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Causation and Sufficient Reason

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Theists argue that God and his activity provide the cause or sufficient reason for the existence and nature of the universe. Atheists, by contrast, argue that God isn’t needed to cause or explain the universe’s existence or nature. The notions of causation and sufficient reason thus play a key role in arguments concerning theism and atheism. The present chapter provides an overview of these notions and their bearing on the epistemic merits of the two views. The plan of the chapter is as follows. First, we discuss the core issues and options with respect to the nature of causation and its bearing on theism and atheism. Second, we explore and critically evaluate the most widely discussed theistic argument that makes crucial use of a causal premise, viz., the kalām cosmological argument. Finally, we explore and critically evaluate a representative sampling of the most widely discussed theistic argument-type that makes crucial use of an explanatory premise, viz., the cosmological argument from contingency. In each of these sections, it will be concluded that considerations respecting causation and sufficient reason do not favor theism over atheism.

# Causation

Before considering causation’s bearing on the epistemic merits of theism and atheism, a brief overview of some of the core issues and options with respect to the nature and categories of causation is in order. There is considerable disagreement about virtually every aspect of causation (For an overview of the issues, see Paul 2004, Beebee, Hitchcock, and Menzies 2009, and Schaffer 2016). However, according to the standard view, causation is a relation, where this relation is irreflexive (a thing can’t cause itself), asymmetric (if *A* is the cause of *B*, then *B* isn’t the cause of *A*), and transitive (if *A* causes *B* and *B* causes *C*, then *A* causes *C*).

 A number of accounts have been proposed for the causal relation itself, as well as its relata. Proposals for the latter include events, facts, states of affairs, universals, exemplifications of universals, tropes, and objects. With respect to the causal relation itself, standard views include regularity accounts (*A* causes *B* just in case all *A*s are followed by *B*s), counterfactual dependence accounts (*A* causes B just in case: if *A* had not happened, *B* wouldn’t have happened); probability-raising accounts (*A* causes *B* just in case *A* raises the probability of *B*); conserved quantities accounts (*A* causes *B* just in case A transfers a conserved quantity (e.g., mass-energy, charge, momentum, etc.) to *B*); and agency accounts (*A* causes *B* just in case bringing about *A* would be an effective means for a free agent to bring about *B*).

 There is also considerable disagreement about the metaphysical status of the causal relation. Two main issues are relevant for our purposes. The first concerns whether the causal relation is an objective feature of the world. While realists of course affirm that it is, eliminativists deny this on a number of grounds. For example, some think the causal relation need not be posited in our best physical theories. Others think the problems besetting extant accounts of causation are so severe as to warrant abandoning the notion. The second issue, which arises within the realist camp, is whether the causal relation can be analyzed in terms of non-causal facts (reductionism) or not (anti-reductionism). Reductionistic views are represented in the proposed analyses of the causal relation mentioned above. By contrast, anti-reductionist views assert that the causal relation is a basic or primitive feature of reality.

 Finally, there is disagreement about how many fundamental types of causes there are. We can distinguish the types that have been proposed by means of Aristotle’s table of causes: Formal, final, material, and efficient. To illustrate these, consider a car that just rolled off the assembly line. The car originated as an idea in the minds of its designers (its formal cause), which they made for a purpose, viz., transportation (the final cause). Furthermore, the car was ultimately made from steel, plastic, glass, etc. (the material causes). Finally, by means of persons and machines (the efficient cause), these materials were transformed into a shiny new car.

 Given the preliminary remarks above, we turn now to consider causation’s bearing on the merits of theism and atheism. Consider first the relata of causation. It seems that both theism and atheism are compatible with virtually all of the proposed views. However, it’s less clear that all accounts of the relata are compatible with versions of theism that take God to possess libertarian free will. For on such views, it is often thought that God *qua* individual or substance must be the first term in the causal relation. Therefore, the plausibility of such accounts of theism will turn, in part, on the plausibility of such an account of the causal relata (more on this below).

 With respect to the causal relation itself, things are a bit more interesting. On the one hand, as atheism is just the view that there is no such person as God, it seems to be compatible with any account of the relation, whether reductionistic or not. By contrast, theism seems to be a bad fit with at least most reductionistic accounts of the causal relation. First, theism seems to be incompatible with both regularity and counterfactual dependence accounts of causation. For to preserve God’s sovereignty, God must be taken to be the cause of regularities or counterfactual dependencies that constitute the causal relation. But in order to do that, it would seem that God must have a kind of causal power that doesn’t reduce to regularities or counterfactual dependence (Cf. Fales 2009).

 Second, theism is prima facie incompatible with conserved quantity accounts of causation. For one thing, it seems to limit God’s omnipotence. For example, it implies that God can’t create an electron without also creating several other particles so as not to violate conserved quantity requirements (Fales 2009). For another, it seems that it cannot be squared with the doctrine of creation *ex nihilo*. For that would require God to transfer conserved quantities of physical energy when creating the universe, which seems to imply that either God is a physical being, or God created the universe out of pre-existing physical stuff (Ibid.). By contrast, atheism is compatible with conserved quantity accounts of causation.

 Prima facie, the most natural account for theists is of course the agency account. It fits nicely with the notion of God as free personal cause of the universe, while avoiding the problems raised by regularity, counterfactual dependence, and conserved quantities accounts. However, it seems to be beset by an equally worrisome problem. For prima facie, the cause of an agent’s actions reduces to their basic constitutive features (e.g., their beliefs, preference structure, etc.), in which case it seems to reduce to some other account (Oppy 2006, Fales 2009, Leon forthcoming).

 Perhaps, then, a probabilistic account of causation is the best fit for theism. Such an account nicely avoids the worry above that agency accounts raise for theism, as it allows that God’s constitutive features do not necessitate his acts of will. However, this benefit comes at the cost of bringing objective chance into the theistic picture of the world. As we will see in subsequent sections, this poses a significant problem for standard arguments for God’s existence.

 With respect to realist vs. eliminativist accounts of causation, atheism is compatible with either sort of view, as it makes no commitment one way or the other with respect to the existence and nature of the causal order. By contrast, the doctrines of divine omnipotence, divine sovereignty, and divine creation all seem to require the falsity of eliminativism. Furthermore, eliminativism would entail that theistic arguments that rely on a causal principle are doomed.

 Finally, consider the categories of causation. First, consider efficient causation. While atheism is compatible with any view of this category of cause, whether realist, reductionist, or eliminativist, we saw above that theism requires a realist account of the relation. Second, consider material causes. While atheism is clearly compatible with material causes at any and every level of reality there may be, theism is prima facie incompatible with the view that material causes are fundamental. This is because it conflicts with theistic doctrine of creation *ex nihilo*.

 Third, consider formal causation. Now theism is obviously compatible with, and seems to require, formal causes at the base level of reality, in the mind of God. What about atheism? At least when it comes to base-level reality, many think formal causation is incompatible with the view, as it seems to imply the existence of Mind at the base level. However, even this isn’t perfectly clear. For Russellian monism is compatible with atheism, and the former entails that phenomenal (or proto-phenomenal) or representational (or proto-representational) properties are non-derivative, fundamental features of the essence of matter (Alter and Nagasawa 2015). Therefore, to the extent that formal causes are reducible to such entities, atheism is compatible with base-level formal causes.

 Lastly, consider final causation. Many think final causes are incompatible with atheism. The issue is usually traced back to Aquinas’s view about final causation, who is widely thought to have argued that final causes require an agent acting for the sake of some end. However, it turns out to be controversial that this was Aquinas’s view of the matter (See, e.g., Hoffman 2009). More importantly, it’s not at all clear that atheism is incompatible with final causes that are more fundamental than those produced by human persons.

 To see this, let us distinguish between four notions of a final cause that seem to be suggested in the writings of Aquinas (Ibid.): (a) the tendency to produce one type of effect rather than another; (b) the tendency toward some endpoint or terminus; (c) the tendency toward some endpoint or terminus that is good in some important sense, and (d) acting for the sake of some end. Now if there are ground floor-level final causes in sense (d), then this is clearly incompatible with atheism. However, it’s not at all clear that any of the other three senses of a final cause are incompatible with or otherwise problematic for atheism. For (a) only requires regularity in nature, which is prima facie compatible with atheism. On this point, it’s worth noting that this seems to be the only sense of a final cause that Aquinas thought was presupposed by efficient causes (Ibid.).

 Furthermore, (b) and (c) seem no more problematic for atheism than for theism. For consider the God of theism. Prima facie, his personhood, omnipotence, and omniscience entail that God has at least an intellect and a will, and that these work together in such a way as to have a tendency toward a number of ends (e.g., to design and create things). Furthermore, these ends appear to be good in some important sense – at a minimum, they are good *for* God’s well-being. Prima facie, then, final causes in senses (b) and (c) are built into God's nature without a prior cause. But if that's right, then classical theism entails the existence of final causes at the metaphysical ground floor that God cannot create. And if that's right, then theism entails that non-conscious final causes in senses (b) and (c) are more fundamental features of reality than final causes produced by intelligence. And finally, if that's right, then it’s not clear why atheism would be any *worse* off than theism in this regard if it should turn out that there are such final causes at the metaphysical ground floor that have no prior cause (Hume 1779; Leon forthcoming).

 Summing up: we’ve looked at the nature of causation and its bearing on theism and atheism. We saw that while atheism is compatible with almost any view of the nature and varieties of causation, theism is only compatible with a very narrow range of such views. Of particular concern here are probabilistic accounts of causation, and the category of material cause, both of which enjoy wide acceptance and strong empirical support. As we saw above, while they pose no obvious problem for atheism, both views pose significant problems for theism. In at least these respects, therefore, considerations of causation favor atheism over theism. But at the very least, such considerations don’t favor theism over atheism.

# Cosmological Arguments: Preliminaries

We turn now from consideration of the causal relation itself to arguments for theism that exploit both it and its near cousin, the Principle of Sufficient Reason (For further discussion of the latter, see the final section of the chapter). Perhaps the central arguments for theism that exploit the notions of causation and sufficient reason to infer God’s existence are *cosmological arguments*. In rough terms, cosmological arguments aim to show that the sheer existence of the universe, or some features therein, cannot be adequately accounted for without appeal to God as their causal or explanatory ground. Standard cosmological arguments can be divided into two main types: those that deploy a *causal* principle as one of their core premises, and those that deploy an *explanatory* principle, or *principle of sufficient reason,* as one of their core premises. Each type of cosmological argument will be discussed in turn.

# The Kalām Cosmological Argument

The kalām cosmological argument aims to show that there is a first, uncaused cause of the universe, and that this cause is God. William Lane Craig is the leading proponent of the argument, and so, with a few exceptions, his defense of the argument shall be the focus of the present section.

 Craig (1979) expresses the core of his argument as follows:

1. Whatever begins to exist has a cause of its existence.

2. The universe began to exist.

3. Therefore, the universe has a cause of its existence.

Craig offers both *a priori* and *a posteriori* considerations for the causal principle expressed in premise 1. According to the first, the causal principle is supported by an *a priori* intuition that something cannot come from nothing. According to the second, the principle enjoys strong inductive empirical support.

 Craig offers five main arguments for premise 2: two *a priori* and three *a posteriori*. The first is that an infinite past is impossible because actual infinites are impossible *in general*. The second is that even if concrete actual infinites are possible, they can't be traversed by successive addition. The third is that the evidence for the Big Bang indicates an absolute beginning to the universe. The fourth is that the 2nd Law of Thermodynamics indicates that the universe is running down, in which case it must have been "wound up" with an initial input of matter-energy at the beginning of the universe. Finally, according to the fifth, the Borde-Guth-Vilenkin theorem entails that any universe that is (on average) expanding has an absolute beginning.

 After defending his core argument, Craig goes on to argue that an analysis of the cause of the universe reveals it to be the spontaneous, free act of a person of some kind. But since it is the cause of spatiotemporal, physical reality, it must be a timeless, immaterial person of immense power. And this, as Aquinas would say, we all call 'God'.

## Evaluating Premise 2: Did the Universe Begin to Exist?

A priori arguments against the possibility of actual infinites.As mentioned above, Craig’s first argument for premise 1 is that the past can’t be actually infinite because actual infinites are impossible *in general*. Craig has offered a large number of sub-arguments for this claim. In the present section, a representative sampling of his arguments will be discussed. (For a fuller exposition and discussion, see Morriston 1999, 2002a, 2003, 2010, 2013; Craig & Smith 1993; Draper 2003; Sobel 2004; and Oppy 2006a, 2006b).

####  Infinite Library, Part I. Craig offers a number of thought experiments to support the claim that actual infinites are impossible. To begin, consider the following thought experiment involving an infinite library:

Suppose...that each book in the library has a number printed on its spine so as to create a one-to-one correspondence with the natural numbers. Because the collection is actually infinite, this means that every possible natural number is printed on some book. Therefore, it would be impossible to add another book to this library. For what would be the number of the new book? . . .Every possible number already has a counterpart in realty, for corresponding to every natural number is an already existent book. Therefore, there would be no number for the new book. But this is absurd, since entities that exist in reality can be numbered (Craig 1979, p. 83).

A standard criticism of the present thought experiment is that it *is* possible to assign a unique natural number to the new book. This is because one can *reassign* the natural numbers to the books in the library so as to free up a natural number for the new book. For example, suppose we assign ‘2’ to the first book, ‘3’ to the second book, and so on all the way through the rest of the books in the library. Then we can free up ‘1’ to be assigned to the new book (Morriston 2002, Oppy 2006a).

 Another criticism is that Craig’s argument seems make a fallacious inference from

 (a) Any concrete entity can be uniquely numbered.

to

 (b) Any entity that exists in reality can be uniquely numbered via a *natural* number.

However, (b) looks to be false. For consider a library that contains a set of books that can be put into a one-to-one correspondence with the set of real numbers. Such a set of books would be *non-denumerably* infinite; that is, it would be actually infinite, but it couldn’t be put into a 1-1 correspondence with the natural numbers. Therefore, while all such books in the library can be uniquely numbered, they can’t all by uniquely numbered via the *natural* numbers.

 In short, either we hold fixed the assignment of natural numbers to books in Craig's infinite library or we don't. If we don't, then it's possible to reassign the natural numbers so as to free up a unique natural number for the new book. On the other hand, if we do hold fixed the original assignment of numbers to books, then it is impossible to assign a unique natural number to the new book. But of course, there are more numbers than the naturals, and the new book can be numbered with one of these. If Craig yet demands that the new book be numbered with a natural number, even after all the natural numbers have been assigned to other books, then the problem lies not with the possibility of his infinite library, but rather with the coherence of the task demanded for it. Either way, Craig's argument is unsuccessful.

####  Infinite Library, Part II. Consider next a variant of the library thought experiment (Craig and Smith 1993). According to this version, the problem is that such a library would have just as many even-numbered books as it would have odd- and even-numbered books combined. This is because (i) the set of even numbers (2, 4, 6, …) can be put into a one-to-one correspondence with the set of natural numbers (1, 2, 3, …), and (ii) any two sets that can be put into a one-to-one correspondence with one another are the same “size” – each set is just as large as the other. But this is absurd; the set of even-numbered books is a proper subset, or proper part, of the set of all the books in the library, and no proper part or subset of a set could be just as large as the set of which it is a part. Therefore, a library containing an actually infinite number of books is impossible. But this problem isn’t particular to just infinite libraries; it applies to any actually infinite collection of things whatsoever; therefore, concrete actual infinites are metaphysically impossible.

 We can express the argument above as follows:

1. If concrete actual infinites are possible, then a library with an actually infinite number of books (each labeled with a unique natural number) is possible.

2. If a library with an actually infinite number of books (each labeled with a unique natural number) is possible, then it would have just as many even-numbered books as odd- and even-numbered books combined.

3. There couldn’t be just as many even-numbered books as odd- and even-numbered books combined.

4. Therefore, concrete actual infinites are impossible.

A standard criticism of the argument is that there is an ambiguity in the notion of “just as many” in premises 2 and 3 (Morriston 2002, 2003; Oppy 2006a; Draper 2008). On the one hand, one might mean that there are just as many even-numbered books as odd- and even-numbered books together in the sense that the two sets of books can be put into a one-to-one correspondence with one another. Then while (2) is true, it’s not clear that (3) is true. For an actual infinite is standardly *defined* as a set that can be put into a one-to-one correspondence with one of its proper subsets. But, presumably, Craig's argument is supposed to persuade those who already know what an actual infinite is supposed to be, and yet remain at least agnostic as to whether actually infinite sets of things are metaphysically possible. It seems, then, that one wouldn’t accept (3) unless one already rejected the possibility of actual infinites.

 On the other hand, one might mean that there are just as many even-numbered books as odd- and even-numbered books together in the sense that neither set of books has other members besides the ones they share in common. Then while (3) is true on that reading, (2) is not. For of course the set of odd- and even-numbered books has other books besides the set of books they have in common, viz., the even-numbered books. The upshot is that the argument gets its intuitive appeal by equivocating on the notion of “just as many”. Thus, once the different readings of the expression are disambiguated, the argument loses its force.

 Hilbert's Hotel, Part I. Craig’s most popular arguments against actual infinites appeal to variations on the Hilbert’s Hotel thought experiment: Imagine a hotel with an actually infinite number of rooms. If such a hotel were possible, then it would have some remarkable features. For example, suppose every one of its rooms were full. Then one could create vacancies in some of the rooms even if none of the guests left. So, for example, the hotel manager could have the guests in room 1 move to room 2, the guests in room 2 move to room 3, and so on for all the rest of the rooms. In this way, room 1 would could become vacant for a new guest, even though not a single guest left the hotel.

 In fact, one could create infinitely many vacant rooms without removing a single guest. For one could move the guest in room 1 to room 2, the guest in room 2 to room 4, the guest in room 3 to room 6, and in general, for each room n, move the guest in n to 2n. The result would be that an infinite number of odd-numbered rooms would become vacant for more guests to occupy.

 Furthermore, one could also remove any vacancies -- i.e., fill all the rooms - without adding a single new guest (again, assuming one has an infinite number of guests to move around). So, for example, one could just reverse the moving of guests stated in the previous examples, and thereby go from an infinite number of vacancies to a fully-occupied hotel.

  These features of an infinite hotel illustrate that no such hotel could exist -- not even an omnipotent God could create one. For it is metaphysically impossible for a spatial region to transition from being occupied to being vacant merely by moving its occupants around; without removing at least some of what occupies a region, that region will remain occupied by something or other. Similarly, it is metaphysically impossible for a spatial region to transition from being vacant to being occupied merely by moving its occupants around; without adding at least some new occupants to a given region, that region cannot become occupied.

 We can express the argument in the illustration above as follows:

1. If concrete actual infinites are possible, then a hotel with an infinite number of rooms and guests is possible.

2. If a hotel with an infinite number of rooms and guests is possible, then it can transition from having no vacancies to having vacancies without removing any of its occupants, and it can transition from having vacancies to having no vacancies to without adding new occupants (i.e., merely moving occupants around is sufficient).

3. No hotel can transition from having no vacancies to having vacancies without removing any of its occupants, and no hotel can transition from having vacancies to having no vacancies to without adding new occupants (i.e., merely moving occupants around is not sufficient).

4. Therefore, concrete actual infinites are impossible.

 A number of worries can be raised against this argument. First, one might worry about (3): Granted, no hotel occupying a finite region of space and with a finite number of rooms could transition from having no vacancies to having some (and vice-versa) by just moving some of its occupants around. But these things aren’t obviously true for a hotel occupying an infinite region of space and having infinitely many rooms. For one might think that what makes such transitions impossible for *finite* hotels is that *having spatial boundaries* leaves some occupants with nowhere to go in such transitions (e.g., the person in the room at the end of the hotel). But since an infinite hotel of the relevant sort lacks a spatial boundary in at least one direction, there is always somewhere for each tenant to go (since there is no last room at the end of the hotel).

 Second, Morriston (2002) and Oppy (2006b) have raised worries for the justification for (1), on the grounds that the supposed absurdities of Hilbert's Hotel don't obviously generalize to all actual infinites. More to the point, the supposedly problematic features of Hilbert's Hotel aren't a part of sets of past events – whether infinite or not. For the supposed problems only arise when one combines infinites with co-present regions, and only when the occupants of such regions can be rearranged. But, of course, temporal regions are not co-present (at least not according to Craig’s preferred A-theory of time). Nor can the events that occupy the temporal regions be rearranged or moved around. Therefore, even if the combination of features in Hilbert’s Hotel and Craig’s infinite library give rise to absurdities, such a combination of features is not present in an infinite past. But if not, then Craig's justification for premise (1) is undercut.

 Hilbert’s Hotel, part II. One of Craig’s variations on Hilbert’s Hotel raises a more serious charge. To see this, suppose all the guests in the even-numbered rooms check out. Then the hotel would still have infinitely many occupied rooms, viz., the odd-numbered rooms. On the other hand, suppose all the guests in rooms 4, 5, 6, ... check out of the hotel. Then the hotel will no longer have infinitely many occupied rooms -- it will have three. But this is impossible, since just as many guests checked out in the first scenario as in the second scenario. This is because (i) the infinite set of even-numbered rooms (2, 4, 6, …) can be put into a one-to-one correspondence with the set of rooms numbered 4 and higher (4, 5, 6, …), and (ii) any two sets that can be put into a one-to-one correspondence with one another are the same “size” – each set has just as many members as the other. But this is an outright contradiction: subtracting the same amount yields different amounts. Therefore, Hilbert’s Hotel is metaphysically impossible. But, argues Craig, the absurdity isn't particular to just infinite hotels, but generalize to every infinite set of concrete entities whatsoever. Therefore, concrete actual infinites are metaphysically impossible.

 We can express the argument illustrated above as follows:

1. If concrete actual infinites are possible, then a hotel with infinitely many rooms and infinitely many guests is possible.

2. If a hotel with infinitely many rooms and infinitely many guests is possible, then it’s possible to remove just as many guests from the hotel and get different amounts of remaining guests.

3. It’s impossible to remove just as many guests from the hotel and get different amounts of remaining guests.

4. Therefore, concrete actual infinites are impossible.

What to make of this argument? By now the problem with Craig's argument is a familiar one: there is an ambiguity in the expression "just as many" in (2) and (3). On the one hand, it might mean that "just as many" guests were removed in the two scenarios in the sense that the two sets of rooms can be put into a one-to-one correspondence with one another. Then while (2) is true, it’s not obvious that (3) is true. For while the two sets of rooms can be put into a one-to-one correspondence with one another, one set has all the members of the other set *and others besides*, viz., the odd-numbered rooms. Referring to the coarse-grained similarity of the two sets (viz., sameness of cardinal number) *conceals* this crucial difference. But once one shifts one's focus from the sameness of cardinality to the finer-grained difference in the particular members of the two sets, the intuitiveness of premise (3) disappears. For then one would *expect* different results when the sets removed in the two scenarios are different in this crucial way.

 A Priori Arguments Against the Traversability of Actual Infinites. As mentioned at the beginning of our discussion of the kalām argument, Craig’s second *a priori* argument for a finite past is that, whether or not concrete actual infinites can exist, they cannot be *crossed* or *traversed* one at a time, by successive addition. But if not, then if the past is actually infinite, then the past couldn’t have been traversed to reach the present. But since this is absurd (after all, here we are), the number of past moments must be finite, in which case the universe had a beginning.

 Counting to Infinity. Craig has argued that infinites cannot be crossed on the grounds that one cannot count to infinity. J.P. Moreland provides a clear and succinct statement of his argument:

It is impossible to count to infinity. For if one counts forever and ever, he will still be, at every moment, in a place where he can always specify the number he is currently counting. Furthermore, he can always add one more member to what he has counted and thereby increase the series by one. A series formed by successive addition is a potential infinite. Such a series can increase forever without limit, but it will always be finite. This means that the past must have been finite. For the present moment is the last member of the series of past events formed by successive addition. And since one cannot reach infinity one at a time, then if the past was actually infinite, the present moment could not have been reached. For to come to the present moment, an actual infinite would have to have been crossed.

We can express the argument as follows:

1. At every point in the growth of any potential infinite, one can specify its cardinal number via a natural number and increase that number by 1.

2. If at every point in the growth of any potential infinite, one can specify its cardinal number via a natural number and increase that number by 1, then no actual infinite can be formed from a potential infinite by successive addition.

3. Therefore, no actual infinite can be formed from a potential infinite by successive addition. (From 1 and 2)

4. Any series formed by successive addition is (at least initially) a potential infinite.

5. The past is a series formed by successive addition.

6. Therefore, the past is (at least initially) a potential infinite. (From 4 and 5)

7. Therefore, the past cannot be an actual infinite formed from a potential

infinite by successive addition. (From 3 and 6)

A standard criticism is that even if the argument provides a good reason for thinking that no series with a beginning can be transformed from a potential infinite into an actual infinite by successive addition, it has no obvious bearing on the prospects of a beginningless series formed by successive addition (Morriston 2002; Draper 2008; Leon 2011). Rather, all that follows is the weaker claim that if the latter series is possible, it doesn't involve the formation of an actual infinite from a potential infinite. But of course, those not antecedently convinced of the necessary finitude of the past likely agree with that. For if the past should turn out to be beginningless, then some infinite set of events or other has elapsed prior to each point in the past. And if so, then there is no event in the past that involved going from a state of not having traversed at least one infinite set of events to having traversed at least one such set. And if that's right, then if a beginningless past is possible, then it is a series of events formed by successive addition that does not involve transforming a potential infinite into an actual infinite.

 Perhaps Craig construes a beginningless past in the way he does in an attempt to be charitable. In at least one place, Craig (1979) argues that if, in a beginningless past, some infinite set or other is traversed before every event, then such a past has at least one infinite proper subset of events that wasn’t formed by successive addition, which seems absurd:

The only way a collection to which members are being successively added could be actually infinite would be for it to have an infinite ‘core’ to which additions are being made. But then it would not be a collection formed by successive addition, for there would always exist a surd infinite, itself not formed successively but simply given, to which a finite number of successive additions have been made. (p. 105)

However, Leon (2011) has argued that such reasoning relies on an inference involving an illicit quantifier shift, reasoning from:

1. Every point in a beginningless past is such that there exists an actually infinite set of events that existed prior to it.

to

2. There is an actually infinite set of events, such that it exists prior to every point in a beginningless past.

Such is the same illicit pattern of inference involved in reasoning that if every child has a mother who directly gave birth to them, then there is a mother who directly gave birth to every such child.

No, if the past is beginningless, then while an infinite subset of events exists prior to each event, it's a new infinite every time. To illustrate: pick any event --say, the present day -- and represent it by the integer -1. Then the set of past days traversed for each of the previous days, and including today, can be represented as follows:

.....

....

...

2 days ago: {..., -5, -4, -3}

1 day ago: {..., -5, -4, -3, -2}

Present day: {..., -5, -4, -3, -2, -1}

Thus, if a past of this sort is possible, then the set of days traversed at each day of the past is actually infinite. However, at each day, the set of days traversed is different. So, for example, the set of days traversed today contains, in addition to the set of days traversed yesterday, the new member represented by -1, viz., today. Thus, if the past is beginningless, then while the set of events traversed at each point in the past is actually infinite, it's a new set every time, as each passing event adds a new member to the previous set. Therefore, from the fact that a beginningless past doesn’t involve the formation of an infinite set of events from a finite set of events, it doesn’t follow that such a past includes a subset of events that wasn’t formed by successive addition.

 Immortal Counter. One of Craig’s main arguments against the possibility of traversing the infinite is compatible with the objection to the previous argument. Craig (2009) states the argument as follows:

Suppose we meet a man who claims to have been counting down from infinity and who is now finishing: . . ., -3, -2, -1, 0. We could ask, why didn’t he finish counting yesterday or the day before or the year before? By then an infinite time had already elapsed, so that he should already have finished. Thus, at no point in the infinite past could we ever find the man finishing his countdown, for by that point he should already be done! In fact, no matter how far back into the past we go, we can never find the man counting at all, for at any point we reach he will already have finished. But if at no point in the past do we find him counting, this contradicts the hypothesis that he has been counting from eternity. This shows again that the formation of an actual infinite by never beginning but reaching an end is as impossible as beginning at a point and trying to reach infinity. (121-122)

Call this *the immortal counter argument*. The immortal counter argument can be expressed as a *reductio*, with (1) below as the premise set up for reduction:

 1. The past is beginningless.

2. If the past is beginningless, then there could have been an immortal counter who counts down from such a past at the rate of one negative integer per day.

3. The immortal counter will finish counting if and only if he has an infinite number of days in which to count them.

4. If the past is beginningless, then there are an infinite number of days before every day.

5. Therefore, the immortal counter will have finished counting before every day.
6. If the immortal counter will have finished counting before every day, then he has never counted.

7. Therefore, the immortal counter has both never counted and has been counting down from a beginningless past (contradiction).

8. Therefore, the past is not beginningless (from 1-7, *reductio*).

A standard criticism of the immortal counter argument takes issue with premise 3 (Morriston 1999, 2002b, 2013; Leon forthcoming). The core of the criticism is that Craig conflates counting an *infinite* number of negative integers with counting them *all*, and that completing the former task does not entail completing the latter. But the problem is that it's epistemically possible (i.e., possible for all we know) that he's counted down an infinite number of negative integers from a beginningless past, and yet has not counted them all. So, for example, he could now be counting "-3", so that he has just finished counting an infinite number of negative integers, viz., {...-5, -4, -3}, and yet he has not counted down all the negative integers. Given this epistemic possibility, any reason for believing his (3) is undercut.

 Craig’s (1985) reply to this sort of objection is that the believer in the (epistemic) possibility of a beginningless past is committed to the claim that the counter will finish his count just in case the days he's counted can be put into a one-to-one correspondence with the set of natural numbers. This is because otherwise the objector can't account for the possibility of an immortal counter who finishes the task on a particular day, as opposed to any other day.

 However, Craig’s response seems to presuppose a substantive version of the principle of sufficient reason, according to which every event has a sufficient reason for why it occurs (Morriston 2003; Oppy 2006a). But this is problematic, as the principle of sufficient reason – especially as strong as the one assumed here in Craig’s reply – is implausible (Cf. the section below on cosmological arguments from contingency). Indeed, Craig (2008) himself has recently explicitly rejected strong versions of the sort at issue.

  Furthermore, in order for Craig’s reply to work, it must be possible for the series of events of the universe’s history to occupy different temporal intervals than they in fact occupy. Craig’s reply therefore seems to presuppose a controversial view of the nature of time, according to which the temporal segments of the universe’s history are distinct from the events that occupy them (Morriston 2003). If, on the other hand, the temporal intervals of the universe’s history are identical to its events, or the temporal metric applied to events is a matter of convention, Craig’s reply fails (*Ibid.*).

 Can’t get there from here. Another popular argument against infinite traversals comes from Moreland (2001):

...Suppose a person were to think backward through the series of events in the past...Now he will either come to a beginning or he will not. If he comes to a beginning, then the universe obviously had a beginning. But if he never could, even in principle, reach a first moment, then this means that it would be impossible to start with the present and run backward through all the events in the history of the cosmos...But since events really move in the other direction, this is equivalent to admitting that if there was no beginning, the past could have never been exhaustively traversed to reach the present. Counting to infinity through the series 1, 2, 3, ... involves the same number of steps as does counting down from infinity to zero through the series …, -5, -4, -3, -2, -1, 0. In fact this second series may be even more difficult to traverse than the first. Apart from the fact that both series have the same number of members to be traversed, the second series cannot even get started. This is because it has no first member! (201-202)

We can express Moreland’s argument as follows:

1. If the past is beginningless, then it’s impossible in principle to traverse from the present all the way through the past.

2. If it’s impossible in principle to traverse something in one direction, then it’s impossible in principle to traverse it in the other direction.

3. Therefore, if the past is beginningless, then it’s impossible in principle to traverse the past all the way to the present. (From 1 and 2)

4. But it’s not impossible in principle to traverse the past all the way to the present (as demonstrated by the actuality of the present).

5. Therefore, the past is not beginningless. (From 3 and 4)

The crucial premise is 2. Moreland thinks it’s true because "[c]ounting to infinity through the series 1, 2, 3, ... involves the same number of steps as does counting down from infinity to zero through the series …, -5, -4, -3, -2, -1, 0."

 A standard criticism of the argument is that in the case of actual infinites, there are several asymmetries in direction of traversal that seem relevant to difficulty or ease of traversal in a beginningless past: Going forward (but not backward) there is an endpoint to reach; going forward (but not backward) one is always over the hurdle of traversing an infinite; etc. (Leon 2011).

###  A Posteriori Arguments for a Beginning. In addition to *a priori* arguments, Craig offers several scientific arguments for a beginning of the universe. These are discussed in the present section.

 Big Bang Cosmology. According to the first scientific argument, Big Bang cosmology supports the premise that the universe began to exist (Craig 2008; Craig and Sinclair 2009). The core idea is that current scientific evidence indicates that our physical universe began less than 14 billion years ago, when our spatiotemporal manifold and all of the energy within it existed in an extremely condensed state. From that hot and volatile initial state, our universe expanded and evolved into its present state. Since Big Bang models are well confirmed, they imply that our universe is of finite age, and things with a finite age have a beginning, Big Bang cosmology confirms premise 2 of the kalām cosmological argument.

 A number of criticisms have been raised against this line of reasoning. First, our best scientific evidence does not support that the universe had a beginning, since it can’t tell us about the earliest known stages of the visible universe, before Planck time (i.e., 10-43 seconds). This is because the general theory of relativity breaks down at that point, and quantum effects dominate. But since we currently lack a quantum theory of gravity, our best scientific theories can’t tell us what happened at times prior to Planck time, including even whether there was a beginning to our universe at all (Morriston 2002b, 2013; Oppy 2006b; Monton 2011).

 Second, even if it were true that the evidence for a Big Bang provided sufficient evidence that *our* universe began to exist, it wouldn’t provide sufficient evidence that *all physical reality* (let alone *all contingent concrete reality*) began to exist (Morriston 2002b, 2013; Oppy 2006b). Indeed, on a wide variety of quantum cosmological theories, our universe has temporal, physical antecedents (Craig 2008; Craig and Sinclair 2009).

 Third, even if it were true that the evidence for the Big Bang provided sufficient evidence that all physical reality began to exist, including physical time, it doesn’t follow that there was no time prior to the Big Bang (Morriston 2002b, 2002c, 2013). For as Craig (1992) himself has argued, there is a kind of time – metaphysical time – that is more fundamental than physical time. Thus, we can imagine or conceive of God existing prior to the Big Bang and counting off, “1, 2, 3, …, *Fiat lux*!” (Ibid.). According to this scenario, the elapsing of God’s mental states consisting of his countdown to creation constitute events in metaphysical time, and these are temporally prior to the physical time of our universe. Unless one can rule out this epistemic possibility, one cannot conclude an absolute temporal beginning from the truth of the Big Bang theory.

 Fourth, even if the universe had a beginning in the sense that there is nothing *temporally* prior to the Big Bang singularity, it doesn’t follow that there is nothing *causally or* *ontologically* prior to it (Morriston 2002b, 2002c, 2013). It's therefore compatible with the possibility of the universe created from a *timeless* stuff. Indeed, Craig is already committed to saying that, causally and ontologically prior to the singularity, *God* exists timelessly. It’s therefore not clear what principled grounds there might be to rule out the epistemic possibility that, causally and ontologically prior to the singularity, *other things besides God*exist timelessly. And if that’s right, it’s not clear how Craig can rule out the epistemic possibility that God created the universe out of a timeless stuff. Therefore, even if there was no time prior to the singularity, it doesn’t follow that the universe was created *ex nihilo*.

 In anticipation of the previous objection, Craig (1979, 1981) has argued that he can rule out the epistemic possibility of a timeless stuff because he thinks (a) the only possible stuff from which God could make the universe is matter/energy, (b) timeless stuff is quiescent, and (c) matter/energy is never quiescent. However, it’s not clear that (a) is true, as it’s epistemically possible that the universe was created out of some timeless stuff that’s distinct from the matter/energy we observe (Morriston 2002b, 2002c). Indeed, the intuitive and empirical evidence for the need of a material cause is at least as strong as that for an efficient cause, in which case the need of an efficient cause of the universe and of a material cause of the universe stand or fall together: rationality requires that we posit the one just in case it requires that we posit the other (*Ibid*.)

 Finally, as Craig acknowledges, the argument presupposes the A-theory of time and real temporal becoming (Craig and Sinclair 2009). But many scientists and philosophers deny real temporal becoming, accepting instead the B-theory of time. According to the latter view of time all past, present, and future events exist tenselessly, on a par with one another. But if that’s right, then it’s not at all clear that the universe began to exist in a sense that cries out for a cause. Rather, it exists timelessly, enjoying a mode of being similar God’s. And if that’s right, then premise 2 is false.

 The Second Law of Thermodynamics. According Craig’s second *a posteriori* argument, the universe’s amount of usable energy is decreasing, such that at some time in the distant future, all of its usable energy will be completely exhausted, resulting in the heat death of the universe. But if so, then since the universe’s total energy is finite, then if the universe were infinite in age, it would’ve run out of usable energy by now. But since it hasn’t, the universe must be finite in age; that is, it must have had a beginning (Craig 2008; Craig and Sinclair 2009).

 A number of objections can be raised against the present argument. However, since most of these overlap with those raised against the previous argument, they are briefly summarized here. First, the laws of physics break down prior to Planck time, in which case we currently have no way of knowing whether something like the 2nd Law applies prior to that time (Morriston 2013).

 Second, the argument assumes that our universe exhausts all physical reality. However, it’s epistemically possible that our universe arose from prior causal antecedents within a much larger – and perhaps infinite -- physical reality. But if so, then we can’t confidently extrapolate from the heat death of the former to the heat death of the latter.

 Third, the evidence for the 1st Law of Thermodynamics – the Law of Conservation – is at least as strong as the evidence for the 2nd Law, in which case we have epistemic grounds for accepting that one of them holds prior to Planck time just in case we have such grounds for accepting that the other one does. But the 1st Law entails that the total amount of matter-energy in the universe remains constant: it cannot be created or destroyed. But if that’s right, then appeal to the 2nd Law cannot be used to support the claim that the universe began to exist in the sense required for the kalām argument.

 Fourth, even if the evidence indicates a beginning to physical time, that wouldn’t entail a beginning of metaphysical time.

 Fifth, even if the evidence could be used to indicate a beginning of metaphysical time, so that nothing is temporally prior to our universe, it wouldn’t show that there is no material cause of the universe that is causally or ontologically prior to it.

 Finally, even if the evidence could be shown to indicate that the universe had an absolute beginning and that it has no causally or ontologically prior material causes, the universe would still lack the relevant sort of beginning that requires a cause if it turns out that the B-theory of time is correct.

 The Borde-Guth-Vilenkin Theorem. According to Craig’s third and final *a posteriori* argument, the Borde-Guth-Vilenkin Theorem (henceforth, BGV) entails that any universe or multiverse that is, on average, expanding has an absolute temporal beginning. But if so, then the BGV provides powerful scientific evidence that all physical reality had such a beginning (Craig 2008; Craig and Sinclair 2009).

 A number of objections can be raised against the present argument. However, as with Craig’s argument from the 2nd law of thermodynamics, most of these overlap with those raised against the previous argument and are thus briefly summarized here. First, there is currently no scientific consensus about whether BGV has the implication that all physical reality had an absolute temporal beginning, in which case it is epistemically prudent to suspend judgement about the matter (Morriston 2013).

 Second, even if it could be shown that BGV has the implication that all physical reality had an absolute beginning in the sense that there was an absolute beginning of physical time, that wouldn’t entail that there was an absolute beginning to metaphysical time.

 Third, even if it could be shown that BGV implies a beginning of metaphysical time, so that nothing is temporally prior to our universe, it wouldn’t show that there is no material cause of the universe that is causally or ontologically prior to it.

 Finally, even if it could be shown that BGV implies that the universe had an absolute beginning and that it has no causally or ontologically prior material causes, the universe would still lack the relevant sort of beginning that requires a cause if it turns out that the B-theory of time is correct.

## Evaluating Premise 1: Whatever Begins to Exist Has a Cause?

Recall that Craig offers both *a priori* and *a posteriori* grounds for the causal premise that whatever begins to exist has a cause of its existence: *a priori* intuition and enumerative induction from universal experience. However, a number of criticisms have been raised against both the causal premise of Craig’s kalām argument and the evidence he offers for it. Three will be considered here. First, the intuitive and empirical support for the causal premise is dependent upon what is meant by “begins to exist” (Draper 2003; Oppy 2006b). According to one gloss, it means “begins to exist *within* time”. On this gloss, the empirical and intuitive evidence seems adequate to support premise 1 – the causal premise. Unfortunately, it does so at the expense of rendering premise 2 false. For Craig intends the latter premise to mean that the universe began to exist *with* the first finite interval of time. By contrast, according to the other gloss, “begins to exist” means the sort of beginning just mentioned, viz., “begins to exist *with* time”. But on this gloss, while premise 2 seems true, it’s not at all clear that the intuitive and empirical evidence supports premise 1. For it appears that the empirical evidence for the causal premise only supports the “within time” gloss: we have no experience of things beginning with the origination of time itself. Furthermore, while our intuitions might be strong that things that begin *within* time have a cause, it’s not at all clear what our intuitions are about the need for a cause for things that begin to exist *with* time (*Ibid*.; Morriston 2002c, 2002d).

 Second, the causal premise is called into question by certain apparent counterexamples (Oppy 2006b). For example, if, as Craig believes, God and humans have libertarian free will, then free acts begin to exist and yet lack efficient causes. Furthermore, certain quantum entities seem to lack efficient causes. To be sure, such events and individuals seem to have *material* causes, but that is of no help to Craig’s case for a divine creator of the universe *out of nothing* (*Ibid*.). It’s therefore not at all clear that the causal premise is true.

 The previous point naturally leads to the third criticism, since the grounds for a requirement of an *efficient* cause of the universe are on an epistemic par with the case for a requirement of a *material* cause (Morriston 2002b, 2002c; Fales 2009; Leon forthcoming), the latter of which is at odds with the kalām argument’s aim to show that the universe was created by an immaterial person who created the universe *out of nothing*. Both causal principles are intuitive, and both enjoy strong empirical confirmation. Indeed, the case for material causes is stronger, given the apparent counterexamples to the existence of efficient causes mentioned above.

 Furthermore, the theoretical costs of both are the same. We’ve never observed timeless stuff, but we’ve never observed a timeless person, either (*Ibid*.) And while it’s odd to think that the material cause of the universe was timeless *sans*creation, and then entered time with its creation, Craig thinks the same is true of the efficient cause of the universe: God is timeless *sans*creation, but he entered time at the moment of creation (Ibid.). Therefore, given epistemic parity, we have a dilemma: Either our commonsense intuitions about causation can be justly applied to the beginning of the universe or they can’t. If they can, then creation of the universe out of timeless stuff is more plausible than creation *ex nihilo*. But if they can’t, then we lose our grounds for inferring a cause of a universe (Morriston 2002b, 2002c, 2013).

 In a similar vein, Oppy (2016) argues that our empirical and intuitive evidence supports claims about causation that conflict with Craig’s claim that the universe arose from a timeless, changeless cause, such as that all causing involves a change in the cause.

A Personal Cause?

Recall from Section 1 that Craig goes on from defending his core argument that the universe has a caused beginning to argue that the cause is a timeless, immaterial person of immense power. In this section, Craig’s core argument for a personal cause will be evaluated.

 According to Craig (1979, 2009), there are only two main types of efficient cause: personal and non-personal. But the cause of the beginning of the universe can't be a non-personal cause, for any such cause must be in a state of either quiescence or activity. But neither possibility applies to the cause in question. For if the cause were in a state of absolute quiescence, then since no events occur in that state, then it would remain quiescent eternally, in which case the universe would have never arisen. On the other hand, if the cause of the beginning of the universe *were* in a state of activity, then the universe would be eternal. For the effect of a non-personal cause occurs as soon as such a cause is present. And if that's right, then if the cause is eternal, then the effect is eternal. But assuming the success of the first state of the kalām argument, the effect is finite. Therefore, the effect -- the universe -- did not arise from a non-personal cause, whether quiescent or active (*Ibid*.).

 By contrast, a personal cause has the features suitable to produce an effect in the type of situation at hand. For it can (in principle, at least) exist in a state of eventless quiescence and spring into action with a spontaneous, creative act of libertarian free will. Therefore, the universe had a beginning, and it was caused by the spontaneous, free act of a person of some kind. But since it is the efficient cause of all spatiotemporal, physical reality, it must be a timeless, immaterial being of immense power (*Ibid*.).

 A number of objections have been raised against the second stage of Craig’s kalām argument. First, the same sorts of objections Craig raises against a non-personal cause seem to apply with equal force to a personal cause as well. For if an omnipotent God’s willing to create the universe is sufficient for bringing about its existence (which, on orthodox views of the theistic god, it is), then just as with non-personal causes, the temporal duration of the universe should stretch back to “when” God willed it into existence. But if we suppose with Craig that God is timeless *sans* creation, then there is no change in God in this state. But if not, then it appears that his willing of the universe must be eternal, in which case the universe should also be eternal. But this contradicts the conclusion of the first stage of the kalām argument, viz., that the universe had an absolute temporal beginning (Morriston 2000, 2002b, 2000d).

 Craig anticipates the present objection and aims to get around it with the help of the distinction between God’s *intending* to create a universe and his *undertaking* it -- i.e., his *exercising* his will to bring aboutthat intention (2009). Given this distinction, Craig argues that it’s possible for God to eternally intend to bring about the universe, and then to freely and spontaneously exercise his will to create it a finite amount of time ago.

 An important rejoinder is that while Craig’s reply may have a good deal of plausibility with respect to *human* action, it doesn’t seem plausible in the case of *divine* action. For intending and undertaking come apart in three main types of case: (i) when you don’t yet know what you’ll decide to do; (ii) when the time for carrying out your decision has not yet arrived; and (iii) when you have weakness of will that (at least temporarily) prevents you from carrying out your decision. But the problem is that none of these conditions apply to God: God is supposed to be omniscient, and thus, presumably, always knew what he would do; God is in a timeless state “when” he both intends and undertakes to create, and thus there is no room for a temporal delay in creating; and God is omnipotent and morally perfect, and thus can’t succumb to weakness of will. But if that’s right, then appeal to the distinction between deciding and carrying out one’s decision won’t block the previous objection (Morriston 2000, 2002b).

 Perhaps some theists will reply that God is a necessary, but not a sufficient, cause of the origination of the universe, but then it’s not clear what sense can be made of his omnipotence. It’s also not clear why a similar account can’t apply to a *non-personal* cause of the universe’s origin (*Ibid*.). Relatedly, perhaps some theists will reply that God is a probabilistic cause. But then, again, it’s not clear why similar accounts can’t apply to non-personal causes of the universe’s origin (Oppy 2009, 2010, 2013a, 2013b). Now to the previous point, one might reply that a purely naturalistic quiescent universe can be ruled out on the grounds that it would be in a state of absolute rest, from which no event could arise (barring supernatural intervention). However, a similar worry arises for the hypothesis of the creation of the universe by a God who is quiescent “prior” to the creation of the universe.

 The theist might instead reply that there is a way out if God eternally and timelessly wills the universe to come into existence at a specified (metaphysical) time. However, as Fales (2010) has argued, such a reply raises further serious problems. Alternatively, the theist might reply that there is a way out if God eternally and timelessly wills a universe with a beginning. However, as Morriston (2000) has argued such a move generates a contradiction when combined with other propositions Craig accepts and is committed to:

1. Alpha (i.e., our universe) has a beginning.

2. God’s willing-to-create-alpha is eternal.

3. God’s willing-to-create-alpha is causally sufficient for the existence of alpha.

4. If a cause is eternal and sufficient for the existence of something, then that thing is also eternal.

5. If a thing is eternal then that thing doesn’t have a beginning.

6. Therefore, alpha both does and doesn’t have a beginning (Ibid.).

Something has to give, but what? Craig needs (1) for the core the kalām argument; (2) seems to follow from God’s timeless eternality and omniscience; those with standard views about God’s omnipotence will resist denying (3); and (5) seems analytic (at least assuming an A-theory of time, which, Craig has argued, is presupposed by his version of the argument). One might think (4) can be resisted by saying that while God’s eternally willing alpha makes the statement, “There is a world with a beginning” eternally true, it doesn’t make the world eternal. But this isn’t a move that would help Craig here. For there seems no principled basis for denying this distinction for a *non*-personal eternal sufficient condition for the beginning of the universe. And if that’s right, then such a reply would undercut stage 2 of his kalām argument. (Ibid.)

## Recap

The kalām cosmological argument aims to show that the universe began to exist, and that it was created out of nothing by a timeless, immaterial person of immense power. However, we’ve seen that the argument appears to succumb to at least seven problems: (i) the scientific and philosophical arguments for a beginning of the universe are unsuccessful; (ii) even if they were, they wouldn’t entail the origination of the universe *ex nihilo*; (iii) there are serious worries about how a universe with a finite past could arise from a timeless personal cause; (iv) even if the arguments for a finite past and timeless cause succeed, they seem to entail something on the order of an eternal 4-dimensional block universe; (vi) even if these issues can be resolved, similar solutions are available for naturalistic universes with a finite past arising from a timeless non-personal cause; and (vii) the intuitive and empirical evidence for a requirement of a material cause are at least as strong as those for the requirement of an efficient cause, in which case the grounds for both stand or fall together. But whether they both stand or both fall, the implications for theism are equally devastating. It therefore seems that, at the very least kalām cosmological argument fails to provide evidence that favors theism over atheism.

# Cosmological Arguments from Contingency

Another form of the cosmological argument makes crucial appeal to some version or other of the Principle of Sufficient Reason (PSR). Principles of sufficient reason assert that some range of entities in a given domain have an explanation for why they exist or occur. Versions of the principle can vary along a number of dimensions, such as modal force (e.g., whether they are supposed to be necessarily, contingently, or possibly true, and whether the modality at issue is *de dicto* or *de re*), the range of entities that are supposed to have an explanation (e.g., all entities whatsoever vs. some specific subset, such as continently existing states of affairs or concrete individuals), and type of explanation (e.g., entailment or necessitation vs. some weaker explanatory relation). (For further discussion of the varieties of PSR, see Oppy 2006a, 2006b; Rasmussen 2010).

## A Generic Version of the Argument

Once a version of the principle is selected, it can then be pressed into service as a premise in a cosmological argument. A huge number of versions of the cosmological argument from contingency have been proposed, and justice cannot be done to each here. However, a small but representative sampling of such arguments will be discussed. (For a fuller discussion, see the references to Oppy and Rasmussen above, and to the references in the bibliography.)

 For the purposes of this section, it will prove instructive to begin by considering a fairly standard version of PSR and how it functions within a generic formulation of the argument:

1. (a) For every object that exists, there is an explanation for why it exists, and (b) for every state of affairs that obtains, there is an explanation for why it obtains. (Standard version of PSR)
2. Some contingent objects exist, or some contingent states of affairs obtain (or both).
3. Therefore, there is an explanation for why such entities exist or obtain (or both). (From 1 and 2)
4. The explanation for why such entities exist or obtain is in terms of either (a) contingently existing or obtaining entities, or (b) at least one necessarily existent or obtaining entity.
5. There cannot be an explanation for why such entities exist or obtain solely in terms of contingently existent or obtaining entities.
6. Therefore, the existence or obtaining of contingent entities is explained in terms of at least one necessarily existent or obtaining entity. (From 3-5)

The argument is valid: (3) follows from (1) and (2), and (6) follows from (3), (4), and (5). That leaves (1), (2), (4), and (5). What can be said in support of them?

 Start with (1) – i.e., PSR. Several lines of evidence have been offered in support of the various versions of PSR (Rowe 2007; Pruss 2009; Rasmussen 2010a). First, some argue that PSR is self-evident in the standard sense that once one understands the constituent concepts of the principle, one can thereby “see” that the principle is true. Second, some argue that PSR enjoys strong empirical support, where this is cashed out in terms of enumerative induction or an inference to the best explanation. Third, some argue that PSR is a presupposition of rational thought.

 Finally, it has argued that PSR is supported by the near universal acceptance of the epistemic force of explicability arguments (Della Rocca 2010). In an explicability argument, one reasons that some state of affairs does not obtain, on the grounds that it would be an inexplicable brute fact if it did. For example, Derek Parfit (1984) famously argued for?? that reason that if a person has their brain cut in half, and each half is placed in a new, different body, neither of the two resultant persons would be the original person. This is because the grounds for saying that either one of them is the same person as the original are the same as those for the other. But if so, then it would be an inexplicable brute fact if one is the original person and the other is not, and this is implausible (*Ibid*.). Explicability arguments are ubiquitous. But prima facie, all such arguments are legitimate if any are. But to say that all explicability arguments are legitimate is just to say that PSR is true.

 Two main types of evidence are standardly offered in favor of (2): empirical evidence and modal evidence. According to the first, we observe objects coming to be and passing away, and we see states of affairs obtaining and then failing to obtain. But necessary beings can’t come to be or pass away. By contrast, contingent beings *can* come to be and pass away.

 According to the second, we can *imagine* or *conceive* of a different universe existing instead of this one. We can also imagine or conceive of each thing in the universe, and even the universe as a whole, failing to exist. But whatever we can imagine or conceive is *prima facie* possible. Therefore, it’s *prima facie* possible for the universe to have been different, and to fail to exist (or to fail to have existed). An important line of modal evidence for the latter claim is the Subtraction Argument (See, for example, Baldwin 1996; Rodriguez-Pereyra 2002, 2013). According to one version of the Subtraction Argument, one starts by considering a scenario in which a tiny particle is annihilated from the universe and asking whether this scenario is metaphysically possible. But if one allows that it is, then there seems to be no principled grounds for denying the possibility that two, three, or any number of particles be annihilated, one by one, down to the very last one. But if that’s right, then it follows that it’s possible for each thing in the universe, and indeed the universe itself, to fail to exist. But no necessary being can fail to exist, whether in the actual world or in any other possible world. Therefore, our modal evidence indicates that the universe is not a necessary being, but rather a contingent being.

 (3) can be supported by an argument from elimination. The broadest and most permissible categorization of entities comprises impossible beings, merely possible beings, contingent beings, and necessary beings. But *prima facie*, only *actual* beings can explain actual beings. But that rules out impossible beings and merely possible beings for explaining the existence of contingent beings. Therefore, the only candidates for explaining some range of contingent beings are contingent beings and necessary beings.

 Finally, in support of (5), theists standardly argue that if everything were a contingent entity, then at least some such entities would lack an explanation. Consider the totality of contingent concrete entities. This totality might be the mereological fusion of all contingent concrete objects, or it might be the conjunction of all contingent facts, events, truths, or states of affairs (cf. Oppy 2009). But whichever it is, it will here be called *the Conjunction of all Contingent Entities* (CCE). Now suppose that nothing exists or obtains but CCE. Then there is no explanation for why CCE exists or obtains at all, instead of just nothing. There is also no explanation why CCE exists or obtains instead of some other possible contingent conjunctive entity. Therefore, if everything were a contingent being, then at least some things would lack an explanation for why they exist or obtain. But that is just to say that (5) is true.

 A standard criticism of the argument is that the version of PSR in play absurdly entails that everything exists and obtains of necessity (Ross 1969; van Inwagen 1983, 2002; Rowe 1998). The reasoning behind this criticism can be stated as follows. Consider again the conjunction of all contingent entities (CCE). By PSR, there is a sufficient reason for CCE. Now the sufficient reason for CCE is itself either contingent or necessary. But it can’t be contingent, because then it would itself be a part of CCE. But contingent facts don’t contain within themselves the sufficient reason for why they obtain, let alone the sufficient reason for why CCE obtains. Thus, the sufficient reason for CCE must be necessary. But whatever is entailed by a necessary truth is itself necessary, in which case all truths would be necessary truths, and the referents they represent would obtain of necessity. But this is absurd. Therefore, PSR is false.

 Another criticism of PSR is that it admits of counterexamples (Oppy 2006a, 2006b; Rasmussen 2010a). For example, on standard interpretations of quantum mechanics, certain quantum events lack sufficient reasons or explanations for their occurrence. Another apparent counterexample is free will. If humans have libertarian free will, then our free actions lack sufficient reasons or explanations that entail their occurrence. Finally, it has been argued that a counterexample to PSR seems to follow from the problem of the many (Kleinschmidt 2013). So, for example, consider the set of atoms of which you are constituted. There are any number of proper subsets of this set that are equally good candidates for the set that constitutes you. One is the subset of all of the original set minus one atom at the top of your left ear, and another is the subset of the original set minus one atom at the top of your right ear. But there is only one “you” there. Therefore, there seems to be no sufficient reason for why you are one of these sets of atoms rather than another.

 Another criticism of the argument takes aim at our empirical and modal evidence for contingent entities. Start with the empirical evidence. It’s true that we observe things made out of matter coming to be and passing away. It’s also true that this is evidence of their contingency. However, that’s only evidence that things *made out of* matter are contingent entities; it does nothing to show that the existence of *matter* is contingent (Leon forthcoming). For all that such evidence shows, the latter could turn out to be a necessary being. And while, strictly speaking, such an epistemic possibility doesn’t call into question the argument’s soundness, it is of course not the kind of necessary being the theist wants to infer from it.

 The modal evidence is even more problematic for the argument (Hume 1779; Oppy 2006b; Leon forthcoming). For either imaginability or conceivability is *prima facie* evidence of possibility or it isn’t. If it is, then we can imagine or conceive a different conjunction of objects than CCE. We can also imagine or conceive anything and everything -- including God -- being different than the way it is, and of anything and everything failing to exist. Thus, one might continue the Subtraction Argument discussed previously and subtract *God* from the universe after one subtracts the last physical particle, thereby erasing in thought all concrete objects from the world. But if so, then one is *prima facie* justified in believing that it’s possible that anything and everything could have been different, and that everything – including God -- could have failed to exist. But if that’s right, then one is *prima facie* justified in believing that there are *no* necessary beings. On the other hand, if imaginability or conceivability isn’t *prima facie evidence* of possibility, then our ability to imagine or conceive of a different universe, or of no universe at all, isn’t *prima facie* evidence that such things are possible. But if not, then we lose our modal evidence of the CCE’s contingency.

## Davis and Craig’s Version

Another version of the cosmological argument from contingency has been given by Davis (1999), and subsequently modified and defended by Craig (2003, 2008). Craig expresses the argument as follows:

1. Every existing thing has an explanation of its existence, either in terms of the necessity of its own nature or in terms of an external cause.

2. If the universe has an explanation of its existence, that explanation is God.

3. The universe is an existing thing.

4. Therefore, the universe has an explanation of its existence. (From 1 and 3)

5. Therefore, the explanation of the existence of the universe is God. (From 2 and 4)

The argument is clearly valid: (4) follows from (1) and (3), and (5) follows from (2) and (4). That leaves (1), (2) and (3). Why should one accept them?

Premise 1 is a version of PSR that has been modified in response to the counterexamples to PSR from quantum indeterminacy and free will, as well as the Ross-van Inwagen-Rowe criticism that there cannot be a sufficient reason for all contingent states of affairs. To avoid these criticisms, Craig eliminates clause (b) of the standard version of PSR discussed in the previous argument – the one that states that there is an explanation for every state of affairs that obtains – thereby restricting the range of things needing an explanation to objects or individuals alone. The premise therefore allows for at least some brute contingency about what states of affairs obtain. What it rules out are objects or individuals that have *no explanation whatsoever* for their existence -- whether probabilistic or necessitating -- in terms of their own nature or in terms of other beings.

In support of the modified version of PSR in premise 1, Craig appeals to Taylor’s (1992) translucent sphere thought experiment. Imagine finding a translucent sphere in the forest. One would find it intuitive that there must be an explanation for why it exists. It wouldn’t make the slightest difference if one shrunk the sphere down to the size of the tiniest particles or inflated it to the size of the whole universe. But what is true of the sphere is of every object in the universe – rocks, trees, planets, galaxies, and even the universe itself. The only reason why one might not think to ask for an explanation or cause of the universe and its fundamental elements is because they are so familiar to us. So, it seems that every object that exists – from the tiniest particles to the universe as a whole – has an explanation for why it exists. But that is just to say that the version of PSR in play is true.

One criticism concerns the justification for premise 1. In particular, one might object that the epistemic weight of one’s intuitions concerning the need for an explanation of Taylor’s sphere is much too weak to do the heavy-lifting Craig assigns to them in the argument. One might quite sensibly ask why such intuitions, which many will plausibly take to be created and shaped by our experience of objects *within* the universe – things *made out of* matter-energy -- having explanations for their existence should serve as a reliable guide to whether *matter-energy itself* needs an explanation for its existence. Such an inference is especially dubious in light of the extremely well-confirmed conservation laws.

In support of premise 2, Craig offers three main lines of reasoning. According to the first, atheists often take the existence of the universe to be a brute fact, and on the grounds that if God doesn’t exist, then there is no explanation for why the universe exists. But the latter statement is logically equivalent to saying that if there is an explanation for why the universe exists, then God exists, which is just to say that premise 2 is true.

One obvious criticism of the line of reasoning above is that, whether or not atheists often think the non-existence of God entails that the existence of the universe has no explanation for why it exists, atheism itself has no such entailment. This is because atheism is merely the view that God does not exist. As such, it makes no claims whatsoever about whether the universe is necessary, contingent, or brute. Therefore, atheism is perfectly compatible with the necessary existence of the universe or its ultimate constituents.

Craig’s second line of reasoning in support of premise 2 is that since the referent of ‘the universe’ in the argument is all physical reality, the cause of the universe must, by the very nature of the case, be something that transcends physical reality, in which case it must be timeless and immaterial. But there are only two candidate types of beings that meet those conditions: abstract objects and immaterial minds or souls. But abstract objects can’t cause anything, as they are, by definition, causally impotent. Therefore, the cause of the universe is a timeless, immaterial mind or soul of immense power.

At least three criticisms can be raised against Craig’s line of reasoning above. First, the argument is a false dichotomy, as there are more candidate possibilities for the cause or explanation of the universe than the two Craig considers. For example, it might be a *nonpersonal* being that produces their effects *indeterministically*, such as one or another of the sorts described in many non-theistic religions. Given the problems with the hypothesis of a timeless personal cause of the universe (and of a cause of the universe out of nothing) discussed earlier, hypotheses concerning a nonpersonal cause would seem to have at least as much going for them as theistic hypotheses.

Second, as was pointed out in the discussion of the kalām cosmological argument in the previous section, we have at least as much intuitive and empirical evidence that contingent concrete objects have *material* causes as that they have *efficient* causes. But since the version of theism at issue in Craig’s cosmological argument entails that God created the universe out of nothing, such evidence defeats premise 2.

Finally, Craig’s line of reasoning in support of the premise assumes that the universe is a contingent being, and not an uncaused, necessary being whose existence is explained in terms of its own nature. Craig anticipates this reply. In response, he appeals to our modal intuitions in support of the claim that there could have been no universe at all, or one composed of different fundamental entities, which in turn is evidence that our universe isn't metaphysically necessary. In an attempt to avoid Hume’s criticism of the appeal to modal evidence discussed earlier, Craig appeals to Charles Taliaferro's (2001) account of justification-conferring inferences from conceivability to possibility:

If one can conceive that a state of affairs obtains, and one has carefully considered whether the state of affairs is internally consistent (self-consistent at a minimum) and consistent with what one justifiably believes, then one has *prima facie* reason to believe it is possible for the state of affairs to obtain. (407)

Therefore, if this account captures a correct principle of justified modal inference, then if one can conceive of the non-existence of the universe (or of a universe composed of different fundamental stuff) in this way – i.e., on reflection one finds no internal inconsistency in the idea, and one finds the idea to be consistent with what one justifiedly believes -- then one thereby has *prima facie* reason to think the universe's non-existence is metaphysically possible. And if that's right, one has *prima facie* reason to think the universe is not a metaphysically necessary being.

One criticism of this line of reasoning is that even if Craig has identified a correct principle of justified modal inference, it's a dialectically ineffective tool if offered to the non-theist in the context of evaluating Craig's contingency argument. To see this, consider a reflective atheist or agnostic who can conceive of God's non-existence as well. So, for example, she coherently conceives of eternal, uncreated, existentially independent matter in a godless universe. She can also conceive of a *different* god (e.g., a god that exists eternally as one distinct person, and not, say, the Trinitarian god of the sort Craig believes in). Furthermore, she finds that these conceivings remain intelligible to her after careful evaluation of their internal consistency, and of their consistency with the other things she justifiedly believes. Therefore, on Craig's recommended account of justified modal inference, she has *prima facie* reason to believe that God's non-existence, and the existence of a different god, are likewise metaphysically possible. Pending a better criterion of justified modal inference, then, Craig’s line of reasoning is a problem for the metaphysical necessity of both God and the universe if it's a problem for either one. And if that’s right, then Craig’s case for (2) is undercut.

Craig’s final line of reasoning in support of (2) is that there are good philosophical and scientific arguments that the universe had an absolute beginning. But if so, then since no necessary being can have a beginning, the universe must be a contingent being. However, such arguments were discussed in the section on the kalām argument, and it was seen that it’s not at all clear that such arguments succeed.

 Another criticism applies to both (2) and (3). For Craig's argument seems to equivocate on the meaning of 'the universe' between the former premise and the latter. For while, as was seen earlier, in (2) Craig means the term to denote all physical reality, in his discussion of (3) he means the expression to denote *our* universe, i.e., the (roughly) 13.7 billion-year-old entity that began with a Big Bang. But if this is Craig's intended referent of the term, then while (3) seems true, it's less than clear that (2) is true. To see this, suppose there is a beginningless series of contingent universes such that each such being is explained in terms of its predecessor, as follows:

. . . C --> B --> A

In this series, A is explained by B, B is explained by C, and so on. But if so, then each contingent being in the series (including our universe) is explained by another contingent being. And if that's right, then Craig’s PSR is satisfied in such a scenario without an appeal to a necessarily existent God, in which case premise (2) is undercut (Hume 1779; van Inwagen 2002).

On the other hand, if by 'the universe' Craig means 'all physical reality', then whatever the merits of (2), it's not at all clear that (3) is true. For it's epistemically possible that there is more (perhaps much more) to physical reality than our universe. So, for example, our scenario above involving a beginningless series of contingent universes is such a possibility, as is a multiverse. But if it’s unclear that *our* universe is itself a thing, it’s even less clear that *all physical reality* is a thing. For at least since the publication of Peter van Inwagen's (1995) *Material Beings,* it has become extremely unclear when – or even whether – any two or more things compose a further thing. And if that’s right, then *a fortiori*it is controversial that *all physical reality* is a thing. Thus, whether the collection of all contingent things is *itself* a thing depends on which theory of material composition is correct.

Now *universalists* about material composition say that *any* two or more things is itself a thing. At the other end of the spectrum, *nihilists* about material composition say that *no* two things compose a thing -- there are only “simples” (or part-less beings) and their aggregates. Finally, *moderates* are those who fall somewhere in between universalists and nihilists, allowing that two or more things *sometimes* compose a thing, depending on whether they stand in a certain special relation to one another. So, for example, Peter van Inwagen’s moderate account entails that two or more things compose a new thing just in case they function together in such a way their activities constitute a life (*Ibid*.). For a moderate like van Inwagen, then, there are just two sorts of things: simples and living beings.

The problem this debate poses for Craig's argument is that each position has significant problems, in addition to their own set of strengths, and it's not clear how one should weigh each of these in determining which theory is correct. (For an overview of the range of positions and their strengths and weaknesses, see Markosian 2007.)

 It therefore seems that an adequate defense of (3) would require a widely persuasive defense of a position in the material composition debate that entails that the universe (i.e., all physical reality) is itself a thing. Now universalism entails that the universe is itself a thing, while nihilism entails that it is not*,*and it's at least conceivable that a moderate position could be developed that is more plausible than universalism and nihilism, and which entails that all physical reality is itself a thing. So an adequate defense of (3) would seem to require a defense of either a universalist account of material composition or a defense of a moderate account that meets the desiderata mentioned above. Unfortunately, though, Craig has yet to offer such a defense.

Craig has anticipated these objections and has offered two main responses.  His first response is to argue that we can tell that the universe is a thing independently of an argument on behalf of a particular account of material composition. For here we can appeal to our intuitions, which indicate that the universe is, in fact, a thing -- or at least that it *was* a thing, during the earliest stages of its existence:  “ . . . the universe is obviously an existing thing (especially evident in its very early stages when its density was so extreme), possessing many unique properties such as a certain density, pressure, temperature, space-time curvature, and so on . . .” (2007, 115). In this way, Craig defends the standard reply that the collection of all contingent beings or things in the series is (or at least was) *itself* a being, and so his PSR isn't satisfied without appeal to a necessary being.

His second main response is to argue that the material composition debate can be sidestepped altogether, on the grounds that whether the universe is properly considered a thing or not, it is nonetheless the sort of entity that requires a cause or explanation: "I do not mean to pronounce here on ontological debates about what constitutes an object, but merely to claim that the universe is just as much a thing as are other familiar entities which we recognize to have causes, such as chairs, mountains, planets, and stars.” (Ibid., 130, fn. 6)

What to make of these responses? It’s plausible to think that at least in its earliest stages, *our* universe was a single existing thing, or at least the sort of entity that requires a cause or explanation in terms of one or more or other things. However, it’s not clear how this helps to answer the criticism raised above. For absent an independent argument that *our* universe is co-extensive with *all physical reality*, it’s epistemically possible that our universe is properly explained in terms of temporally prior processes involving other universes (or in any case, other natural contingent entities), and so on back *ad infinitum*. To answer the criticism above, therefore, it looks as though Craig will need to provide a reason for thinking that a collection of beings of the *latter* sort (i.e., a beginningless series of contingent universes) is itself a contingent being – or at least the sort of entity that requires a cause or explanation.

Unfortunately, the reasons we’ve looked at from his writings don’t look plausible when applied to the latter sort of case. For unlike *our*universe during its earliest stages, it’s not at all clear that a beginningless *series* of contingent universes is *itself* a thing, or even (thing or not) an entity that requires a cause or explanation. It therefore looks as though the material composition debate cannot be sidestepped so easily after all. In short, it looks as though Craig has more work to do in defending the contingency argument against the criticisms raised here. Absent such a defense, even those who accept his version of PSR are left without a good reason for thinking there is a metaphysically or factually necessary being.

## Rasmussen’s Version

Joshua Rasmussen (2011) offers an original version of the contingency argument. Stripped down to its essentials, the argument can be stated as follows:

1. Normally, things that can begin to exist can have a cause of the beginning of their existence.
2. Contingent concrete reality can begin to exist.
3. Therefore, there can be a cause of the beginning of contingent concrete reality’s existence.
4. If there can be a cause of the beginning of contingent concrete reality’s existence, then a necessary being exists.
5. Therefore, a necessary being exists.

Rasmussen’s contingency argument is a significant improvement over previous versions. Perhaps the most obvious improvement is its version of PSR. The principle is considerably more modest in what it asserts, and in ways that make it easier to support. For example, the “normally” operator in its PSR indicates that the principle is a defeasible rule of thumb that holds in ordinary circumstances, but which may admit of exceptions. As such, it can’t be refuted by simple counterexamples. To avoid the demands of a well-supported defeasible principle, one must give principled grounds for thinking that it admits of an exception in the particular case at stake (Koons 2017). Furthermore, the principle restricts the requirement for a cause to things that begin to exist. Finally, the principle only asserts that such things *can* have a cause, not that they *do* have a cause.

 What can be said on behalf of the premises? Premise 1 can be supported in the standard ways mentioned earlier.

 What about premise 2? (2) asserts that it is metaphysically possible that there is a beginning to the existence of contingent concrete reality. There are two main ways in which one might attempt to support (2). First, one might argue that it’s *actually* true that all contingent concrete reality had a beginning to their existence, and since whatever is actually the case is possibly the case, it follows that it’s *possible* that all contingent concrete particulars had a beginning to their existence. So, for example, one might appeal to the Big Bang theory, or some other line(s) of scientific evidence, to support the claim that the physical universe (actually and thus possibly) began to exist.

Another way in which one might support (2) is via modal evidence, such as an inference from imaginability or conceivability to possibility. According to this line of reasoning, our ability to imagine such a scenario – i.e., a scenario involving a beginning to the existence of all contingent concrete reality -- constitutes sufficient prima facie evidence of its metaphysical possibility. This means of supporting (2) seems suggested by Rasmussen’s remark that one can *imagine* “… a beginning to the existence of contingent bits of matter as they explode out of an initial singularity” (Ibid., 4, emphasis added.).

 At least three criticisms can be raised against (2). First, the empirical evidence in support of (2) is inadequate. For as was seen in the section on the kalām argument, the scientific evidence doesn’t support the claim that the universe had an absolute beginning.

 Second, the modal evidence for (2) is likewise inadequate. For there are two different sorts of states of affairs one might be asked to imagine here: a beginning to the existence of the concrete particulars of the *actual* world, or a beginning to the existence of those of *some other* possible world. Take the former first. The problem is that we immediately fall afoul of the problem of conceivability-possibility inferences in contexts involving *a posteriori* necessities (Kripke 1980). To see this, suppose we give our universe a Kripkean baptism: We say (pointing to the universe), "Let *that* be called 'Uni'. 'Uni' is now a rigid designator, and thus refers only to *our* universe in all the possible worlds in which it exists. Holding our universe fixed via the term ‘Uni’, we can start considering modal claims about *it*. There are two relevant possibilities for us to consider in this regard: (i) Uni has its origin in the causal activity of a necessary being, and (ii) Uni has no such origin – i.e., it is either eternal or it is a member of a beginningless series of contingent concrete particulars. Now if (i) is true, then by origin essentialism, this is an essential property of Uni, in which case there is no possible world in which Uni lacks such an origin. On the other hand, if (ii) is true, then Uni lacks an origin in the causal activity of a necessary being, and so *this* fact about Uni is essential to it, in which case there is no possible world in which it has an origin in the causal activity of a necessary being.

The moral, then, is that if one accepts origin essentialism, then one will think that facts about whether our universe has an explanation in terms of a necessary being don't vary from possible world to possible world. But if not, then we can't know whether our universe *could* have a beginning in the causal activity of a necessary being unless we know beforehand that it *in fact* had such a beginning. But of course, if one knew *that*, then the argument for a necessary being would be superfluous.

But suppose one takes instead the second sort of candidate referent of one’s act of imagining: the beginning to the existence of some *other* possible collection of concrete particulars distinct from those that actually exist. Would the imaginability of such a scenario adequately support premise (2)? Not obviously. For even if it is granted that imaginability can provide sufficient justification for many possibility claims, there is a growing trend in modal epistemology that the justification-conferring ability of such imaginings does not extend to states of affairs as remote from ordinary experience as the beginning of all concrete particulars, any more than it does to the states of affairs denoted by the modal premises in (for example) the modal ontological argument (possibly, an Anselmian being exists) and conceivability arguments for dualism (possibly, I can exist apart from my body) (Cf. Seddon 1972; van Inwagen 1998; Williamson 2007; Fischer and Leon 2016a, 2016b; Leon 2016a. For further discussion of this point, see Leon, “*A Priori*”, present volume).

Finally, some argue that all concrete objects that have an originating or sustaining efficient cause have an originating or sustaining material cause (Leon forthcoming). But if so, then there cannot be a beginning to the existence of contingent concrete reality in the sense required for a theistic conclusion, viz., one where the first contingent concrete particulars were created *ex nihilo*.

What about premise 4? The basic line of reasoning is that (setting aside impossible beings and merely possible beings, for the reasons given in the earlier discussion of a generic contingency argument) there are only two types of beings that could explain the beginning of the existence of all contingent beings: contingent beings and necessary beings. But since nothing can be causally prior to itself, contingent beings can’t cause the beginning of the existence of contingent beings. Therefore, a necessary being must be the cause of the beginning of contingent beings if such a beginning is possible. But by (2), there is at least one such possible world. Therefore, a necessary being exists in at least one possible world. But by Axiom S5 of S5 modal logic, whatever is necessary in *one* possible world is necessary in *every* possible world, including the actual world. Therefore, if a beginning of the existence of contingent concrete reality is possible, then a necessary being exists. But that is just to say that premise 4 is true.

One criticism of (4) pertains to the twofold categorization of objects assumed by the argument (Leon forthcoming). According to this categorization, all contingent beings – beings that exist in the actual world, but not in others -- are dependent upon other concrete objects for their existence. By contrast, necessary beings – beings that exist not only in the actual world, but in all possible worlds – do not depend on other beings for their existence but are explained by their own inner nature. According to this categorization of beings, then, there are only two possible types of beings:

(i) Contingent dependent beings

(ii) Necessary independent beings

However, there at least two concerns for thinking this categorization of types of beings is adequate. First, *necessary dependent beings* seem epistemically possible. So, for example, Swinburne (1994) argues that the second person of the trinity to be just such a being. On the sort of account at issue, God the Father is a necessary being, and he necessarily and eternally wills the existence of the second person of the trinity—God the Son—as an act of essence. On this account, then, God the Son exists in all possible worlds, and is thus a necessary being. However, despite this, his existence is dependent on the causal activity of at least one other being, viz., God the Father. Therefore, on this account, God the Son of Christian theology is a necessary dependent being.

 However, *contingent independent* beings seem epistemically possible as well (Hick 1961; Rowe 1998; Swinburne 1994). So, for example, Swinburne (Ibid.) argues that the first person of the trinity of Christian theology is just such a being. According to his account, there are possible worlds in which God the father doesn’t exist. However, he is an existentially independent, freestanding being who is uncaused, un-created, eternal, and indestructible at all the worlds in which he *does* exist. Typically, philosophers of religion who accept such a view of God also take all the other existing concrete beings to be contingent beings that depend for their existence upon him. It is therefore common for such philosophers to speak of God’s existence as “necessary” in the relative sense of it being necessary *for* the existence of other beings—viz., contingent dependent beings. Let us follow such philosophers in referring to contingent independent beings as *factually necessary beings*.

 In light of the preceding, the worry is that the twofold categorization of types of concrete beings is inadequate, as it seems to unduly restrict the range of candidate types of beings. The preceding considerations reveal a more neutral and inclusive way of carving up epistemically possible space that expands the types of concrete beings from two to four:

1. Contingent dependent beings
2. Contingent independent beings
3. Necessary dependent beings
4. Necessary independent beings

However, given the epistemic possibility of this broader categorization of possible types of beings, one cannot automatically infer “dependent being” from “contingent being”. For then it is epistemically possible that all contingent dependent beings are ultimately composed of contingent *independent* beings, i.e., *factually* necessary beings. So, for example, perhaps matter-energy (or whatever matter-energy is ultimately composed) is a factually necessary being. According to such a scenario, the contingent dependent beings (e.g., rocks, trees, planets, you and I, etc.) come into being when two or more contingent independent beings (i.e., factually necessary beings) are combined, and the contingent dependent beings cease to exist when they decompose into their elements. However, the fundamental elements of which contingent dependent beings are composed (i.e., the contingent independent beings/factually necessary beings) cannot pass away, for they are at least *de facto* indestructible—i.e., nothing in the actual world has what it takes to knock them out of existence. Nor can they be created, for they are eternal, existentially independent, and (assuming origin essentialism and their being uncaused at the actual world) *essentially* uncaused.

 In this scenario, then, we have an explanation for all contingent dependent beings in terms of contingent independent beings. Furthermore, we have an explanation of contingent independent beings, partly in terms of the factual necessity of their own nature (i.e., in terms of their being uncreated, eternal, and existentially independent), and partly in terms of the character of the world at which they exist (They are indestructible at least partly in virtue of there being nothing around in the world that can knock them out of existence.). But since this scenario is epistemically possible, (4) is undercut.

# Theism, Atheism, and the Continued Existence of the Universe

One can find, through the writings of Lucretius, a powerful yet simple Epicurean argument for matter's (factual or metaphysical) necessity. In simplest terms, the argument is that since matter exists, and since nothing can come from nothing (in the sense that everything with an originating or sustaining efficient cause needs an originating or sustaining material cause, respectively), matter is eternal and uncreated. The argument can be strengthened in light of the scientific evidence for the conservation laws, according to which it’s at least physically impossible that matter-energy is created or destroyed. And if there are no supernatural beings that can annihilate matter-energy, the latter is at least de facto indestructible. Therefore, given the uncreated, eternal, and de facto indestructibility of matter-energy, it follows that matter-energy (or if matter-energy isn’t fundamental, whatever matter-energy is ultimately made of) is at least a factually necessary being.

 A stronger version of Epicurus' core argument can be developed by adding an appeal to something in the neighborhood of origin essentialism. The basic line of reasoning is that if being uncreated is a property of matter-energy in the actual world, then it is an *essential* property of matter-energy, in which case matter-energy in the actual world is *essentially* uncreated.

 Yet stronger versions of the argument can go on from what is said above by appealing to a strong version of the principle of sufficient reason to argue that whatever plays the role of being eternal, essentially uncreated, and indestructible does not vary from possible world to possible world. But if not, then matter is a *metaphysically* necessary being. On any version of the argument, however, we seem to get the conclusion that the universe requires no external sustaining cause, in which case, a fortiori, God is not required to play such a role.

 The broadly Epicurean line of reasoning above can be seen as a cosmological argument of sorts, but one that concludes that matter-energy (or its ultimate constituents), and not an immaterial creator, is the uncaused cause of contingent, dependent, concrete reality. Let us therefore call any argument that deploys a material cause version of the principle *ex nihilo nihil fit* to infer the factual or metaphysical necessity of matter (or matter's ultimate constituents) an *Epicurean cosmological argument*.

 If successful, Epicurean cosmological arguments can be used to provide evidence in support of atheism over theism. For such arguments provide prima facie evidence that matter-energy (or its ultimate constituents) are factually or metaphysically necessary. But if so, then since it’s constitutive of classical theism that God is the creator of any material universe that happens to exist, then since an essentially uncreated universe exists in the actual world, and since essentially uncreated universes cannot, by definition, be created, it follows that the God of classical theism does not exist. Indeed, if, as many classical theists assert, God exists necessarily if he exists at all, then given that he doesn’t exist in the actual world, God exists in *no* possible world. In other words, God’s existence is metaphysically impossible.

# Conclusion

In this chapter, cosmological arguments that deploy causal or explanatory principles to prove God’s existence were explored, viz., the kalām cosmological argument and contingency arguments. This exploration revealed that both sorts of arguments face a number of powerful criticisms. Furthermore, it’s not at all clear that such criticisms can be successfully answered. Finally, it was seen that there are reasons to think that the universe or its ultimate constituents are factually or metaphysically necessary beings. Therefore, considerations respecting causation and sufficient reason appear to favor atheism over theism.

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