Defeasible Reasoning, Special Pleading and the Cosmological Argument

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Abstract

The rehabilitation of causation and modal realism in recent analytic philosophy have made possible the revival of the argument from contingency to the existence of a necessary first cause. Recent work in defeasible or nonmonotonic logic means that this argument can be cast in such a way that it does not presuppose that every contingent situation, without exception, has a cause. Instead, the burden of proof is shifted to the skeptic, who must produce positive reasons for thinking that the cosmos is an exception to the defeasible law of causality. The most promising line of rebuttal open to the skeptic contradicts a plausible account of the nature of causal priority, namely, that the actuality of a token causes is necessitated by the actuality of its token effect. Several independent lines of argument in support of this account are outlined.

1 Introduction

The cosmological argument for God's existence has a long history, but perhaps the most enduring version of it has been the argument from contingency. This is the version that Frederick Copleston pressed upon Bertrand Russell in their debate about God's existence in 1948. In 1997 [2], I noted that all three of Russell's principal objections to the argument (viz., the unreality of modality, the unreality of causation, and the unreality of the world as a totality) have fared poorly in recent analytic philosophy. This is especially clear in the case of causation. Far from withering away (as Russell anticipated [7]), the notions of cause and effect have never held a more central position. Causality is absolutely central to recent philosophical work in semantics, the philosophy of mind and intentionality, epistemology, and philosophy of science.

2   The Cosmological Argument

The formal framework I employed in " A New Look at the Cosmological Argument" [2] was a modal logic supplemented by the Leśniewski-Goodman-Leonard calculus of individuals ("mereology") [4]. By way of modal logic, I needed only the axioms and rules of T. I used the two usual predicate symbols of mereology, $\sqsubseteq$ and $\bigcirc$, representing part-of and overlap, respectively. I needed three mereological axioms (I use the two usual predicate symbols of mereology, $\sqsubseteq$ and $\bigcirc$, representing part-of and overlap, respectively) :

Axiom 1 $x \sqsubseteq y \leftrightarrow \forall z\, (z \bigcirc x \rightarrow z \bigcirc y)$

Axiom 2 $\exists x\, \phi\,(x) \rightarrow \exists y\, \forall z\, (z \bigcirc y \leftrightarrow \exists u\, (\phi\,(u)\ \&\ u \bigcirc z))$.

Axiom 3 $x = y \leftrightarrow (x \sqsubseteq y\ \&\ y \sqsubseteq x)$

Axiom 1 defines the part-of relation in terms of overlap, and Axiom 2 is an aggregation or fusion principle: if there are any situations of type ϕ, then there is an aggregate or sum of all the ϕ situations. Axiom 3 guarantees that the part-of relation is reflexive and anti-symmetric.

There were two principles linking the modal and mereological languages. Here I needed to introduce a new predicate, A. Where b is a possible situation, Ab can be used to state that b actually obtains.

Axiom 4 $x \sqsubseteq y \rightarrow \Box\,(Ay \rightarrow Ax)$.

Axiom 5 $\Box(\forall y \in \mathcal{F}\, Ay \rightarrow A\hat{x}\mathcal{F})$

Axiom 4 ensures that aggregation of situations is a form of conjunction: a whole necessitates all of its parts. Conversely, 5 implies that the existence of all the members of a sum necessitates the existence of the sum itself.

There is one special notion that had to be defined: that of being "wholly contingent", represented by '∇'.

Definition 1 $\nabla x \leftrightarrow (Ax\ \&\ \forall y\, (y \sqsubseteq x \rightarrow \neg\Box\, Ay))$

A wholly contingent situation is an actual situation none of whose parts are necessary.

Finally, I needed only three facts about causation:

Axiom 6 *Veridicality:* $(x \rhd y) \rightarrow (Ax\ \&\ Ay)$

Axiom 7 *Separate Existence:* $(x \rhd y) \rightarrow \neg(x \bigcirc y)$

Axiom 8 *Universality:* $\forall x\, (\nabla x \rightarrow \exists y\, (y \rhd x))$

Axiom 6 stipulates that only actual situations can serve as causes or effects. Axiom 7 is intended to capture Hume's insight that a cause and its effect must be "separate existences". The language of mereology, when applied to situations, enables us to state Hume's principle precisely: a cause must not overlap its effect. It is very important to bear in mind that Axiom 6 does not require that a cause must not overlap its effect in space or time: it is only *mereological* overlap (the having of a common part) that is ruled out. Axiom 8 expresses the universality of the causal relation: every wholly contingent situation has a cause. Axiom 8 does not entail determinism, in any of its usual senses, since I have not stated that causes are sufficient conditions for their effects. I do not assume that every event is necessitated by its causes; in fact, I believe that this is not typically the case. For this reason, this account of causation is compatible with indeterministic theories of human freedom and indeterministic interpretations of quantum mechanics.

In "A New Look at the Cosmological Argument" [2], I used these axioms to prove the following theorem:

Theorem 1 *If there are any contingent situations, then the cosmos C (the sum of all wholly contingent situations) has a cause that is a necessary situation.*

Since we know that there is at least one contingent situation, we can use Theorem 1 to conclude that the cosmos has a cause that is a necessary situation, a First Cause. It is legitimate to call this cause a "first cause" if we assume (as seems plausible) that all effects are contingent.

3   The Role of Defeasible Reasoning

Even though we have excellent empirical evidence for the generalization that wholly contingent situations have causes, it is hard to see how any amount of data could settle conclusively the question of whether or not this generalization (Axiom 8) admits of exceptions. The skeptic can always find a logically consistent position by simply restricting the scope of axiom 8 in such a way as to exclude its application to the cosmos as a whole.

The most effective response, dialectically speaking, is to insist that, at the very least, our experience warrants adopting the causal principle as a *default* or *defeasible* rule. This means that, in the absence of evidence to the contrary, we may infer, about any particular wholly contingent situation, that it has a cause.

This is, however, all that is needed for the cosmological argument to be rationally compelling. In place of a deductively valid, *apodeictic* proof of the existence of a first cause, the defender of the cosmological argument can offer instead a defeasible argument (an argument correct by the standards of non-monotonic reasoning). The burden is then shifted to the agnostic, who must garner evidence of a positive sort for the proposition that the cosmos really is an exception to the rule. Merely pointing out the defeasible nature of the inference

(i.e., the bare possibility of the cosmos's being an exception) does not constitute a cogent rebuttal.

Considerable progress has been made in recent year in developing formal systems of defeasible or nonmonotonic reasoning that satisfy certain plausible meta-logical constraints. For example, in the Commonsense Entailment system of Asher and Morreau [1], a defeasible version of Axiom 8 could be expressed by using a default conditional connective, $>$:

$$\text{Axiom } 8^* \; \forall x \; (\nabla x > \exists y \; (y \rhd x))$$

This version of Axiom 8 can be read as: normally, a wholly contingent situation has a cause. This defeasible Axiom 8^* will allow us to infer that any given wholly contingent situation has a cause unless some positive reason can be given for thinking that the situation in question is an exception to the rule, for example, by showing that the situation belongs to a category of things that typically does *not* have a cause.

The skeptic could refuse to accept even the defeasible generalization 8^*. Like Kant or Russell, he might insist that the universality of causation be seen as a canon or prescriptive rule for reason, and not as a descriptive generalization (even a defeasible one) of mind-independent reality.

However, to give up even the defeasible version of Axiom 8 as a descriptive generalization about reality is to embrace a radical form of skepticism. All of our knowledge about the past, in history, law and natural science, depends on our inferring causes of present situations (traces, memories, records). Without the conviction that all (or nearly all) of these have causes, all of our reconstructions of the past (and therefore, nearly all of our knowledge of the present) would be groundless. Moreover, our knowledge of the future and of the probably consequences of our actions depends on the assumption that the relevant future states will not occur uncaused. The price of denying this axiom is very steep: embracing a comprehensive Pyrrhonian skepticism.

4 The Best Rebuttal to the Argument

In my 1997 article, I dealt with twelve objections to the cosmological argument, including the classic Humean and Kantian objections. Here I would like to focus on what I take to be the most promising rebuttal to the defeasible version of the cosmological argument. This rebuttal is based on making the simple observation, Don't contingent situations typically have *contingent* causes? This is an instance of a wider strategy: focus on some unique feature of the First Cause and point out the cause of the world's having that feature is an exception to some well-established generalization. Indeed, for the most part, contingent situations do have contingent causes. They also have causes with finite attributes and causes that can be located in space and time, features which, in each case, the hypothesized First Cause would lack.

Once we have established that the the cause of the cosmos would be relevantly unusual, we seem to be faced with two equally unattractive options: supposing that the cosmos has only a very unusual kind of cause, or supposing that it has no cause at all. Thus, we seem to end in a stalemate.

This is essentially the line taken by Graham Oppy in his recent response to my original paper. ([5]) Oppy defines a *first event* as a situation to which nothing is temporally prior. Oppy argues that we could replace Axiom 8^* with the principle that every *non-first event* has a cause (call this Axiom 8^{NF}). Oppy contends that all the evidence that can be adduced in support of Axiom 8^* can also be adduced in support of 8^{NF}, so there is no ground for preferring one to the other ([5, p. 381]).

Oppy admits that his principle is "slightly less natural" than Axiom 8^* ([5, p. 388 n. 5]). I would argue that Oppy's principle is "slightly less natural" than Axiom 8^* in exactly the same way that *all emeralds are grue* is "slightly less natural" than *all emeralds are green*. When drawing inductive generalizations, any loss of naturalness, no matter how "slight", can be critical. In fact, Oppy's restriction of the universality of causation to non-first events is a classic case of special pleading, until and unless he can provide some principled ground for thinking that the absence of temporally prior situations is relevant to the presence or absence of a cause.

Oppy seems confused here about the nature of defeasible or nonmonotonic reasoning. It is certainly *logically consistent* to maintain the universality of causation with the exception of first events, but Oppy has not shown that it is *reasonable* to maintain such an exception. If Oppy's only reason for excepting first events from the scope of Axiom 8 is his distaste of the conclusion which would otherwise be drawn (viz., the existence of a necessary first cause), then his position is consistent but unreasonable, just as it would be unreasonable for me to except the events that occur after January 1, 2000. It would be *consistent* for me to maintain that all events except those occurring after January 1, 2000 have causes, and my version of Axiom 8, which we might call Axiom 8^{Y2K} is supported by exactly the same body of evidence supporting Axiom 8^*, but clearly it would be unreasonable to except those events without providing some positive reason to think that the temporal location of an event relative to the turn of the millenium is relevant to its being caused or uncaused.

Although Oppy offers no defense for his restriction of the scope of Axiom 8^*, there are several defenses that could be mounted. A defender of Oppy's principle could perhaps appeal to Hume's account of the nature of causal priority. If the causal priority of an event to one of its effects simply consists in its temporal priority to that effect, then we would have very good reason for supposing that first events have no causes, since nothing could be causally prior to them. However, there are good reasons to resist Hume's account of the nature of causal priority. First, it excludes the possibility of temporally backwards causation, which seems to be metaphysically possible and has actually figured in scientific explanations and interpretations of quantum mechanics. Second, the nature of

temporal priority is even more obscure than that of causal priority, and the best accounts of temporal priority seem to be those that presuppose the ontologically prior existence of causal priority.

A second line of defense of Oppy's principle would be to point out that all of the causes with which we are familiar are temporally prior to their effects. In *Realism Regained* [3], I provide a number of arguments for thinking that this is mistaken: that we do, in fact, have experience of the causal efficacy of atemporal situations (such as the situations that support the holding of certain natural laws). Moreoever, even if this claim were correct about our experience, it would fail to support Oppy's principle, since what we need is a positive reason for thinking that situations that are not temporally related to an event cannot cause it. Merely observing that all of the causes we are familiar with in experience are temporally prior to their effects does not support Oppy's principle if our experience is in fact limited to temporally located situations. We can only observe that situations do have temporal causes; we cannot observe that they *do not have* atemporal causes, but it is the latter observation that would be needed to justify Oppy's restriction of Axiom 8*. Consider the following analogy: all the causes we have so far observed occurred before January 1, 2000, but this gives us no reason to think that all causes without exception will occur before this date.

However, there is a third, more successful line of defense for Oppy's principle. All of the situations we have observed have had causes which were *at least in part* located in time at a moment earlier than the effect. Oppy's first events are clearly unusual in this respect: if they have any causes, these causes cannot be located even in part at a time prior to the first event.

This third version of a defense of Oppy's principle can be subsumed under the original objection I mentioned: namely, that all observed cases of causation are cases in which the cause was *contingent*. In my 1997 paper, I argued that necessary (non-contingent) situations cannot be located in space or time [2, pp. 199-200]. If I can explain why we must conclude, this fact notwithstanding, that the comos has a necessary cause, then I will have also explained why we must conclude that first events have non-temporal causes, since necessary causes are ipso facto atemporal ones.

In other words, the defender of the cosmological argument must respond to this sort of rebuttal with substantial reasons for thinking that, although the First Cause is unique in a number of respects, each of these unique features can be adequately explained by extrapolating from tendencies already observable in ordinary cases of causation. My own defense of the argument is based on the following thesis: that, in some precise sense, a cause is always *more nearly necessary* (or, equivalently, *less contingent*) than its effect.

Relative necessity can be defined by the following:

$$a \text{ is more nearly necessary than } b \leftrightarrow_{df} \forall x \sqsubseteq b\, [\Box(Ax \rightarrow Aa)\ \&\ \Diamond(Aa\&\neg Ax)]$$

In other words, a situation a is more nearly necessary than situation b just in case a is actual in every world in which any part of b is actual, but a could be actual in the absence of the actuality of any part of b. This follows from the *identity conditions* of situations. The causes of a situation are essential to its identity: had the very same truth been verified by a situation caused in a different way, we would not have had the same situation as verifier. The corresponding thesis involving effects is not plausible: a situation's identity does not include the eventuality of all its effects.

This assumption is a generalization of the Kripkean intuition that the origin of a thing is always essential to it. It is true that in natural language we sometimes treat event-tokens with slightly different parts and antecedents as identical. For example, we might say that the death of Caesar would have been less painful had Brutus not participated. However, such looseness in natural language should not be taken as settling the metaphysical issue.

This principle (an effect necessitates the existence of its causes) does not imply that the *content* or *intrinsic type* of an effect necessitates the *content* or *type* of its causes. For example, the token situation of Caesar's death could not have existed had not all of its causes, including Brutus' knife-thrust, existed. This of course does not mean that Caesar wouldn't have died unless Brutus and the other senators had killed him. The truth 'Caesar died' would have been verified by a different situation in all of those worlds in which Brutus does not help in inflicting the fatal set of wounds. The situation that actually verifies the truth 'Caesar died' would not have existed had any of its causes failed to exist.

There are several additional reasons for thinking that causes are more nearly necessary than their effects. First, it is clear that we need some account of causal priority that explains the transitivity and asymmetry of this relation. An account of causal priority in terms of relative contingency nicely satisfies this desideratum.

Second, this account enables us to specify exhaustively the *potential causes* of a given situation: a is a potential cause of b if and only if a is more nearly necessary (less contingent) than b. Such a specification is necessary if we are to account for the statistical properties of causal connections, the so-called "Markovian principles" developed by Salmon [9] and Suppes [11] and studied recently by Pearl and Verma [6] and Spirtes, Glymour and Scheines [10]. I use these Markovian principles in developing a causal calculus in Appendix B of my forthcoming book ([3]). Markov locality entails that the causal antecedents of an event "screen off" the probability of that event from the probability of any non-consequent event-token. If we assume that the probability of every actual event-token is screened off in this way by its *actual* causes, then we are implicitly assuming that the causal antecedents of any actual token are necessary to its identity, that there are no non-actual or counterfactual causes of actual tokens.

Finally, this principle seems to be implicit in our conviction that the past is *fixed* and the future is *open*. The relative necessity of causally antecedent tokens gives us an explanation of the asymmetry of past and future. The fixity

of the past can best be understood as the relative necessity of past event-tokens, given the token event corresponding to the present. This thesis is implicit in all "branching-future" models of temporal logic.

The cosmos (as I have defined it) is a situation of absolutely minimal contingency. If situation a contains situation b as a part, then b is no less contingent (no more nearly necessary) than a, since (by Axiom 4) a could not be actual if b were not actual. Since the cosmos contains every wholly contingent situation as a part, no wholly contingent situation can be less contingent than the cosmos.

Since the cosmos is a situation of minimal contingency, it is not surprising that it should have no contingent cause, but it would still be very surprising if it had no cause at all. By extrapolating from our common experience with causation, we conclude that a situation of minimal contingency (such as the cosmos) has a non-contingent (necessary) cause. At the same time, the principle of causal priority as asymmetric necessitation gives us good reason for concluding that the necessary cause of the cosmos is itself uncaused, since nothing can be strictly more nearly necessary than an absolutely necessary situation.

These considerations lead to a new version of the critical Axiom 8:

$\qquad$ **Axiom** 8^{**} $\forall x(Ax > \exists y(y \text{ is more nearly necessary than } x \,\&\, y \rhd x))$

On the basis of induction, we can confirm that, at every degree of necessity (short of absolute necessity), every token is caused by some token more nearly necessary than it. As we successfully build scientific models that stretch across astronomical and geological time, we confirm that situation-tokens across a wide swath of degrees of necessity have causes that are strictly more nearly necessary than themselves. Axiom 8^{**} is the generalization of this pattern (in the form of a defeasible rule). Axiom 8^{**} states that we may reasonably infer, about any token at any degree of necessity, that it has a causal antecedent which is more nearly necessary than it.

When we try to apply Axiom 8^{**} to a necessary situation (or any situation that is not wholly contingent), we find that the defeasible conclusion is blocked, since there is no situation more nearly necessary than an absolutely necessary situation. When we apply Axiom 8^{**} to the Cosmos, or to any other minimally contingent situation, we succeed in drawing the defeasible conclusion that it has a cause, and in addition, we have an explanation as to why the cause of the Cosmos is necessary.

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