

**Explaining Explanation:  
How Aristotle and Teleology Can Help Make Sense of Scientific  
Explanation**

*“So one elephant having a trunk was odd; but all elephants having trunks looked like a plot.”  
–G.K. Chesterton, Orthodoxy*

Brad Littlejohn

Dr. Mitchell Stokes

Philosophy of Science

10/9/08

One of the first questions out of a child's mouth, once they have learned the rudiments of how to acquire food and attention, is "Why?" or perhaps, "Why not?" This instinct, the desire to understand the causes and the reasons behind the phenomena we experience, and the restrictions upon those phenomena, comes so naturally to man, whether toddler or accomplished scientist. Though once content to merely *describe* the phenomena, science in the past century has claimed more and more the power to explain. Unfortunately, however, science has had a difficult time explaining just what it might mean by "explain." So, in the last few decades, the problem of scientific explanation has become a popular field in the philosophy of science, but many philosophers now feel that the problem is no closer to solution than it was fifty years ago, and have abandoned the attempt for a unified theory of explanation.<sup>1</sup>

In this paper, I will turn to a 2400-year-old philosophy of explanation, that is, Aristotle's (with a Christian twist), to find some clues to point the way out of this impasse. In particular, I suggest that Aristotle's recognition of multiple kinds of explanation, in terms of his four causes and various combinations of them, makes more sense than any of the disputed modern theories. I also argue that modern philosophy of explanation has missed a key piece of the puzzle by omitting Aristotle's "final cause" explanation from consideration, though he considered it the most important of all (which it must be for a Christian). Along the way, I shall closely consider an article by Richard Swinburne, using scientific explanation to argue for the existence of God, and a brilliant rebuttal by Stephen Clark. Unfortunately, it is outside of my scope here to discuss the merits of the theistic argument *per se*, but both of these articles serve to elucidate the

---

<sup>1</sup> See for example, Dudley Knowles, "Explanation—Opening Address" in Dudley Knowles, ed., *Explanation and Its Limits*, Royal Institute of Philosophy Supplement 27 (Cambridge: Cambridge University Press, 1990): 1-20, and Peter Godfrey-Smith, *Theory and Reality* (London: University of Chicago Press, 2003), 196-200.

difficulties and potential solutions in the philosophy of explanation (and their implications for Christian faith), and it is for this purpose that I shall employ them.

First, then, what was Aristotle's theory of the four causes?<sup>2</sup> This theory stands at the center of Aristotle's account of physics and metaphysics. Aristotle's purpose, to answer the why-questions that natural phenomena or patterns confront us with, was not far from that of modern scientific explanation. He was not of course the first to attempt an answer to this question, as many natural philosophers before him had pursued such an inquiry, but he consciously sought to systematize their scattered theories.<sup>3</sup> He identified four main "causes" in the work of his predecessors, the material, formal, efficient and final cause,<sup>4</sup> and sought to make these explicit and foundational in his own work.

The material cause, he says, is "an intrinsic feature from which something is produced. Examples: the bronze is the cause of the statue, the silver of the salver." The *formal cause* can be described as "the form and template, which is the account of what-it-was-to-be-that-thing....Example: the proportion of 1 to 2 and, at a more general level, number are the cause of the octave." The *efficient cause* comes closest to what we think of as a cause: "the source of the primary principle of change or stasis. For example, the man who deliberates is the cause of action, and the father is the cause of the child. In general, the producer is the cause of the product and the changer of the thing changing." Lastly comes the so-called final cause or end cause. "The end of something is what that thing is for. For example, the end of taking a constitutional is to be healthy. 'Why', we might ask, 'is this chap walking about the place?' 'It is

---

<sup>2</sup> It should be clarified that the word usually translated "cause" in Aristotle's theory has a broader meaning than our term, which tends, in its proper sense, to refer only to the third of Aristotle's causes.

<sup>3</sup> Andrea Falcon, "Aristotle on Causality," in Edward N. Zalta, ed., *The Stanford Encyclopedia of Philosophy* (Fall 2008 Edition) <<http://plato.stanford.edu/archives/fall2008/entries/aristotle-causality/>>.

<sup>4</sup> Aristotle, *Metaphysics*, I.3-7.

in order', replies the expert, 'to be healthy', and in so saying he reckons to have put his finger on the cause of the behaviour."<sup>5</sup>

Each of these seems to make rather good sense, in certain contexts. Why is that log floating? Because it's made of wood (material cause). Why is that object red? Because it reflects light at certain wavelengths (formal cause). Why is the ball rolling? Because the boy kicked it (efficient cause). Why did the boy kick it? Because he wanted to score a goal (final cause). Thus "there are," he says, "many causes of the same thing,"<sup>6</sup> and often this results in reciprocal causation. But it is not, of course, as if every phenomenon must be explained with reference to all four causes—some explanations may only involve a couple of these (though, presumably, it would be possible to specify the others, even if they are insignificant or redundant). The Stanford Encyclopedia of Philosophy clarifies, "Aristotle does not say that all four explanatory factors are involved in the explanation of each and every instance of natural change. Rather, he says that an adequate explanation of natural change may involve a reference to all of them."<sup>7</sup>

We should also note that Aristotle does not treat all of these causes the same. Of these four causes, we might be inclined to be most dubious of the final cause, at least when it comes to natural phenomena. While we might happily explain that the boy kicked the ball because he wanted it to go into the goal, we would not like to say that the ball rolls because it wants to reach the bottom of the hill, or that leaves turn color in the fall because they purpose to. This sort of explanation tries to psychologize nature, it seems. Despite our misgivings, however,

---

<sup>5</sup> Aristotle, *Metaphysics*, trans. Hugh Lawson-Tancred (New York: Penguin, 2004), 115 (IV.2).

<sup>6</sup> Ibid.

<sup>7</sup> Falcon.

Aristotle considers the final cause the most important and indispensable of the four.<sup>8</sup> Moreover, he does not seem to insist that we invoke psychological categories to explain it; we may simply say that, by the nature of the thing, its goal, to which it is pressed by some kind of internal necessity, is to embody that final form. This begins to be more comprehensible when we consider living but unconscious things such as plants; the final cause, producing a blossom and a seed, may be the key to understanding the process of a flowering plant's growth. This example also points to the connection between formal and final cause; often, Aristotle believed the final cause was simply the need for a thing to realize its proper form, and so formal and final causes often coincided.<sup>9</sup>

Aristotle believed that the final cause was absolutely necessary in natural science to explain what the other causes could not, namely, the regularity of the universe. In the *Physics*, Aristotle uses the example of human teeth: why should our teeth regularly grow so that we have sharp, tearing teeth in front, and flat, grinding teeth in the back? The material and efficient causes cannot, in his mind, do any more than leave us with an unexplained coincidence. We must assume that some goal guides the process, leading the growth of the teeth toward what is good for the animal. This points to a final clarification of the final cause, that "not everything that is last claims to be an end (*telos*), but only that which is best."<sup>10</sup> The final cause is not simply whatever happens to be the end of the process, but the good toward which the process ought to lead.

---

<sup>8</sup> Falcon; see Aristotle, *Physics*, 198 a 23-26.

<sup>9</sup> *Ibid.*; see *Physics* II.8

<sup>10</sup> *Physics* 194 a 32-33 (quoted in Falcon).

Now, having sketched the most influential ancient theory of explanation, I will briefly survey some of the modern contenders.<sup>11</sup> In the beginning was the covering-law, or Deductive-Nomological (henceforth D-N) model. Carl Hempel proposed this model in 1948, and it reigned unchallenged for nearly 15 years. Stated briefly, the model claims that scientific explanation simply consists in demonstrating that a particular fact is deducible from a relevant general law.

The criteria for an adequate explanation, according to Hempel, were as follows:

- 1) The *explanandum* [that is, the thing needing to be explained] must be a logical consequence of the *explanans* [that is, the explanation].
- 2) The *explanans* must contain general laws, and these must be essential for the derivation of the *explanandum*.
- 3) The *explanans* must have empirical content; that is, it must be capable, at least in principle, of test by experiment or observation.
- 4) The sentences in the *explanans* must be true.<sup>12</sup>

This model, and the parallel model he developed to deal with probable events, called the Inductive-Statistical (I-S) model, avoided any appeal to causality, which Hempel considered a suspicious concept. Partly for this reason (and due to other weaknesses), many counterexamples were eventually offered to both forms of Hempel's theory, showing that the models didn't really function as a proper explanation in many circumstances. The attempt to salvage Hempel's model by adding a causal condition fell short, and rival models were soon suggested.

Prominent among these was Wesley Salmon's purely causal<sup>13</sup> account, the Statistical Relevance (S-R) model, in which explanation consisted in merely identifying all of the relevant

---

<sup>11</sup> These models are of course grossly oversimplistic, as each of these models has taken multiple full-length books to develop, and there are of course other models.

<sup>12</sup> Martin Curd and J.A. Cover, *Philosophy of Science: The Central Issues* (New York: W.W. Norton, 1998), 770.

<sup>13</sup> Meaning, of course, efficient cause.

factors that had causally brought about the state of affairs requiring explanation.<sup>14</sup> Salmon's theory too, when we listen to it for a moment, sounds quite intuitive; of course to explain why something happened is to say what caused it. However, there are many cases of so-called scientific explanation that do not seem to fit this mold. For example, to explain the operation of Kepler's laws in terms of Newton's laws should not, it seems, suggest that Newton's laws somehow come first and cause Kepler's laws to operate. Rather, Kepler's laws are explained simply as being a particular application of Newton's laws. Impressed by considerations such as these, a number of philosophers, led by Philip Kitcher, have suggested a somewhat vague but quite helpful notion of explanation as unification. That is, the purpose of explanation is to identify particular phenomena as examples of more general phenomena. The goal is, by progressive explanation, to reduce the number of independent phenomena into relatively few general principles.<sup>15</sup>

One other theory of explanation is advanced by Swinburne in his essay, though he did not develop it himself. This is the causal-powers, or powers and liabilities (P-L) model. Swinburne critiques Hempel's model, in which we have a "universe with two components—stuff in various states, and laws of nature which form a kind of invisible grid covering the universe and dictating how the stuff will behave; the stuff is inert and its states are passive, only the laws stir it into motion."<sup>16</sup> Instead of this, he proposes that we "abandon the 'invisible grid' model and suppose that all the necessity in nature is built into the objects which make it up.

---

<sup>14</sup> See Samir Okasha, *Philosophy of Science: A Very Short Introduction* (Oxford: Oxford University Press, 2002), 48-52; Godfrey-Smith 194-95.

<sup>15</sup> See Godfrey-Smith 195-96; Wesley C. Salmon, "Four Decades of Scientific Explanation" in Wesley Salmon and Peter Kitcher, eds., *Scientific Explanation*, Minnesota Studies in the Philosophy of Science XIII (Minneapolis: University of Minnesota Press, 1989), 94-101; Peter Kitcher, "Explanatory Unification and the Causal Structure of the World," in Salmon and Kitcher, *Scientific Explanation*, 430-47.

<sup>16</sup> Richard Swinburne, "The Limits of Explanation," in Dudley Knowles, *Explanation and Its Limits*, 190.

Scientific explanation then consists in explaining the occurrence of events as brought about by objects in virtue of their powers and liabilities to exercise them.”<sup>17</sup> In other words, if asked, “Why is the ball rolling down the hill” we would not answer in terms of any law but would simply say, “Because this is what balls are liable to do in this sort of circumstance.” Advocates of an S-R causality model would insist that this way of putting it ends up reducing to the same thing as their theory, but this model does offer a distinct and attractive way of viewing explanation.

It is worth now taking a moment to relate what we find in these models to Aristotle’s view. Hempel’s theory, in its traditional form, is hard to square with Aristotle’s theory at all, because of its attempt to avoid causality altogether. After all, if causality is not part of the picture, a law of nature could simply be the (completely true) statement that “if penguins only live in the Southern hemisphere, then the moon orbits the earth every 28 days,” for a law of nature (in Hempel’s conception) need imply no more than that two phenomena always occur together, not that there is any causal connection between the two. This is, of course, the mortal “irrelevance” objection to Hempel’s D-N model that many have raised, and the fact is that Hempel’s application of his model usually presupposes a kind of genuine causal connection between the *explanans* and the *explanandum*, though he refuses to admit the terminology of causation. In that case, then, the usual applications of Hempel’s model, as well as certainly Salmon’s model, reduce to an emphasis on the efficient cause as the focus of explanation. Kitcher’s unification model appears to function as something of a formal cause explanation, for its purpose is to explain a phenomenon by showing that it is part of a larger phenomenon; that is, by identifying the actual form and essence of the phenomenon, “what-it-is-to-be-that-thing”

---

<sup>17</sup> Ibid.

in Aristotle's words.<sup>18</sup> Swinburne's P-L model, by explaining all in terms of the actualities and potentialities inherent in the object (rather than on external causal forces), moves away from the efficient cause and toward an explanation in terms of material and formal causes.<sup>19</sup> In each of these, we will note, the theory of explanation tries to isolate one (or at most two) of Aristotle's causes, and to use this to account for all forms of scientific explanation. No wonder these theories have all been so vulnerable to counterexamples. Moreover, in all the theories, a final cause explanation is decidedly lacking, though there have been some unsuccessful gestures in this direction.<sup>20</sup>

Stephen Clark, although he does not invoke the Aristotelian language specifically,<sup>21</sup> considers this a pretty sorry state of affairs and diagnoses the problem accurately. He first takes a Humean baseball bat to the D-N and S-R models of explanation, insisting that they don't truly explain anything, because all they do is state a constant conjunction of events.

How is the particular conjunction of A and B "explained" by saying that there is a discoverable set of A-things conjoined with B-things? "Why does this happen? Because it always does." This is not explanation, but a refusal to take puzzles seriously at all. Even if "its always happening" is a datum strictly deducible from some yet more extensive generalization, the thing is no nearer to intelligibility....[A]s Chesterton, a much neglected philosopher, remarked: "[Scientific men] feel that because one incomprehensible thing constantly follows another incomprehensible thing the two together somehow make up a

---

<sup>18</sup> However, the "form" in this picture ends up being perhaps more general and abstract than Aristotle's usual notion of the form.

<sup>19</sup> In Aristotle's metaphysics, the material cause is identified with the *potentiality* of a thing, and the formal cause with its *actuality*.

<sup>20</sup> For example, the use of the so-called "anthropic principle" to account for the universe. See Salmon, "Four Decades," 111-16.

<sup>21</sup> This particular article actually argues from a fairly Platonist standpoint, though he considers himself largely Aristotelian.

comprehensible thing . . . It is no argument for unalterable law that we count on the ordinary course of things. We do not count on it; we bet on it.”<sup>22</sup>

This critique tells against both Hempel’s model as well as causality-based models (as it questions the intelligibility of causality-claims). So much for the efficient cause explanation.

Clark also questions Swinburne’s “powers and liabilities” form of explanation:

That an entity has an intrinsic power to do such and such presumably means more than that things of the same kind frequently do that, or that there seems no reason, at any rate, why they should not. “X has the *power* to do A” cannot mean simply “It is *possible* for X to do A” nor yet that “Things like X do acts like A more often than not.” Those are not explanations, but descriptions and associations.<sup>23</sup>

So much for a material and formal cause explanation.

This critique certainly fits our intuitions because we fail to understand why things should function in just this way, rather than some other way. Clark sees that explanations, to truly explain, must show us why it ought or needed to happen the way it did; explaining an apparently arbitrary particular by citing a law of the regular succession of such arbitrary particulars fails to show us any such necessity. As Clark puts it, “If laws of nature or statements of causal power are to function as genuine explanations, they must record some real constraint on the sheer indifference of possible events. To explain the phenomena is to show how they express or represent a deeper reality, to show how what had seemed to be many distinct particulars are better seen as some one thing.”<sup>24</sup> Clark here appears to be espousing something like Kitcher’s unification theory of explanation, but there is a bit more than that. For true explanation needs to show that this particular is part of this universal, but that it ought to or

---

<sup>22</sup> Stephen R. Clark, “Limited Explanations,” in Dudley Knowles, *Explanation and Its Limits*, 197. Quote is from G.K. Chesterton, *Orthodoxy* (London: Fontana, 1961), 50f.

<sup>23</sup> *Ibid.*

<sup>24</sup> *Ibid.*

needs to be that way.<sup>25</sup> What Clark is getting at is that, to explain, we need to show why the particular structure of the world reflects a meaningful, necessary, desirable form. In other words, we need a final cause to explain, as Aristotle said, not merely that there is a regularity and what it is, but for what purpose it exists.

Clark develops his argument for this formal-final cause approach to explanation in dialogue with Swinburne's inadequate attempt to plug final cause into his view of explanation and his argument for the existence of God, so I will turn to consider these essays in more detail.

Swinburne's purpose in his essay is to use the notion of scientific explanation, and its limits, to reason back to the necessity of God as the original creator of the cosmos and all its laws. The gist of the argument is to appeal to "explanatory regress," that is, the notion that to explain a phenomenon, we need to invoke laws, which then themselves require explanation in terms of more fundamental (or previously operating) laws, until we finally get to the point where no "law" can explain why the cosmos and all its fundamental laws should exist, so God must be invoked. This is a form of the famous cosmological argument for God's existence (renowned at least since Aquinas), and depends on efficient-cause reasoning—from one cause back to another to another, ultimately to an Uncaused First Cause. But Swinburne, recognizing the difficulties in this argument, offers a substantial revision, to what he calls the "Inductive Cosmological Argument."

First it is necessary for him to define a notion of "personal explanation," in addition to his model of "scientific explanation,"<sup>26</sup> though he clarifies, "I do not imply that there is anything

---

<sup>25</sup> That is to say, in short, that true explanation requires that we can't have a simply nominalist account of universals.

<sup>26</sup> Which at the outset of the essay is a fairly ambiguous and generic laws-of-causality approach; later in his essay he suggests the "Powers-and-Liabilities" model that I have already referenced.

unscientific in a wide sense in invoking personal explanation."<sup>27</sup> In personal explanation, we do not explain a state of affairs in the physical world by appeal to other physical phenomena, but by appeal to a person's intentional action. "Why is the ball rolling?" "Because Bobby wanted to kick it." There are of course a number of details and nuances in Swinburne's account here, but the gist is fairly simple: "personal explanation is where we explain some event, say a limb moving (E) in terms of an agent (P) acting intentionally (J) so as to bring about E, in virtue of his basic powers (C)."<sup>28</sup> Now, the salient new feature of this account is the notion of intentionality, and here things start to get really interesting. "In order to act intentionally he will need a belief that the occurrence of E is a good thing; J could not occur without such a belief."<sup>29</sup> Swinburne does not dwell on this observation, but this is a very intriguing point, for here Swinburne introduces a notion of final cause explanation: Why does E happen? Because the agent purposes to bring it about, as part of some desired good. The notion of a good goal as part of the explanation for a phenomenon, as we saw, played a central role as the final cause in Aristotle's thought. So how does Swinburne use this notion?

Well, first, he follows the traditional line of the cosmological argument, following explanatory regress back to the notion of a *full explanation*, then to a *complete explanation* (both of which he defines in detail but which are not particularly important here), and then to an *ultimate explanation*. Swinburne defines this as an explanation "in which the factors O cited are such that their existence and operation have no explanation either full or partial in terms of any other factors [that is, factors either present or past]. Those factors are ultimate brute facts."<sup>30</sup> We

---

<sup>27</sup> Swinburne 177.

<sup>28</sup> Ibid. 180.

<sup>29</sup> Ibid.

<sup>30</sup> Ibid. 186.

might suppose that no more thorough explanation could exist, but Swinburne specifies one more type of explanation, an *absolute* explanation. “An absolute explanation of *E* is an ultimate explanation of *E* in which the existence and operation of each of the factors cited is either self-explanatory or logically necessary. Other explanations cite brute facts which form the starting-points of explanations; there are no brute facts in absolute explanations—here everything really is explained.” (186)

The reader at this point is expecting Swinburne to say something like “And so we are left with the need to posit God as a self-explanatory, logically necessary first cause that explains all other explanations, unless we want to leave the universe as an unexplained brute fact.” This would be the route of the traditional cosmological argument. However, Swinburne does not say this. In fact, he insists that God is not a logically necessary or self-explanatory being and so cannot function as an absolute explanation; there are no absolute explanations, and we are left with brute facts. Having vetoed the traditional conclusion of the cosmological argument, Swinburne takes an alternative route, which constitutes his particular “inductive” twist on the cosmological argument and involves making God the conclusion of an inference to the best explanation.

A good explanation, he says, “is (1) simple and (2) leads us to expect the phenomena, (3) when these are not to be expected *a priori*.”<sup>31</sup> The notion of simplicity is crucial to his account, and he describes it as “a matter of few entities, few kinds of entities, behaving in mathematically simple kinds of ways.”<sup>32</sup> The preference for simplicity, all other things being

---

<sup>31</sup> Ibid. 187.

<sup>32</sup> Ibid.

equal, goes for personal explanation as well as scientific explanation, he says.<sup>33</sup> Since we desire simplicity, a major purpose of explanation is to account for the “many, complex, and coincidental” in terms of some simpler underlying phenomenon,<sup>34</sup> and this is exactly what physical explanations do. Physics, he says, is capable of reasoning back to a few remarkably simple laws (or, on his P-L model, types of entities) that can explain everything in the cosmos. But each of these must, it seems, remain an unexplainable brute fact. But this is indeed remarkable, he says, since, if this orderliness and simplicity characterizes the structure of the cosmos, we should expect a simple, orderly explanation for this foundational structure, rather than mere coincidence.

Indeed, the simplest (and thus best) explanation would prefer that, if we must be left with an unexplainable brute fact, that there be only one, and that it be a simple fact. Can we find one such simple fact? Swinburne at this point finally obliges, whipping God out of his left breast pocket with a cry of triumph. Purely scientific explanation cannot give us the simplicity we desire, so we will invoke personal explanation. This hypothesis becomes even stronger, according to Swinburne, by virtue of the fact that God is the simplest imaginable entity. Complexity, Swinburne suggests, results from the many limits on an entity’s or person’s powers, so a perfectly unlimited, infinite person will be perfectly simple: “The hypothesis of the existence of a being with zero limits to the qualities essential to a being of that kind is the postulation of a very simple being....A finite limitation cries out for explanation of why there is just that particular limit, in a way that limitlessness does not.”<sup>35</sup> So, the cosmological argument,

---

<sup>33</sup> Ibid. 188.

<sup>34</sup> Ibid. 189.

<sup>35</sup> Ibid. 192.

unable to reason back to a necessary first cause of all other causes, may nevertheless assume that a single, perfectly simple unexplained cause (that is, God), is a much more likely explanation for the universe than several limited unexplained causes.

Swinburne is left with one question, however: "God has, *ex hypothesi*, the power to create an orderly universe, but why should he choose to do so?"<sup>36</sup> We should remember that, in personal explanation, the key factor was intentionality, which was the agent's purposing to perform the action in order to achieve some good. Swinburne answers that God created our orderly universe in order to achieve the good of ordered beauty, and the good of man's ability to act on nature (which requires an ordered universe).

While many objections might be raised against Swinburne's argument, it is on this last point that Clark targets much of his firepower, revealing the inadequacy of this deft *final cause ex machina* maneuver via a clever *reductio ad absurdum*.

Swinburne's argument depends upon the supposition that the orderly universe is more intelligible if it is a product of a simple God. Remember, though, that for Clark, an explanation needs to "record some real constraint on the sheer indifference of possible events."<sup>37</sup> In that case, just to say that the world exists because God wanted it to makes it no more intelligible, for we have no idea why God should have wanted it to.

What exactly is added by saying that things are so because someone wants them to be? Either there are real constraints on what that one could want or there are not: if there are not, we have no explanation that is more than a brute fact (and so no explanation); if there are, might not those self-same constraints themselves have an effect on what, physically, there is?<sup>38</sup>

---

<sup>36</sup> Ibid. 192.

<sup>37</sup> Clark 197.

<sup>38</sup> Ibid. 198.

What is he getting at here? Well, Swinburne, we may remember, in answering why God made the world the way he did, gestured at the intrinsic goodness and beauty of the created order. However, Clark wonders why, if this intrinsic goodness and beauty is the real cause, we should need to invoke God.

If He does whatever it is He does as being the right thing to do, or as expressing a beauty which ought indeed to be expressed, why might we not say instead that the cosmos is what it is as expressing just that beauty. Why might things not continually arise from the happy nothing to embody, or approximately to embody, what would otherwise be a merely 'ideal' schema? ...If we believe (as presumably we must if science is to be more than a passing fancy) that the cosmos that exists is intelligible we might not unreasonably suspect that it is elicited, as it were, by the mere attractive force of that formed order. So what does 'God's intention' add but an extra wheel that turns without effect?<sup>39</sup>

This seems bizarre to us, no doubt, but Clark would say that that is only because we are so accustomed to the idea of God. For one thing, it is hard to give any real content at all to the judgment of "how likely" it is for cosmoi to "lurch into being from the happy nothing" or "how likely" it might be for God to make the cosmos.<sup>40</sup> For another, the only rationale Swinburne has given for choosing the second alternative is its greater "simplicity." But this notion, Clark argues for a number of reasons, is incoherent. For one, is it really clear that we can give any clear *a priori* meaning to "simplicity," or that God is really a "simple" being—is not theism "an

---

<sup>39</sup> Ibid. 200.

<sup>40</sup> Ibid. 199.

attempt to postulate complexity by postulating a being of a still higher order of complexity"?<sup>41</sup>

This critique, Clark thinks, gains more power because the intuitive attraction of a personal cause (rather than things simply arising from the happy nothing on their own) is not really satisfied by Swinburne's God, who lacks any of the characteristics of personhood or agency as we normally understand them. Clark suggests that "the God we are asked to hypothesize turns out, at best, to be the theory or schema animating the cosmos: why do we need to suppose that anyone has the scheme 'in mind'?"<sup>42</sup>

If all this is so (and I think that Clark demonstrates that, on Swinburne's terms, there is no reason why it shouldn't be), then the really essential explanatory factor for the cosmos is not this quasi-personal God who acts in order to realize eternal standards of good and beauty, but the eternal standards themselves. Indeed, without these, there is no reason why we should prefer a "simple" God to a complex one. Swinburne must, Clark says, accept "the *necessary* being of those standards of order, beauty, justice that provide his God with a reason for acting and a pattern to follow. In fact he has to accept the precosmic being of such standards of simplicity [to]<sup>43</sup> secure his God's existence rather than Pratchett's Turtle." (203) These standards, then, "namely the systemic whole of Forms centred and enlivened by the good itself,

---

<sup>41</sup> Ibid. 196. Clark actually offers a further argument, more sophisticated and, I think, decisive, but it is too complex to go into here (even though it contributes importantly to his conclusion), though the gist can be seen in this quote: "Any attempt to limit the class of things that could just come into existence must identify causal factors in the preceding conditions, since it cannot be anything about the *Sosein* [that is, roughly, "nature"] of non-existent things which would require them to exist. The point must also apply to the cosmos as a whole. If it is possible for a cosmos just to come into existence, without any precedent base, then any kind of cosmos could, including incoherent and ridiculous ones—perhaps like Terry Pratchett's Disc-world. Why should *simple* worlds (like Swinburne's God) have any greater likelihood than infinitely complex ones? In which case we might be living in exactly such a world, and science is hopeless." (202)

<sup>42</sup> Ibid. 201.

<sup>43</sup> The text actually has "as" here, which renders the sentence unintelligible. I believe "to" was intended, but that there has been a typographical error.

by what (exactly) ought to be,” and not Swinburne’s God, are what renders the universe intelligible, what provides the final cause for the universe’s being-the-way-it-is, and are thus a true explanation for the natural world.

There is of course more to the essay, and Clark’s point is not to substitute “The Forms” for any notion of God. Rather, his point is to demonstrate that Swinburne has accepted an account of scientific explanation that accepts no ultimate meaning, and then tries to insert a meaningful God at the end of the line. If explanation is to really accomplish anything, however, and is really to give us a God worth worshipping, and upon whom the world must depend, then explanation must assume ultimate meaning. Clark puts it this way:

If what we are faced by, and seek to live through, is mere matter in motion, any god invoked to explain the motion is no more than an additional source of momentum....[T]he divine life which binds the scattered fragments of the phenomenal order into the unifying *Logos* that stems from the One, is not an addendum to ‘explain’ atheistically perceived phenomena. I postulate, or seek to live in imaginative consciousness of that divinity, because I already (or identically) see the phenomena as the outward body of God.<sup>44</sup>

In conclusion, then, we have seen that modern theories of scientific explanation have tied themselves in knots because of their failure to recognize the multiformity of causality and explanation, which Aristotle described so well. In recent literature, there has been some move toward a more “pluralistic” approach to explanation, which will hopefully remedy this defect to some degree. However, a more fundamental defect remains in the lack of final cause explanation in order to give genuine meaning and structure to the phenomena, rather than simply positing arbitrary associations and patterns. Richard Swinburne’s attempt to introduce final cause explanation comes too late in the argument and too feebly to give the cosmos any truly meaningful structure. Instead, Stephen Clark suggests that we must assume that the

---

<sup>44</sup> Ibid. 207. To clear up any possible ambiguity, Clark is a Christian, and argues for a Trinitarian God, but in very Neo-Platonic terms.

causal structure of the world is indeed oriented toward final causes, which are the embodiment and revelation of an intrinsically good and beautiful God, if we are to see any meaning in it and offer any true explanation.

## Bibliography

Aristotle. *Metaphysics*. Translated by Hugh Lawson-Tancred. New York: Penguin, 2004.

Clark, Stephen R. "Limited Explanations." In *Explanation and Its Limits*. Edited by Dudley Knowles. Royal Institute of Philosophy Supplement 27. Cambridge: Cambridge University Press, 1990.

Curd, Martin, and J.A. Cover. *Philosophy of Science: The Central Issues*. New York: W.W. Norton, 1998.

Falcon, Andrea. "Aristotle on Causality." In *The Stanford Encyclopedia of Philosophy* (Fall 2008 Edition). Edited by Edward N. Zalta. <<http://plato.stanford.edu/archives/fall2008/entries/aristotle-causality/>>.

Godfrey-Smith, Peter. *Theory and Reality*. London: University of Chicago Press, 2003.

Kitcher, Peter. "Explanatory Unification and the Causal Structure of the World." In *Scientific Explanation*. Edited by Wesley Salmon and Peter Kitcher. Minnesota Studies in the Philosophy of Science XIII. Minneapolis: University of Minnesota Press, 1989.

Knowles, Dudley. "Explanation—Opening Address." In *Explanation and Its Limits*. Edited by Dudley Knowles. Royal Institute of Philosophy Supplement 27. Cambridge: Cambridge University Press, 1990.

Okasha, Samir. *Philosophy of Science: A Very Short Introduction*. Oxford: Oxford University Press, 2002.

Salmon, Wesley C. "Four Decades of Scientific Explanation." In *Scientific Explanation*. Edited by Wesley Salmon and Peter Kitcher. Minnesota Studies in the Philosophy of Science XIII. Minneapolis: University of Minnesota Press, 1989.

Swinburne, Richard. "The Limits of Explanation." In *Explanation and Its Limits*. Edited by Dudley Knowles. Royal Institute of Philosophy Supplement 27. Cambridge: Cambridge University Press, 1990.