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ORIGINAL ARTICLE

Powers, possibility, and the essential cosmological argument

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Abstract

One classical version of cosmological argument, defended famously by Thomas Aquinas and Duns Scotus, deduces the existence of a First Cause from the existence of a particular sort of causal series: one that is 'essentially ordered'. This argument has received renewed defence in recent work by Feser (2013), Cohoe (2013), and Kerr (2015). I agree with these philosophers that the argument is sound. I believe, however, that the standard defence given of the ECA in these philosophers can be complemented by a formulation that appeals to the powers theory of possibility. This approach to possibility has been defended in recent years by, for example, Pruss (2002), Jacobs (2010), and Vetter (2015). In this article, I show how this modal theory allows us to defend the ECA in a way that is dialectically advantageous as well as clarifying.

Keywords: Powers; possibility; cosmological argument; essential order; causation

One classical version of cosmological argument, defended famously by Thomas Aquinas and Duns Scotus, deduces the existence of a First Cause from the existence of a particular sort of causal series: one that is 'essentially ordered'. Call this the 'essential cosmological argument', or 'ECA' for short. The ECA has received renewed defence in work by Feser (2013, 2017), Cohoe (2013), and Kerr (2012, 2015, 2019). I agree with these philosophers that the ECA is sound. I believe, however, that it can receive additional justification by an appeal to the *powers theory of possibility*. This approach to possibility has been defended in recent years by, for example, Pruss (2001*a*), Jacobs (2010), and Vetter (2015). In this article, I show how this modal theory allows us to frame the ECA in a way that complements the approaches of the aforementioned philosophers, a framing that has several dialectical advantages.

I proceed as follows. First, I make some preliminary remarks that will help to frame the subsequent discussion. Second, I unpack the standard formulation and defence of the ECA. Next, I do the same for the powers theory of possibility. I then deploy this modal theory to formulate a new version of the ECA. Finally, I summarize and conclude.

Preliminary remarks

I begin by considering two preliminary issues: One of interpretation, and one of technical clarification.

First, the interpretive issue. Just how to understand the ECA at it appears in Aquinas and Scotus has been a matter of some controversy. In this article I shall follow closely

a line of interpretation that can be found in Gilby (1964), Brown (1966), Cross (2005), Frank and Wolter (1995), Cartwright (1996), King (2003), Klima (2013), Feser (2013), and Kerr (2015). There are three points common to this tradition of interpretation that I shall assume without argument in what follows. First, Aquinas and Scotus were not concerned to demonstrate a first cause *in time*, and indeed held it to be a logical possibility that the cosmos had no beginning. Second, they had no general antipathy for infinite series, admitting both the possibility of some infinite causal as well as mathematical series. And third, by 'first cause' in their arguments they did not primarily mean a *numerical* first (although they meant this as well), but rather a *first in power or causal efficacy* – that is, a 'principal' or 'primary' cause. This last point is important for appreciating that Aquinas and Scotus were not begging the question against a *per se* infinite series when deploying premises in their arguments like 'if there were no first cause, then there would be no later causes'. This last point will be further clarified in the following section.

Second, I shall use the term 'infinite causal series' throughout this article as shorthand for 'infinite *and non-well-founded*'. That is, I shall mean a causal series that more than being infinite in number, also fails to terminate in a first member that serves as a cause for all other members in the series. As is familiar from mathematics, not every series with infinite cardinality is non-well-founded. For example, the series of natural numbers under the less-than relation is infinite, but nevertheless is well-founded in the sense that it has a member, the number 1, that is less than all other members but for which no other member is less than it.

ECA

Aquinas and Scotus distinguished between two fundamentally different kinds of causal series: what they called 'accidentally' (or *per accidens*) and 'essentially' (or *per se*) ordered series.[1] In a *per accidens* series, the members possess the causal power definitive of the series *in themselves*, or *intrinsically*. The medieval paradigm for this was a series of biological generators: a person generates a child, who goes on to generate another, who generates another, and so on. Although each person in the series exists only because of the prior generative activity of their parents, nevertheless they each have, in themselves, a generative causal power that can be exercised without dependence upon, or participation in, the ongoing activity of their parents. So Frank and Wolter (1995), unpacking this distinction in Scotus, write that 'when accidentally ordered causes are involved, although A may be dependent upon B for its original existence, B subsequently acts independently of A in its relationship to E' (83). In other words, in a *per accidens* series, each member has the power to *initiate* the next causal act in itself, without depending upon or needing to participate in the power of earlier members of the series for that activity. Thus, in the generation case, each caused generator, *qua* generator, is related only 'accidentally' to its causal predecessors. As Aquinas put it, 'it is accidental to this particular man as generator to be generated by another man; for he generates as a man, and not as the son of another man' (*ST* I, Q. 46, a. 2). In this sense, each member of the series possesses the causal power definitive of the series intrinsically.

By contrast, in an essentially ordered series, each member with a prior cause *does not* in itself possess the causal power definitive of the series. Instead, it only possesses this power by depending upon or participating in the ongoing causal activity of prior members in the series. The paradigm here (drawn from Aristotle) was a series involving a person, stick, and stone, where the person moves the stone by way of the stick. In such a series the stick and stone, each of which has a prior cause, has no intrinsic power to move. Instead, it must be caused to move by the motion of prior members of the series,

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in this case ultimately terminating in something that possesses the causal power for motion in itself: the person or soul. Thus, each caused member of this series of movers, *qua* mover, is indeed related 'essentially' to its causal predecessor(s), for it is precisely *in the act of moving* that it depends upon being moved by its predecessor(s). In this sense, the caused members of a *per se* series possess the causal power definitive of the series in a merely contingent, or extrinsic, way.

Other conditions were sometimes added for a series to count as *per se* or *per accidens* (for example, Scotus thought *per se* causal series must also be *simultaneous*).[2] For my purposes, however, it is only the aforementioned power-related conditions that are relevant. We may summarize the distinction between causes ordered *per accidens* and causes ordered *per se*, then, by way of the following contrasting necessary conditions (where 'Φ' denotes some causal activity (moving, heating, pulling, etc.)):

> *Accidental Order*: A series S constituted by causal activity Φ is *per accidens* only if for each member x of S with successor y and predecessor z, x possesses intrinsically the power to cause y to Φ.

> *Essential Order*: A series S constituted by causal activity Φ is *per se* only if for each member x of S with successor y and predecessor z, x does *not* possess intrinsically the power to cause y to Φ.

Causes that satisfy the first condition the scholastics called 'primary' or 'principal' causes of Φ. By contrast, causes that satisfy the second condition they called 'secondary', 'instrumental', or 'intermediate' causes of Φ.[3] Thus, in a *per accidens* series, each member is a primary cause of its effect, whereas in a *per se* series, each member with a causal predecessor is merely a secondary, or instrumental, cause of its effect. It is important to note, however, that to be a primary cause of Φing is not necessarily to be a primary cause *simpliciter*. Something may be a primary cause of Φing, while itself being caused to do this by some distinct causal activity Ψ. So, for example, a train's railway engine is a primary cause of the *locomotion* of all of the train cars to which it is attached, because it possesses intrinsically a power of locomotion (unlike the train cars). But it is not a primary cause *simpliciter*, because it must be caused to move the others by electrical energy and so on. Similarly, a fire is a primary cause of heat, because it possesses intrinsically a power to heat (unlike, say, a metal pan), but it is not a primary cause *simpliciter*, because it must be caused to heat by the ongoing action of oxygen, fuel, and so on. A primary cause *simpliciter* would be something that is not caused *in any sense* to engage in the activity it is engaged in.

We can then define the scholastic conception of a 'first cause' as follows:

> *First Cause*: Some $x_1 \ldots x_n$ are a first cause relative to a causal series S constituted by activity Φ iff (1) $x_1 \ldots x_n$ cause every other member of S to Φ, and (2) $x_1 \ldots x_n$ are a primary cause of Φ.

We can now consider the style of cosmological argument that is the subject of this article: the *Essential Cosmological Argument* (ECA). The ECA traditionally has two stages: First, it is argued that every essentially ordered causal series must terminate in a first cause, and second, that there is a *single* primary cause of every essentially ordered series, one which must have some of the classical divine attributes – necessary existence, simplicity, and so on.[4] I am not here concerned with this second stage of the argument, but only the first. However, for simplicity, I will simply refer to this first stage as 'the ECA'.

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The ECA has as its conclusion that every essentially ordered causal series must have a first cause, and can be summarized as follows:

(1) For every essentially ordered causal series *S*, either (a) *S* is infinite, or (b) *S* terminates with a first cause.
(2) (a) is impossible.

Therefore,
(3) For every essentially ordered causal series *S*, *S* terminates with a first cause.

Once we exclude the possibility of symmetric causation (as the medievals did), the truth of (1) is evident: Every essentially ordered series is either infinite, or terminates in a first cause.[5] The substance of the argument, then, lies in (2). But is a *per se* infinite series of causes impossible?

Aquinas and Scotus argued in the affirmative. Their argument for (2) can be reconstructed as follows:

(2a) In an infinite essentially ordered series, each cause would exert purely secondary causal power with no source in primary causal power.
(2b) It's not possible for anything to exert purely secondary causal power with no source in primary causal power.

Therefore,
(2c) An infinite regress in essentially ordered causes is impossible (i.e. (2) is true).

The truth of (2a) is obvious, for it simply follows from the definition of an infinite essentially ordered series. An essentially ordered series is defined as one in which each caused member with a successor has no power in itself to cause its successor to Φ. Instead, it must be caused to Φ, and be causally sustained in its Φing, by something else. But, as pointed out above, to be a cause of this sort just *is* to be a secondary cause. Thus, in an essentially ordered series every caused member with a successor exerts purely secondary causal power. And this secondary causal power can have no source in primary causal power in the case of an infinite series. For no matter how far back you trace the causal ancestry of a given effect, you're met with only further secondary causes.

(2b), then, is the substantive claim. Why think that it is true? Aquinas justifies it in the following way (keeping in mind that the main sense of 'first' here is 'primary' or 'principal', rather than numerical): 'a second cause does not act save through the influence of the first [*causae primae*]: so that every action of a second cause presupposes that of the [first] active cause' (Aquinas (2011), 29), and 'all second causes derive their action from the first cause [*primo agente*]' (*ibid*., 31). Along similar lines, Scotus defends the exercise of secondary causal power necessitating a source in primary causal power with these words: 'in essentially ordered causes the second, in so far as it causes, depends upon the first' (Scotus (1949), 43). But what, precisely, do these claims amount to? Here recent interpretative work by Edward Feser, Caleb Cohoe, and Gaven Kerr has been most helpful.

According to Feser, the underlying reason that secondary causes must depend upon primary causes in order to act, and so there cannot be an infinite regress in such causes, is precisely because they have no causal power in themselves to engage in the activity that they are engaged in. Because of this, they require something to *impart* to them this contingently possessed causal power. Otherwise, there would be no explanation of why something is engaged in a causal activity that it simply has no intrinsic power to engage in. Feser, unpacking this idea, writes:

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> a hierarchical [*per se* ordered] series is hierarchical precisely insofar as each member other than the first can act only insofar as its power to act is imparted to it from outside. If D is actualized by C only insofar as C is in turn being actualized by B and B in turn by A, then until we get to something which can actualize everything else in the series without having to be actualized itself – that is to say, to something which can impart causal power without having to derive it – then we will not really have explained anything. We will just keep passing the explanatory buck. A first actualizer who is the source of the actualizing power of the others is a precondition for there being a hierarchical series in the first place. A hierarchical series without such a first member would be like an instrument that is not the instrument *of* anything, a series of causes which have *derivative* causal power without anything *from which to derive it.* (Feser (2017), 64; emphasis in original)

To illustrate this point, Feser uses the example of a cup sitting on a desk, which is keeping it three feet off the floor (*ibid*., 22). The cup, in itself, has no power to be three feet off the floor. As such, the table on which it sits is required in order to keep it there. But then, the desk *also* does not, in itself, have a power to keep the cup three feet off the floor, and thus must be held up by the house's foundation. Ultimately, this series terminates at the earth, which does have in itself the power to sustain the whole cup-desk-foundation series, and confers on everything it is holding up a power to be such-and-such feet off the ground. Without the table, the cup would fall; without the house's foundation, the desk would fall; and without the support of the earth underneath the foundation, the entire series would fall. Feser concludes: 'Since the desk, the floor, and the foundation have no power of their own to hold the cup aloft, the series could not exist in the first place unless there were something that *did* have the power to hold up these intermediaries, and the cup through them, *without* having to be held up *itself*' (*ibid*., 23; emphasis in original). That which possesses this primary, or as I am calling it 'intrinsic', power, which it imparts to everything else in the series, is thus the 'first cause' of the series: 'what it means for such a series to have a first member is that there is something which can impart causal power to the other members of the series without having to have that power imparted to it – something that has its causal power in a "built-in" or nonderivative way' (*ibid*., 26–27).[6]

Feser's analysis accords with that of Cohoe, who writes:

> Because these intermediate causes possess causal powers only by deriving them from all the preceding causes, they need a first and non-derivative cause. Something can have a causal power derivatively only if that causal power can, in fact, be derived from something else. If there were only intermediate and derivative causes, then there would be no source from which the causal powers of the intermediate causes could be derived, regardless of whether there were a finite or an infinite number of intermediate causes. If there were no first, non-derivative cause, the intermediate causes would not actually be causes and the effects observed in the first three ways [of Aquinas] would lack a cause capable of producing them. (Cohoe (2013), 840).

Like Feser, Cohoe sees the source of a *per se* series requiring a first cause in the purely contingent, or 'derivative', way in which the intermediate members possess their causal powers. Because the intermediate causes 'depend on the first for their causal powers' (*ibid*., 848), if the series had no first member with a primary power, as a *per se* series would not if it were constituted by an infinite regress in secondary causes, 'there will be something that is an effect but that lacks a cause capable of producing this effect, and this is impossible' (*ibid*.).

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Kerr argues similarly, though instead of speaking in terms of causal power, he speaks of causal 'efficacy' – which, I take it, amounts to much the same thing. He writes as follows:

> in an essentially ordered series the causal efficacy of the series is derived from the primary cause such that the primary cause's causality is transitive and allows for further members of the series to act as causes in the series; on this account then, *x* can cause *y* and *y* can go on to cause *z in virtue of the causal efficacy granted to it* (*y*) by *x*. (Kerr (2012), 541; emphasis added)

Thus, agreeing with Feser and Cohoe, Kerr asserts that in a *per se* ordered series the intermediate causes must have their causal efficacy 'granted' to them ('imparted', 'conferred', etc.). And this because the intermediate causes 'do not possess such causality in themselves; it is distinct from what they are, distinct from their essences. Hence the effects of such series, i.e. things dependent on the primary cause, do not possess the causality of the series essentially, whereas the primary cause does' (Kerr (2019), 104). Elsewhere, he puts this in terms of the causal activity exercised by intermediate causes in a *per se* series 'exceeding their capacity' (*ibid*., 107), and 'thereby requiring the causal influence of the primary cause' (*ibid*.).[7] And this, again, is why there cannot be a *per se* infinite regress in causes:

> considering a supposed infinite [*per se* ordered] series, there will be no primary cause in such a series. But if this is so, then the causes in the series will have no causal efficacy, because, as has been noted, causal efficacy in the one-many series is originated and preserved therein by a primary cause. Therefore, to deny a primary cause of the one-many series (i.e., to affirm the possibility of an infinite such series), is precisely to remove the causal efficacy of the causes within the series, which is in effect to deny the causal series itself. (Kerr (2015), 142–143)

We might summarize Feser, Cohoe, and Kerr's reasoning here as a defence of premise 2b above as follows:

(1) If it were possible for something to exert purely secondary causal power with no source in primary causal power, then something could exercise a causal power that must be conferred without anything having conferred it.
(2) It's impossible for something to exercise a causal power that must be conferred without anything having conferred it.

Therefore,
(3) It's not possible for anything to exert purely secondary causal power with no source in primary causal power. That is, (2b) is true.

Before turning to consider how this defence of the ECA can be complemented by a modal approach that utilizes the powers theory of possibility, a word about a potential confusion is in order. The potential confusion is this: we may be misled into conflating the mere *triggering of a previously possessed power* with the *conferral of a power not previously possessed.* Failing to appreciate this distinction may render the force of the reasoning behind the ECA, either in its standard formulation or in my modal formulation to be considered shortly, opaque.

The difference between conferring a power not previously possessed, and triggering a power already possessed, is this. In the former case, the activity being manifest *cannot be maintained without the ongoing activity of that which conferred the power*. By contrast, in the

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latter case, the activity being manifest *can* be maintained without the ongoing activity of that which *triggered* the power, and this is indicative of the fact that the given power belongs to the affected object intrinsically. So, for example, when I roll a ball down a hill, I have not thereby *conferred* on the ball a power to move down an incline that it previously did not possess. Why? Because the ball can go on manifesting the activity of moving down the incline without my ongoing activity of moving it. So, in this case, I have simply triggered the ball's previously possessed power of moving down inclines. By contrast, when I move the ball *up* an incline, I am indeed conferring upon it a power that it did not previously possess. Why? Because the ball *cannot* go on moving up the incline without my continuously maintaining it in this activity, pushing it up the hill. The moment I stop conferring this power that it lacks in itself, that it has only contingently, it will immediately cease to move up the incline and roll back down.

Or consider a chandelier hanging from a fixture on the ceiling (to borrow an example from Feser (2017), 21). In manifesting its activity of being in the air six feet off the floor (say), it is not manifesting a power that it previously possessed, a power merely 'triggered' by the fixture holding it up. Instead, the fixture has *conferred* on it a power that it did *not* previously possess, since the manifestation of its activity of being in the air six feet off the floor must be maintained by that which has conferred it. By contrast, if I release a balloon from my hand, and it proceeds to float up to the ceiling six feet off the floor, I have not thereby conferred upon it a power that it did not previously possess to be in the air six feet off the floor. Instead, I have simply triggered the manifestation of its previously possessed power to do so. Once again this is because, unlike the chandelier, the balloon does not need my ongoing support to keep it in the air six feet off the floor.

Consider one final example. When I hold my hand over an open fire, I do not thereby confer on the flame a power to burn. Instead, I have simply (and unfortunately) triggered its pre-existing burning power. By contrast, when a fire is lit underneath a piece of metal, the fire indeed thereby confers on the metal a power to burn. It has no power, in itself, to burn anything, but insofar as it is being heated by the fire, it acquires this power. And this, again, is because the presence of the fire is required to sustain the metal's capacity to burn. Upon removing the fire, the metal's burning power will quickly disappear.

Note that this distinction between the mere triggering and the conferring of a power maps onto the distinction between *per se* and *per accidens* causation: a *per se* causal relation is generated when a cause *confers* a power on one or more effects. By contrast, a *per accidens* causal relation is generated when a cause merely *triggers* the pre-existing powers of one or more effects. Thus, essentially ordered series are generated by the conferring of powers, and accidentally ordered series by the triggering of powers.

Before unpacking my modal approach to defending the ECA, which complements the standard approach discussed in this section, let us first consider just what the modal theory in question – the powers theory of possibility – amounts to.

The Powers Theory of Possibility

Recently, a powers theory of possibility (hereafter 'PTP') has received notable defence in Pruss (2001*a*), Borghini and Williams (2008), Jacobs (2010), and Vetter (2015).[8] According to PTP, possibilities are grounded in the powers of actually existing substances. Roughly, *p* is possible just in case there exist(s) something(s) with a power to bring it about that *p*.

According to Pruss (2001*a*), PTP is the thesis that '[a] non-actual state of affairs is possible if there actually was a substance capable of initiating a causal chain, perhaps nondeterministic, that could lead to the state of affairs that we claim is possible'. Cashing out the idea more fully elsewhere, he writes:

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> the claim that it is possible that *B* take place is made true by there having existed something, *A*, such that when it exists it has causal capabilities enabling it to be the first step in a chain of causes (perhaps the chain having indeterministic links and perhaps it being a null-length chain, i.e., one that consists just of the initial thing itself) terminating at *B* and such that each step in the chain would have sufficient capabilities to be a full explanation of the next step should the next one be taken. (Pruss (2001*b*))

Similarly, according to Vetter (2015), who uses the term 'potentiality' as a catch-all for powers, dispositions, capacities, etc., 'It is possible that $p =_{df}$ Something has an iterated potentiality for it to be the case that *p*' (*ibid*., 197). Vetter includes the 'iterated' qualification here in order to capture the idea that some proposition *p* may be possible not only because something *currently* possesses a power for it to be the case that *p*, but also because something may have a power *to acquire further powers*, which would be powers for it to be the case that that *p*.

Simplifying these formulations, in this article I shall assume the following definition of PTP (where the term 'proposition' is meant to be neutral as to the nature of propositions, and where something has a power to bring it about that *p* if it either (i) currently has a power to do so, or (ii) has a power to acquire a power (an iterated power) to do so):

> **PTP** $=_{DF}$ For any possibly true proposition *p*, the fact that *p* is possible is grounded in the fact that some $x_1 \ldots x_n$ have a power to bring it about that *p*.

The theoretical motivations for PTP are manifold. They include that of providing an account of possibility that avoids the pitfalls both of possibilism and of ersatzism about modality, and that accords with common sense (cf. Jacobs (2010)). To unpack such justifications for PTP in detail here would take us too far afield. Suffice it to say that this approach to the metaphysics of possibility has received sustained defence in recent literature, and has become a contender for a compelling account of modality, along with traditional approaches like the actualism of Plantinga (1978) and Adams (1981), and the possibilism of Lewis (2001). I shall hereafter take for granted that PTP is a well-motivated theory of possibility, independent of any consideration of cosmological arguments in particular.

PTP and the ECA

Using PTP, we can formulate an argument to demonstrate that any possible *per se* ordered causal series must terminate in a first cause, and so (by implication) it is impossible that any regress infinitely. The argument infers the necessity for a first cause of any *per se* ordered series from the facts that (1) possibilities are grounded in powers, and (2) secondary causes are not equipped with the powers necessary to ground corresponding possibilities. In what follows I lay out each premise, defending or unpacking them as necessary as the argument proceeds.

Our intended conclusion is that every possible *per se* ordered causal series terminates in a first cause. As such, we begin by assuming an arbitrary instance of the antecedent of this claim:

> (p1) Possibly, some arbitrary essentially ordered series *S* constituted by causal activity φ exists.

By PTP we can then infer,

> (p2) There exists some $x_1 \ldots x_n$ with a power *p* to bring it about that *S* exists, which grounds the possibility that *S* exists.[9]

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But what is it for *S* to exist? Simply for each member of *S* to be engaged, in order, in the relevant causal activity: *x* being caused to φ by *y* φing, *y* being caused to φ by *z* φing, and so on. So, for example, if we have an essentially ordered series constituted by the causal activity of motion, then for that series to be actualized is for each member to be moving, and by its moving causing its successor (if it has one) also to move. Or, if the series is constituted by the causal activity of suspension (say, a chain suspended from a ceiling), for the series to be actualized is for each member to be suspended, and by its being suspended causing its successor (if it has one) to also be suspended. To unfold more clearly the reasoning of our argument, then, we infer,

(p3) There exists some $x_1 \ldots x_n$ with a power *p* to bring it about that each member of *S* is φing, which grounds the possibility that each member of *S* is φing.

Next we consider whether *p* is a conferred power or is rather intrinsic:

(p4) Either *p* is conferred on $x_1 \ldots x_n$ or is possessed by $x_1 \ldots x_n$ intrinsically.
(p5) If *p* is conferred on $x_1 \ldots x_n$, then $x_1 \ldots x_n$'s possession of *p* cannot ground the possibility that each member of *S* is φing.

Premise 5 is the core of the argument, so let us pause to consider its justification.

The reasoning behind (p5) is this. If a power is conferred, then it has to be conferred (as we saw in the previous section) by something that possesses the relevant power intrinsically, and so can confer it on others. But if so, then anything with a purely conferred power for some activity cannot exercise that power without the ongoing activity of that which confers it. As such, it is insufficient to bring about the relevant effect. Instead, it can only do so *in conjunction with* that which is conferring the power upon it, and so maintaining its causal activity. But then it is clear that anything with a merely conferred power cannot constitute the grounds for the possibility of it, or anything else, engaging in the relevant activity. Instead, that which *confers* the power – that which has it in itself, intrinsically – must be the grounds. Thus, (p5) is justified by the very nature of what it is to have a conferred power.

To clarify this point further, let us consider again two of the examples of conferred powers given in the previous section: the ball's power to move uphill, and the metal's power to burn. First, the possibility that the ball move uphill surely cannot be grounded in the ball's merely conferred power, for it is causally impotent to exercise, and indeed entirely lacks, this power in itself. Instead, the grounds of the possibility must involve *my* power (or some other 'self-mover') to move it uphill. The possibility, in this sense, more fully resides in me, not the ball, because the ball has no power in itself to move up the hill, though I can confer upon it this power, and so realize the possibility.

Second, consider the metal heated by fire. Insofar as it is being heated by the fire, it acquires the power to burn something: a power that the fire has conferred upon it. Now consider the possibility that the metal burn something (say, my hand). The metal in itself, and the powers native to it, cannot ground this possibility. It has no intrinsic capacity at all to burn anything. As such, the possibility that the metal may burn must be grounded in the *intrinsic* power of the fire to burn. Without the existence of fire, and its natural burning power, the possibility that the metal may burn could not exist, for the metal in itself is impotent to engage in this activity. Instead, it must participate in the power of fire.

Consider one final example not discussed in the previous section: the possibility that a mirror may illuminate something. No mirror, in itself, has a power to illuminate. As such,

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it must have this power *conferred* upon it by a light-source: lightbulb, fire, lightning, etc. Once light is shone upon it, it then acquires a derivative illuminating power. Because of this, the possibility that the mirror may illuminate something simply cannot have its grounds in the purely conferred illuminating power of another mirror. Rather, the ground must be in the *intrinsic* illuminating power of a light-source, which power can be conferred upon the mirror.

So much for a defence of (p5). But the consequent of (p5) is inconsistent with (p3), which states that $x_1 \ldots x_n$ having power p indeed grounds the possibility that each member of S is φing. So, by *modus tollens*, we infer,

(p6) It's not the case that p is conferred.

Which along with (p4) entails,
(p7) p is possessed by $x_1 \ldots x_n$ intrinsically.

Now, it might be objected at this point that I have created a false dichotomy: that either the grounds for a possibility *only* involve that which has an intrinsic power to bring the possibility about, or they *only* involve that which has a merely conferred power to do so. To frame the objection concretely: do not the grounds of the possibility that the ball move uphill need to involve *both* the ball with its purely conferred power to move uphill *and* that which can confer the power?

This, however, fails to grasp the distinction between merely *participating in* a given causal activity, and *actively bringing about* or *initiating* that activity. And it is the power to *actively bring about* a certain activity, a certain state of affairs, that is relevant to grounding the possibility that such a state of affairs may obtain, not the power to merely participate, or be involved in it, once it obtains. Conferred powers merely participate in a causal act, are merely involved in a state of affairs, once it is brought about, but by definition they cannot themselves bring it about. By contrast, intrinsic powers, by their very nature, are powers to bring about or initiate the relevant act or state of affairs.

This distinction between merely being involved in, and bringing about, a state of affairs can be illustrated as follows. I have the power to bring it about that an apple is cut with a knife. Once this event is brought about, it is of course the case that, necessarily, the apple, knife, and the knife's conferred cutting power are constitutively involved in the event. Nevertheless, neither the apple, nor the knife with its conferred cutting power, are what actually has brought about the cutting of the apple with the knife. Instead, it is *I* who have done this, by exercising my intrinsic power to cut apples with knives. We must not conflate, then, that which has a power to bring a certain state of affairs about, and that which would essentially be involved in that state of affairs once brought about. And again, it is the former, not the latter, that is relevant to grounding a possibility on PTP.

Now, if that which grounds the possibility that every member of S is φing has an intrinsic power to φ, and so to confer the power to φ on the members of S (exempting itself), it then follows that,

(p8) S will exist only if some $x_1 \ldots x_n$ exercise their intrinsic causal power to bring it about that S exists.

This premise is a straightforward consequence of PTP itself. If some proposition P is possible because some $x_1 \ldots x_n$ have a power to bring it about, then it follows that, if P were to come about, it must be by way of $x_1 \ldots x_n$ exercising their power. If P could be brought about *without* the causal activity of that which grounds the possibility that P comes

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about, then it is difficult to see why $x_1 \ldots x_n$ should be *relevant* to *P*'s possibility in the first place. Note, however, that there need not be any *unique* *x*s whose power grounds a particular possibility. There may be a variety of powerful 'witnesses' to a given possibility. So, for example, the possibility that I am suspended 5,000 feet in the air is witnessed to by the existence of planes, helicopters, jetpacks, and so on (note that all such witnesses have an intrinsic power to suspend something in air, for they can do this without themselves being suspended in air by something else – unlike, say, a chain). Any one of these has the power to actualize this possibility. However, the principle behind (p8) still holds: For all it says is that *at least some* of the witnesses to a possibility must be exercising their power to actualize that possibility in order for the proposition to become true. My argument is neutral regarding, and is independent of, whether there are one, several, or many such witnesses to the possibility that *S* exists. For no matter how many or how few witnesses there are, the argument has so far established that *any* such witnesses must have an intrinsic, rather than conferred, power to bring it about that *S* exists. This is because $x_1 \ldots x_n$ are simply a stand-in for *any* of the empowered witnesses to the possibility that *S* exists.

It further follows from (p8) that, were $x_1 \ldots x_n$ to exercise this power, they would *ipso facto* be a *primary* or *first* cause of the essentially ordered series *S*. For recall the definition given above of a first cause:

> *First Cause*: Some $x_1 \ldots x_n$ are a first cause relative to a causal series *S* constituted by activity Φ iff (1) $x_1 \ldots x_n$ cause every other member of *S* to Φ, and (2) $x_1 \ldots x_n$ are a primary cause of Φ.

Something(s) with an intrinsic power to φ, and which grounds the possibility that every member of *S* is φing, straightforwardly satisfies this definition. It satisfies (1) because, by the definition of their grounding the possibility of *S* and the nature of *S* itself, they would cause every member of *S* to φ if they exercised their power to bring *S* about. And it satisfies (2) because everything that exercises an intrinsic power to cause something else to φ, is thereby a primary cause of φing in that thing, since it does not require something else to confer on *it* the power it has conferred on that which it causes. So we can infer,

> (p9) If *S* will exist only if some $x_1 \ldots x_n$ exercise their intrinsic causal power to bring it about that *S* exists, then *S* will exist only if *S* has a first cause.

By *modus ponens* we then have,

> (p9) *S* will exist only if *S* has a first cause.

But *S* was just any arbitrary instance of a *per se* ordered causal series. So we can conclude by generalizing as follows:

> *Conclusion*: For any *per se* ordered causal series *S*, if *S* is possible, then *S* will exist only if *S* has a first cause.
> Which completes the proof.

Before proceeding, let us briefly summarize this modal proof for the necessity of a first cause in every *per se* ordered series. According to PTP, every possibility is grounded in the existence of something(s) with a power to bring that possibility about. Consequently, the possibility that an essentially ordered causal series may exist is grounded in the existence of something(s) with a power to bring that series about.

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This power to bring the series about must either be a conferred power, or an intrinsic power. It cannot be conferred, for conferred powers, precisely because they are conferred, are insufficient to bring about the relevant effect. Instead, they are only sufficient insofar as they participate in the intrinsic power of that which has conferred this very power upon them. Thus, the power to bring about a *per se* series *S* must be intrinsic, not conferred. But then the *per se* series will only exist if this intrinsic power is exercised, and if it is exercised, the series by definition has a first cause. This is because a first cause of any activity φ in something else is that which can cause φing without needing this power to be conferred upon it by something else's φing. And this is just what an intrinsic power to φ is. So, every essentially ordered causal series, if it is to exist, must have a first cause.

If this argument is sound, then an infinite *per se* ordered causal series is impossible, and every such series must terminate in a first cause. It might be wondered at this point, however, what this modal approach adds to the standard defence of the ECA that the latter does not already possess. After all, isn't the core of this modal proof simply identical to the standard defence, hinging as it does on the notion that conferred powers must be conferred by something that possesses the relevant power intrinsically?

I believe this modal approach adds to the standard defence in at least two ways. First, it is arguable that part of what creates the illusion of the possibility of an infinitely regressive *per se* ordered series is that we begin by thinking of the series as *already actual*, and then consider whether something would be explanatorily deficient about the series were it so. Those who endorse the possibility of such a regress answer 'No', because in such a case each member of the series would have a cause, and so what is there left to explain (cf. Hume (2007), 65–66)? Those who reject such a possibility answer 'Yes', because each member of such a series would have nothing from which to derive their purely conferred, or derivative, causal power. The latter are in my view correct. However, my modal approach complements the standard one by forcing us to take a step back from this 'moment' in the dialectic, where we consider the series as already actual and then ask what might or might not be explanatorily deficient about it, and to a logically prior 'moment' in which we consider *what could ground the very possibility of such a series in the first place*.

This is important, because if we begin by thinking of the series as already actual, the distinction between conferred and intrinsic powers is liable to become opaque. Thinking of one engineless train car pulling another, which pulls another, which pulls another, and so on *ad infinitum* (for example), our attention is drawn not to the intrinsic (or lack thereof) *potencies* of the train cars, but rather to their *actualities*. And in terms of the *act* of pulling, a locomotive (which has an intrinsic pulling power) that is pulling a train car, and another train car (which lacks such an intrinsic power) pulling a train car, are identical. And because the act is identical, conceiving of the series as already actual naturally lends itself to the *illusion* that the motion of each train car can be completely accounted for, even without a locomotive 'first puller', because each train car has something that is acting on it in the right way: pulling it. The modal approach to the ECA breaks this spell, by forcing us to think of the series not as actual, but as *possible*, and then connecting its possibility to an ontology of powers. When we do so, it becomes transparent that only certain kinds of powers – intrinsic powers – can ground the relevant possibilities. And from this, as the argument shows, it logically follows that the series could not exist without a first cause.

Second, and relatedly, this approach helpfully ties the ECA to an independently plausible modal theory: the powers theory of possibility. In so doing, it both helps to motivate those who endorse such an approach to modality to seriously consider the soundness of the ECA, as well as clarifies the underlying modal presuppositions involved in debates over its soundness. Those who defend the ECA typically presuppose (rightly, in my

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view) an ontology of causal powers, and that certain kinds of powers are more or less relevant to the possibility that a certain effect may take place. Those who reject such an ontology (either knowingly or unknowingly) will, by implication, naturally fail to see the force of the standard defence of the ECA. Unpacking the argument in terms of that ontology, in particular the ontology as it bears on modality, thus helps to illuminate the metaphysical framework in which the ECA becomes intelligible.

Conclusion

If sound, this modal argument provides compelling reason to reject the possibility of an infinite regress in *per se* causes. Every such series must terminate in a first cause, because the possibility of the actualization of *any* activity hinges on the existence of something(s) with a primary ('initiative', 'agentive') power to bring such actualization about. Were it (/they) to exercise this power, the series would by definition have a first cause. We can conclude, then, that the ECA is justified by an independently plausible theory of possibility: the powers theory.

As mentioned previously, this result goes only as far as justifying the first stage in the ECA: that of showing that every *per se* series has a first cause. But it does not, in itself, get us to anything like the God of classical theism: a unique and absolutely uncaused cause of the being of all contingent reality. The result of my argument, however, does provide some of the resources necessary for developing this second stage of the argument within a powers-theoretic framework. For if we consider a *per se* series ordered by the causal activity of *causing the very being* of a thing, then we can apply the reasoning above to get to the conclusion that every such series terminates in something which exercises an intrinsic power *to cause being* without needing this causal power to be conferred upon it by something else. Such an uncaused cause of being seems a good candidate for being an absolutely first cause of everything's being, and one might think it implausible to think there could be many such absolutely uncaused beings. But this line of thought I leave to be developed on another occasion.[10]

Notes

1. See for example Aquinas, *ST* I, Q. 46, a. 2; and Scotus (1949), 43.
2. See Scotus (1949), 43.
3. So, for example, Aquinas says of a secondary cause that it performs its 'operation not by the power of its own nature but by the power of the one who moves it' (Aquinas (2011), 29).
4. For the *locus classicus* of this argument, which fully unpacks both stages, see Scotus's *De Primo* (1949).
5. So Aquinas writes that '[a cause] does not educe itself from potency to act, since that which is in potency, being still in potency, can therefore not act. Some prior being is therefore needed by which it may be brought forth from potency to act' (*SCG* I, xvi, a. 7).
6. See also Feser (2013) for further discussion of these points.
7. For further discussion see Kerr's defence of Aquinas's proof in the *De Ente* in Kerr (2015).
8. For an overview of the powers-theoretic approach to modality, see Vetter (2011).
9. Note that this is not meant to imply that these are the *only* grounds for the possibility. It simply states that there *are some* such grounds in the power of something(s), in order for there to be a genuine possibility. See below for further elaboration on this point.
10. I'd like to thank an anonymous referee for suggestions that substantively improved the clarity and content of this article, as well as Kris McDaniel and Mark Heller for conversations that helped me develop some of the ideas contained here.

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