Why is There Anything?

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Abstract: We argue that there exists a necessary causally potent being. We then argue that that being is God.

1. Introduction

There are concrete things: atoms, antelopes, and armchairs, for example. But why? Why isn't the world instead empty of all concrete things? Imagine a reality that fundamentally consists of nothing but empty space—or for that matter no space at all. Why isn't reality like *that*?

We are intrigued by a simple answer: there is something concrete because there *must be*. Yet this answer inspires a further question: why must there be something concrete? The traditional answer is that there is a *necessarily existing* concrete thing or things capable of causing or grounding everything else. Call this theory 'Necessary Foundation'.

Necessary Foundation is certainly a significant theory. It provides a framework for thinking about cosmogonic theories, since it implies that there is a necessary foundation capable of causing or grounding the cosmos. Moreover, the theory contradicts a version of Metaphysical Nihilism (according to which there could fail to be concrete things), since Necessary Foundation implies that there must be at least one concrete thing. Third, the theory has this theological ramification: it implies that God, if God exists, would be a necessary being (assuming that no foundation could cause or ground the existence of God). Fourth, and perhaps most significantly, Necessary Foundation answers one of the deepest "why" questions humans have asked—why is there anything at all?

But is Necessary Foundation true?

We will develop a new pathway toward Necessary Foundation. The steps along the way are inspired by developments in the literature on modality and causation, and the resulting argument builds upon recent work on causal-based arguments for a necessary being.[1] Although our investigation is exploratory, we believe that the pathway we mark out provides a means by which someone could become rationally inclined to think, or at least strongly suspect, that Necessary Foundation is true.

Even more speculatively, we will propose a way to extend the pathway from Necessary Foundation all the way to *theism*. We will again rely on recent developments in modality and causation.[2] The result is a pathway of reason that, in effect, begins with an ultimate "why" question and ends with a broadly theistic explanation of contingent reality.

[1] See Rasmussen (2010a) and Weaver (forthcoming).
[2] Cf. Rasmussen (2009).

2. Cause and Effect

Ordinary language includes talk of things causing things. We say such things as "a fire caused their house to fall down," or "his smoking was a cause of his lung cancer," or "the political speech caused riots in the streets." And so on. Let us assume that at least some of these things we say are true. Then some things, at least, are caused by other things.

Which things are caused? Here is the simplest answer: *any*. If "things" includes pluralities, then the answer amounts to this:

(C1) $\forall xs\ (\exists ys\ (ys \triangleright xs))$, where '$ys \triangleright xs$' reads 'the ys are the causes of the xs',

Principle (C1) says that each and every thing and *things* has a cause. There is much to like about this principle. It has the widest possible explanatory scope. It thus accounts for every single case of cause and effect in our world. Moreover, the principle enjoys theoretical simplicity, where simplicity is measured in terms of the number of basic, primitive terms required to express the principle. Finally, the principle is consistent with everything we can justify on solely empirical grounds.[3]

Sadly, however, (C1) is marred by a fatal vice: falsehood. The principle is false because there are no causes of *all* things together (where the *x*s occupy the entire domain: everything). For suppose there are causes, *Cs*, of all things. Then the *Cs* are among the very things they are causes of, which results in causal circularity. Genuine causation cannot run in a circle, we say.[4] Therefore, there is no cause of all things. Therefore, (C1) is false: some things lack a cause.

If the above argument is sound, then although some things (plural) have a cause, others do not. What might account for the difference between the caused and the uncaused?

There are many proposals, but perhaps the most famous is the proposal that the division between the caused and the uncaused coincides with the division between the *contingent* and the *necessary*. A motivation for this proposal is that contingent realities *might not* have obtained, and one might expect that there needs to be an explanation, then, of why they in fact obtain rather than not. A cause of their reality would enable that explanation (*cf*. Pruss (2006)). Necessary realities, by contrast, cannot have been otherwise, and in fact, it is not so clear how necessary realities even *could* be caused to exist.[5] Therefore, a necessary reality is a good candidate for an uncaused reality. We may state the resulting causal principle as follows:

[3] What about so-called virtual particles? Don't they come into being without a cause? We answer that they come into being (apparently) without a logically *sufficient* cause. But there cannot be an empirical reason to think that causes must be sufficient for their effects. Moreover, on an ordinary use of the term "cause," we may say that Eric's desire to check his email again caused him to refresh his Internet browser even if it was possible for other factors to have prevented him from satisfying that desire in that way.

[4] We recognize that causal-loops may be compatible with physical laws, even if they are metaphysically problematic. But in case there are doubts about the impossibility of causal loops, replace occurrences of "cause" with "external cause," where external causes are causes that can't run in a circle (by stipulation). We are interested here in principles of external causation.

[5] Someone might think, for example, that causes can exist ontologically prior to—and without—their effects, whereas there cannot be anything that exists prior to—or without—a necessary reality. For our purposes, however, we will leave open whether or not some necessary realities may be caused to exist by a more fundamental necessary reality.

(C2) ∀xs (C(xs) → ∃ys (ys ▹ xs)), where 'C(xs)' reads 'x exists or obtains, and it is not necessary that *x* exists or obtains'.

This principle restricts the scope to *contingent* things, and it says that any and all of them have a cause (at least one). Unfortunately, there are challenging objections to the above principle. Perhaps the most important is the Rowe-Ross-van Inwagen objection, which is basically that there can't be a cause of the *totality* of contingent things, since any external cause would be non-contingent and would thus have only non-contingent effects.[6] Moreover, one may object that certain contingent things aren't of the right category to be caused: for example, one might think that contingent *events* have a cause but not contingent *substances*. Although the objections are by no means decisive, we prefer to use a less contentious principle to build an argument for a Necessary Foundation.

The logically weakest causal principles in the literature on arguments for a necessary being take the following form (or something in the neighborhood):

Possibly, some reality (entity or entities) of type T has a cause.

For example, we could conceive of the argument by Gale & Pruss (1999) as an argument for the principle that possibly, there is a cause of a reality of the following type: *a contingent fact consisting of the actual world's contingent facts*.[7] Rasmussen (2010a) argues for the principle that possibly, there is a cause of a thing of the type *maximal contingent state of existence*. Elsewhere, Rasmussen (2011) argues for the principle that possibly, there is a cause of a thing of the type, *a beginning of an exemplification of contingency*. Turri (2011) gives a related argument with the premise that possibly, there is a cause of a thing of the type, *the first contingent causal power*. These causal principles may seem easier to accept than the causal principles in traditional cosmological arguments.

We will offer an argument whose causal principle has the same weakened form, but which is even more restricted than each of the above examples. An initial statement of the principle is as follows:

(C3) ◊∃x∃y ((y ▹ x) & T(x)), where 'T(x)' reads 'x is a totality event consisting of all purely contingent events'.

The principle says that it is possible that there is a cause of a totality of purely contingent events. To be clear, the possibility in question is one in which the effect is a totality of purely contingent events, where the cause is not included within the effect. In the next section, we will give a more precise metaphysical account of *purely contingent* events. But a rough idea suffices for now. Think of events that contain only contingent things. So, for example, a *tree falling*, *star exploding*, and *car coming into being* count as purely contingent events (assuming trees, stars, and cars are not necessary beings).

The term "possibility" expresses metaphysical possibility, which we understand as *consistency with the absolutely necessary truths*. Absolutely necessary truths are what Alvin

[6] Ross, (1969, pp. 295-304); Rowe (1975); van Inwagen (1983, pp. 202-204); *cf*. the discussion in Pruss (2006, pp. 97-125).

[7] Their argument, more exactly, was expressed in terms of a principle of *explanation* applied to propositions. So, even while their principle is in the neighborhood, there are some important differences.

Plantinga calls "broadly logically necessary": they include truths of logic and also necessary non-logical truths, such as that no odd number is capable of sneezing (see Plantinga (1974, p. 2)). We take it that metaphysical necessity and possibility are characterized by certain key axioms of S5 quantified modal logic.[8] (If there are doubts here, let us stipulate that the notions of 'necessity' and 'possibility' we shall be working with are implicitly defined by those axioms. It will be interesting enough if there is a necessary being, where such a being exists no matter what possible situation obtains, and where 'possibility' is understood in terms of those axioms.)

So (C3) says it is possible for there to be a cause of a certain totality of events. Why believe that?

We will sketch three reasons in support of (C3). First, (C3) follows from a more general, independently supported principle of causation:

(C4) $\forall x\,(C(x) \rightarrow \Diamond\exists y\,(y \triangleright x))$.

This principle says that every contingently existing or obtaining thing *possibly* has a cause.

Some philosophers may wish to adjust the principle to suit their preferred theory of causation. For example, if you think only *events* are the proper *relata* of causation, then translate 'y $\triangleright$ x' so it reads 'y causes an *event* whose occurrence entails that x exist or obtain'.[9] Or you might prefer to restrict the quantifier to contingent *states of affairs*, or to purely contingent states, or to some similar category. There is a variety of options consistent with the spirit of (C4).

Principle (C4) fits with a wide range of data, including (i) our experience with contingent things (states, events, etc.) having a cause, and (ii) our lack of experience with uncaused contingent things.[10] Moreover, it makes modest demands: it only requires the *possibility* of a cause. If there

[8] Specifically, we assume the following axioms plus the axioms of classical first-order logic:
M: $\Box p \rightarrow p$
K: $\Box(p \rightarrow q) \rightarrow (\Box p \rightarrow \Box q)$
4: $\Box p \rightarrow \Box\Box p$
5: $\Diamond p \rightarrow \Box\Diamond p$
We would like to note that our argument doesn't require **N** (the necessitation rule). We mention this because **N**, together with standard logic, implies that the theorem, $\exists x(x=x)$, is necessary, and thus that there must be something. One may wish to avoid building into the *meaning* of 'necessity' anything that strictly implies the controversial metaphysical hypothesis that there must be something. In any case, those who wish to preserve the full S5 system may still include **N**. We should add that the statement "$\Box\exists x(x=x)$" is in important respects far from our conclusion.

[9] To be a bit more precise: '*x* causes state of affairs *s*' = 'there is a *y*, such that (i) *x* causes *y*, (ii) necessarily if *y* exists, then *s* obtains, and (iii) possibly *x* exists prior to (or without) the obtaining of *s*.' The last condition accounts for the idea that causes may exist prior to—and so without—their effects.

[10] Jonathan Schaffer (among others) have suggested to us that we have exactly parallel support for the thesis that all causes are contingent—which contradicts the conclusion of our argument. The suggestion is reminiscent of a worry Jordan Howard Sobel (2004, pp. 236-237) had for Robert Koons' (1997) cosmological argument.

We see an important difference, however. Let us grant that all the causes we observe are contingent. Still, would our observations be any different if there *were* necessary causes? Consider that if we did glimpse a necessary thing, we would not see that it *is* a necessary reality. How could we? Even if we discover something that we cannot create or destroy, we do not thereby observe that something exists in all possible worlds. We have reason, therefore, to expect our observations to be as they are even if there *are* necessary causes. By contrast, we have no reason to expect our observations to be as they are if (C4) is false. On the contrary, if some contingent things can exist without any cause or any possibility of cause, then we might well witness arbitrary and completely disjoint combinations of contingent things entering reality at any moment. Yet we never do. (For a point similar to the last one made, see Craig and Sinclair (2012, pp. 186-187)).

are counterexamples, they are few and far between.[11] Thus, we propose that (C4) is at least a good rule of thumb: that is, for any given case of a contingent thing, its contingency provides defeasible evidence for its causability.

From (C4), we may deduce (C3) as follows. Let 'E' be a totality event consisting of purely contingent events in our world. Then let S be the state of affairs of *E's occurring while in a world where E is the totality of purely contingent events*. S obtains contingently, since E occurs contingently. So S is causable, given (C4). But causing S requires causing a totality of purely contingent events. Therefore, (C4) implies (C3). As a result, our support for (C4) may contribute to our support for (C3).[12] (This argument may be weakened somewhat by the worry that S is a prime candidate for being a counterexample to (C4), but the next consideration mitigates that worry.)

A second reason in support of (C3) is based upon *causal relevance*. Suppose some things are caused, while others are not. What relevant difference might there be between the caused and uncaused things? We suggested above that a difference between *necessity* and *contingency* may seem to be causally relevant. But there is a more modest way to proceed. Take any arbitrary contingent thing and consider whether there is a reason to think that the thing in question differs in a causally relevant way from things that are known to have a cause. In cases where one lacks such a reason, one lacks a reason to make an exception to the rule of thumb expressed by (C4). And, in cases where one has a reason to think the differences are *not* causally relevant, one has an additional "causal uniformity" reason to think that the contingent thing in question is causable.[13]

Does a totality of purely contingent events differ from other purely contingent events in a way that is causally relevant? We'll give one reason to think not. To begin, consider the following states of affairs:

s1: *there being exactly 1 purely contingent event*
s2: *there being exactly 2 purely contingent events*
s3: *there being exactly 3 purely contingent events*

Notice that these states differ by a mere *quantity* of events. You might think mere quantitative differences aren't normally relevant to causal possibility. That is, if there could be a cause of s3, then there could be a cause of s2, and if there could be a cause of s2, then there could be a cause of the smaller state, s1. This inference is supported by what Rasmussen (2014) calls "modal continuity." Rasmussen argues that situations that differ by a mere quantitative term are normally

[11] There is an objection that (C4)-like principles ultimately entail a stronger principle that falls prey to the Rowe-Ross-van Inwagen objection mentioned earlier. Here is one way one might attempt to deduce the stronger principle. Suppose every contingent reality is causable. Then if there were an uncaused contingent reality C, then the fact that C is uncaused would itself be causable. But something's being uncaused cannot itself be caused. Therefore, every contingent reality is causable *only if* every contingent reality actually has a cause. *Cf.* Oppy (2000, pp. 347-348) and Gale and Pruss (2002, p. 90).

We make two replies. First, the entailment isn't uncontroversial (for example: maybe something's lacking a cause could be caused by there being a lack of available causes). Second, and more importantly, even if the objection is successful, that is consistent with our observation that counterexamples are rare, at best.

[12] See a more complicated argument of the same type (with stronger premises) in Weaver (forthcoming, reply to objection #5).

[13] To be clear, we do not claim that one has a defeasible reason to expect that something is causable in cases where one lacks reason to think that the thing in question is contingent. We focus on *contingent* things because the clearest cases of causable things are all contingent.

modally unified: if the one is possible, then we have a defeasible reason to expect its neighbors are also possible. We should emphasize that the reason is defeasible, since there are plenty of breaks in modal continuity. The point is just that modal breaks are surprising in arbitrary cases. The idea, then, is that if there could be a cause of s3, then we have a defeasible reason to expect that there could be a cause of s1. The states are causally uniform.

From the causal uniformity of the above states, we may extract a reason in support of (C3). To do this, observe first that causal uniformity implies that s1 is causable if s3 is causable. We don't expect it to be controversial that there could be a cause of s3 (where a cause of s3 could be analyzed as a cause of something in virtue of which s3 obtains).[14] For example, there could be two purely contingent events that give rise to a third. In this situation the two events jointly cause s3 to obtain. So, by causal uniformity, we have some reason to expect that it is possible that there is a cause of s1. What could cause s1? No purely contingent event can *cause* there to be exactly one purely contingent event, since that would require that an event cause its own existence.[15] So, a cause of s1 must instead be external to the single-member *totality* of purely contingent events. (C3) follows.

Note here that we leave open whether there may be causally relevant differences between events that are purely contingent and those that are not. We focus on purely contingent events if only to restrict our focus on cases where causal relevance appears *clearer*. Yet, we do not make any claim about whether causal irrelevance also extends beyond our scope. It may.[16]

Third, the main modal epistemologies on offer provide some epistemic justification for (C3).[17] We will focus on just one such epistemology: Chalmers' conceivability tests (2002).

Chalmers develops various notions of conceivability and shows how they may guide us into reliable judgments about metaphysical possibilities. The most reliable guide packs into the notion of conceivability two great-making properties: being positive and being ideal.[18] Conceiving a situation S is *positive* when one is able to coherently imagine a situation in which S obtains. For example, I can positively conceive of there being a regular polyhedron with fewer than ten sides by imagining a cube. Or, I can positively conceive of there being more than twenty animals in my coat closet by imagining twenty turtles stacked on top of each other. Chalmers understands "imagination" as broader than visual imaging (like in a vivid dream), since an imagination can include a conceptual or intuitive representation, such as when one brings to mind the details of a logic or math proof. Although one may further scrutinize the notion of coherent imagination, we believe it is a familiar enough notion to give us some grip on the concept of positive conceivability.[19]

Conceivability comes in degrees of epistemic strength. In its strongest form, it is *ideal*. Conceivability is ideal if no amount of further scrutinizing would or could reveal incoherence in what one is imagining. We could think of this in terms of an ideal rational agent: if a perfect cognizer is able to (positively) conceive the situation in question, then the situation is ideally

[14] For more on causing states of affairs, see note 9.

[15] We are assuming the "prior cause" condition given in note 9.

[16] We thank Dean Zimmerman for asking us whether our restriction to purely contingent events may be artificial and overly restricted. Our answer is that it may be—which is no reason to doubt the principle.

[17] We have in mind the theories of modal knowledge in Bealer (2002); Chalmers (2002); Geirrson (2005); Gregory (2004); Jenkins (2010); Williamson (2007); and Yablo (1993).

[18] A statement *q* is ideally, positively and primarily conceivable for *C*, just in case, *C* can imagine a circumstance in which *q* is verified, *C* can conceive that *q* is actually true, and *q* "is conceivable on ideal rational reflection." Chalmers (2002, p. 147). *Cf.* ibid., 150, 157.

[19] See Chalmers (2002, p. 150); see also Yablo (1993).

(positively) conceivable. Or, we could think of ideal conceivability in terms of indefeasible conceivability: as far as one can tell, one can (positively) conceive of S, and there is nothing one could learn that would reveal incoherence in one's conception.[20] In either case, ideal (positive) conceivability is strong evidence of possibility—and may even entail possibility. But even without ideal conceivability, one can enjoy *prima facie* (upon initial inspection) or *secunda* (upon further inspection) conceivability. These notions provide varying degrees of justification for modal judgments, where the more we inspect, the more justification our modal judgments may enjoy.

For our purposes, it will be useful to bring in one more notion: primary conceivability. Chalmers introduces this notion to deal with cases involving opaque contexts, as in "Hesperus is not Phosphorus". In these cases, it may seem that conceivability is unreliable: for example, we can easily imagine a world where the star that rises in the evening is not the same as the star that rises in the morning, even though such a world is impossible (since the *actual* evening star cannot fail to be the actual morning star). There are different ways one might deal with these cases. Chalmers proposes that in such contexts there are actually two importantly different modal statements with two corresponding senses of conceivability. Without going into all the details, the basic distinction is between the purely *a priori* elements of (say) "Hesperus is not Phosphorus," on the one hand, and *a posteriori*-sensitive elements (like that Hesperus *is* Phosphorus), on the other. Primary conceivability doesn't turn on *a posteriori* truths—it's entirely *a priori*. Fortunately, in our argument we may restrict ourselves to statements that don't admit of opaque contexts, and so we may work entirely with *a priori* (primary) conceivability.

With Chalmers conceivability tests in hand, let us now return to our causal principle, (C3), which says that possibly, there is a cause of a purely contingent totality event. Does conceivability justify (C3)? According to Chalmers, it does to the extent that we can imagine a situation in which a totality event has a cause. So consider the following scenario. There is a supremely powerful entity E (whose nature we leave unspecified), which is capable of causing any and every purely contingent event, including a totality event. We may imagine, for example, that whatever event can occur could be caused by E. Or if that is too much to imagine, then imagine merely that E causes whatever purely contingent events happen to occur. Or if even that is too much, then imagine a particularly big contingent event, which is known to be causable, like a galaxy forming, and then imagine that E causes that event. Now add to your imagination empty space around the caused event so that there are no other purely contingent events. The imagined galaxy is now a totality of purely contingent events, and no incoherence is revealed by supposing that it still has a cause. These imaginations are *prima facie* and *secunda* coherent, and thus, by Chalmers' lights, they provide *prima facie* and *secunda* evidence for the metaphysical possibility of the imagined situation. We have thus identified a third line of potential support for our causal principle. (In our "Objections" section, we will address the worry that conceivability considerations may cut against our argument from another direction.)

3. From Causation to Necessary Existence

We are now ready to put together our argument for a necessarily existent, causally potent foundation of reality. The argument is as follows:

[20] Chalmers (2002, p. 147).

(P1) It is possible that there is a purely contingent totality event that has a cause.

(P2) It is impossible that a cause of a purely contingent totality event is purely contingent.

(P3) If, (a) it is possible that there is a purely contingent totality event that has a cause and (b) it is impossible that a cause of a purely contingent totality event is purely contingent, then (c) it is possible that there is a cause that isn't purely contingent.

∴ Therefore, (c) it is possible that there is a cause that isn't purely contingent.

(P4) If (c) it is possible that there is a cause that isn't purely contingent, then (d) there is a necessary thing that can be a cause.

∴ Therefore, (d) there is a necessary thing that can be a cause.

Let us have a closer look at the premises. (P1) simply expresses the causal principle we motivated in the previous section. Recall we gave three independent reasons for the principle: from causal relevance, from inductive generalization, and from conceivability. We'll examine potential defeaters in the objections section.

We add here just that (P1)'s modesty is hardly diminished by Kripke's (1980, pp. 110-115) doctrine that a thing's origin is essential to it. For suppose there can be a contingent totality that lacks a cause. Then, assuming Kripke's origin thesis, there can be a contingent totality that *cannot* have a cause. But it doesn't follow that there *cannot* be a contingent totality that can have a cause. There are presumably infinitely many possible contingent totalities, and the claim that *possibly* some of them cannot have a cause is far away from the claim that *necessarily*, none of them can have a cause.

Turn next to (P2), which says that a purely contingent totality event can't have a purely contingent cause. The motivation for this premise is a "no circularity" condition on causation. More exactly, we will assume that a cause cannot be identical to or wholly included within its effect. On this conception a cause of a purely contingent totality event must itself be an event that is not purely contingent. We intend this assumption to be stipulative: it orients us to the concept of the causation at work in (P2). (The arguments given in support of (P2) lose nothing on this conception of causation.)

Premise (P3) records the inference from the above premises to the conclusion that it is possible that there is a cause that isn't purely contingent. This inference is justified by the following schema:

Possibly, there is an F.
Necessarily, no F is a G.
∴ Therefore, possibly, there is an F that is not a G.

To see the inference in (P3), let F = 'a cause of a purely contingent totality event,' and G = 'a purely contingent cause'.

The final premise is (P4), which links the possibility of a non-purely-contingent cause with an actually existing Necessary Foundation. The inference here takes two steps: a metaphsics-y one, and a logic-y one. Start with metaphysics. Let us suppose that an event is any complex consisting of a substance or mereological fusion of two or more substances contingently exemplifying a

universal at a time. This account may remind you of other contemporary accounts of events, such as property exemplification, fact (in the truth-maker sense), concrete states of affairs, change, and property instance theories.[21] Fortunately, we may run our argument in terms of most of these theories, but for presentation sake, we'll focus on just one theory. We may now understand a *purely contingent* event as follows: '*x* is a *purely contingent event*' = '*x* is an event, and every substance or mereological fusion of two or more substances that is a constituent of *x* is contingent'.

Purely contingent events are different from *merely* contingent events. An event may be *merely* contingent and yet fail to be *purely* contingent by having as a constituent a necessarily existing substance though the event itself could have failed to occur. Purely contingent events only ever involve contingent substances or fusions of such contingent substances. We are now ready to precisely characterize a purely contingent totality event: it's a purely contingent event that includes all contingent substances that there are (relative to some possible world).

Now for the logic-y part. Go to a possible world at which a purely contingent totality event E has a cause C. (P1) tells us there is such a world. Since E exhausts the world's purely contingent profile, C must either be a *purely necessary event*, or a *barely necessary event*, assuming the no circularity condition expressed by (P2). Now a purely necessary event's substance-constituents are necessary substances solely, and such an event itself is necessary. A barely necessary event is one which features at least one necessary being as a substance-constituent. If either type of event is the relevant cause, then there could be an entity that is both necessarily existent and such that it can be a cause (in the sense that it is a substance-constituent of a cause). So, in either case Necessary Foundation is possibly true. Then, given our S5 axioms, Necessary Foundation follows.[22]

4. Objections and Replies

We will consider a couple objections to the causal principle in our argument.

Objection 1. The conceivability test used in support of the causal principle equally supports the possibility of there being a world where there fails to exist a causally potent being (*i.e.*, a being with causal powers). Thus, we have the following counter-argument:

[21] For discussion of these views see Ehring (2009) and the literature cited therein.

[22] Here is one way to show the inference:

Let 'N' abbreviate '∃x (N(x))', where 'N(x)' reads '□ (∃!(x) & ◊ (∃y (x causes y)))'.

1. Assume ◊N.
2. Then: ◊□N. (□(N → □N), by axioms **4** & **5**)
3. Now suppose (for the sake of argument) that ◊~N.
4. Then: □◊~N. (by axiom **5**)
5. Then: ~◊~◊~N. (by substituting '~◊~' for '□')
6. Then: ~◊~~□~~N. (by substituting '~□~' for the second '◊')
7. Then: ~◊□N. (because '~~X' is equivalent to 'X')
8. But (7) contradicts (2).
9. So: (3) is not true. ((3) → (8))
10. So: ~◊~N.
11. So: □N. (by substituting '□' for '~◊~')
12. So: N. (□X → X, by axiom **M**)
13: So: if ◊N, then N.

(1) Possibly, there is no causally potent being.[23]

(2) If (1), then it is not the case that there is a necessary (essentially) causally potent being.

(3) Therefore, it is not the case that there is a necessary (essentially) causally potent being.

Repy. The argument isn't parallel. Consider that positive conceivability of an *absence* of a causally potent being is only possible if we can successfully and coherently imagine a situation in which there is an absence of any and all causally potent beings. Perhaps we can imagine an empty space in which all actual contingent things are subtracted. But what if there could be a necessarily existent, *non-spatial* thing? Are we able to imagine or conceptually represent its *absence*? Can we imagine or conceptually represent the absence of the number 9? Answers are far from obvious. Furthermore, it is far from obvious that we can imagine or conceptually represent the absence of a necessary entity that can cause something to exist. Such imagining is modally complex in a way that parallels the modal complexity of Necessary Foundation itself. It seems to us, therefore, that Chalmers' conceivability test do not justify (1). Or, to be a bit more modest, we suggest that the conceivability test provides *no more* justification for the possibility of no Necessary Foundation than for the possibility of Necessary Foundation, and that, therefore, the conceivability test doesn't directly favor one possibility over the other. Meanwhile, the conceivability-based support for the causal principle remains undefeated (not to mention the other lines of support).

Objection 2. Our argument will not run if an especially strong version of causal reductionism is true. The causal reductionism we have in mind says that causal properties logically supervene on non-causal properties. Michael Tooley nicely explicates the basic idea as follows:

> Any two worlds that agree with respect to all of the non-causal properties of, and relations between, particulars, must also agree with respect to all of the causal relations between…[events]. Causal relations are, in short, logically supervenient upon non-causal properties and relations.[24]

We should add that the causal reductionism (CR) we have in mind goes further. It says that the non-causal properties in the subvenient base have strictly to do with those properties that build up law-governed physical history (and where the laws doing the governing are non-causal *natural* or *physical* laws). Thus, CR asserts that causal relations logically supervene upon law-governed physical history. Importantly though, supervenience relations are ordinarily superdupervenience relations since such relations require explanation.[25] There are a number of potential explanations available to reductionists. To illustrate by means of just one example, contemporary metaphysics has been enthralled by the idea of grounding, and one might insist that necessarily, history and natural nomicity ground obtaining causal relations and that that is why causation logically supervenes upon the grounding base.[26] Given, in particular, Jonathan Schaffer's (2009) theory of grounding, an entity *x* is grounded by another entity *y*, just in case, *x* depends for its positive

[23] Alternatively: possibly, there are no *necessary* causally potent beings.

[24] Tooley (2003, p. 388). Tooley originally expressed this type of "[s]*trong reductionism with respect to causal relations*" (ibid) in terms of states of affairs rather than events.

[25] The term 'superdupervenience' comes from William Lycan (according to McLaughlin and Bennett (2014, sect. 3.7)), but see also Horgan (1993, p. 566, pp. 577-582); and especially McLaughlin and Bennett (2014, sect. 3.7).

[26] See a related but weaker idea in Schaffer (2008).

ontological status, and nature, on *y*. In order to deliver an appropriate explanation in this context, the proponent of a causal reductionism that explains logical supervenience via grounding should add that law-governed physical history grounds causation at every world at which there exist obtaining causal relations. Let us call this distinctive brand of causal reductionism CR*.

If one does not see the problem CR* poses for our argument, then consider the following: If CR* holds, then causation is necessarily grounded in the natural or physical. Presumably, a necessary causally potent being is neither natural nor physical, since a possible world with no spacetime manifold is presumably a real metaphysical possibility. A necessary causally potent entity seems to be one that is not grounded by the physical. Its positive ontological status and nature does not depend upon the physical law-governed cosmos. Thus, if CR* holds, then it is difficult to see how a necessary causally potent being could causally produce anything.

The committed naturalist might see no problem at all with the conjunction that is our conclusion and CR*. Such a naturalist may align themselves with Graham Oppy's recent work, for Oppy (forthcoming) maintains that the naturalist is within her epistemic rights in claiming that there exists a necessary causally potent entity that is itself the physical and natural universe, or perhaps the initial state of that universe (call this Oppy's Thesis, or OT).

We do not recommend Oppy's response to the objection at hand. There are two reasons for this. First, OT rests upon an idiosyncratic conception of the natural. Consider the fact that according to Oppy, a "natural entity cannot exist except as an occupant of a location in the manifold of natural reality."[27] But one of the leading canonical quantization approaches to quantum gravity (Loop Quantum Gravity, or LQG) suggests that the correct geometry of space at the Planck scale is a quantized discrete geometry revealed in s-knot states (for the diffeomorphism invariant level) and a veritable tapestry of weaved spin networks (or states) of the background metric known as weave states (for the non-diffeomorphism invariant level).[28] Importantly though, these s-knot and spin networks build the very structure of space, and they are not themselves spatially located. Thus, by Oppy's lights, the s-knot and spin states of LQG are not natural. Next, suppose that a spacetime substantivalism motivated by the approximate truth of the orthodox interpretation of the general theory of relativity holds.[29] On such a view, spacetime is an eternal four-dimensional differentiable manifold. Spacetime, in other words, is an entity. However, it does not itself occupy "a location in the manifold"; it is itself the manifold. Should we really regard general relativistic spacetimes as supernatural entities? The suggestion strains credulity.

The above complications arise only if OT rests upon Oppy's particular conception of the natural. Put them aside for now and assume they can be resolved. What is wrong with regarding the universe as a necessary causally potent entity? Well, a lot depends on what's meant by 'universe'. Is 'universe' being regarded in this context as a rigid designator (Kripke (1980)), a proper name of sorts for all of physical or natural reality? If so, then we must return again to properly informatively analyzing 'natural' or 'physical'. One way of cashing out that notion is in terms of what's indispensable to our best scientific theories, or else that which can be explained

[27] Oppy (forthcoming, sect. 3).
[28] Rovelli (2004, p. 268).
[29] As Lawrence Sklar remarked:

> "...the theory [i.e., GTR] treats...spacetime as substantival in its surface presentation, just as do Newtonian, neo-Newtonian, and Minkowski spacetime theories. Any claim that the theory really affirms spacetime to exist solely as a set of relations among ordinary material things requires, as usual, an argument..." Sklar (1974, p. 214)

by our best scientific theories. The challenge here, however, is that there's no evidence that any of our best *scientific theories* has need of a *necessary* causally potent being; nor is there evidence for the claim that a necessary causally potent being of some variety is actually explained by any of our best scientific theories. But what if the term 'universe' is not a rigid term, but is instead a way of flaccidly designating the sum or arrangement of all of the actual natural entities? On such a supposition Oppy's necessary causally potent universe does not exist. We are not *necessary* causally potent beings.[30]

Moreover, even if one can overcome these difficulties (maintaining, perhaps, that an initial state of our universe could somehow be constituted by a necessary, natural causally potent being), CR* is in conflict with arguments we give in the final section according to which the causal foundation would be an immaterial God. We will therefore grant the objector's premise that a necessary causally-potent foundation cannot be part of a purely physical causal base.

Repy. Note, first, that if one's reductionism about causation were significantly weaker than CR*, such that it was motivated by the Humean supervenience thesis (HST), for example, then our argument would be unscathed. This is because the HST asserts that the fundamental level (FL) is comprised of local categorical, qualitative, and intrinsic properties and spatio-temporal relations of such properties (particularly their instantiations), and that all else *globally supervenes* upon FL.[31] In other words, FL is "a vast mosaic of local matters of particular fact, just one little thing and then another…an arrangement of qualities. And that is all."[32] But the HST is a contingent truth, if true. Some possible worlds may feature different derivative structure though their fundamental structures match exactly. So according to the HST, there can be worlds at which causal properties are not determined by non-causal properties that are constitutive of law governed physical or natural history, and that is all our argument will require.[33]

There are theoreticians whose theories of causation do not pretend to inform us about the nature of causation at distant metaphysically possible worlds.[34] Ignoring for now the question of whether or not one should be in the business of merely providing an empirically adequate theory of causation that at best holds at the actual world and worlds very much akin to it (*cf*. Collins, Hall, and Paul (2004, p. 14)), we stress that the argument of this section goes through given any of the merely empirically adequate reductive theories of causation since they are at best contingent truths if true.

But again, what of the stronger form of causal reductionism, specifically CR* above? Against these stronger (in terms of modal force) reductive theories we advance a report: there is wide spread consensus that all such theories fail, and fail miserably. As two foremost experts on causation noted:

> After surveying the literature in some depth, we conclude that, as yet, there is no reasonably successful reduction of the causal relation. And correspondingly, there is no reasonably successful conceptual analysis of a philosophical causal concept. No

[30] In fact, such a conclusion is entailed by contingentism, the denial of necessitism (the idea that necessarily every entity is necessarily some entity). Necessitism is defended in Williamson (2013), but I doubt that Oppy wants to rest his thesis upon necessitism.

[31] See Lewis (1986, pp. ix-x); *cf*. Lewis' comments on supervenience in Lewis (1999, p. 29).

[32] Lewis (1986, pp. ix-x).

[33] See Weaver (draft).

[34] See, *e.g*., the comments in Aronson (1982, p. 302); Dowe (2000, pp. 6-12); Kutach (2013, pp. 1-50, see particularly the comments on p. 5); and perhaps Salmon (1984).

> extant approach seems able to incorporate all of our desiderata for the causal relation, nor to capture the wide range of our causal judgments and applications of our causal concept. Barring a fundamental change in approach, the prospects of a relatively simple, elegant and intuitively attractive, unified theory of causation, whether ontological reduction or conceptual analysis, are dim.[35]

Given our contemporary philosophical milieu, we believe it is safe to shift the burden of proof onto the proponent of CR*. If one would like to resist our argument in this section by defending one's favorite strong reductionist theory of causation, one is entitled to travel that road. But be warned: there are multifarious cases of preemption and/or overdetermination, and not a few strong reductionist theories have fallen victim to them.[36]

5. From Necessary Existence to Maximal Greatness

The greatest conceivable causal foundation would, intuitively, enjoy the most robust form of existence—*necessary existence*. But would a necessary causal foundation be the greatest conceivable?

We'll build a tentative bridge from *necessary existence* to *maximal greatness* using materials from the previous sections. We will proceed by considering what kind of thing a necessary causal foundation might plausibly be. In particular, we will show that, given our principle of modal continuity, there is a defeasible reason to think that a necessary foundation would be great to a maximal degree.

The thrust of our argument is that the totality of necessary concrete reality cannot have arbitrary non-maximal *limits* with respect to its basic, uncaused attributes. We will begin by applying our strategy to the attributes of *causal power* and *geometric form*. Then we will see how the argument may work for degrees of *greatness*.

5. 1. Causal Power

Let 'N' refer to the totality of the necessary causal foundation. (We leave open whether 'N' picks out a single thing, sum of things, or a plural of things.) Assume there is such a thing (or things) as N.

How much causal power does N have in total? N has at least *some* causal power, if our previous arguments go through. For example, N could cause a purely contingent totality event. To pick just one measure of power, we may consider how many bosons, fermions, and/or fields (BForFs) it can produce within (say) 1 second. If N can produce all of the BForFs, then we may say that it has at least 10 units of causal power. Accordingly, N's causal power is no less than the *most* amount of BForFs it can produce. How much is that?

Suppose there is an upper limit *m*, such that N cannot produce more than *m* units of BForFs. So, for example, say that N can produce at most 1 trillion units. In that case, the following two propositions are both true:

1. There *can* be a purely contingent totality involving 1 trillion units of BForFs.

[35] Paul and Hall (2013, p. 249).
[36] See the discussion in Carroll (2009, pp. 287-290); and Schaffer (2000).

2. There *cannot* be a purely contingent totality involving 1 trillion and one units of BForFs.

These propositions mark a *break* in modal continuity. This break is unexpected, however. We have no reason, as far as we are aware, to think there must be an upper bound with respect to how many units of BForFs are *metaphysically* possible. We have no reason to think that, for example, there couldn't be a contingent totality of (say) 1 quadrillion units of BForFs. And we doubt that one could in principle attain such a reason. But if we lack a reason to expect an upper limit, then by the principle of modal continuity, we have an undefeated reason to think that there would be no such upper bound. Thus, we may suppose, instead, that if there can be a beginning of m units of BForFs, then there can be a beginning of m+1 units of BForFs, for any *m*. If that's right, then we have a reason to infer that there is no upper limit to the amount of units of BForFs that N can produce. In other words, we have a reason to infer that there is no upper limit to N's causal power, if N's causal power is measured in terms of what N can produce.

Our conclusion so far is just that N *in total* has unlimited causal power. But modal continuity equally applies to causally potent members or parts of N (if there are any). An upper bound on their powers would be arbitrary, and modal continuity leads us to expect that there is no such boundary.

There is a corollary. Modal continuity gives us a reason to think that every conceivable degree of causal power alike *can* be instantiated. Suppose there is a *greatest conceivable* degree of causal power--*omnipotence* suitably defined.[37] Then modal continuity gives us a reason to think a greatest conceivable degree of causal power can be instantiated. What could instantiate such a power? Clearly, if anything can, N can, since N is a source of all possible causal powers. Moreover, unless there is some reason to think that N's unlimited degree of causal power is *non*-maximal, then modal continuity gives us an undefeated reason to think that N has the greatest conceivable causal power.

There is another corollary. N's causal power is *essential* to N. This follows from our measure of "causal power" in terms of what N *can* produce. We are thinking of "can" in the sense of metaphysical possibility. So, if N can produce X, then *necessarily*, N can produce X—given our modal axioms. (We leave open whether there may be other important senses in which N's causal power "could" vary.)

The argument isn't unassailable. As we see it, the most promising way to block the above reasoning would be to show why there is a break in modal continuity: for example, one may find some reason to think there is an upper limit to the amount of causal power it could take for N to produce a purely contingent totality event. Whether such a reason is available we leave for further inquiry.

5.2. Geometry

Modal continuity suggests that N cannot have an essential geometry. To see this, imagine that N, in total, instantiates a certain spacetime geometry (or topological and metric structure), G. Let G* be a geometry that would result from offsetting two instances of G. To give a simple illustration, if G were a square, like  , then G* might be two overlapping squares, like  . Of course, in reality G is enormously more complex than a square; it may even be infinitely

[37] Flint and Freddoso (1983); *cf.* Leftow (2009).

complex. But in any case, G is not the same as G*. More to the point, the differences between G and G* are accounted for solely in terms of degreed differences in offsets of various shapes. Therefore, by modal continuity, we have a reason to think that N could instead have geometry G*. In other words, we have reason to think that if N has a geometry, it *could* have had a different one.

This result is especially significant if N's contingent states can be caused. For then N can be an ultimate cause of geometric reality. Moreover, to avoid causal circularity, N can *lack* a geometry altogether—prior to its causing there to be a geometric reality. There is more. Suppose one thinks that whatever *has* a geometry *must have* a geometry. Then one may infer that N is essentially geometric-less and thus immaterial. That's a startling result, though there are multiple places where one might get off before reaching it.

Greatness

The route to unlimited *greatness* is like the route to unlimited causal power. We observe that N has *some* extent of greatness (awesomeness, praiseworthiness, value) in virtue of having unlimited power, assuming that unlimited power is itself a great-making attribute. Then we follow modal continuity along the path to unlimited greatness—and perhaps even to maximal conceivable greatness.

What is *greatness*? We think there is an intuitive, pre-philosophical notion of greatness that is grasped when considering examples of great-making attributes. To illustrate, suppose we praise a being by saying, "you are so great: you have so much power, so much knowledge, and you are terribly wicked." We suspect you'll intuitively see that two of the three attributes are great-making. The third—being terribly wicked—is out of step with the others, precisely because it doesn't contribute to the greatness of a being. If that seems right to you, then you have some grip on what we mean by "greatness".

We should be clear that we have in mind *absolute* greatness, not *relative* greatness. Perhaps there could be a greatest lion, or a greatest knife. These are notions of greatness with respect to a *specific kind* of thing. We have in mind greatness with respect to the most general kind of thing (or more cautiously the most general kind of concrete thing). That is to say, we are interested in the greatestness of a *thing* simpliciter.

We believe that it is possible to see *a priori* that unlimited causal power is a great-making attribute. Thus, we believe that it is possible to see *a priori* that N, which has unlimited causal power, has a great-making attribute. Thus, we believe that it is possible to see *a priori* that N is great to some extent.

The pathway from "N is great to some extent" to "N is great to a maximally conceivable extent" is guided by modal continuity in the usual way. To get us along the path, suppose there is a non-maximal degree of greatness *d*, such that N can be great to degree *d* but not to degree *d+1*. Then there is an arbitrary, unexplained modal break in N's potential degree of greatness. To avoid the modal break, we should suppose that N *can* have a maximal degree of greatness (both maximally possible and maximally conceivable). From here we reach the conclusion that N *is* maximally great if maximal greatness entails essential maximal greatness. The supposition is plausible: maximal greatness intuitively entails essential maximal greatness, for intuitively the greatest being is the one that has no possibility of falling from greatness. We have thus marked out a pathway to a grand conclusion: there is a causal foundation, such that none greater can be conceived. That is the ultimate reason there is anything.

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