

# Is there anything wrong with “God of the gaps” reasoning?

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A common objection raised against those who defend the proposition that God acts upon nature to cause events that nature would not otherwise produce, is that any such claim commits the fallacy known as “God of the gaps.” Such a position, it is urged, cannot be defended either scientifically or theologically. Thus we are warned that “there is no ‘God of the gaps’ to take over at those strategic places where science fails”<sup>1</sup> and that God “cannot be the old ‘God of the gap’.”<sup>2</sup> We have “to learn that God is not in the gaps in the nexus of events but is somehow in the whole process.”<sup>3</sup> Any appeal to divine intervention to bridge what seem to be otherwise unbridgeable gaps in naturalistic explanations is viewed with great suspicion. So strong is this sentiment, “that merely labeling an explanation as ‘God-of-the-gaps’ is often taken to constitute an unanswerable refutation of it.”<sup>4</sup>

Unfortunately, although the phrase “God of the gaps” is widely and disparagingly used, and is understood by those employing it to refer to reasoning that is clearly fallacious, there has been little rigorous examination of this presumed fallacy. Exactly wherein the fallacy lies and whether those who defend the claim of divine intervention in the course of nature are really guilty of such reasoning gets little discussion. Equally, it seems to be assumed, rather than argued, that theologians in the past have typically been guilty of this fallacy and that the progress of scientific understanding has steadily undermined any prospect of justifying claims of divine intervention within the course of nature.<sup>5</sup> My intention in what follows is to expose these assumptions to critical analysis in order to judge how seriously the “God of the gaps” objection should be taken.

The charge that those who defend the claim that divine intervention in nature has occurred are engaged in fallacious reasoning seems to be grounded in the view that the evidence taken to justify talk of divine intervention must be based on the existence of gaps in our scientific understanding of nature. To consider such gaps as evidence for divine intervention is fallacious, however, as it takes our ignorance of how nature works as evidence for supernatural intervention. The “God of the gaps” is thus an example of the fallacy of *argumentum ad ignorantiam*, i.e., an appeal to ignorance.

The fallacy of *argumentum ad ignorantiam* is standardly cited in texts as an argument that takes either of the following forms:<sup>6</sup>

1. There is no proof (or you have not proved) that  $p$  is false. Therefore  $p$  is true.
2. There is no proof (or you have not proved) that  $p$  is true. Therefore  $p$  is false.

Thus, “if an argument claims that some statement is false, just because it is not known to be true or has not been proven, or it claims that a statement is true just because it is not known to be false or because it has not been refuted or disproved, then that argument commits the *fallacy of appeal to ignorance*.”<sup>7</sup>

A problem with the standard discussions of *argumentum ad ignorantiam* is that they tend to be very short and the examples used to illustrate this fallacy seem artificial. Discussions of the fallacy are typically in the order of one to two pages and the illustrations of the fallacy frequently bear little resemblance to real life arguments. Copi’s widely used *Introduction to Logic* devotes one and one-half pages to discussing the fallacy and provides the “practical” example that it is fallacious to argue that there must be ghosts because no one has ever been able to prove that there are not any.<sup>8</sup>

That considerably more needs to be said on the subject seems evident. *Ex silentio* arguments are frequently used in historical research, psychology recognizes the reasonableness of “lack-of-knowledge” inferences made by experimental subjects, and the natural sciences employ the concept of “negative evidence.”<sup>9</sup> The relation of these widely accepted forms of reasoning to *argumentum ad ignorantiam* needs to be made clear. Equally, it needs to be recognized that the examples customarily cited of *argumentum ad ignorantiam* are often a caricature of how arguments actually take place. With reference to Copi’s ghost example, I suspect that it is difficult to find a defense of the existence of ghosts that relies simply on the assertion that it has not been proved that ghosts do not exist. Those who believe in ghosts generally make appeal to some body of positive evidence that, rightly or wrongly, they take to support their contention that ghosts exist.

The artificiality that plagues the short discussions of *argumentum ad ignorantiam* found in so many textbooks on informal logic results from the fact that in real life it is difficult to find arguments based **simply** on ignorance. It is clearly fallacious to argue that a statement must be false **solely** on the basis that it has not been proven true, or that a statement must be true **solely** on the basis that it has not been proven false. Typically, however, people do not argue in such a manner. Usually, we find them utilizing a premise, whether it be implicit or explicit, that if a proposition  $P$  were true (or not true) then we should reasonably expect to find evidence for it being true (or not true). When we do not find such evidence we can take this as a kind of evidence that  $P$  is false (or true). If my son tells me that there is a Great Dane in our bathroom and I go look and find no evidence of a Great Dane, I conclude that it is false there is a Great Dane in our bathroom. My lack of evidence for it being the case that there is a Great Dane in our bathroom is good evidence that there is not a great Dane in our bathroom because I have knowledge that if a Great Dane were there, there should be positive evidence to confirm its presence. Walton is, therefore, correct to note that presumed examples of the fallacy of

*argumentum ad ignorantiam* can often be redescribed in a positive way that makes them seem not to be arguments from ignorance at all.

This redescription or transformation turns an argument from ignorance into a more positive-appearing kind of argumentation using *modus tollens*, and an implicit conditional assumption . . . The transformation is based on the conditional that if you have looked for something, and clearly it is not there, then this observation can count as a kind of positive evidence that it is not there.<sup>10</sup>

It seems that examples of the fallacy of *argumentum ad ignorantiam* are rare.<sup>11</sup> In most instances, arguments which might at first glance appear to commit the fallacy of simply appealing to ignorance, reveal themselves on further inspection not to be arguing that a particular proposition P has been proved false simply on the basis that it has not been proved true, but rather on the basis that there is good reason to believe that if P were true then we should have been able to find evidence for its truth. The fact such evidence is lacking provides good reason, via *modus tollens*, for concluding that P is false. In such instances, it is a mistake to insist that the argument for concluding -P is based simply on ignorance and thus commits the fallacy of *ad ignorantiam*.

This analysis suggests that in most instances what is really at issue is the status of the conditional claim that if P were true (or false) then we could reasonably have expected to find evidence that it is true (or false) and thus, lacking such evidence, are entitled to conclude that P is false (or true). Put a little differently, what is really at issue in most instances is not the logical structure of the argument, i.e., whether it can be considered valid, but whether there is good reason to accept the truth of the conditional claim that is being employed, either implicitly or explicitly, as a premise of the argument.

Applying this analysis to the “God of the gaps” objection, we can ask whether those who appeal to gaps in our scientific understanding of nature as evidence of supernatural intervention in the course of nature do so solely or simply on the basis of ignorance of how natural causes operate or rather on the basis of presumed positive knowledge of how natural causes operate. If the former, then those who appeal to such gaps as evidence of supernatural intervention are guilty of the fallacy of *argumentum ad ignorantiam*. If the latter, although one may wish to dispute the truth of their conditional premise, one can scarcely accuse them of an error in logic.<sup>12</sup>

It seems clear that, at least in contemporary discussions, those who appeal to gaps in purely naturalistic explanations as evidence of divine intervention do so not on the basis of ignorance of how natural causes operate, but on the basis that we know enough about the operation of natural causes to think that it is unlikely, or perhaps impossible, that natural causes can account for such gaps. It is a commonplace in the discussion of miracles that a miracle must be an exception to the known order of nature. Equally, those in the intelligent design movement explicitly claim that they are arguing on the basis of what can be known about the operation of natural causes. Meyer, for example, argues that

Inferences to design need not depend upon our ignorance, but instead are often justified by our knowledge of the demonstrated causal powers of nature and agency respectively. Recent developments in the information sciences formalize this knowledge helping us to make inferences about causal histories of various artifacts, entities or events based upon information-theoretic signatures they exhibit ... Thus knowledge (albeit provisional) of established cause-effect relationships, not ignorance, justifies the design inference as the best explanation for the origin of biological information in a prebiotic context.<sup>13</sup>

What is really at issue is not the logical structure of “God of the gaps” arguments, but rather the legitimacy of the premise that enough can be known about the operation of natural causes to make it reasonable to conclude that at least some gaps in purely naturalistic explanations are evidence of supernatural intervention. If this premise can be undermined then there will be little reason to take such arguments seriously.

One such attempt seems implicit in the frequently met assertion that proponents of “God of the gaps” arguments have a theologically inadequate view of God, inasmuch as they restrict God’s activity to gaps which interrupt the normal course of nature. Thus Bube charges that, “although some advocates of a God-of-the-Gaps appreciate to some extent the complete control that God holds over the universe at all times and in all ways, the emphasis normally placed on God’s activity in the gaps often leads to the conviction that God’s activity in any ongoing way is shown primarily, or even only, in the gaps in our understanding.”<sup>14</sup>

Such charges seem ill-founded. There is no reason to think that distinguishing between primary and secondary causal acts of God will lead one to hold that God only acts in the gaps. It seems perfectly possible to believe that God is responsible for there being a natural order in which the secondary causes studied by scientists operate, yet raise the question of whether that natural order is ever overridden by its creator. The issue for those who employ “God of the gaps” arguments is not whether God can be understood as acting through secondary causes, but whether God sometimes directly intervenes in the course of nature. If such interventions involving God acting as a primary or direct cause occur then it is to be expected that any account of the resulting event solely in terms of natural secondary causes will be incomplete.

A possible reply on the part of the critic is to insist that God must be conceived as acting through history rather than intervening in history. Paul Davies insists that

the notion of God as a cosmic magician meddling with matter, moving atoms around and rearranging them is offensive not only on scientific grounds but on theological grounds as well. I’m sympathetic to the idea that overall the universe has ingenious and felicitous laws that bring life and indeed intelligence into being, and sentient beings like ourselves who can reflect on the significance of it all. But I loathe the idea of a God who interrupts nature, who intervenes at certain stages and manipulates things. ... It would be a very poor sort of god who created a universe that wasn’t right and then tinkered with it at later stages.<sup>15</sup>

Leaving aside Davies' emotion-laden prose, this type of objection appears to be a variation on early Deistic arguments against miracle. The thought seems to be that the perfection of God implies that He create a universe which requires no intervention. Presumably, a God who performs miracles must be conceived as something of a bungler who is analogous to a beginning painter who paints himself into a corner and then cannot get out except by undoing some of his previous work. The universe, like a well made machine, is most perfect if it does not require service calls to adjust its operation. A universe in which God finds it necessary to intervene is a universe unworthy of being created by a perfect God. Peter Annet, a Deist writing prior to Hume, claims that if God ever acts

by a different method than that of his standard laws; it must be either because he could not foresee the consequences, which is like blundering in the dark; or he foresaw it would be needful; and then it would be like a blunder in the design and contrivance; or he foreknew and determined this own works should not answer his own ends without his mending work, which is worst of all.<sup>16</sup>

But why think of the universe along the lines of a maintenance free machine? This objection seems founded on the rationalistic prejudice that any idea of nature implies an order that God must leave absolutely alone.

Why should the theist insist upon this? Why not, for example, think of the universe along the lines of a musical instrument? Musical instruments exist precisely to be played, i.e., intervened upon.

Leaving aside the double-edged appeal to metaphor, it is clear that most theists maintain that God has endowed people with free will and consequently the capacity to influence history. Theists also maintain that God has purposes that He wishes to see fulfilled. Given these two beliefs, it seems plausible to hold that God might at times intervene in the usual course of events so as to bring about certain of His purposes which might otherwise be thwarted. F. R. Tennant puts this point well when he writes that,

if ... the world ... [has] a derived or devolved activity permitted to it, as relatively independent of its self-limited Creator; and if any of God's creatures are in their lesser way also creators: then ... why should not God encounter obstacles within His own created world? Is it not inevitable that He will do so? [Those who insist that God would never intervene in the natural order are] so shocked at the attribution of anything like arbitrariness to the Deity that, in their zeal to rule it out, they also by implication remove all possibility of God's directivity, of adaptation of immutable purpose to emergent needs. In their haste to eliminate from the idea of God the very anthropic quality of caprice and changefulness, they ascribe to Him the equally anthropic qualities of indifference and impassive obstinacy.<sup>17</sup>

A second attempt to undermine the legitimacy of the premise that enough can be known about the operation of natural causes to make it reasonable to conclude that at least some

gaps in purely naturalistic explanations are evidence of divine intervention is to argue that it is in principle illegitimate ever to infer an immaterial cause as an explanation of a physical event. The problem with this line of criticism is that “gaps” arguments appear in other contexts in scientific reasoning without raising any concern regarding their legitimacy. As Ratzsch notes,

there is nothing inherently unscientific in the idea of gaps in nature-of things that nature cannot do. Science, in fact, is littered with impossibility claims. Perpetual motion is impossible, acceleration across the light-speed barrier is impossible, simultaneous determination of energy and position of certain particles to arbitrary degrees of precision is impossible. Every conservation principle is a claim that permanent unbalanced changes in specified parameters are impossible. In fact, every statement of a natural law is logically equivalent to a claim that nature cannot produce certain (contranomic) phenomena. Thus scientific justification for the claim that nature does not or cannot produce some specific phenomenon turns out to be a routine, unproblematic aspect of scientific activity.<sup>18</sup>

Equally, it is a commonplace that there are gaps in nature’s capabilities that intelligent agents can bridge. Scientists in a variety of disciplines routinely posit intelligent agency to account for the gaps that would otherwise exist in their explanations.<sup>19</sup> No one accuses archeologists of a “scribe of the gaps” fallacy when they infer an intelligent cause for the inscriptions on the Rosetta stone. Neither do they censure anthropologists who posit intelligent agency on the basis that certain chipped flint patterns cannot be explained by reference to unintelligent causes.

There is, then, nothing unscientific about the idea that there are things that nature does not or cannot do and that intelligent agents can bring about events that nature would not or could not otherwise do. We customarily attribute the operation of intelligent agency on precisely this basis and any recognition of alien intelligence, as in the case of the SETI project, proceeds on these two assumptions. This implies that if “God of the gaps” explanations are to be rejected as in principle scientifically illegitimate it must be solely on the basis of their inferring a supernatural cause and not on the basis that gap arguments are in principle unscientific.

That “God of the gaps” arguments are frequently rejected solely on the basis that they make reference to a supernatural cause is clear.<sup>20</sup> This rejection appears problematic, however. Suppose we observe within nature phenomena that defy naturalistic explanation and which bear the marks of intelligent design, but we have good reason to believe these phenomena were not caused by alien or human intelligent agents. On what non-arbitrary grounds is it possible to insist that it would never be legitimate to explain such phenomena as having a supernatural cause? If no matter what the physical phenomena and no matter how they resist explanation in terms of physical causes or non-supernatural agency, it is never admissible to posit a supernatural cause then it seems that we have moved to a position that is unfalsifiable in the worst possible sense.<sup>21</sup> There seems no scientific reason to think that it is inconceivable that science, in considering whether a naturalistic explanation can be given for a certain phenomenon, might come to the

conclusion that the phenomenon would never have occurred were nature left to its own devices. Ratzsch is thus correct in his observation that “any stipulation that it would be scientifically illegitimate to accept the inability of nature to produce life, no matter what the empirical and theoretical evidence, has, obviously, long since departed deep into the philosophical and worldview realms.”<sup>22</sup>

A third attempt to undermine the premise that enough can be known about the operation of natural causes to make it reasonable to conclude that at least some gaps in purely naturalistic explanations are evidence of supernatural intervention is to argue that, even if such gap arguments cannot in principle be ruled out as unscientific, they have been shown to be unsuccessful on empirical grounds. Underlying this line of argument is the assumption that the advance of science has increasingly diminished the gaps in our understanding of how natural causes can account for phenomena previously attributed to direct supernatural intervention. On this assumption, those who employ gap arguments are like children trying to defend sand castles against the incoming tide. Each increase in scientific understanding further erodes the foundation of a fundamentally mistaken enterprise.

Several points need to be made in response to this line of argument. First, the assumption that, prior to the rise of science, theologians typically inferred that God was the immediate cause of any event they did not understand is historically naive.<sup>23</sup> It is not the case that thinkers such as Augustine and Aquinas were willing to posit the direct intervention of God simply on the basis of ignorance. Both Augustine and Aquinas distinguished between direct (primary) and indirect (secondary) divine action. Both held that supernatural interventions in nature take place, but neither argued for such interventions on the basis of ignorance of how secondary causes operate.<sup>24</sup> This is not to claim that it may not be possible to find examples of a simple appeal to ignorance in postulating supernatural intervention.<sup>25</sup> It is to claim that it is a cultural myth that such reasoning is or ever was the stock in trade of theologians.

Second, any appeal to this line of argument is double-edged. The claim of those defending gaps arguments is that we can know enough about the operation of natural causes to conclude that the explanation of certain phenomena in purely naturalistic terms is either unlikely or impossible. This claim can be undermined if, as science progresses, it becomes clear that a complete explanation of such phenomena purely in terms of natural causes can be given. Equally, however, it must be acknowledged that this claim is strengthened if, as science progresses, the prospects of providing completely naturalistic explanations become increasingly remote. Put a little differently, this line of argument must grant the possibility that the progress of science has strengthened, rather than weakened, “God of the gaps” arguments. The real issue is not whether “God of the gaps” arguments are in principle inadmissible, but whether there is good evidence for the claim that natural causes are inadequate to explain certain phenomena.

A key question in addressing this issue is the question of under what conditions is the failure to find evidence of something good reason to conclude that it is not present. The

failure to find something can only be considered good evidence that it is not present if it is reasonable to suppose that one's search procedure was adequate to detect it.

What constitutes an adequate search procedure will vary depending upon the phenomenon in question. The search procedure for detecting a Great Dane in my bathroom differs from the search procedure for detecting whether a letter contains anthrax. In general, however, the following factors are relevant to evaluating the adequacy of search procedures:<sup>26</sup>

- a. how many individuals are conducting the search
- b. are the individuals competent to conduct the search
- c. are the individuals conducting the search motivated to find the thing they are looking for
- d. do the individuals conducting the search have the resources necessary to conduct the search
- e. have the individuals conducting the search taken the time necessary to conduct a thorough search

It is no accident that meeting these conditions is a prerequisite of good science.

What should be at issue in assessing "God of the gaps" arguments is whether they have met these conditions. Claims regarding events traditionally described as miracles and claims regarding the origin and development of life are where "God of the gaps" arguments are most commonly met. In the case of events traditionally described as miracles, it seems very evident that our increased knowledge of how natural causes operate has not made it easier, but more difficult, to explain such events naturalistically. The science underlying wine-making is considerably more advanced today than it was in first century Palestine, but our advances have made it even more difficult to explain in terms of natural causes how Jesus, without any technological aids, could, in a matter of minutes, turn water into high quality wine. Indeed, it is the difficulty of providing a naturalistic account of such events that leads many critics to deny that they ever occurred; though this looks suspiciously like begging the question in favour of naturalism. It is clear that if such events have occurred, the advance of science has made them more, rather than less, difficult to explain in terms of natural causes. Employing a "God of the gaps" argument that the occurrence of such events would constitute good evidence for supernatural intervention within the natural order seems entirely legitimate.

With reference to claims regarding the origin and development of life, it can be similarly argued that the advance of science has made the problem more, rather than less, intractable. Darwin worried that transitional gaps in the fossil record were at odds with his theory, but was able to suggest that as our knowledge of the fossil record increased we would find these transitional gaps being bridged. Our knowledge of the fossil record has increased enormously since Darwin's time, but our increased knowledge has served to emphasize the presence of transitional gaps.<sup>27</sup> Raup, for example, writes,

we are now about 120 years after Darwin and the knowledge of the fossil records has been greatly expanded. We now have a quarter of a million fossil species but the situation hasn't changed much. The record of evolution is still surprisingly jerky and, ironically, we have even fewer examples of evolutionary transition than we had in Darwin's time.<sup>28</sup>

Equally, it is clear that our increased understanding of the complexity of the cell has made an account of its origin solely in terms of natural causes more, rather than less, implausible. Thus Meyer, writing in support of a theory of intelligent design, can argue that the claim that information-intensive systems always come from an intelligent source

has ironically received confirmation from origin-of-life research itself. During the last forty years, every naturalistic model proposed has failed to explain the origin of information. Thus mind or intelligence ... now stands as the only cause known to be capable of creating an information-rich system, including the coding regions of DNA, functional proteins and the cell as a whole.<sup>29</sup>

At this point in the argument, one tends to meet the claim that it is always more rational to believe that the advance of science will someday provide an explanation in terms of natural causes, than ever to believe that an event was the result of supernatural intervention in the course of nature. But on what grounds is this to be asserted?<sup>30</sup>

To claim that no matter what the event in question, or the context in which it occurred, one should believe that it has a natural, though totally unknown, cause is to retreat to the dogmatic and question-begging view that it is, **in principle**, illegitimate ever to explain a physical event as having a supernatural cause. To claim, however, that the advance of science has provided empirical support for the view that natural causes will someday be uncovered to explain the phenomena typically appealed to in "God of the gaps" arguments is simply false.<sup>31</sup>

I conclude that there is nothing wrong with the reasoning typically involved in "God of the gaps" arguments. The widespread dismissal of such arguments as unworthy of serious consideration is, therefore, unjustified.

## Notes

1. Coulson C.A., *Science and Christian Belief* (Great Britain: Fontana, 1958), p. 32.
2. Peacocke A.R., *Creation and the World of Science* (Oxford: Oxford University Press, 1979), p. 78.
3. *Ibid*, p. 132.
4. Ratzsch Del, *Nature, Design and Science* (Albany, New York: SUNY Press, 2001), p. 47.
5. Thus, for example, Richard Bube, without providing anything very much in the way of supporting evidence either by way of science or theology, finds it possible to assert that it is to a large extent the long history of Christian

- acceptance and use of the concept of a God-of-the-Gaps that has made the Christian position so vulnerable to the assertion ... that modern science has made God unnecessary. *Putting It All Together* (New York: University Press of America, 1995), p. 60.
6. Walton Douglas, *Arguments From Ignorance* (University Park, Pennsylvania: Pennsylvania University Press, 1996), pp. 25–26.
  7. Freeman James, *Thinking Logically* (New Jersey: Prentice-Hall, 1988), p. 86.
  8. Copi Irving, *Introduction to Logic*, 7th ed. (New York: Macmillan, 1986), pp. 94–95.
  9. Walton, pp. 64–65.
  10. *Ibid*, pp. 134–135.
  11. Walton proposes that we distinguish between fallacious and nonfallacious forms of *argumentum ad ignorantiam*. Fallacious forms of *argumentum ad ignorantiam* occur when there is no implicit or explicit conditional premise by which to generate a *modus tollens* argument, nonfallacious forms occur when there is such a conditional premise employed. I prefer, in line with common usage, to reserve the term *argumentum ad ignorantiam* for reasoning that is clearly fallacious, and thus do not define arguments which appeal to an implicit or explicit conditional premise to generate a *modus tollens* as instances of the fallacy.
  12. Ratzsch is very clear on this point. He writes:
 

[I]dentification of the agency as supernatural depends upon the implicit claim that neither nature alone nor finite agent activity is causally or explanatorily adequate for the phenomena in question. Those conditions constitute the defining characteristics of God-of-the-gaps explanations—explanations that appeal to supernatural activity, on grounds of allegedly otherwise unbridgeable explanatory gaps in broadly scientific accounts of relevant phenomena. ... **[S]uch arguments have no formal logical problems.** After all, if neither nature nor finite agency can produce some phenomenon inarguably before us, then supernatural agency is about the only option left. p. 47 (Emphasis added).
  13. Meyer Stephen, “The Explanatory Power of Design” in William Dembski (ed.), *Mere Creation*, pp. 113–147 (Downer’s Grove, Illinois: InterVarsity Press, 1998), p. 139.
  14. Bube, p. 60.
  15. Quoted by Ratzsch, endnote 19, p. 198.
  16. Annet Peter, *Supernaturals Examined in Four Dissertations on Three Treatises* (London: F. Page, 1747), p. 44.
  17. Tennant F.R., *Miracle and Its Philosophical Presuppositions* (Cambridge: Cambridge University Press), pp. 90–91.
  18. Ratzsch, p. 48.
  19. Ratzsch notes that, generally, any identification of a phenomenon as artifactual on the basis of counterflow involves an implicit gap argument

that since this (counterflow) is something nature would not do, an agent must have had a hand in it. Thus, the basic structure of (finite) gap arguments is suspect only if our recognition of artifactuality is generally illegitimate-which it manifestly is not (48).

20. Those espousing methodological naturalism insist that non-natural explanations of physical phenomena are to be rejected. Far from being an inductive generalization, this insistence seems clearly *apriori*. Proponents of supernatural intervention in the course of nature are dismissed not on the basis that they have failed to produce enough evidence, but on the basis that such evidence is in principle impossible. Thus, for example, Douglas Futuyma insists that “in dealing with questions about the natural world, scientists **must** act as if they can be answered without recourse to supernatural powers”. (Emphasis added) *Science on Trial* (New York: Pantheon, 1983), p. 170.
21. Ratzsch is again helpful in this regard. He notes that

the basic structure of gap arguments has the great virtue of ... being logically valid. If unaided nature cannot generate some phenomenon, and there that phenomenon is in front of us, then obviously some other agency was involved. If we add the premise that humans couldn't or didn't produce the phenomenon, whereas aliens could have, we get alien-of-the-gaps arguments, which is precisely what underlies SETI. If we add the further premise that aliens couldn't or didn't (and there is no principial [sic] bar to that), then supernatural agency follows. Prohibition on such arguments is equivalent to the assertion that with respect to any phenomenon we might ever observe, we are scientifically obliged to presume that either nature or humans or aliens have the capability of producing that phenomenon. **That would appear to be not only a rather sweeping presumption, but an empirical one as well, and thus not an apt candidate for normative stipulation** (Emphasis added) p. 119.

22. Bube, for example, finds it possible to assert without any supporting argument that,

In earlier days it was both possible and common to sustain a religious interpretation of the world by looking directly to God as the immediate Cause of those physical and biological events that human beings were then unable to describe or understand. In the historical context of growing scientific descriptions of the world, this religious interpretation became known as a belief in a *God-of-the gaps*. The practical consequence of the view that God's existence could be proved by human ignorance of certain key physical and biological mechanisms was that evidence for God's existence decreased as human scientific knowledge grew. p. 57.

23. Reynolds argues that neither ancient nor medieval theologians were guilty of postulating God's intervention simply on the basis of ignorance of natural causes. He writes,

Was the Christian church guilty of gaps reasoning throughout the late Middle Ages? ...no unmodified gaps argument [i.e., an argument based solely on ignorance of how natural causes operate] would have been possible during that time. The theology of the period, for example that of Thomas Aquinas in the West or Maximus in the East, was simply too sophisticated. Neither the scholastic nor the Byzantine scholar postulated divine action only in those places where the science of the day failed. In fact, like Augustine, both were willing to allow for direct and indirect divine action. The philosopher-theologians of the period gave natural and theological reasons for any postulated instance of direct, divine action. ...

Nor can the ancient philosophers be found guilty of gaps reasoning. ... Plato postulated solutions to problems of natural science based on two principles: induction from astronomical observation and deduction from recollected Forms. When God or demigod is invoked as explanation, it is for carefully described teleological or observational reasons. For example, the craftsman or demiurge of *Timmaeus* 30 is invoked to act as a mediator between the World of the Forms and the World of Becoming in which humans live. He is postulated not because of a gap in human knowledge but as the only entity fit to fill such a metaphysical space. Neither God nor a demigod is ever invoked merely to cover a gap in knowledge. "God of the Gaps" in William Dembski (ed.), *Mere Creation*, pp. 313–331 (Downer's Grove, Illinois: InterVarsity Press, 1998), p. 327.

In a similar vein, Simpson comments that,

it is open to some question ... whether the choice of those who have been singled out to support a general thesis to the effect that the Church through many centuries was not merely obscurantist and hostile to, but actively did its best to discourage and even suppress the investigation of natural causes, has been altogether fair.

and goes on to observe that,

in Gregory of Nyssa, on the basis of his *Hexaemeron* alone, the Early Church possessed a teacher competent to take his place with the ablest of the pagan philosophers. He had a real idea of scientific method, and evidenced a worthy respect for the views of those from whom he was led to differ. *Landmarks in the Struggle Between*

*Science and Religion* (London: Hodder and Stoughton, 1925), pp. 96, 111.

24. Critics of “God of the gaps” arguments do not tend to cite many examples of this presumed fallacy nor to do any thorough analysis of the examples they do cite. I suspect, though I will not argue, that even in the cases of the examples that are cited such as Newton, the fallacious reasoning is not so clearly evident as they would have us believe. Plantinga, for example, notes that

Newton seems ... to have suffered a bum rap. He suggested that God made periodic adjustments in the orbits of the planets; true enough. But he didn't propose this as a reason for believing in God; it is rather that (of course) he already believed in God, and couldn't think of any other explanation for the movements of the planets. He turned out to be wrong; he could have been right, however, and in any event he wasn't endorsing any of the characteristic ideas of God-of-the-gaps thought (“Methodological Naturalism” Pt. II, *Origins and Design*, Vol. 18, No. 2, Footnote 52).

25. I am basically following Copi and Burgess, *Informal Logic*, 3rd ed. (New Jersey: Prentice-Hall, 1995), pp. 115–116, though I have modified their conditions somewhat.
26. See, for example, Johnson, *Darwin on Trial*, 2nd ed. (Downer's Grove, Illinois: Inter-Varsity Press, 1993), pp. 45–62.
27. Raup, “Conflicts Between Darwin and Paleontology” *Field Museum of Natural History Bulletin* (January 1979), pp. 22–29, p. 25.
28. Meyer, p. 137. Meyer references Dose, K., “The Origin of Life: More Questions Than Answers”, *Interdisciplinary Science Review* 13, pp. 348–356; Yockey, H.P., *Information and Molecular Biology* (Cambridge: Cambridge University Press, 1992), Thaxton/ Bradley/Olson, *The Mystery of Life's Origin* (Dallas: Lewis and Stanley, 1984) in support of the claim that naturalistic models of the origin of life have failed and Kauffman, S., *The Origins of Order* (Oxford: Oxford University Press, 1993), pp. 287–341 as dissenting from this claim.
29. Huston Smith makes essentially this point when he notes that

Those who control the religion phalanx of the [science-religion] dialogue give science the benefit of the doubt by assuming that the naturalistic causes it works with hold in principle the wherewithal to deliver the whole story. In every case I know where a new conjecture is introduced to rescue Darwinism-punctuated equilibrium to account for the absence of connecting links in the fossil record; the thousands of generations that ... *could* have included ancestors that would link the radically diverse phyla in the Cambrian explosion to a single postulated ancestor-in all such cases the

establishment in the science-religion dialogue ... gives Darwinism the benefit of the doubt. Is it naive to ask straightforwardly, Why? (224–225)

30. This is not to deny that scientific claims are corrigible. The bare logical possibility that a scientific claim could conceivably be false is not, however, any reason for thinking that it is in fact false. Thus, for example, the bare logical possibility that scientists might be mistaken in believing the blood to circulate in the body constitutes no evidence that this belief is in fact mistaken. Equally, the bare logical possibility that the scientific claims underlying the judgement that certain phenomena cannot be explained in terms of natural causes could conceivably be false, is no evidence that they are in fact mistaken.

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