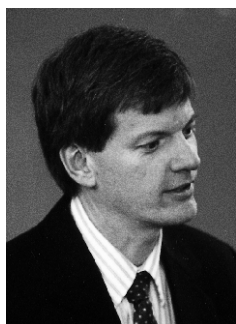




Article

Miracles, Intelligent Design, and God-of-the-Gaps

Miracles, Intelligent Design, and God-of-the-Gaps*



I shall outline the Christian scholastic metaphysic ..., that will lead to the definition of "miracle" and provide a context for discussing "design."

Both traditional Christian miracle claims and the newer project of "intelligent design" have been held to commit the "God-of-the-gaps" fallacy: that is, they depend on our ignorance of the material processes that produced them and invoke supernatural action to explain the unknown. By this argument, scientific research will eventually reduce the "gaps," and hence the motive for believing in God. In reply, I argue that a proper treatment of this question requires careful definitions of such terms as "natural," "supernatural," "design," and "gap." An attentive consideration of the Christian scholastic metaphysic provides definitions of "supernatural" and "design" that give criteria for detecting such events without committing the God-of-the-gaps fallacy. We must distinguish between different kinds of "gaps": those that are simply gaps in our knowledge, and those that are genuine gaps between the properties of the components and the complex structure we are considering.

It is a curious fact that both traditional Christian miracle claims and the contemporary project of "intelligent design" face similar objections. For example, both may be ruled out *a priori* as incompatible with the modern scientific world view, or as outside the realm proper for scientific pronouncement; and both can be called "science stoppers" (i.e. they prevent further research). Both may be dismissed as exhibiting a flawed view of God's action in the world; or as involving their participants in the "God-of-the-gaps" fallacy; or as an improper use of "reason" to compel faith; or as incompatible with the existence of evil.

While I am far from claiming that one entails the other, I find the common opposition to these two claims to be striking. In this brief paper, it is impossible to cover the full range in any depth; so I shall focus on the problem of "God-of-the-gaps." I shall outline the Christian scholastic metaphysic (which I claim accurately represents the

biblical one), that will lead to the definition of "miracle" and provide a context for discussing "design." This will allow us to say whether and when it is possible to make a miracle or design claim that is not liable to the God-of-the-gaps objection, which then will give some basis for discussing how this metaphysic might relate to natural theology.

Definitions, Part 1: Nature and Miracle

To discuss our topic, first we need to define some terms: what is "ordinary" or "natural," and what is a "miracle"? Straightaway we face difficulties, since there is no technical biblical discussion of either of these notions. That, of course, is hardly evidence that the *concepts* themselves are foreign to the Bible. Rather than rely on etymologies¹ or on the various definitions of miracle that have been offered (often for polemical purposes, and often representing varied metaphysics),² I shall state the standard scholastic metaphysic of ordinary and miraculous events, and cite a few biblical texts that clearly support this position.³

Lutheran theologian Heinrich Schmid gives a representative description of divine providence as having three elements: (1) preservation, (2) concurrence, and (3) governance.⁴

1. *Preservation* is the act of Divine Providence whereby God sustains all things created by Him, so that they continue in

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being with the properties implanted in their nature and the powers received in creation ... Created things have no power of subsistence in themselves ... Therefore *preservation* is also designated as *continued creation*.⁵

2. *Concurrence*, or the co-operation of God, is the act of Divine Providence whereby God, by a general and immediate influence, proportioned to the need and capacity of every creature, graciously takes part with second causes in their actions and effects.⁶
3. *Government* is the act of Divine Providence by which God most excellently orders, regulates, and directs the affairs and actions of creatures according to His own wisdom, justice, and goodness, for the glory of His name and the welfare of men. ...

The Providence of God ordinarily employs second causes, and thus accomplishes its designs; but God is by no means restricted to the use of those second causes, for he often exercises His Providence without regard to them, and operates thus contrary to what we call the course of nature, and hence arises the difference between *ordinary* and *extraordinary* providence.⁷

There is no doubt here that both ordinary and extraordinary (miraculous) providence are expressions of God's *active* power: it is never correct to refer to the miraculous as having God more "directly" or "immediately" involved. However, the mode of that expression of power is different, and, at least in principle, some of those differences are detectable by human observers.⁸ God's activity in ordinary providence is not physically detectable, since it is not part of the order of the world we experience with our senses.⁹

Some sample biblical texts show that this is a good inference.¹⁰ For example, James 3:11-12 supports the idea of "natural powers" by which a fig tree *cannot* yield olives; Col. 1:17 and Heb. 1:3 speak of all things depending on Christ's active power of upholding; Exod. 14:21 shows an extraordinary (miraculous) event that uses a means (the east wind); and Luke 1:34-35 describe the mechanism of a supernatural event (the conception of Jesus) as being due to the special agency of the Holy Spirit.¹¹

This metaphysic allows us to see that it is more helpful for our purposes to speak of the "natural properties" of created things and their interactions rather than of the "laws of nature."¹² We may employ this to arrive at the following definitions:

Natural: God made the universe from nothing and endowed the things that exist with natural properties; he preserves those properties, and he also confirms their interactions in a web of cause-and-effect relations.

Supernatural: God is also free to "inject" special operations of his power into this web at any time, e.g., by adding objects, directly causing events, enabling an agent to do what its own natural properties would never have made it capable of, and by imposing organization, according to his purposes.¹³

It is inherent in this metaphysic that "miracles" (better, "supernatural events") are possible. Under what conditions they may be expected is another question. Christian theologians commonly add provisos about them not being capricious but related to God's pursuit of relationship with human beings. These provisos are quite appropriate. At the same time, Christian theism resists the notion that supernatural events are in some way unworthy of God. It is quite true that a doctrine of creation posits a created world that has all its necessary capacities built into it, needing no tinkering. But those capacities are the ones necessary for the world's assigned purpose: namely, of being the background for the lives and choices of rational agents.¹⁴

Definitions, Part 2: Design

How is "design" related to nature and providence? Historically, mention of design has involved purpose. For example, Aristotle's term for it was *heneka tou* "on account of something."¹⁵ Paley defined it as "the several parts ... framed and put together for a purpose."¹⁶ Thus the theistic design argument is also called the "teleological argument."¹⁷

But, as Paley himself acknowledged, there are different kinds of design, ranging from "a principle of order" to specific instances of "contrivance." Hence, we need a more careful definition. We may distinguish two different kinds of design:¹⁸

design-properties results in the production of a material with properties that will serve some purpose.

design-imposed results in the imposition of structure upon some object or collection of objects for some purpose, where the structure and the purpose are not inherent in the properties of the components but make use of these properties.

Examples of design from everyday life include: steel and plastic (both *design-properties*); a digital watch (combination of *design-properties* and *design-imposed*); and Stonehenge (*design-imposed*). Detection of *design-properties* is normally possible against a background of "non-designed" items, and thus a theistic inference from the properties of the natural world (e.g., the anthropic principle) is a weak one, since the properties of the whole are designed. The intelligent design program says, at its simplest, that it is legitimate to have as part of our tool-kit for scientific explanations for natural things, the option to say that they may contain instances of *design-imposed*.¹⁹

We might further notice that, as it applies to design in nature, there are different possible levels of *design-imposed*, ranging from the micro level of particular biological structures, to the larger level of an organism or an ecosystem, to the perception of purpose in the world as a whole. Paley includes arguments for design at all of these levels, but does not discuss whether they are conceptually distinct.

Finally, it should be clear that, given the definitions of "natural" and "supernatural" above, the detection of a



Article

Miracles, Intelligent Design, and God-of-the-Gaps

There are different possible levels of design-imposed, ranging from the micro level of particular biological structures, to the larger level of an organism or an ecosystem, to the perception of purpose in the world as a whole. ...The detection of a supernatural event is analogous to the detection of design-imposed, because it detects a gap between the result and the properties of the components.

supernatural event is analogous to the detection of *design-imposed*, because it detects a gap between the result and the properties of the components.²⁰

Detecting Design-Imposed

We may take the declaration that Stonehenge is an instance of *design-imposed* to be indisputably rational. What do we do when we make this declaration? We are saying that we do not believe that the properties of these rocks or of their interaction with nonpurposive aspects of their environment (wind, rain, seismic events, etc.) would lead to the formation that we see. It does not matter that the structure is in disrepair, nor that we do not know who made the structure or even why they made it.

In other words, we find a gap between the properties of the components and their environment, and the structure we find. This gap is not a product of our ignorance, but of the natures of the components: we do not believe that any research into the components will undo the inference of *design-imposed*. We may label this kind of gap as a *lacuna naturae causâ* (Latin: “a gap on account of nature”)—an explanatory gap due to the natures of the components.

We must carefully distinguish this kind of gap from the other kind. For example, supposing I cannot explain why a volcano erupted when it did. I would not be warranted (at least not without further research) in declaring this as due to *design-imposed*, since the explanatory gap is due to my ignorance of the processes (which in principle are explicable). We may label this kind of gap a *lacuna ignorantiae causâ* (Latin: “a gap on account of ignorance”)—an explanatory gap due to our ignorance of the processes.²¹

Therefore it follows that the detection of *design-imposed* amounts to the identification of *lacunae naturae causâ* (and not necessarily to the perception of the purpose of the event or object).

God-of-the-Gaps

To claim to have detected a miracle, or an instance of design in the natural world, renders one liable to the charge of committing the “God-of-the-gaps” fallacy.²² That is to say, suppose we come upon some object or

event for which we do not have a naturalistic explanation, and then say, “See, God must have done that,” and then proceed to base either our own belief or our apologetic for belief on such an instance. This involves us in a risk. Let us suppose the sciences provide a natural-process based explanation. Then where does that leave God’s involvement in the matter? Are what once were grounds for believing in God now made an argument for disbelief?²³

A serious theological problem also is involved (at least within traditional theism) if we think that it is possible to say of some events or objects, “God made this,” and of the natural ones, “God did *not* make this.”²⁴ The doctrine of providence cited above affirms that the products of second causes are every bit as much direct divine action as the miraculous events.

It is widely held that Darwin’s theory undermined the classical (Paley’s) argument from design.²⁵ According to the standard reading, Paley had put forward many instances in the biological world that were impossible to account for except by divine imposition of design (*design-imposed*). Then, however, Darwin’s theory of natural selection provided a natural-process based explanation of the features and interactions of organisms.²⁶ The most that design could claim, by this understanding, was that God had designed the properties and the laws governing the process (along the lines of *design-properties* above).²⁷

From within the perspective of traditional Christian theology, there are many possible critiques of Paley’s argument. I will give only three.²⁸ First, he overreaches. He apparently thought that ascertaining design involved discerning the purpose for a large part of the creation, and potentially for the whole of it. The book of Ecclesiastes explicitly denies that such is possible.²⁹ Second, he apparently assumed a static view of the creation, i.e., that what one observes today is just what came forth from the special design of the Creator. This makes no allowance for development under natural (and possibly supernatural) factors; nor does it allow for the reality of human evil. And finally, he apparently assumed that a fairly full range of divine attributes, including benevolence, could be derived from the created order. Paul simply referred to “his eternal power

and deity" (Romans 1:20). However, this hardly implies that all design arguments must be thrown out.³⁰

Rationality and Detecting *Design-Imposed*

The claim that *all* appeals to special divine action lead to the God-of-the-gaps fallacy, amounts to a claim that *all gaps are gaps due to ignorance*—namely, that behind every gap lies a completely natural explanation. On the face of it, this is not an empirical claim. Instead it sets limits on what kinds of explanations are allowed for what we meet empirically. For example, consider the following statement from the National Science Teachers Association (NSTA):

Science is a method of explaining the natural world. It assumes the universe operates according to regularities and that through systematic investigation we can understand these regularities. . . . *Because science is limited to explaining the natural world by means of natural processes, it cannot use supernatural causation in its explanations.* Similarly, science is precluded from making statements about supernatural forces, because these are outside its provenance (my italics).³¹

Similarly, the National Association of Biology Teachers (NABT) claims the following:

The diversity of life on earth is the outcome of evolution: an unpredictable and natural process of temporal descent with genetic modification that is affected by natural selection, chance, historical contingencies and changing environments.³²

In saying this they are in effect denying the existence of any *lacunae naturae causâ*. They then go on to claim:

Providing a rational, coherent and scientific account of the taxonomic history and diversity of organisms requires inclusion of the mechanisms and principles of evolution.

In effect they are saying that to be scientific and rational, you must agree that "all explanatory gaps are *lacunae ignorantiae causâ* only."

To evaluate whether we ought to follow this definition of rationality, we must first recognize the two domains of scientific explanation, the *nomothetic* and the *historical*.³³ In nomothetic explanations, we consider what normally happens, and explain its causation. We are looking for "laws," hence the name. This domain is represented in most common definitions of science. In historical explanations, we are asking what specific chain of cause-and-effect produced the item we are studying. Obviously, the two are related, but they are also distinguishable, e.g., how animals interact in an ecosystem (nomothetic) versus why a particular species went extinct (historical). Of course, our historical explanations make use of our nomothetic ones.

Now the biblical theist will not appeal to special divine action in a nomothetic context, because in situations like the ordinary function of God's creation, we recognize that

God's activity is that of maintaining the order of what he made. Appeal to any special divine action is unsuited to a context like that.³⁴ To invoke supernatural causation here would involve the God-of-the-gaps fallacy. Further, many historical events, such as the 1980 Mount St. Helens eruption, may be explicable by appeal to natural factors. To attribute these to supernatural action would be improper (at least, without plenty of further research). On the other hand, there may be unique events that *do* involve special divine activity (e.g., creation, exodus, virgin birth, resurrection of Jesus). In such cases, it would be incorrect and misleading to insist that only natural factors are valid for describing what happened in those events.

The biblical theist will not appeal to special divine action in a nomothetic context, because in situations like the ordinary function of God's creation, we recognize that God's activity is that of maintaining the order of what he made.

It is wise to avoid constructing, *a priori*, unrealistic requirements for what constitutes rationality. It makes more sense to identify actions and judgments that we know to be rational, and to discern from them what characteristics they have.³⁵ We know the judgment that Stonehenge is an instance of *design-imposed* is rational; and any philosophy that would call the rationality of this judgment into question is itself undermined by the clash. We have experience of rocks, wind, and water, and the kinds of arrangements they produce. We recognize in Stonehenge, however, something that is beyond those natural capacities; we see that a pattern has been imposed on the components. The key to the identification of *lacunae naturae causâ* is to identify the principle that separates the design from the natural properties.

Another example of identifying a principle that separates design from natural properties is William Clark's signature on the stone formation called Pompey's Pillar in Montana. We do not have any problem being confident that either Clark wrote it or someone forged it. It simply cannot be a product of the stone, because a linguistic message is not a product of the properties of its medium.

This approach to detecting *design-imposed* is, to be sure, an intuitive one, and perhaps some people will find this to be a shortcoming. There is, however, research under way to make it more than that.³⁶ We may also feel cautious about using it, since we do not know everything there is to know about the relevant natural properties. On the other



Article

Miracles, Intelligent Design, and God-of-the-Gaps

hand, we know enough about some things that we can have confidence when speaking of them. C. S. Lewis pointed out:

No doubt a modern gynaecologist knows several things about birth and begetting which St. Joseph did not know. But those things do not concern the main point—that a virgin birth is contrary to the course of nature. And St. Joseph obviously knew *that*.³⁷

Can empirical study identify instances of *design-imposed* in the natural world? The popular writer G. K. Chesterton observed:

No philosopher denies that a mystery still attaches to the two great transitions: the origin of the universe itself and the origin of the principle of life itself. Most philosophers have the enlightenment to add that a third mystery attaches to the origin of man himself. In other words, a third bridge was built across a third abyss of the unthinkable when there came into the world what we call reason and what we call will.³⁸

These bridges across the abyss of the unthinkable equate to what I am calling gaps due to natural properties, not due to ignorance, and they, in principle, are empirically detectable.³⁹

Supposing we agree to the NSTA requirement that “science ... cannot use *supernatural causation* in its explanations,” does it follow that we must agree that there are no natural gaps? The only way this could be rational is if we knew beforehand that there are no such gaps; but that is beyond the bounds of the natural sciences.⁴⁰ No scientist who refuses to be a theist should be required to say that these gaps have a supernatural cause; but it is only honest to acknowledge the gaps’ existence.⁴¹

Miracles, Intelligent Design, and Natural Theology

If the detection of gaps due to nature makes the inference of *design-imposed* rational, we then may ask about the role of miracles and intelligent design in natural theology. But what is “natural theology”? Some take it as the discipline of producing proofs for the existence of God; others take it as elucidating the knowledge of God that comes to us as humans apart from special revelation;

and some take it in opposition to special revelation.⁴²

It is better to step back and ask what one hopes to gain from natural theology. Aquinas, in discussing whether God exists, gave what he saw as the two really telling arguments that God does not exist. The first is the problem of evil; and the second is what we may call the problem of the redundant deity. He said:

What can be fully accounted for through fewer principles is not produced through more. But it seems that all things that appear in the world can be accounted for fully through other principles, when it is supposed that God does not exist, because those that are natural are reduced to a principle that is nature, but those that come from intention are reduced to a principle that is human reason or will. Therefore there is no need to suppose that God exists.⁴³

One function, then, of natural theology, is to remove these objections to religious believing.

There are several varieties of argument from design. For example, some focus on *design-properties*: those that adduce the cosmological anthropic principle as evidence that the universe is especially hospitable to life; or those that express wonder that our minds and the universe are so well fitted for each other. These are important, but relatively weak. Someone may reply: “Well, if it were otherwise we would not be here discussing it.”⁴⁴

Darwinism is often said to remove all evidence for *design-imposed* from the biological world.⁴⁵ It is certainly the case that the a-teleological description of evolution from the NABT does so; and this is because it is no longer simply a theory about natural origin of any number of species, but a biological theory of everything. At its heart is a pre-commitment to the absence of gaps, rather than the empirical discovery of that absence. The theory cannot, however, eliminate appeals to *design-properties*.

Those who think that their religious faith requires *design-imposed* will conclude both that a-teleological evolution is an ideological threat, and that only allowing *design-properties* leaves the believer with too thin a soup; hence they will want to see if there are coun-

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ter-arguments to the a-teleological theory of evolution.⁴⁶ This is what Michael Behe has provided in *Darwin's Black Box*: his concept of irreducible complexity is claimed to be an instance of a *lacuna naturae causâ*. He argues:

Darwinism is the most plausible unintelligent mechanism, yet it has tremendous difficulties and the evidence garnered so far points to its inability to do what its advocates claim for it. If unintelligent mechanisms can't do the job, then that shifts the focus to intelligent agency. That's as far as the argument against Darwinism takes us, but most people already have other reasons for believing in a personal God who just might act in history,⁴⁷ and they will find the argument for intelligent design fits with what they already hold.

With the evidence arranged this way, evidence against Darwinism does count as evidence for an active God ... Life is either the result of unintelligent causes or it is not, and the evidence against the unintelligent production of life is clearly evidence for intelligent design.⁴⁸

There are many strengths to this way of framing the argument. First, it does not ask of the empirical evidence more than it can provide (an improvement on Paley). Second, it recognizes that most people have religious faith for other reasons than the argument from design—but once they have that faith, it is reasonable of them to want a scientific theory that is both rational and compatible with that faith (or else the faith should be modified or even abandoned).⁴⁹ And finally, it exposes the nub of the issue: the a-teleological theory says life (including us) results from unintelligent causes, but it has not presented the evidence it would take to back up a claim with such far-reaching metaphysical consequences.

I do not consider here whether the empirical case made by Behe is adequate. However, it deserves consideration, and cannot be ruled automatically invalid for committing the God-of-the-gaps fallacy. This is because it is based on the claim of having discovered *lacunae naturae causâ*.

We will likely never know who made Stonehenge, or why, until we uncover and interpret a text from its makers. This illustrates nicely the limits of design when it comes to religion: it takes a text from the Maker, special revelation, to elucidate the Creator's identity, character, and will.⁵⁰ But, like Stonehenge, it raises the question: now that we know it was designed, what was it designed *for*? And now that humans see themselves as the products of design, what were *we* designed for? ❖

Notes

*This paper was first read at the Gifford Bequest International Conference on Natural Theology, Aberdeen, Scotland, 26–29 May 2000. My respondent was Professor Roger Trigg; and I have since

read his book, *Rationality and Science: Can Science Explain Everything?* (Oxford: Blackwell, 1993), with profit. I am grateful to Professor Trigg and to the audience for helpful comments.

¹The English word "miracle" derives from Latin *miraculum*, which in turn comes from the verb *miror* "to wonder." That is, it contains the notion of the subjective response of amazement on the part of the onlookers; but this notion is not uniformly present in the biblical passages which are held to describe miracles.

²E.g., David Hume, *Enquiries Concerning the Human Understanding and Concerning the Principles of Morals*, ed. L. A. Selby-Bigge (Oxford University Press, 1902), 114 (section x.1), defined a "miracle" as "a violation of the laws of nature," while others have preferred to speak of a *suspension* of those laws. Still others think of an event that is personally significant but not necessarily metaphysically distinct from ordinary events, e.g., R. J. Berry, who wrote: "Probably all miracles are susceptible to an explanation other than the supernatural." This statement appears in *Science and Christian Belief* 9, no. 1 (1997): 77 (a response to P. Addinall's reply to Berry's previous article on "The Virgin Birth of Christ," *Science and Christian Belief* 8, no. 2 [1996]: 101–10). The occasionalist G. C. Berkouwer, *The Providence of God* (Grand Rapids, MI: Eerdmans, 1952), 196 (drawing on Abraham Kuyper), asserted that a miracle "means nothing more than that God at a given moment wills a certain thing to occur differently than it had up to that moment been willed by Him to occur."

³A full exegetical and theological discussion of the options in traditional Christianity appears in C. John Collins, *The God of Miracles: An Exegetical Examination of God's Action in the World* (Wheaton, IL: Crossway, 2000). This work concludes that the scholastic metaphysic has the advantages both of being exegetically sound and of being robust in the face of modernism and postmodernism.

⁴Heinrich Schmid, *Doctrinal Theology of the Evangelical Lutheran Church*, trans. Charles Hay and Henry Jacobs (Minneapolis, MN: Augsburg, 1961), 170–94. For the same position from other branches of Western Christianity, cf. Heinrich Heppe, *Reformed Dogmatics*, trans. G. T. Thomson (Grand Rapids, MI: Baker, 1978), 251–80; and Alfred Freddoso (Roman Catholic), "God's General Concurrence with Secondary Causes: Why Conservation Is Not Enough," *Philosophical Perspectives* 5 (1991): 553–85. Some theologians dispute whether *concurrence* should be included, but Freddoso's essay is, I believe, proof that it must. Such a notable Presbyterian theologian as William G. T. Shedd, *Dogmatic Theology* (Nashville: Nelson, 1980), i:527–30, speaks only of preservation and government, but from his exposition it is clear that his definition of preservation *includes* concurrence.

⁵The term "continued creation" can cause some confusion, since different writers may mean different things by it. The Reformed compendium of Heppe uses similar language about "continued creation," but adds a clarification: "*conservatio* is to be conceived as a *continuata creatio*, resting upon the same command of God as creation. ... At the same time preservation must not be conceived as a continued creation, as though by preservation the essential identity of the once created world were abolished" (Heppe, 257–8).

⁶The expression "graciously takes part" is somewhat vague; it refers to God's confirming the interactions of their causal properties. Heppe, 258, cites Swiss theologian J. H. Heidegger (ca. 1700) for a definition: "Concurrence or co-operation is the operation of God by which he co-operates directly with the second causes as depending upon him alike in their essence as in their operation, so as to urge or move them to action and to operate along with them in a manner suitable to a first cause and adjusted to the nature of the second causes."

⁷"The form of divine *gubernatio* in which God is active without second causes or uses them in a manner deviating from their orderly appointment and activity is God's performance of miracle" (Heppe, 263).

⁸Cf. Stephen T. Davis, "God's actions," in *In Defense of Miracles*, ed. R. D. Geivett and G. R. Habermas (Downers Grove, IL: Intervarsity, 1997), 163–77, at 166. I say "at least in principle" and

"some of those differences" because it is conceivable that a given special divine action is not distinguishable to us from a "natural event." Some which are clearly distinguishable, under the supernaturalist scheme, are the initial creation *ex nihilo* event; the virgin conception of Jesus; the turning of water into wine; the resurrection of Jesus; and the conversion of sinners, even at the hands of incompetent messengers.

⁹Cf. Paul Helm, *The Providence of God* (Downers Grove, IL: InterVarsity, 1994), who helpfully says "the exact sense in which objects which are distinct from God are yet upheld by him is difficult to get clear" (p. 82); and "it should be stressed that this upholding, being metaphysical or ontological in character, is physically undetectable" (p. 89). Other writers have referred to the hiddenness of the "causal joint" between God and the creation (Austin Farrer's term). Note also Helm's p. 146, where he virtually defines "providence" as "that great matrix of causes and effects through which God governs the world."

¹⁰These and many other texts are discussed at length in Collins, *The God of Miracles*, chaps. 5–7. This conclusion is stronger than that of Paul Gwynne, *Special Divine Action* (Rome: Gregorian University Press, 1996), 65, who supposes that the biblical material is not decisive.

¹¹Cf. Matt. 1:18, 20. Of course, God is represented as active in the formation of every embryo (cf. Ps. 139:13); the question is the *mode* of his involvement.

¹²Although arrived at independently, my approach resembles the views of Stephen S. Bilynskyj, *God, Nature, and the Concept of Miracle* (PhD dissertation, University of Notre Dame, 1982), 104–5, who speaks of "natural powers."

¹³For a reference point, compare this with Blaise Pascal's definition of "miracle," as "an effect which exceeds the natural power of the means which are employed for it; and what is not a miracle is an effect which does not exceed the natural power of the means which are employed for it," in *Pensées* (Paris: Garnier Frères, 1964), no. 804 (no. 891 in Krailsheimer's translation). This is also similar to Gwynne's definition of "special divine action" in *Special Divine Action*: "God brings it about that some particular outcome is different from what it would have been had only natural, created factors been operative," (p. 24).

¹⁴Cf. Helm, *Providence*, 106–7. The objection that miracles are unworthy of a fully-fitted creation seems frequently to rely on a metaphor for the world as a machine or artifact: it would be a reproach on the Craftsman if it needed "tinkering." But suppose we change the metaphor, and picture the world as a musical instrument, and its history as the tune. It is no shame to the Craftsman if his instrument does not have the tune within itself!

¹⁵*Posterior Analytics* 95a (II.xi, pp. 216–9 in the Loeb edition, lines 3ff.), where it is distinguished from *ananche* "necessity" and *tyche* "chance." Hence "design" is traditionally "teleology."

¹⁶William Paley, *Natural Theology* (New York: American Tract Society, n.d. [originally 1802]), 1; cf. his description of the designing mind as "that which can perceive an end or purpose, as well as the power of providing means and directing them to their end" (p. 265). Paley also uses the term "contrivance" throughout as a synonym.

¹⁷Cf. Thomas Aquinas, *Summa Theologiae* I.a, 2, 3, which contains the five ways of showing that God exists. The fifth way is the teleological argument: "We see that things which lack intelligence, such as natural bodies, act for an end [operantur propter finem] ... Now, whatever lacks intelligence cannot move towards an end unless it be directed by some being endowed with knowledge and intelligence."

¹⁸Thomas McPherson, *The Argument from Design* (London: Macmillan, 1972), 8, distinguishes what he calls "design-A," or order, from "design-B," which specifically refers to purpose. My categories do not align with his.

¹⁹Since the program does not rule out the function of natural processes, it is clear that intelligent design offers a larger set of tools than the purely naturalistic approach.

²⁰To identify *design-imposed* in the natural world does not of itself serve as an identification of a "supernatural" agent; we must bring in our background beliefs about what kinds of agents may have produced such an effect. But this is the same situation with Stonehenge: the agents may be aliens, deities, or humans; and it is our background beliefs that render any of these worth pursuing as the explanation.

²¹It was interesting to me that, after I had arrived at this analysis, I discovered a similar dichotomy in John Polkinghorne's *Quarks, Chaos, and Christianity* (New York: Crossroad, 1994), 71–2. Polkinghorne writes of gaps that are "patches of contemporary ignorance" and "intrinsic gaps in the bottom-up description alone in order to leave room for top-down action." This is interesting, both because of his prominence among writers on science and religion, and because Polkinghorne is not an adherent of the scholastic metaphysic given above, nor of intelligent design (*design-imposed*) in the biological world.

²²Examples of the charge are easy to multiply: for example, Michael Roberts' review of Behe's *Darwin's Black Box in Science and Christian Belief* 9:2 (1997): 191–2, and his reply to a response to that review, *Science and Christian Belief* 10:2 (1998): 189–95; Richard Bube, "Seven Patterns for Relating Science and Theology," in Michael Bauman, ed., *Man and Creation: Perspectives on Science and Theology* (Hillsdale: Hillsdale College Press, 1993), 75–103, at 83–6; Robert Pennock, *Tower of Babel: The Evidence against the New Creationism* (Cambridge: MIT Press, 1999), 163–72.

²³For example, visitors to Mount St. Helens in Washington State are treated to a history of American Indian beliefs about the mountain's eruptions: these were held to be due to special acts of the gods. If a geologist can show that the regular working of natural processes fully explains the eruptions, then the eruptions are no longer supernatural (but, on the Christian view, not necessarily irrelevant to divine providence). I have heard religious speakers on the BBC defend ignorance on the causes, say, of lightning strikes or the 1987 hurricane in the south of England, because that leaves room for God's mysterious action in his world.

²⁴For example, the subtitle of R. Douglas Geivett and Gary R. Habermas, *In Defense of Miracles* (Downers Grove, IL: InterVarsity, 1997), is "A comprehensive case for God's action in history." Although some of the authors in the collection try to provide a more careful nuancing to this, it nevertheless shows the problem in popular parlance. A Scripture text such as Ps. 119:126, "It is time for the Lord to act," must be taken as analogical – that is, it speaks as if God were doing nothing about the wicked, rather than asserting that he actually is doing nothing.

²⁵Charles Darwin, *The Origin of Species*, Harvard Classics 11; (New York: Collier, 1909).

²⁶Strictly speaking, the situation is actually more complex than that. Many of Paley's examples seem to be to the effect, "I cannot imagine a natural scenario that could have produced such phenomena," while Darwin replied, "But I can." Darwin described variation plus natural selection as a mechanism that *could have* produced these structures; he never supported the modality shift from *imaginable* to *possible*, much less to *plausible* or *probable*. Instead he argued, "I cannot see why it could not," shifting the burden of proof; and he offered no empirical tests for the proposed possibility.

²⁷David Livingstone, "The Idea of Design: The Vicissitudes of a Key Concept in the Princeton Response to Darwin," *Scottish Journal of Theology* 37 (1984): 329–57, presents such a reading of the nineteenth century. Livingstone believes that the *design-properties* line of argument was a positive move in response to science, and that the later Princetonians' return to the older argument for *design-imposed* was a regression. Interestingly, Paley was aware of the *design-properties* line of argument (he called it a "principle of order in nature"), and considered it inadequate for what we see (Paley, 54–5).

²⁸These are complementary to those in Michael Behe, *Darwin's Black Box* (New York: Free Press, 1996), 211–6.

²⁹See J. Stafford Wright, "The interpretation of Ecclesiastes," *Evangelical Quarterly* 18 (1946): 18–34.

³⁰It is likely that Paley, writing a quarter of a century after David Hume's *Dialogues Concerning Natural Religion* (New York: Hafner, 1948; originally 1779), intended to overwhelm Hume's case with examples; and some think he was at least partially successful. Cf. D. L. LeMahieu, *The Mind of William Paley* (Lincoln: University of Nebraska Press, 1976), 29–54, 67–8; David Burbridge, "William Paley Confronts Erasmus Darwin: Natural Theology and Evolutionism in the Eighteenth Century," *Science and Christian Belief* 10 (1998): 49–71. For the purposes of this paper, I accept Elliott Sober's assessment of Hume's objections to the design argument, in *Philosophy of Biology* (Boulder, CO: Westview, 1993), 34–5, namely that they do not defeat Paley's form of it. (Sober thinks that Darwin's case does defeat Paley.)

³¹National Science Teachers Association, NSTA Position Statement on the Teaching of Evolution, 1997 (<http://www.nsta.org/159&id=10>).

³²National Association of Biology Teachers, NABT Statement on Teaching Evolution, adopted March 15, 1995 and modified in October 1997 (<http://www.nabt.org/Evolution.html>). The earlier version of this statement appeared in *The American Biology Teacher* 58, no. 1 (1996): 61–2, and described evolution as "an unsupervised, impersonal, unpredictable and natural process." The newer statement is not different in its rejection of design, only less blatant: for example, it goes on to say that "natural selection ... has no specific direction or goal." (The most recent update, August 2000, does not change in this respect.)

³³Cf. Ian Barbour, *Religion in an Age of Science* (New York: Harper San Francisco, 1990), 66–71.

³⁴Indeed, as Helm put it, "It should be stressed that this upholding, being metaphysical or ontological in character, is physically undetectable" (*Providence*, 89).

³⁵I profess the influence of Mikael Stenmark, *Rationality in Science, Religion, and Everyday Life* (University of Notre Dame Press, 1995), who stresses that our criteria of rationality ought to describe something it is possible for real people to achieve.

³⁶William Dembski, *The Design Inference: Eliminating Chance through Small Probabilities* (originally a University of Illinois at Chicago PhD thesis, 1996; now published by Cambridge University Press, 1998). Jonathan Edwards' *Treatise Concerning Religious Affections*, in *The works of Jonathan Edwards* (Edinburgh: Banner of Truth, 1974), i:234–343, is an attempt to provide criteria for identifying supernatural moral transformation.

³⁷C. S. Lewis, *Miracles: A Preliminary Study* (New York: Macmillan/Simon and Schuster, 1960), chap. 7, paragraph 5.

³⁸G. K. Chesterton, *The Everlasting Man* (Garden City, NJ: Doubleday, 1955 [1925]), 27.

³⁹The more than seventy years of scientific research since Chesterton wrote this have not done anything but provide confirmation of this. The Big Bang theory of the origin of the cosmos looks like a scientific theory that recognizes the first of Chesterton's gaps. For the second, Charles Thaxton has argued that the information-bearing function of DNA cannot result from a law-based regularity (cf. Nancy Pearcey and Charles Thaxton, *The Soul of Science* [Wheaton: Crossway, 1994], 243–5). This is a stronger conclusion than that of Paul Davies, *The Fifth Miracle* (New York: Simon and Schuster, 1999), that *we have not yet* discovered the law; it is instead a denial by principle that *we can*. Finally, as many have observed, human rationality is hard to square with a purely law-based explanation of it: "If I am physically determined to think as I do, if these physical conditions are sufficient for me to have a certain belief, then the relation between that belief and any evidence there may be for it is purely coincidental" (Paul Helm, *Providence*, 221). Interestingly enough, even Darwin (*Origin*, 251) acknowledged that he must bracket out the second and third of these. Once these three are acknowledged, it becomes a valid research project to see if there are others.

⁴⁰Surely, at least from the point of view of the scientist, this is a contingent matter of fact; and as such it cannot be known except by

empirical investigation. For a Christian theist, this is a particularly bad approach: as Helm put it: "It is not appropriate to argue, *a priori*, what God will and will not do with and in the physical creation, but — as with any contingent matter of fact — it is necessary to investigate what God has done" (*Providence*, 76).

⁴¹For example, with such words as: "This object or event *looks like* it has an agent as its cause. I do not know of a non-purposive process that could have produced this effect. I do not wish to attribute the effect to a supernatural agent."

⁴²Cf. James Barr, *Biblical Faith and Natural Theology* (Oxford: Clarendon Press, 1993), 1–20, for a survey of "Natural theology in this [i.e., the twentieth] century."

⁴³Aquinas, *Summa Theologiae*, I.a, 2, 3 (my translation).

⁴⁴Cf. John North, *Norton History of Astronomy and Cosmology* (New York: Norton, 1995), 619. This is not to say that there is no rejoinder to this; cf. William Lane Craig, "Cosmos and Creator," *Origins & Design* 17, no. 2 (1996): 18–28, for a vigorous discussion. Further, such cosmological concerns diminish the force of Hume's objection (*Dialogues Concerning Natural Religion*, 22) that our experience is too local to be applicable to the universe.

⁴⁵Cf. the famous job description of the biologist from Richard Dawkins in *The Blind Watchmaker* (New York: Norton, 1987), 1: "Biology is the study of complicated things that give the appearance of having been designed for a purpose" (with a view toward removing that appearance, cf. his subtitle, *Why the evidence of evolution reveals a universe without design*).

⁴⁶This is not the same as saying they will reject *all* forms of evolutionary theory; a great deal depends on the metaphysics underlying the theory.

⁴⁷I assume Behe means this analogically!

⁴⁸Michael Behe, review of Robert Pennock, *Tower of Babel: The Evidence against the New Creationism* (Cambridge: MIT Press, 1999), in *The Weekly Standard* (7 June 1999): 35.

⁴⁹Indeed, the believer must often confront proposed reasons for abandoning faith; and it is spiritually healthy to recollect the evidence of design at times when the overall design of the cosmos is invisible. Paley, *Natural Theology*, 344–7, was well aware of this, and commented: "It is one thing to assent to a proposition of this sort; another, and a very different thing, to have properly imbibed its influence. I take the case to be this: perhaps almost every man living has a particular train of thought, into which his mind glides and falls, when at leisure from the impressions and ideas that occasionally excite it: perhaps, also, the train of thought here spoken of, more than any other thing, determines the character. It is of the utmost consequence, therefore, that this property of our constitution be well regulated ... In a moral view I shall not, I believe, be contradicted when I say, that if one train of thinking be more desirable than another, it is that which regards the phenomena of nature with a constant reference to a supreme intelligent Author. To have made this the ruling, the habitual sentiment of our minds, is to have laid the foundation of every thing which is religious. The world thenceforth becomes a temple, and life itself one continued act of adoration. The change is no less than this: that whereas formerly God was seldom in our thoughts, we can now scarcely look upon anything without perceiving its relation to him." McPherson, *The Argument from Design* (pp. 12–3), notes that Kant also saw this as a value.

⁵⁰Theologically, one of the functions of miracles has been to authenticate the messengers sent by God conveying such revelation.

