On Philipse's Attempt to Write Off All Deductive Cosmological Arguments

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Abstract
In his 2012 book *God in the Age of Science? A Critique of Religious Reason* Herman Philipse argues that all known deductive versions of the cosmological argument are untenable. His strategy is to propose a few objections to two classical deductive cosmological arguments. The first argument is from the impossibility of there being contingent entities that are the sufficient cause for the existence of a contingent entity. The second argument is from the impossibility of there being an infinite causal regress. In this article I argue that Philipse's attempt to write off all deductive cosmological arguments fails.

Introduction
A cosmological argument makes an inference from some broad empirical fact, such as that there are caused or contingent objects, or that there is something rather than nothing, to the existence of a first cause or necessary being, which is God. A distinction is often drawn between deductive and inductive cosmological arguments. In a deductive cosmological argument the conclusion that God exists follows logically from the premises. One kind of inductive cosmological arguments, namely arguments to the best explanation, argue that given the empirical fact in question the hypothesis that God exists is more likely to be true than any available alternative hypothesis. The development of deductive cosmological arguments has a long and rich history that goes back at least as far as Plato and continues until today.

Nevertheless, in his book *God in the Age of Science? A Critique of Religious Reason* Herman Philipse needs no more than four pages to arrive at the sweeping conclusion that *all* known deductive versions of the cosmological argument are unsound or at least deeply problematic, so that proponents of the cosmological argument have no choice but to prefer inductive versions to deductive ones.[1] His strategy to arrive at this conclusion is twofold.

First, he asserts that it seems that *all* existing deductive versions have been refuted in the existing philosophical literature (p. 223). Second, to support this assertion, he proposes a few objections to two well-known classical deductive cosmological arguments, namely *(i)* the argument from the impossibility of there being contingent entities that are the sufficient cause for the existence of a contingent entity[2], and *(ii)* the argument from the impossibility of there being an infinite causal regress.[3] In this article I shall argue that Philipse's attempt to write off all deductive cosmological arguments fails. I start with his case against *(i)*, followed by *(ii)*.

Philipse's attempt to reject the deductive cosmological argument from contingency
The deductive cosmological argument from contingency as criticized by Philipse is formulated by him schematically as follows (p. 223):

1. A contingent entity exists (that is, an entity which we can[4] suppose without contradiction[5] does not exist), or a contingent event occurs *[premise]*,
2. Each contingent entity or event has a sufficient cause *[premise]*,
3. Contingent entities or events alone cannot constitute, ultimately, a sufficient cause for the existence of a contingent entity or the occurrence of a contingent event *[premise]*,

4. Therefore, at least one necessary entity exists (that is, an entity which we cannot suppose without contradiction does not exist), or at least one necessary event occurs. And because it exists or occurs necessarily, it does not stand in need of an explanation *[conclusion]*.[6]

Philipse holds that this argument is known as the *standard* modal cosmological argument (p. 223). However, in the literature another version of the modal cosmological argument can be found that is arguably more exemplary than (1)-(4). The example I have in mind is the modal cosmological argument typically attributed to Leibniz. Leibniz's argument takes there being *a totality of all contingents* as its point of departure, and arrives at the conclusion that there is a necessary self-explanatory being that is the ultimate cause of *this totality*. But let this pass. In what follows I focus on the argument that Philipse *does* criticize, namely (1)-(4).

Philipse states that this argument is logically valid *if* we assume that every entity or event is either necessary or contingent. However, for the argument to be valid we must also assume that every necessary entity or event does not stand in need of an explanation.[7] By adding this further assumption (4) follows indeed logically from the premises.[8]

Given that the argument is deductively valid, in order to refute the argument Philipse has to argue convincingly that at least one of the three premises is untenable. According to Philipse the first premise 'states an evident facet of experience, so that it is obviously true' (p. 223). Indeed, it would seem rather implausible to deny that the world contains at least one contingent entity or event. Surely we perceive a world that appears to be full of contingent entities and events. The first premise is thus an unproblematic observational datum.

With respect to the second premise, Philipse admits that the well-known objection that quantum mechanics provides counter-evidence to it is not convincing because quantum-mechanical indeterminacy may well be an epistemological and not an ontological matter (p. 223). Here, I agree with Philipse as well. The objection he refers to is that according to quantum mechanics contingent elementary particles can come into existence without any reason at all, that is *uncaused*. However, this claim only holds if we accept upfront an *indeterministic* interpretation of quantum mechanics, such as the Copenhagen version, according to which randomness is an objective feature of reality itself. For if we were to accept a *deterministic* interpretation of quantum mechanics, such as the interpretation of David Bohm[9] or Heinz-Dieter Zeh[10], according to which randomness is a feature of our microphysical theories instead of reality, it does not follow that contingent elementary particles can come into existence without a cause.

Besides, one could argue that *even in the case of an indeterministic interpretation of quantum mechanics* contingent elementary particles do not pop into existence uncaused. After all, they originate from the quantum vacuum, which is a physical entity in itself, so that one can hold that these particles, although not having an efficient cause, have a proper material cause and are therefore not uncaused. Indeed, as William Lane Craig has rightly pointed out:

> Even on the traditional, indeterministic interpretation, particles do not come into being out of nothing. They arise as spontaneous fluctuations of the energy contained in the sub-atomic vacuum […] Popular magazine articles touting [sub-atomic physics] as getting 'something from nothing' simply do not understand that the vacuum is not nothing, but is a sea of fluctuating energy endowed with a rich structure and subject to physical laws.[11]

In order to repudiate the cosmological argument from contingency Philipse thus has no choice but to attack the third premise. And this is precisely what he does. He raises two objections to it. According to Philipse it is obvious that the sufficient cause of an effect *can be* contingent

(p. 223). However, this might be obvious for an effect's *proximate* sufficient cause, but it is not obvious for its *ultimate* sufficient cause, which is what premise (3) is about.

Philipse's other objection is that in fact causes *cannot* but refer to contingent entities or events. As he argues:

> If one explains causally an event E with reference to a cause C, what one means is that, *ceteris paribus*, if C had not occurred, E would not have occurred either, assuming there is no causal redundancy. Hence, it is essential to the very meaning of the word 'cause' that we can always suppose without contradiction that a cause C did not occur. All causal explanations must connect contingent facts or events. (p. 223)

In what follows I show why this objection is untenable as well. Now, the conclusion that all causes are contingent only follows if he also accepts the principle that whatever can be supposed without *logical* contradiction is *metaphysically possible*[12], so that C indeed cannot be necessary and therefore must be contingent.[13] Thus, although Philipse does not explicitly state this, we may take it that he is in fact committed to this principle, for else his objection would not be deductively valid.

Besides, that he indeed holds to it is implied by the fact that he identifies the proposition 'A contingent item obtains'[14] in premise (1) with the proposition 'We can suppose without logical contradiction that the obtaining item does not obtain', and the proposition 'A necessary item obtains' in conclusion (4) with the proposition 'We cannot suppose without logical contradiction that the obtaining item does not obtain'. For, both identifications hold if and only if the aforementioned principle holds.[15] This can be verified by a straightforward derivation. I will only show that the principle entails the first identification. The rest of the derivation proceeds in the same manner.

Assume the principle holds. Now, if we can suppose without contradiction that some obtaining item X does not obtain, then the principle entails that it is metaphysically possible that X does not obtain. Moreover, since X does in fact obtain it follows immediately that it is metaphysically possible that X obtains. But then X is by definition a contingent obtaining item. Vice versa, if X is a contingent obtaining item, then it is metaphysically possible that X does not obtain. But then it is also logically possible that X does not obtain. After all, metaphysical possibility entails logical possibility. Thus the principle indeed entails the first identification.

It is interesting to note that Philipse limits his Lewisian[16] counterfactual analysis of causation to event causation only[17], while in his rendering of the deductive cosmological argument from contingency he allows for both substance causation ('entities') and event causation ('events'). Now, following his rendering of the deductive argument from contingency, a counterfactual analysis of the concept of causation that includes both substance and event causation would look as follows: If one explains causally the occurrence of an event E or the existence of an entity E with reference to an occurring event C or the existence of an entity C, what one means is that, *ceteris paribus*, if event C had not occurred or entity C had not existed, event E would not have occurred or entity E would not have existed either, assuming that there is no causal redundancy.

It is not clear whether Philipse deliberately chooses to limit his counterfactual analysis of causation to event causation. In what follows I shall argue that Philipse's objection to the argument is untenable if we assume, as Philipse seems to do, that his analysis of the meaning of causation applies to event causation only. After that, I will argue furthermore that the objection also fails if we assume that his Lewisian counterfactual analysis of causation applies to both event and substance causation.

Assume that Philipse is right in saying that, in order to hold that event C causes effect E, we must be able to suppose *without logical contradiction* that C did not occur. From this it

does not follow however that it is metaphysically possible that C does not occur. For, Philipse's principle, so the principle that everything that is logically consistent is metaphysically possible, is not tenable. Take for example the alleged event that something comes into being from literally nothing. Now, no *logical contradiction* can be derived from this alleged event. Yet, this gives us no reason to take it that it is *metaphysically possible* that something could really come into being from nothing. Our being able to assume in a logical consistent manner that, say, a lion or a car suddenly comes into being out of nothing in the room right now, in no way shows that this could happen in reality. After all, in the case of sheer nothingness, that is, absolute non-being, there simply are no entities, no properties, no relations, no universals, no events, and not even potentialities. So, in the case of nothingness there is nothing at all that could bring something else actually into existence. In point of fact, there is not even the mere potentiality of something coming into being. But then it is reasonable to conclude that it is impossible that something could come out of truly nothing, or, in other words, that being could come from non-being. Besides, if things can really come into being from literally nothing at all, why would we then not observe all the time all kinds of objects popping into existence out of nothing? For true nothingness can by definition not be biased.[18]

As another example we could consider the alleged state of affairs of *qualia* being material objects. We may not be able to derive a logical contradiction from the assumption that individual instances of subjective, conscious experience, such as feeling pain or perceiving red, are material objects, but from this it does not follow that such a state of affairs is in fact metaphysically possible. Materialists who uphold the view that it is metaphysically possible that qualia are material objects cannot support their view by just appealing to the alleged logical consistency of such a state of affairs.[19]

And, as a third example, Van Inwagen argues:

> It is hard to believe that the two properties *being a solid sheet of iron* and *being as transparent as glass* are compatible, but there is no way of deriving a formal contradiction from the proposition 'There is a sheet of solid iron as transparent as glass'.[20]

These three examples show that we cannot infer metaphysical possibility from mere logical consistency. But then us being able to suppose without logical contradiction that cause C does not occur does not entail that it is metaphysically possible that cause C does not occur. And therefore it does not follow that cause C is contingent, so that Philipse's objection that all event causes must be contingent fails.

Moreover, even if we for the sake of argument accept the principle that logical consistency entails metaphysical possibility, we can ask ourselves whether Philipse's counterfactual analysis is adequate. Does it apply to *all* cases of event causation? The notion of event causation might be a primitive concept. But then no counterfactual analysis of it can be given. Yet, Philipse claims that we must *always* be able to suppose without contradiction that the cause of an event did not occur. But this is in fact not required.

To see why, let us ask ourselves what we basically mean with the word 'cause' in the case of events. It seems to me that we normally hold that some event, say C, causes another event, say E, just in case C *produces* E, or E *originates from* C, or C is a *prior condition that wholly or partially explains* E. In short, C is the event of *bringing it about* that E. Our univocal concept of event cause is the concept of an event that brings about a result. But then there is no good reason for holding that we always must be able to suppose without contradiction that C did not occur in order for us to meaningfully assert that C causes E. For, given the basic meaning of 'cause' in the case of events, it is surely sufficient that we are able

to conceive that C is productive and produces E, or that C is a source from which E originates, or that C is a prior condition that explains E. Whether C is contingent or not is irrelevant here because there is no reason for holding that necessarily occurring events, if such events do occur, cannot be productive, or are such that nothing can originate from them, or are such that they cannot explain the occurrence of some other event. Indeed, why would for example a necessarily occurring event C not be able to *produce* an event E? If it is a necessary truth that C produces E, that is, if C produces E by virtue of its own nature, then E occurs necessarily as well. And if it is a contingent truth that C produces E, that is, if it is metaphysically possible that C does not produce E, then E occurs contingently.[21] Nothing logically inconsistent is going on here. And there seem to be no other reasons to deny that necessarily occurring event causes are metaphysically impossible. In fact, following Philipse's principle that everything logically consistent is metaphysically possible, it follows that necessary event causes are metaphysically possible. To conclude, there is no convincing metaphysical argument that excludes solely on *a priori* grounds the existence of necessarily occurring event causes. In any case, as part of his objection, Philipse does not give us a good reason to believe that such events are logically inconsistent and thus impossible.

Finally, even if we, for the sake of argument, accept the principle *and* also accept that we must always be able to suppose without contradiction that the cause of an event did not occur, so that it follows that necessarily occurring causes are impossible, it would still not follow that we have to rule out the existence of necessarily existing and causally efficacious *entities*. For we can suppose without contradiction that a necessarily existing agent A has, and actually exercises, the power to freely bring it about that some specific event E occurs. In this case we are able to assume without contradiction that A does not exercise his power to freely bring it about that E occurs. And also, if A did not exercise this power, then, *everything else being equal*, E would not have occurred. Thus, according to Philipse's counterfactual analysis of causation, the contingently occurring event of A exercising his power to freely bring it about that E *is* the contingent cause of E. Yet, the description of this contingent event cause does in fact refer to a necessary entity, namely agent A. Therefore, agent A is a necessarily existing and causally efficacious entity.[22] It follows that Philipse's analysis of event causation, even if successful, does not succeed in excluding necessarily existing and causally efficacious entities.

Due to the above considerations Philipse's objection to the deductive cosmological argument from contingency is untenable. Hence, his attempt to write off the argument is unsuccessful. Would this conclusion change if, in addition to event causation, we also include substance causation into Philipse's Lewisian counterfactual analysis of the concept of causation? This is not the case. First, as the earlier mentioned three examples illustrate, the logical consistency of event cause C not occurring *or substance cause C not existing* still does not entail the metaphysical possibility of event cause C not occurring *or substance cause C not existing*.

Second, even if we accept the principle that logical consistency entails metaphysical possibility, we should again ask the question why we must be able to suppose without logical contradiction that event causes do not occur *or that substance causes do not exist*. And the answer would again be that, given the meaning we normally ascribe to the word 'cause', there is no good reason at all to exclude a priori the occurrence of necessary event causes *or the existence of necessary substance causes*. For the basic meaning of 'cause' in the case of *substance causation* would be similar to the basic meaning of 'cause' in the case of event causation: Entity C causes another entity, say E, just in case C produces E, or E originates from C, or C is a prior condition that wholly or partially explains E. In short, C is the entity that brings about E. Now, given this basic meaning we can also in the case of substance

causation meaningfully assert that some entity is a necessary cause.[23] But then necessary substance causes cannot be a priori excluded either.

Third, even if we were to accept the metaphysical impossibility of necessarily occurring event causes *and necessarily existing substance causes*, the earlier mentioned case of a necessarily existing entity A that freely brings it about that E is still not excluded. After all, the contingent event of A freely exercising his power to bring it about that E is according to Philipse's counterfactual analysis the contingent event cause of E. But then A is a necessarily existing *and* causally efficacious entity. So even then Philipse's objection to the deductive cosmological argument from contingency fails.

Philipse's attempt to reject the deductive cosmological argument from finite regress

The deductive cosmological argument from finite regress that Philipse aims to refute is formulated by him as follows (p. 223)[24]:

1. All events are caused by earlier events *[premise]*,
2. Infinite causal regresses are impossible *[premise]*,
3. Therefore, there must have been a first cause of each causal series *[conclusion]*.

Now, in this form the argument begs the question against libertarianism since (1) entails that free will acts are caused by earlier events. But then such acts are not genuinely free in the libertarian sense. Also, the argument is unsound since (1) and (2) cannot both be true. After all, if (2) is true then each causal series of events must have a first cause. According to (1) these first causes must have an earlier cause. But this is impossible since first causes are by definition uncaused. Yet, both problems can be easily solved by adjusting (1) as follows: All *non-self-explanatory* events are caused by earlier events. In this case libertarians could argue that free will acts are in fact self-explanatory and thus not caused by earlier events, whereas opponents of libertarianism could hold that free will acts are not self-explanatory and therefore caused by earlier events. Moreover, (1) and (2) can now both be true. For the first cause of a causal series can be self-explanatory, so that (1) does not entail that it has a cause. In what follows I shall assume the aforementioned adjustment of the argument's first premise.

How does Philipse aim to refute the argument? He does not challenge the reasonableness of the first premise. Indeed, the first premise is an evident facet of experience that is constantly confirmed by scientific evidence, which gives us a very good reason for accepting it. Neither does he dispute that the conclusion follows logically from the premises, which would indeed be a non-starter since the argument is deductively valid. Hence Philipse has no choice but to challenge the second premise. Now, in fact, he does not deny the truth of the second premise. His strategy is to attempt to reject two reasons for accepting the second premise, namely an *empirical* reason based on science's prediction that the cosmos has a finite past[25], preventing an infinite regress of cosmic event causes[26], and an *a priori* reason based on the assertion that an *actually existing* infinity is impossible (p. 224), preventing an infinite regress of event causes. It seems that he believes that this strategy, if successful, shows that we are not justified to accept the second premise, so that the cosmological argument should be rejected.

However, apart from appealing to contemporary cosmology and to the impossibility of an actual infinite, there are also other reasons for accepting the second premise, such as the properly basic belief or direct intuition that there must have been some ultimate origin of the world. The second premise is indeed plausible as an assertion about how we perceive reality. As for example Kant puts it in his *Critique of Pure Reason*: 'The cosmos sinks into the abyss of nothingness, unless, beyond this infinite chain of contingencies, something supports it' (A622/B550). Thus, past infinite causal series are quite counterintuitive, and even prima facie

problematic, so that we are justified to hold that such infinite series do not exist, *unless* a very good ground can be given for thinking otherwise. Since infinite regresses have never been observed, one wonders how positivists or empiricists such as Philipse could find such a convincing ground.

But let this all pass. Let us for the sake of argument assume that the two reasons Philipse attempts to reject do in fact exhaust the set of *all* potential reasons for accepting the second premise. In what follows I shall show that Philipse's objections to the a priori reason for accepting the second premise are unsuccessful, so that his attempt to reject the cosmological argument fails, even if we would for the sake of argument, and contrary to what is reasonable, assume that an appeal to modern cosmology's empirical thesis of the finitude of the past is untenable.

The a priori reason for accepting the second premise can be presented in the following way[27]:

(a) An actual infinite cannot exist *[premise]*,
(b) An infinite temporal regress of events is an actual infinite *[premise]*,
(c) Therefore, an infinite temporal regress of events cannot exist *[conclusion]*.

Surely (c) follows from (a) and (b). So Philipse needs to challenge (a) or (b). He starts his criticism by stating without explanation that (b) is false if we take it that 'an infinite set of […] events exists actually if and only if all its elements exist simultaneously' (p. 225). Presumably his point is that only the events of the present exist, so that the members of the set of past events do not exist simultaneously. But then this set, even if it is infinite, cannot be an actual infinite. However, this reasoning begs the question against eternalism. Eternalism is the view that temporal becoming is not an objective feature of reality because the past, the present and the future are ontologically equally real, that is, all past, present and future events exist together. The universe on this view is a tenselessly existing space-time block. Since on eternalism there is ontological parity among all events, it follows that eternalism uncontroversially entails (b), so that Philipse's objection fails.

But again, let this pass. Let us assume that temporal becoming is not purely subjective. Would it then follow that (b) is false, as Philipse believes? No, it would not. For take the view, also defended by a number of philosophers of time, that temporal becoming is real and that 'the past and present are on an ontological par, the past being a growing space-time block'.[28] In this case a beginningless series of past events is also an actual infinite, so that (b) would still be true.

But let this pass as well. In what follows I shall assume presentism, according to which only the events of the present exist. This seems to be the view that Philipse implicitly endorses for his rejection of (b). Is (b) false on presentism? Surely, on presentism, the members of an infinite temporal regress of events do not exist simultaneously. So that we must reject (b) if we would assume, as Philipse does, that an actual infinite set is *necessarily* a set all of which members co-exist. However, why should we assume this? Why should we take it that there cannot be actual infinite sets having members that do *not* co-exist? As Craig points out: 'If there has been a sequence composed of an infinite number of events stretching back into the past, then the set of all events in the series would be an actually infinite set'.[29] No reference here is made to the requirement that all past events must exist simultaneously. And indeed, as Craig argues:

> [On presentism we] can accurately count things that have existed but no longer exist. […] The nonexistence of such things is no hindrance to their being enumerated. Indeed, any obstacle here is merely epistemic, for aside from considerations of

> vagueness there must be a certain number of such things. So in a beginningless series of past events […] the number of past events must be infinite. […] If we consider all the events in an infinite temporal regress of events, they constitute an actual infinite.[30]

In other words, an actual infinite can be understood as a 'determinate totality' or 'completed unity'. But then an actual infinite set does not necessarily have to be an infinite set whose members all co-exist. Now, indeed, 'since the past events of a beginningless series can be conceptually collected together and numbered, the series is a determinate totality'.[31] After all, 'since past events, as determinate parts of reality, are definite and distinct and can be numbered, they can be conceptually collected into a totality'.[32] But then a beginningless temporal series of events is in fact an actual infinite, as (b) expresses. I conclude, contra Philipse, that even presentism doesn't entail the denial of (b).[33]

Moreover, as will become clear in the rest of this paper, there are grounds for accepting (a) that also apply to actual infinities whose members do not exist together, so that (c) still follows. Besides, *even* if we were to assume that *all* these grounds are untenable, then (c) still follows from the assertion that an actual infinite cannot be traversed, that is, cannot be formed by successive addition.[34] For a temporal infinite regress of events is an actual infinite formed by successive addition, and thus impossible if an actual infinite cannot be traversed.

Yet, Philipse would object that the assertion is ungrounded since it is based on 'seducing the reader to conceive of an infinite set on the model of a finite set'[35], because ''traversing' typically means to pass across some finite stretch' (p. 226). Thus, as Philipse has it, the assertion is unwarranted because it merely appeals to our intuitive understanding of the finite while contemplating the infinite.

But this objection does not go through since there are convincing grounds for the assertion that do not appeal to our intuitions about the finite while thinking of the infinite. One such ground is that utterly inexplicable brute facts would arise if we were to deny the above assertion.[36] For showing that utterly inexplicable brute facts would occur has nothing to do with us trying to ground the assertion by merely appealing to finite cases for inferring claims about infinity. Let me give just one example. Suppose that the task of forming an actual infinite by successive addition could be completed. Now, consider a man who has been counting down from infinity and just finished: "…, -3, -2, -1, 0". As Craig and Sinclair argue: 'We could ask, why did he not finish counting yesterday or the day before or the year before? By then an infinite time had already elapsed, so that he has had ample time to finish'.[37] Indeed, if the man finished his countdown by today, then it becomes utterly inexplicable why he did in fact finish *today.* And it is surely reasonable to ask for an explanation for why he did not finish earlier than today. After all, at *any* moment in the past, the man has already had infinite time to finish his countdown. Moreover, philosophers have recently argued that there are plausible instances of the principle of sufficient reason, which *do* warrant the thesis that there are no utterly inexplicable brute facts.[38] Hence, resting with utterly brute inexplicability is unsatisfactory in the light of these plausible defenses of the principle of sufficient reason. In addition, Peter van Inwagen's famous objection against the principle of sufficient reason[39] is in fact very problematic, as amongst others Alexander Pruss has convincingly argued.[40] So, to conclude, the example provides a good ground for the assertion that an actual infinite cannot be traversed.

But again, let us put all of this aside. Let us for the sake of argument assume that an actual infinite must be an infinite totality *all of whose members exist simultaneously*, so that, on presentism, an infinite series of past events is not an actual infinite. In that case (b) is to be rejected. Would it then follow that the a priori reason for premise (2) of the cosmological argument fails? I will show that this is not the case. For we can adjust the a priori reason for accepting (2) as follows:

(a) An actual infinite cannot exist *[premise]*,
(b*) If an infinite temporal regress of events can exist, then an actual infinite can exist *[premise]*,
(c) Therefore, an infinite temporal regress of events cannot exist *[conclusion]*.

The only difference between this a priori reason for (2) and the previous one is that (b*) is substituted for (b). It is clear that (b*) is a weaker claim then (b).[41] Yet, (c) follows logically from (a) and (b*) as well. Now, is it reasonable to accept (b*)? I argue that this is indeed the case. For suppose that an infinite temporal regress of events can exist. In that case it is metaphysically possible for there to be an infinite temporal regress of events. In other words, there is a metaphysically possible world *w* that has an infinite past. That is, the series of past events in that world has no beginning. But if such a world is possible, then we can also conceive of a possible world *w**, perhaps the same as *w* or another one, in which some entity *A* exists from eternity, that is, has an infinite past, and in which *A* has always been in a state of division, for example by splitting every part of itself in two every hour.[42] In this world the present set of *A*'s parts constitutes an actual infinite, assuming there are no disintegrating factors. But then an actual infinite can exist. After all, there is a possible world, namely *w**, in which an actual infinite exists. This concludes the derivation of (b*). Thus we can reasonably affirm (b*), which implies, contra Philipse, that the adjusted a priori reason for accepting the second premise is adequate *if* it can be shown that (a) can be reasonably affirmed as well.

However, Philipse suggests that *all* potential grounds for accepting (a) are in fact untenable. How does he argue for this universal claim? To justify this claim Philipse considers one of the potential grounds for (a), namely William Lane Craig's *reductio ad absurdum* argument from Hilbert's hotel.[43] If an actual infinite could exist, then according to Craig, an infinite hotel consisting of infinitely many rooms, all being occupied by a guest, could exist. But a hotel occupied by infinitely many guests leads to absurdities. For by simply moving guests around one would be able to accommodate infinitely many new guests: 'The infinitely many guests who booked a room may be lodged in the even-numbered rooms, for example, so the infinitely many odd-numbered rooms are available.' (p. 225). Although Philipse does not mention this, this process could in fact be repeated *infinitely many times* to accommodate an infinite collection of sets of infinitely many new guests. And according to Craig even more absurdities arise. If all guests in the odd rooms check out one could easily shift the guests in the even rooms into rooms with numbers half their respective numbers. But then the hotel would be completely full again.[44] 'In fact, we could […] repeat this [check-out and reshuffle] process infinitely many times, and yet there would never be any fewer people in the hotel.'.[45] Moreover, as Craig continues:

> One might think that by means of these maneuvers the proprietor could always keep this strange hotel fully occupied. But one would be wrong. For suppose that the persons in rooms #4, 5, 6, ... checked out. At a single stroke the hotel would be virtually emptied, the guest register reduced to three names, and the infinite converted in finitude. And yet it would remain true that as many guests checked out this time as when the guests in rooms #1, 3, 5, … checked out! Can anyone believe that such a hotel could exist in reality?[46]

Philipse holds that Craig's argument is not convincing since it only appeals to our intuitions about finite physical things. As Philipse argues:

> His results seem paradoxical merely because in fact there are no hotels with infinitely many rooms […]. Such things are physically impossible on Earth, so that it is perhaps psychologically impossible to imagine them. But this does not show that [it] is logically impossible. (pp. 225-226)

However, as Craig points out in his treatment of the argument:

> The claim is not that such a hotel is logically impossible but metaphysically impossible. As an illustrative embodiment of transfinite arithmetic based on axiomatic set theory, Hilbert's hotel will, of necessity, be as logically consistent as that system; otherwise it would be useless as an illustration. But it also vividly illustrates the absurd situations to which the real existence of an infinite multitude can lead. The absurdity is not merely practical and physical; it is ontologically absurd that a hotel exist which is completely full and yet can accommodate untold infinities of new guests just by moving people around.[47]

The absurdity lies essentially in the fact that in Hilbert's hotel one is able to subtract equal quantities from equal quantities and arrive at different answers. As Craig explains:

> If we subtract all the even numbers from all the natural numbers, we get an infinity of numbers, and if we subtract all the numbers greater than three from all the natural numbers, we get only four numbers. Yet in both cases we subtracted the *identical number* of numbers from the *identical number* of numbers and yet did not arrive at an identical result. In fact, one can subtract equal quantities from equal quantities and get any quantity between zero and infinity as the remainder. For this reason, subtraction and division of infinite quantities are simply prohibited in transfinite arithmetic – a mere stipulation which has no force in the nonmathematical realm.[48]

Yet, another point of criticism put forward by Philipse is that Craig's argument does not show that it is impossible *in general* for an actual infinite to exist (p. 225). But this critique is unsuccessful. For as Craig correctly argues:

> If a (denumerably) actually infinite number of things could exist, they could be numbered and manipulated just like the guests in Hilbert's hotel. Since nothing hangs on the illustration's involving a hotel, the metaphysical absurdity is plausibly attributed to the existence of an actual infinite. Thus [thought] experiments of this sort show, in general, that it is impossible for an actually infinite number of things to exist in reality.[49]

Indeed, nothing in Hilbert's hotel seems to be impossible except from the assumption of there being an actual infinite number of things. But then the absurdities do not depend on the particularities of the thought experiment. In fact, nothing even hangs on the members of the infinitude existing simultaneously. One may apply the same line of reasoning in the case of an alleged completed infinite multitude whose members do not co-exist, such as for example an alleged completed infinite collection of realized past events.[50]

But again, let this all pass. For the sake of argument let's assume, as Philipse has it, that the counterintuitive consequences of Hilbert's hotel do not warrant us to conclude that such a hotel is impossible. Can we then conclude that Philipse has successfully shown that there are no cogent grounds for (a)? Not at all. For by rejecting just one potential ground for (a), namely Craig's argument from Hilbert's hotel, it does not follow that *all* potential

grounds for (a) must be rejected. Now, Philipse will object that all other potential grounds for (a) fail as well because these grounds are *also* based on a fallacious appeal to intuitions about the finite while contemplating the infinite, just like the thought experiment of Hilbert's hotel.

But this is false. For there are many good examples of grounds for (a) that do not 'seduce the reader to conceive of an infinite set on the model of a finite set' (p. 226). Take for example the following paradox of the serrated continuum, as proposed by José Benardete:

> Here is a book lying on the table. Open it. Look at the first page. Measure its thickness. It is very thick indeed for a single sheet of paper – 1/2 inch thick. Now turn to the second page of the book. How thick is this second sheet of paper? 1/4 inch thick. And the third page of the book, how thick is this third sheet of paper? 1/8 inch thick, &c. *ad infinitum*. […] [So] there is no last page in the book. Close the book. Turn it over so that the front cover of the book is now lying face down upon the table. Now – slowly – lift the back cover of the book with the aim of exposing to view the stack of pages lying beneath it. *There is nothing to see*. For there is no last page in the book to meet our gaze.[51]

Now, this is absurd. We must see *something*. So it is reasonable to assert that such a book cannot exist. But if such a book cannot exist, then neither can an actual infinite. For if an actual infinite where possible, then such a book would be possible as well. Besides, as in the case of Hilbert's hotel, nothing hangs here on the peculiarities of the scenario in question.

Now, Philipse might respond that this argument still does not generate an inescapable logical contradiction of the form *P* and *not-P*, so that there is still room to bite the bullet and maintain that such a paradoxical book is possible after all if there could be an actual infinite in reality. However, this response would be unsuccessful as well. For it can be shown that a denial of (a) leads to an inescapable logical contradiction. The ground for (a) I propose is directly inspired by Benardete's Grim Reaper paradox[52] and runs as follows. Suppose an actual infinite could exist. Now consider Mark. Mark lives at t=0. Further, there are infinitely many robots R2, R3, R4, … and so forth. For all natural numbers i>1 robot Ri will kill Mark if Mark is still alive at t=1/i. Does Mark still live at t=1? Well, if Mark were to be alive at t=1, then Mark would have to be alive at t=1/2. But then R2 kills Mark, so that Mark would not be alive at t=1. It follows that Mark is dead at t=1. But then Mark has been killed by one of the robots. But which one? Now, Mark cannot have been killed by robot R2, since if Mark was killed by R2, then Mark was alive at t=1/2, which entails that Mark was alive at t=1/3 as well, so that R3 would already have killed Mark. Mark cannot have been killed by R3 either, since in that case R4 would already have killed Mark. Following this same line of reasoning it follows that none of the robots can have killed Mark. So there is in fact no robot that killed Mark. We thus arrive at a direct logical contradiction. Mark is killed by one of the robots *and* none of the robots killed Mark. This contradiction is surely inescapable. The situation with Mark and the robots is impossible. But then an actual infinite is impossible. For if an actual infinite were possible, the scenario of Mark and the robots would be possible as well, which, as I argued above, is not the case. This argument is based on the derivation of an actual *logical* contradiction and is therefore immune to Philipse's objection to Hilbert's hotel or equivalents. Besides, it is immune as well to the objection against the argument from the book having infinitely many pages, or other paradoxes of the serrated continuum.

It follows that Philipse's attempt to undermine (a) fails, so that his strategy to undermine the second premise of the cosmological argument from finite regress is not successful. Hence his attempt to reject the cosmological argument from finite regress does not succeed.

Conclusion

Earlier we saw that Philipse's attempt to reject the cosmological argument from contingency doesn't go through either. So I conclude that he doesn't succeed in showing that both classical deductive arguments are untenable. Therefore Philipse's strategy to write off all deductive cosmological arguments fails. But one last time, we might put all these considerations to the side. For even if we were to assume just for the sake of argument that Philipse did in fact show that both arguments fail, then this would still do almost nothing to establish his claim that *all* deductive cosmological arguments are untenable.

After all, as Philipse himself agrees with (p. 223), in order to argue for such an universal claim one should also take into account other variants of the cosmological argument, such as the versions of Robert Koons, Richard Gale and Alexander Pruss and Joshua Rasmussen, all of which have premises different from the premises of the two deductive arguments Philipse does discuss[53]. But none of these versions are even mentioned by Philipse, let alone considered and challenged. Besides, since the publication of Philipse's book new deductive versions of the cosmological argument have been proposed.[54]

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Endnotes

1. Herman Philipse, *God in the Age of Science? A Critique of Religious Reason* (Oxford: Oxford University Press, 2012), p. 226. In what follows all references are to this book, unless stated otherwise.
2. Hereafter referred to as the argument from contingency.
3. Hereafter referred to as the argument from finite regress.
4. Philipse writes 'cannot' instead of 'can'. I have corrected here this typographical error.
5. I take it that a contradiction is understood here as a *logical* incompatibility between two or more propositions.
6. I have slightly rephrased (4) to ensure that its formulation is analogous to (1).
7. Actually, the claim that necessary entities or events do not stand in need of an explanation is controversial. For one could reason as follows. If some entity or event, say A, exists necessarily and if A necessarily causes some effect, say B, then, although B exists necessarily, it is not the case that B does not need an explanation. After all, B is explained by A. Moreover, one could argue that (some) necessary entities and events are explained by virtue of their own nature and thus are self-explanatory. One might therefore want to dismiss the last sentence of (4).
8. Surely, (1)-(3) also entail that the necessary entity or event arrived at in (4) is the sufficient cause of at least one contingent entity or event.
9. David Bohm, "A Suggested Interpretation of the Quantum Theory in Terms of 'Hidden' Variables, I and II," *Physical Review* 85 (1952): pp. 166-193.
10. Heinz-Dieter Zeh, "On the interpretation of measurement in quantum theory," *Foundations of Physics* 1 (1970): pp. 69-76.
11. William Lane Craig and Walter Sinnott-Armstrong, *God? A Debate Between a Christian and an Atheist* (New York: Oxford University Press, 2004), p. 6.
12. Something is *metaphysically possible* if it obtains in reality (hereafter: obtains), or if reality is such that it can or could have obtained. The metaphysical concepts of 'being metaphysically impossible', 'being contingent' and 'being metaphysically necessary' can be defined in terms of the concept of metaphysical possibility. Something is *metaphysically impossible* if and only if it is not metaphysically possible. Something is *contingent* if and only

if *(a)* it is metaphysically possible and *(b)* it is metaphysically possible that it does not obtain. Something is *metaphysically necessary* if and only if it is not metaphysically possible that it does not obtain.
13. Indeed, if we can suppose without logical contradiction that C did not occur, then the principle entails that it is metaphysically possible that C doesn't occur, so that C is contingent.
14. This phrase is a mere shorthand for the phrase 'A contingent entity exists or a contingent event occurs'.
15. In fact, the way in which Philipse introduces the notion of 'being a contingent obtaining item' suggests that he believes that the principle is actually an *analytic truth*, understood as a truth determined *solely* by the meaning of 'being contingent'. In other words, he *analyses* the notion of 'being a contingent obtaining item' as being an item that obtains and for which it is true that we are able to suppose without logical contradiction that it does not obtain. Now, this analysis is not convincing. For the meaning of 'being a contingent obtaining item' is plausibly nothing more than being such that it can seize to obtain or could not have obtained if things would have gone differently. And to grasp this we do not need to grasp the formal notion of logical consistency. But then logical consistency is not part of the meaning of 'being contingent'. Indeed, the assertion 'If we can suppose without logical contradiction that some obtaining item X does not obtain, then X is contingent' is not just a conceptual truth, that is, a proposition whose truth depends solely on the meaning of its terms. It is a non-trivial informative assertion about reality, which alleged truth has to be argued for. For, *even* if we can suppose without logical contradiction that X does not obtain, it is perhaps nevertheless false that reality is such that X could not have obtained. Now, one might still respond that Philipse *defines* the notion of a contingent obtaining item in terms of us being able to suppose without logical contradiction that it doesn't obtain. But such a definition surely overloads the expression "being a contingent item". Whether the logical consistency of the non-obtainment of some obtaining item entails its contingency has to be decided by argument, not by stipulative definition.
16. Philipse appears to appeal to David Lewis's original counterfactual theory of causation. See David Lewis, "Causation," *Journal of Philosophy* 70 (1973): pp. 556-567. To overcome a number of deficiencies in this theory Lewis developed a new counterfactual analysis of causation. See David Lewis, "Causation as Influence," *Journal of Philosophy* 97 (2000): pp. 182-197. Hence, Philipse's objection to the argument from contingency is vulnerable to all objections that can and have been raised against Lewis's original counterfactual theory of causation. See for example Peter Menzies, "Counterfactual Theories of Causation," in *The Stanford Encyclopedia of Philosophy* (Fall 2009 Edition), ed. Edward N. Zalta, http://plato.stanford.edu/archives/fall2009/entries/causation-counterfactual. But let this all pass as well.
17. Both the cause C and the effect E in his counterfactual analysis of causation are occurring events (p. 223).
18. An extensive treatment of these and other arguments against the metaphysical possibility of something coming into being out of literally nothing can be found in William L. Craig and James D. Sinclair, "The Kalam Cosmological Argument," in *The Blackwell Companion to Natural Theology*, eds. William L. Craig and J.P. Moreland (Oxford: Wiley-Blackwell, 2009).
19. In fact, it is quite reasonable to hold that a subjective experience cannot be *identical* to a material object. For Leibniz's metaphysical principle of the *indiscernibility of identicals*, that is, for any x and y, if x is identical to y, then x and y have the same properties, entails that a subjective experience cannot be identical to a material object *if* there is at least one property that is not possessed by both. One could argue that there are such properties, such as *mass* (not possessed by a subjective experience) or *intentionality* (not possessed by matter).
20. Peter van Inwagen, *Metaphysics* (Westview Press, 2009), p. 140.

21. Take for example the case of throwing a dice D. Suppose that the event of throwing dice D occurs necessarily. This event can surely cause contingent events, such as 'Dice D falls on six'. After all, there are metaphysically possible worlds in which dice D is thrown and does not fall on six.
22. Note that we do not have to assume here that A *necessarily* has the power to freely bring it about that E occurs.
23. As for example Peter van Inwagen writes: 'Does 'x exists necessarily' entail 'x is uncreated'? Anyone who said that this entailment held would be contradicted by Richard Swinburne, if by no one else. For Swinburne holds that the Son and the Holy Spirit are necessarily existent beings who were created […] by the Father. Revealed theology aside, one might point out, simply as a matter of abstract logic, that if A exists necessarily, and if it is a necessary truth that if A exists, then A creates B, it follows that B exists necessarily'. See Peter van Inwagen, "God and Other Uncreated Things," in *Metaphysics and God: Essays in Honor of Eleonore Stump*, ed. Kevin Timple (London: Routledge, 2009), p. 5. Indeed, similar to event causation, there is nothing logically inconsistent going on in assuming that some entity necessarily exists and necessarily produces another entity, which then exists necessarily as well.
24. I shortened Philipse's rendering of the first premise and I replaced 'chain' in his third premise with 'series'.
25. According to the standard Hot Big Bang theory the cosmos began to exist about 13.7 billion years ago. In the last decennia various mathematically and physically feasible alternatives to this theory have been developed, but most, if not all, of them also entail that there has been a beginning of the cosmos. See Craig and Sinclair, "The Kalam Cosmological Argument," pp. 125-182.
26. Modern cosmology's empirical evidence for a beginning of the cosmos justifies us to affirm that there are no past infinite causal series *of cosmic events*. This is in itself not yet sufficient to warrant (2), which is about causal regresses *simpliciter*. Yet, to arrive at (2) one could argue as follows. The beginning of the cosmos is in itself not a self-explanatory event, so that it must have a cause according to (1). Now, since the cosmos is the totality of *all* space, time and matter, the cause of the beginning of the cosmos is the cause of the beginning of all space, time and matter. But then the cause of the beginning of the cosmos is ontologically prior to all space, time and matter. Hence this cause is not part of the cosmos. It points *beyond* the cosmos to its ultimate origin. Note that this cause cannot be *temporally earlier* than the beginning of the cosmos. For there is no time before the beginning of time itself. Now, since there are adequate accounts of temporal priority that presuppose the ontologically prior existence of causal priority, as for example Robert C. Koons argues in chapter 4 of his book *Realism Regained*, we may indeed reasonably hold that the cause of the beginning of the cosmos is ontologically but not temporally prior to this beginning. Besides, one could argue that the cause of the beginning of the cosmos is still *temporally simultaneous* with the beginning of the cosmos. Surely, in that case 'earlier' in (1) should be replaced by the phrase 'earlier or contemporaneous'. But this further adjustment of premise (1) would in fact be quite reasonable as well since simultaneous causation certainly seems to be metaphysically possible. See Richard Taylor, *Action and Purpose* (New Jersey: Prentice Hall, 1966); Myles Brand, "Simultaneous Causation," in *Time and Cause: Essays Presented to Richard Taylor*, ed. Peter van Inwagen (Dordrecht: D. Reidel Publishing, 1980), pp. 137-153.
27. Craig and Sinclair, "The Kalam Cosmological Argument," p. 103.
28. *Ibid.*, p. 115.
29. *Ibid.*, p. 115.
30. *Ibid.*, pp. 115-116.

31. Bruce Reichenbach, "Cosmological Argument," in *The Stanford Encyclopedia of Philosophy (Winter 2012 Edition)*, ed. Edward N. Zalta, http://plato.stanford.edu/archives/win2012/entries/cosmological-argument.
32. William L. Craig and Quentin Smith, *Theism, Atheism, and Big Bang Cosmology* (New York: Oxford University Press, 1993), p. 25.
33. The notion of an actual infinite as being an infinite completed unity or determinate totality is broader than the notion of an actual infinite as being an infinite set whose members co-exist. For an infinite set whose members co-exist is by definition an infinite determinate totality, but an infinite determinate totality does not have to be an infinite set of co-existing members. An example of the latter is, as we have seen, an infinite temporal regress of events. In fact, even Philipse himself, perhaps without really noticing it, seems to accept this more generic interpretation of the notion of an actual infinite. For he writes: 'In classical, non-intuitionistic mathematics, infinite sets are treated as actual in the sense that they are regarded as *completed totalities* [...]' (p. 225, italics mine).
34. An infinite totality is formed by successive addition in case it is the result of a temporal process of the step by step accrual of one new element after another. An infinite series of past events, if such a series exists, would be a paradigmatic example of an infinite totality formed by successive addition of one additional event after the other.
35. In fact, as we will see in what follows, this objection is his *only* objection against *all* grounds for (a) as well.
36. Craig and Sinclair, "The Kalam Cosmological Argument," pp. 121-124.
37. *Ibid.*, pp. 121-122.
38. Alexander Pruss, "The Leibnizian Cosmological Argument,", in *The Blackwell Companion to Natural Theology*, eds. William L. Craig and J.P. Moreland (Oxford: Wiley-Blackwell, 2009); Michael Della Rocca, "PSR," *Philosophers' Imprint* 10 (2010): pp. 1-13.
39. Peter van Inwagen, An Essay on Free Will (New York: Oxford University Press, 1983): pp. 202-204.
40. Pruss, "The Leibnizian Cosmological Argument," pp. 50-57.
41. Indeed, if an infinite temporal regress of events *is* an actual infinite, then the possibility of an infinite temporal regress of events straightforwardly entails the possibility of an actual infinite, that is, (b) entails (b*). But (b*) does not entail (b). For (b*) does not imply that infinite regresses of events *are themselves* actual infinitudes.
42. It is assumed here that the parts of A are infinitely divisible, which is surely plausibly metaphysically possible.
43. William L. Craig, *Philosophy of Religion. A Reader and Guide* (Edinburgh: Edinburgh University Press, 2002), pp. 94-96.
44. Craig and Sinclair, "The Kalam Cosmological Argument," p. 109.
45. *Ibid.*, p. 109.
46. *Ibid.*, p. 109.
47. *Ibid.*, p. 111.
48. *Ibid.*, p. 112.
49. *Ibid.*, p. 110.
50. Thus, as mentioned earlier, there *are* grounds for the claim that an infinite determinate totality whose members do not co-exist is impossible. Alternatively, one may argue for this claim as follows. If such a totality can exist, then an infinite temporal regress of events can exist. But then, according to (b*), an infinite totality of co-existing members can exist, which leads to a contradiction. I shall not further work out this alternative line of reasoning here.
51. José A. Benardete, *Infinity: An Essay in Metaphysics* (Oxford: Clarendon Press, 1964), pp. 236-237.
52. Benardete, *Infinity*, pp. 259-261.

53. Robert C. Koons, "A New Look at the Cosmological Argument," *American Philosophical Quarterly* 34 (1997): pp. 193-212; Richard M. Gale and Alexander R. Pruss, "A New Cosmological Argument," *Religious Studies* 35 (1999): pp. 461-476; Joshua Rasmussen, "A New Argument for a Necessary Being," *Australasian Journal of Philosophy* 89 (2010): pp. 351-356; Joshua Rasmussen, "From States of Affairs to a Necessary Being," *Philosophical Studies* 148 (2010): pp. 183-200.
54. Emanuel Rutten, *A Critical Assessment of Contemporary Cosmological Arguments: Towards a Renewed Case for Theism* (Amsterdam: VU University, 2012), http://dare.ubvu.vu.nl/handle/1871/38278.