Johnson, “Response to Hasker,” *Christian Scholar’s Review* 22 (1993): 298. This article is a response to William Hasker’s paper “Mr. Johnson for the Prosecution,” *Christian Scholar’s Review* 21 (1992): 177-86.

purported to explain, making the latter explanation of these phenomena otiose. Writing to Lyell shortly after the publication of the *Origin*, he states, "I would give nothing for the theory of Natural Selection, if it requires miraculous additions at any one stage of descent." And to Lyell again, two years later: "The view that each variation has been providentially arranged seems to me to make Natural Selection entirely superfluous, and indeed takes the whole case of the appearance of new species out of the range of science."<sup>6</sup> And so on this interpretation, Darwin meant his theory to exclude God in so far as he conceived and offered it as an *alternative* naturalistic hypothesis that was supposed to displace the God-hypothesis.<sup>7</sup>

But if we thus interpret Darwin's commitment to naturalism as the ruling out of the theistic hypothesis, (and perhaps of all supernatural hypotheses), thereby delimiting the range of alternative hypotheses, it remains unclear why Johnson thinks of Darwin's selected hypotheses (chance variation *cum* natural selection) as deductions from his initial ruling out. The only thing that follows from Darwin's initial abandonment of theism is that he is bound to find some nontheistic alternative explanation—one that will be incompatible with theism in some respect. Darwin's initial ruling out is indeed the *starting point* of his search for an alternative, but it is odd to think of it as a *premise* or even as an *assumption* from which the alternative theory is derived.<sup>8</sup> Darwin sought to replace one hypothesis with another which he thought made better sense of the evidence at hand, including the extensive observational evidence that he collected. His theory cannot be dismissed on the philosophical grounds that it is derived from a prior commitment to finding an alternative to an hypothesis that he deemed incorrect. It must be judged, like any other theory in science, on the basis of its overall explanatory adequacy.

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<sup>6</sup> Quoted by Neal Gillespie, *Charles Darwin and the Problem of Creation* (Chicago: University of Chicago Press, 1979), 120. Gillespie comments on this theme: "It is sometimes said that Darwin converted the scientific world to evolution by showing them the process by which it has occurred. Yet the uneasy reservations about natural selection among Darwin's contemporaries and the widespread rejection of it from the 1890's to the 1930's suggest that this is too simple a view of the matter. It was more Darwin's insistence on totally natural explanations than on natural selection that won their adherence" (146).

<sup>7</sup> Of course subsequent evolutionary scientists may be differently motivated than Darwin was. It may not even occur to them to consciously and deliberately resist supernatural causes in part because Darwin's theory has succeeded in replacing the old paradigm, and also because the naturalistic principle has become so entrenched in science that it is just taken for granted.

<sup>8</sup> "Darwinists know that the mutation-selection mechanism can produce wings, eyes, and brains not because the mechanism can be observed to do anything of the kind, but because their guiding philosophy assures them that no other power is available to do the job. The absence from the cosmos of any Creator is therefore the essential *starting-point* for Darwinism" (DT, 117, emphasis added).

To take this objection a step further, we might compare Darwin's rejection of theistic explanations to Einstein's abandoning of the ether as partially explanatory of the motion of physical bodies in space. In his special theory of relativity, Einstein excluded the ether (and any similar substance) from the physical principles and concepts he used to explain the movement of light particles and bodies in space and time. It would be absurd for a critic of Einstein's theory to call into question that theory on the grounds that it had ruled out the ether hypothesis from the start, and that we only have reason to think that those principles are (empirically) true because we have made the initial assumption that there is no other explanatory construct available to do the job.\*

But we are still left with Johnson's claim that the naturalistic principle that excludes God and all supernatural powers is itself pure philosophy. If that assumption is a priori and arbitrary, then why should scientists continue to maintain it? Why, he asks, is it simply taken for granted that life-forms have only naturalistic causes, and not supernaturalistic ones? What is the justification of that exclusion? For the moment, let us leave open this challenge about the status and justification of the naturalistic principle that rules out God, noting only the peculiarity of a principle that says that certain kinds of explanations are *not* allowable. In a later section, we will see that Pennock concedes that science does make such an assumption, but, he will argue, supernatural beings are kept out of science for sound methodological reasons, and so the assumption is not arbitrary.

At this point in the discussion, we may well ask why life-forms cannot have both the naturalistic causes that science ascribes to them *and* a supernatural cause. *Theistic evolutionists* accept the process of evolution as science describes it, but argue that a creator-God is needed as the being who explains the whole evolutionary process. God institutes evolutionary laws and in some way also guides the process toward the end that he envisions.

The suggestion would seem to be one that Johnson would favor since he also speaks of the theistic God as guiding the process in order to further his purposes. But in fact, Johnson adamantly opposes this compatibilist view on the grounds that there is an "inherent conflict between Darwinism and theism."<sup>9</sup> However, since he also maintains that "God can work through natural processes that are accessible to scientific investigation including mutation and natural selection," we may wonder *why* there is a fundamental conflict between the two theories.<sup>10</sup> Part of the answer is that Johnson believes that naturalism will not allow that God is active in the process. But that by itself does not mean that God could not use Darwin's evolutionary

\* Thanks to the anonymous referee whose comments sharpened Johnson's philosophical argument and to which the last two paragraphs are a reply.

<sup>9</sup> Johnson, "Response to Hasker," 297.

<sup>10</sup> *Ibid.*, 298.

mechanism to create. Another reason Johnson gives cuts deeper, namely that it is impossible to split off the (metaphysical) rejection of God from the rest of evolutionary theory.

Metaphysics and science are inseparably entangled in [evolutionary theory]. I think that most theistic evolutionists accept as scientific the claim that natural selection performed the creating, but would like to reject the accompanying metaphysical doctrine that the scientific understanding of evolution excludes design and purpose. The problem with this way of dividing things is that the metaphysical statement is no mere embellishment but the essential foundation for the scientific claim. (*DT*, 168)

Here the strong claim is advanced that the metaphysics (exclusion of God) and the science are "inseparably entangled" so that we cannot simply disassociate the theory from its antitheistic premise and then invoke God as a cause at a higher level. A conflict between the theory and the God-hypothesis will inevitably arise. But what is it about Darwin's theory that conflicts with the God of theism? Johnson must identify the points of tension or conflict if he is to argue successfully against theistic evolutionism.

What Johnson typically says in this sort of context is that Darwinists claim that evolution is "a purposeless and undirected process that produced mankind accidentally" or that we owe our existence to "a blind materialistic process"—as if it were obvious that such a process could not be consistent with God's purposes.<sup>12</sup> We want to know why an intelligent God could not make use of random processes and material forces to create the varieties of life on earth.

In the essay from which the above phrases were taken, Johnson develops further the idea behind the conflict he sees by bringing to bear some additional theologically-based arguments aimed at showing that "attempts to accommodate theism and Darwinism are inherently futile."<sup>13</sup> In one of these arguments he explains why a process that includes chance variations and accidental results conflicts with the Christian theistic God, and why it is very unlikely that God used such a method:

Darwinistic evolution would be a most peculiar creative method for God to choose, given the Darwinistic insistence that biological evolution was *undirected*. That requirement means that God neither programmed evolution in advance nor stepped in from time to time to pull it in the right direction. How then did God ensure that humans would come into existence so that salvation history would have a chance to occur?<sup>14</sup>

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<sup>12</sup> Phillip E. Johnson, "Creator or Blind Watchmaker?" *First Things*, January 1993, 8-9.

<sup>13</sup> *Ibid.*, 14.

<sup>14</sup> *Ibid.*, 12.



I believe that this idea that, if evolutionary theory is true, humans might not have come into existence can be developed in a way that brings out a serious conflict between evolution and theism.

In a recent discussion of Darwin, the social historian Louis Menand emphasizes the central role that chance plays in Darwin's theory. He writes, "[w]hat was radical about *On the Origin of Species* was not its evolutionism, but . . . something even his most loyal disciples were reluctant to admit, which is that the species—including human beings—were created by, and evolve according to, processes that are entirely natural, chance-generated, and blind."<sup>15</sup> In order to establish this, Darwin had to develop what amounted to a whole new way of thinking. To begin, part of Darwin's novel strategy was that he focused on the *differences* between particular organisms rather than the similarities that enabled them to be grouped into fixed kinds or types. For example, he noticed variations in the length or thickness of a bird's beak. These individual differences were selected by nature if they gave the organism an adaptive advantage over its competitors in the struggle for survival.

The process of natural selection is *blind* in two ways. First, the variations that are selected are ones the individual just happens to have. Darwin saw variations always occurring in nature's regenerative processes, and took them to be an unexplained given in his system. He claimed that these variations were produced by *chance* in the sense that they were unpredictable, not that they were uncaused or indeterminate.

Secondly, natural selection is a blind process "because the conditions to which the individual organism must adapt in order to survive are never the same."<sup>16</sup> The conditions that the individual happens to meet are the ones that happen to be there, and these too are unpredictable. And out of this fortuitous coming together of individual difference and external circumstance, an evolutionary change may occur. Menand illustrates the process as follows:

Darwin thought . . . that variations occur by chance, and that chance determines their adaptive utility. In all seasons it happens that some finches are born with marginally longer and narrower beaks than others, just as children of the same parents are not all exactly the same height. In certain environmental conditions, a narrower beak may have positive or negative survival value, but in other conditions—for example, when seeds are plentiful and finches are few—it may make no difference. The "selection" of favorable characteristics is therefore neither designed nor progressive. No intelligence, divine or otherwise, determines in advance the relative value of individual variations. . . .

<sup>15</sup> Louis Menand, *The Metaphysical Club* (New York: Farrar, Straus and Giroux, 2001), 121.

<sup>16</sup> *Ibid.*, 122.

Natural selection is a law that explains *why* changes occur in nature, [and] *how* changes occur in nature. But natural selection does not dictate *what* those changes shall be. It is a process without mind. . . .

Evolution is simply the incidental by-product of material struggle, not its goal. Organisms don't struggle because they must evolve; they evolve because they must struggle.<sup>17</sup>

In such a chance-driven process, there is no guarantee that any particular species (including humans) will evolve.

In his 1989 book, *Wonderful Life*, Stephen Jay Gould developed an interpretation of Darwin similar to Menand's that emphasizes what he calls the "massive historical contingency" of evolution and leads to a similar conclusion.<sup>18</sup> Based on his study of the anatomical features of the fifteen to twenty different organisms in the Burgess Shale, Gould concludes that a scientific observer could not have predicted which of them would be survivors and which losers in the subsequent mass extinctions. The ones that survived were the ones favored by Lady Luck. Here is how he describes the contingency of the overall process:

The divine tape player holds a million scenarios, each perfectly sensible. Little quirks at the outset, occurring for no particular reason unleash cascades of consequences that make a particular future seem inevitable in retrospect. But the slightest early nudge contacts a different groove, and history veers into another plausible channel, diverging continually from its original pathway. The end results are so different, the initial perturbation so apparently trivial.<sup>19</sup>

And regarding the ascendancy of mammals he writes:

If mammals had arisen late and helped to drive dinosaurs to their doom, then we could legitimately propose a scenario of expected progress. But dinosaurs remained dominant and probably became extinct only as a quirky result of the most unpredictable of all events—a mass dying triggered by extraterrestrial impact. If dinosaurs had not died in this event, they would probably still dominate the domain of large-bodied vertebrates, as they had for so long with such conspicuous success, and mammals would still be small creatures in the interstices of their world. This situation prevailed for a hundred million years; why not for sixty million more? Since dinosaurs were not moving toward markedly larger brains, and since such a prospect may lie outside the capabilities of reptilian design, we

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<sup>17</sup> Ibid., 122-3.

<sup>18</sup> Stephen Jay Gould, *Wonderful Life: The Burgess Shale and the Nature of History* (New York: W. W. Norton, 1989), 233.

<sup>19</sup> Ibid., 320-1.

must assume that consciousness would not have evolved on our planet if a cosmic catastrophe had not claimed the dinosaurs as victims. In an entirely literal sense, we owe our existence, as large and reasoning mammals, to our lucky stars.<sup>20</sup>

Returning to Johnson's theological argument, since God had in mind a plan for humans, namely that he would take the form of a human, Jesus, who would die on the cross to redeem them from their sins, then he would not have created a natural process that left it genuinely open whether humans would evolve. At least it would seem an imperfect plan to will that the divine nature take on human form if the very existence of any humans depended on small unpredictable quirks and nudges in the evolutionary process he initiated.

But perhaps it was left genuinely open whether humans would evolve, but God, who is all-knowing, created a world in which he *foresaw* that humans would in fact evolve by chance. The emergence of humans would be unpredictable on the basis of natural factors, and only predictable if we could know the creator's mind. But there is a theological problem with this compatibilist solution. It seems to make God a deceiver. If God created a world that gives every indication to a rational observer of being one in which chance reigns, when in fact the process is moving toward a preconceived goal, would not this be at the very least misleading to our inquiring minds? So Johnson is right that there is a serious tension here; it is unlikely that the theistic God, who is not a deceiver, would have created a process that left open "a million scenarios, each perfectly sensible," or even a few scenarios, unless each and every one of them led to the appearance of intelligent human beings on earth.

It is important to see that Johnson does not think of the conflict between evolution and theism in terms of *logical* incompatibility. Evolutionary principles are not strictly incompatible with Christian theism. God could have used Darwin's mechanism of chance variations and natural selection to create, but Johnson thinks it is unlikely that he did (for both theological and empirical reasons). Thus the opposition between evolution and theism is put in terms of its being *improbable* that both are true. The logical relation is that if evolution is true, then certain claims about, for example, the Christian God are likely to be false and would have to be revised or abandoned; and if theism is true, then some basic principles of evolution are probably false and will have to be revised or abandoned.

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<sup>20</sup> Ibid., 318. Gould views the fate of *Homo sapiens* as equally precarious: "[W]e are an improbable and fragile entity, fortunately successful after precarious beginnings as a small population in Africa, not the predictable end result of a global tendency. . . . Run the tape again, and let the tiny twig of *Homo sapiens* expire in Africa. Other hominids may have stood on the threshold of what we know as human possibilities, but many sensible scenarios would never generate our level of mentality" (*Wonderful Life*, 319-20).

This brings us to what I call Johnson's *solution to the conflict between science and religion*. It involves two additional aims. First, the theistic God (intelligent designer) should be brought into science, and considered alongside of evolutionary theory as a legitimate alternative. Johnson anticipates that if this is done, then the God-hypothesis will prove to be the better scientific theory; that is, it will be found to be more in accord with the observable evidence (such as the fossil record) than evolutionary theory, and thus be more acceptable than its rival by science's own standards. And second, Johnson's larger aim is to *integrate* science and religion by way of a unified scientific theory that has a place for a designer-God who superintends the natural realm and the human beings that inhabit it. For this reason, he resists any attempt to exclude God from influencing nature by assigning God's actions and interventions to another "spiritual" realm separate from the natural realm.

Let us look more closely at Johnson's claim that God should be brought into science. How exactly is this supposed to work? Pennock takes up this question in his section "The Prospects for a Supernatural 'Theistic Science'" (TB, 294) where he argues that the prospects are not good. It is a mistake, Pennock thinks, to try to "naturalize" God, to make God part of the sort of explanatory account that science constructs, to make God a scientific construct. To do so is to "do a disservice to both religion and science" (TB, 206).

Pennock sets up a dilemma for any proposal for a theistic science: "If one takes God to be supernatural, then God and the Creation hypothesis have no place in science. On the other hand, if one naturalizes god to make the Creation hypothesis scientific, then we find ourselves faced with a God who is not very godly" (TB, 308). Let us consider first the second horn of the dilemma.

As Pennock sees it, Johnson's approach does a disservice to religion because it makes God into a finite object, which conflicts with the traditional theistic idea of God as transcendent and holy. But I do not see that Johnson is in any danger of compromising God's transcendence and making God into a natural object. Johnson's main contention is that the God-hypothesis explains observable facts; it is no more integrally connected with empirical data than that. And even if the God-hypothesis is supposed to be on a scientific par with other naturalistic hypotheses qua explanatory construct, it is different from them precisely because it invokes a supernatural cause.

However Pennock is forcing the question of how the God-hypothesis is supposed to function in science, Johnson might reply that it functions as a guiding principle much as it did for Newton and Paley. God as intelligent creator sets up boundary conditions in nature. God creates an orderly world in which all or most things have some reason for being as they are. Scientists who investigate the world can expect to find those reasons. To be sure, Johnson is willing to *put God to the test* in the head-to-head competition that

he envisions, and some believers may think that this act alone is irreverent. But Johnson would defend against this religiously-based objection by citing scripture: If God's creative act is "clearly perceived in the things that have been made" (Romans 1:20), then there should be plenty of observable evidence in nature to support this belief, and there can be nothing unholy about using it to establish the designer hypothesis.

If Johnson will not be gored on the second horn of Pennock's dilemma, if he retains God as a supernatural being, transcendent and outside of nature, what about the first horn: if one takes God to be supernatural, then God and the Creation hypothesis have no place in science? Pennock has a two-pronged argument to back up his claim that God and the creationist hypothesis have no place in science. The first is that God's actions and interventions into the natural realm are not *testable* in a broad sense of that term (to be explained). And second, the acts or effects of supernatural beings and powers are by definition *contrary to law*, and as such fall outside the boundaries of scientific explanation. Let us examine each of these arguments.

First, Pennock questions whether any of three central claims Johnson makes about the Christian theistic God are testable—that God performs specific *acts* in nature, that God directly *controls* nature, and that God's acts further his *purposes*. Regarding the second claim that God directly controls nature, Pennock asks: how does God intervene to control the process of the origin of species? what is the causal process that God acts on or through? For example, does God create (as some theologians have maintained) by causing the variations upon which selection occurs? or by selecting the variations that will survive? How would we know that God had acted in that way? "May theistic science appeal to *ex nihilo* miracles or other miraculous control processes?" (TB, 298).

Regarding the other two claims, Pennock maintains that there is no clear-cut empirical procedure or test for identifying some observed phenomenon as the result of God's act or intention. But science requires that all theoretical constructs must be tied more or less directly to observable verifying procedures. In contrast to the Creation hypothesis, "[t]he Darwinian view holds that the evolutionary processes are working all the time, and can point to observations thereof. We can observe mutation, recombination, inheritance, natural selection, and the resultant changes in gene frequencies in populations" (TB, 297). In putting his challenge in this way, Pennock is not espousing naive verificationism. He realizes that the absence of clear-cut tests that would verify (or falsify) are not sufficient grounds for ruling out a hypothesis. But he is bringing out the fact that any theoretical principle must have a closer connection to empirical observable fact than Johnson and Intelligent Design theorists seem to realize. It must be tied to a large number of specific observable or experimental contexts (sets of data) and explain those specific data as well as, or better than, rival hypotheses and theories.

When Pennock states that "we can observe mutation, recombination, inheritance, natural selection, and the resultant changes in gene frequencies in populations," he is pointing to the close connection between these theoretical constructs in evolutionary theory and specific sets of correlated data. The general principles of evolution get tied to these data indirectly by way of organizing and explaining these intermediate constructs. When Pennock asks how we would identify, recognize, know about, any of God's particular actions or purposes, he is pointing out that the God-hypothesis gives us nothing like the evolutionary explanatory system that links general principles to specific sets of data via intermediate lower-level constructs. Thus the theistic hypothesis falls far short of its rival in respect of one crucial test of empirical adequacy in science, namely, *the number and variety of kinds of data that it can account for.*<sup>21</sup>

This argument based on the empirical adequacy of design hypotheses has, I believe considerable force against theistic science, but it still leaves the door to science open a crack for theism; for theistic hypotheses might still be admissible in science if they can be made testable in the broad sense I have described. Pennock tries to close off this possibility with another line of argument aimed at keeping the theistic God out of science altogether. Put simply, the argument is that any explanation that appeals to a *supernatural* being is contrary to the very essence of science which is to explain natural phenomena in terms of lawful regularities.

The importance of lawfulness in giving scientific explanations is revealed in this passage:

Empirical testing relies fundamentally upon the lawful regularities of nature which science has been able to discover and sometimes codify in natural laws. For example, telescopic observations implicitly depend upon the laws governing optical phenomena. If we could not rely upon these laws—if, for example, even when under the same conditions, telescopes occasionally magnified properly and at other occasions produced various distortions dependent, say, upon the whims of some supernatural entity—we could not trust telescopic observations as evidence. . . . But without the constraint of lawful regularity, inductive evidential inference cannot get off the ground. (*TB*, 194-5)

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<sup>21</sup> If it is argued that the intelligent design hypothesis makes coherent the sort of low-level constructs and hypotheses that Pennock mentions (and there are many others he does not mention) as well as evolutionary principles, I would reply that Intelligent Design theorists must undertake this task of uniting all or most of these different kinds of data under their hypothesis before it can be considered by science as a rival hypothesis.

The author goes on to say that this is the rationale for scientists making "the methodological assumption that supernatural entities do not intervene to negate lawful natural regularities" (TB, 195).

It is noteworthy that there is a somewhat technical meaning of *supernatural* at play in this discussion. In a useful section on "Supernatural Explanations," supernatural agents and powers are characterized as being (1) "above and beyond the natural world"; (2) "inherently mysterious to us" because "[a]s natural beings, our knowledge all comes via natural laws and processes"; and (3) "not controllable by humans" (TB, 289-90). Each of these properties seems calculated to take supernatural beings out of the sphere of science and our natural knowledge. The acts or effects of supernatural beings on the world are viewed by Pennock as having no natural causes and hence as (contra-causal) violations of nature's laws.

In this way, Pennock attempts to deliver a knockout punch, designed to show that divine causes can be excluded from science as belonging to a class of causes that science cannot deal with. But Pennock's argument fails, I believe, because it depends on his definitions of the concepts of *scientific explanation* and of *the supernatural* which, in the end, amount to a stipulation that there is a boundary around the natural world that science investigates, and that God and other supernatural beings cannot cross it.

But the definitions are too restrictive. In the first place, on the side of scientific explanation and understanding, Pennock overestimates the role of law and lawful regularities in giving naturalistic explanations. Scientists do not always explain events by subsuming them under laws. And in evolutionary biology it is hardly ever the case that events are explained by finding laws that cover them. As we have seen, Darwin explained evolutionary changes (in part) by appealing to chance variations as a basic principle that was contrary to law. Chance variations were indeed couched in a wider context of lawful regularities, but God's interventions could be so as well. Further, Gould has emphasized the contingency and nonrepeatability of some evolutionary changes, implying that evolutionary laws cannot account for the success of some organisms and the failure of others. He advocates the model of *historical* explanations in biology that "take the form of narrative." A historical explanation is based on the principle of contingency and "does not rest on direct deductions from laws of nature, but on an unpredictable sequence of antecedent states, where any major change in any step of the sequence would have altered the final result."<sup>22</sup> Although Gould is holding onto the idea of causality in historical explanations, perhaps even causality of the deterministic kind, it is clear that these explanations do not refer to any lawful regularities or repeatable events.<sup>23</sup> It may be that divine explanations

<sup>22</sup> Gould, *Wonderful Life*, 283.

<sup>23</sup> Philip Kitcher puts forward the similar idea that evolutionary theorists typically construct "Darwinian histories" as a problem-solving strategy to explain evolutionary changes. See *Abusing Science: The Case against Creationism* (Cambridge, MA: The MIT Press, 1982), 50-2.

would not fit into Gould's model of explanations in biology any better than they fit into Pennock's, (we would still have the problem of how we could know that one of the contingencies that led to an event was God's intervening act); but if they did not, it would not be because they involved violations of nature's laws.

And on the side of the supernatural cause, it is not clear that God's interventions would necessarily "violate" or "negate" natural laws, as Pennock strongly suggests. God could intervene in nature at the level of human affairs and decisions, inducing changes in human minds which could then have a downward causal effect on underlying coordinate physical events. Or God might intervene at the physical level, somehow influencing probabilistic events for example, thus effecting changes in human experience from the bottom up. Although the how of these interventions would have to be specified more precisely, my point is that it is an open question whether they would involve violations of nature's laws (especially if those laws are not deterministic). Compare how it is with human agents. There is an ongoing debate about how to fit human agents and their actions into a material world. Are human (mental) volitions reducible to physical states of the brain? Or are they not reducible to, but "supervenient" on, those states? If the latter, are they capable of influencing the physical states that subserve them? And if they can influence those underlying physical states, how can they do so without violating the laws that govern them?

I am not trying to resolve these latter issues, but simply pointing to the fact that they are open questions in the philosophy of mind and body. Cognitive scientists may not be very receptive to the idea that something that may be conceived as outside our neurological systems—a conscious mental state—might affect something inside that system, but some at least have tried to formulate a model of how this might occur. And to my knowledge, cognitive scientists have not invoked a methodological naturalist principle that wholly rules out any such speculation. But if philosophers of mind can speculate about how human minds might influence their bodies and the world without overturning science, theologians might also think about how God might influence the world, perhaps in similar ways, without transgressing the rules of science.

There is a deeper problem here about dividing supernatural powers and forces from natural ones by drawing a sharp boundary between them, and then restricting our knowledge, as natural beings, to the natural realm. The problem is that there is no natural boundary between the natural sphere (accessible to our rational minds) and the supernatural sphere (inherently mysterious to us). We have to make such a boundary, and I do not see any way of doing so without arbitrarily deciding which sorts of possible causes we want to keep out of science and beyond the limits of our natural knowledge. We will say that these causes are inherently mysterious, or that there



is no way for us to detect them, or that there is no agreed-upon method for verifying them. But there is no way for naturalists to eliminate any class of causes from possible consideration by science. All that methodological naturalists can do at any point in the history of science is draw a line around those hypotheses that science has been able to test in some way and distinguish them from those that science cannot yet do anything with. Explanations in terms of divine causes are ruled out now only because we cannot find a way to connect them with scientific explanation and its theories and empirical data in its present state. But this could change.

Another way of putting this point is that the boundaries of natural science are fluid; for example, they are currently being shaped and adjusted to account for the properties of human minds as these are being investigated by the cognitive and social sciences. As regards the divine mind, although I think it unlikely that Intelligent Design hypotheses will gain entrance into the scientific worldview, I do not see any way of ruling this out as an impossibility except by stipulation. Further, while it is true that appeal to the principle of methodological naturalism has proved effective since the time of Darwin and embodies lessons that have been learned over more than a century in the competitive marketplace of scientific ideas and theories, the principle should not be absolutized, and would have to be suspended if Intelligent Design theorists could make their hypotheses meet standards of empirical adequacy.

What should we conclude about Johnson's solution to the conflict between science and theism? If we accept the criticism that Intelligent Design hypotheses lack empirical import, then we will doubt the prospects for the kind of integrated scientific theory Johnson envisions. Intelligent Design theorists have not made their case that there is any place in science for a theistic hypothesis. But if we keep God apart from the natural world as disclosed by science, what then remains of Johnson's positive view, and in particular his claim that we should seek an integrated theory?

I wish to propose that instead of seeking to integrate the two explanatory theories by uniting them in a single theory, theologians should seek to reconcile these accounts by making them consonant. There are several important insights that we can take from Johnson in our effort to forge a reconciling view. First, we can retain his resistance to the deistic option of reducing God's role to creation by an initial act, followed by noninterference of any kind in the natural process. In other words, defenders of theism should not forget they are defending a personal, activist God.

Second, we can retain his resistance to the view that separates (the supernatural) God from nature and then assigns God's actions and interventions to a spiritual realm which is not only separate from the natural realm, but completely "walled off"<sup>24</sup> from it. Science is then awarded exclusive

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<sup>24</sup> Johnson uses this apt term in "Creator or Blind Watchmaker?" 11.

authority over the natural realm, while the spiritual realm falls under the jurisdiction of the theologian or priest. A second and more subtle part of this proposal is that the natural realm is identified with the *real* and the *rational*, while the spiritual realm is judged to be unreal (or not fully real) and irrational (or not fully rational).

Pennock favors this view that religion belongs to another realm. He suggests as a viable option "that God is concerned with our spiritual rather than our material being and thus intervenes only at a spiritual level" (TB, 192). We also see it in his endorsement of the idea of God as "mysterious and inscrutable" (TB, 307) and the claim that "[a]s natural beings, our knowledge all comes via natural laws and processes" (TB, 290). He goes on to say in this passage: "The lawful regularities of our experience do not apply to the supernatural world. If there are other sorts of supernatural 'laws' that govern that world, they can be nothing like those that we understand."

In another passage, he allows that when farmers' crops fail, it may be true "that their crop failure is simply part of God's curse upon the land because of Adam's disobedience or . . . that the Lord is punishing them for some moral offense and that it might not be fertilizer they need, but contrition and repentance." But "such spiritual possibilities fall under the purview of the priest and not the scientist" (TB, 282-3). He goes on to say that "the proper role of the scientist is to search for natural causes of such occurrences" implying that even if God is causally contributing in some way to the poor crop, there are still (sufficient) natural causes for the event and they will not be affected by whatever God may do. So whatever reality this shadowy spiritual realm may have, presumably it is not one that we can *know* anything about, or if we do have some kind of understanding of it, it is not any understanding that might challenge or even conflict with scientific knowledge.

Johnson resists this compartmentalization of science and religion, and there are some very good reasons why a theist should. First, the view ignores the question of how the two realms are related. It overlooks the fact that the God who acts in the spiritual realm is also the creator of the natural realm. And so the question has to be asked: how are these two realms part of one creation? When, for example, God intervenes and alters persons and mental events in the spiritual plane, would not corresponding states of those persons' brains and bodies also be altered so that they would be in states that they would not have been in if God had not acted? If there is one created order, then there must be a *congruence* between the spiritual and the natural spheres. This is where Johnson's vision of an integrated theory is relevant, now in a different sense, but also relevant is the fundamental opposition between science and religion that he has indicated. If theism is true, as

Johnson believes, there must be a way of harmonizing the theistic God with the best science of our day. And theologians should be trying to find ways of making God's purposes and providential goodness congruent with what science is telling us about who we are, and the kind of physical process that brought us to where we are—at the top of the heap, without glossing over the inconsonances.<sup>21</sup>

What about the second part of the two-realms view that assigns a second-class status to the religious realm as far as its claim to be real and rational. Johnson of course resists this. He and other intelligent design creationists may be viewed as refusing to cede to science the entire realm of the natural and the rational understanding of it. As the conflict between theism and evolutionary theory grows, the critics of religion see science as gradually shouldering God out of the picture, not simply by metaphysical or methodological fiat, but on the *evidential* ground that God is becoming more and more implausible as an explanation of anything that occurs in the biological realm. Johnson resists the inference that the theistic view is the more improbable one, and that the onus falls on theism to make compromises and concessions to science. Convinced of the truth of theism, he concludes that there must be something wrong with the evolutionary side of the argument, that evolutionary theory has gotten "on the wrong track and needs to be brought back to reality."<sup>22</sup> He believes as theists must believe that science will eventually change its course.<sup>1</sup>

What recommendation can we make to both parties in this debate. A reconciling view that does not presume that either side is on the wrong track, and that also recognizes the opposition between them, will anticipate changes coming from both sides. We urge theologians to take a critical attitude toward science, identifying the points at which theological claims clash with scientific claims and then plotting the direction that science must go in to accommodate essential theological beliefs. They must pick their battles: Mind is not reducible to matter? There is direction or progress in evolution? What look like chance-based, unguided evolutionary changes are not? But at the same time, they must be willing to contemplate fundamental changes in their own theological systems, such as qualifying God's attributes of omnipotence or omniscience. And science, for its part, should be receptive to this critical function of theology, recognizing that novel hypotheses that challenge old paradigms can come from any quarter.

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<sup>21</sup> I am alluding here not only to the contingency of the process described above, but also to the struggle for existence and the untold destruction and waste that attends it.

<sup>22</sup> Johnson, "Creator or Blind Watchmaker?" 14.