The Kalam Cosmological Argument provides no support for theism

0) Introduction:

The main result of this article is that the Kalam Cosmological Argument (KCA) does not provide any

support for theism.

The premises of the KCA are: **[0]**

P1: Everything that begins to exist has a cause.

P2: The universe began to exist.

William Lane Craig and other theists offer a number of arguments in support of the premises of the KCA, concluding that the universe has a cause. Then, they provide further arguments in support of the claim that the cause is God.

In the first section, I will show that a contradiction follows from William Lane Craig's position.

In the second section, I will prove a more general result about the incompatibility of a tensed theory of time and the timeless existence of God.

In those sections I will assume, for the sake of the argument, that timelessness is a coherent concept - even though that's far from clear to me.

The fact that it's not entirely clear to me what Craig means by "timeless" is not a problem for the arguments I will make, since they only require concepts that are clear (such as "event"), and some of what one *can* tell about what Craig means by "timeless" – assuming it's meaningful -, based on his own assertions, like the fact that if a timeless entity were to change, it would cease to be timeless.

The assumption that timelessness is coherent, however, is not required in order to establish the main results of this article.

In fact, one can consider both possibilities.

a) If timelessness is a coherent concept, then the first and second section establish some results, some of which will be used in later sections.

b) If timelessness is not a coherent concept, then one can just skip to the third section, and the rest of the arguments are not affected. **[1]**

In much of this article, I will focus on William Lane Craig's version of the KCA, given that that is the most common one.

However, I will also address several alternatives, showing that they provide no support for theism, either. While I can't entirely rule out the possibility that someone will come up with an alternative I haven't covered, I will make arguments that cover the main alternatives, and a good number of other potential ones.

Later, in the first appendix, I will analyze the meaning of "begins to exist", and in the second, I will assess whether belief in the first premise is warranted.

In the third appendix, I will assess Craig's argument against the metaphysical possibility of an actual

infinity.

In the fourth appendix, I will consider the Big Bang Model that Craig attempts to use in support of the second premise of the KCA, and some of the consequences that assuming such model to be an accurate description of the universe would actually have for Craig's arguments.

In the fifth appendix, I will take a closer look at some of the implications of the combination of a tensed theory of time and theism, and in the sixth, of presentism and theism.

I leave those issues to the appendices, as they're not required to establish the main result of this article.

Throughout this article, I will assume that metaphysical possibility, etc. - i.e., metaphysical modality - is a coherent concepts, for the sake of the argument. However, the main conclusions of this article do not depend on that; in fact if metaphysical modality is incoherent, one can just ignore all references to metaphysical modality in this article, and the conclusions are not affected - except, of course, to the extent to which some of them might refer to metaphysical modality, which can simply be ignored if there is no coherent concept. In particular, the conclusion that the Kalam Cosmological Argument provides no support for theism would remain unaffected, as are all the main conclusions in this article.

On a terminological note, I'm using the word "argument" loosely, to refer to both the formal argument, and the informal arguments used to support the premises of the formal argument. I think this is a common way of speaking, and context should prevent any ambiguity despite some notational abuse.

1) A contradiction follows from William Lane Craig's position:

William Lane Craig and J. P. Sinclair[2]:

By an "event," one means any change. Since any change takes time, there are no instantaneous events so defined. Neither could there be an infinitely slow event, since such an "event" would, in reality, be a changeless state. Therefore, any event will have a finite, nonzero duration.

William Lane Craig[3]

The reason I hold God to be timeless without the universe is that I think that an infinite regress of events is impossible, and, according to a relational theory of time, in the absence of any events time would not exist. The reason I hold God to be temporal since the beginning of the universe is that the creation of the universe brings God into a new relation, namely, co-existing with the universe, and such an extrinsic change alone (not to mention God's exercise of causal power) is sufficient for a temporal relation.

William Lane Craig[4]

> So if God is timeless, he is also unchanging, but it does not follow that He cannot change. I'd say that He can change and if He were to do so, He would cease to be timeless. And that's exactly what I think He did.

God *changes* from timeless to temporal.

Any change is an event, so let E(0) be the event "God changes from being timeless to being temporal". **[5]**.

Now, if t=0 is the beginning of time, then E(0) is an event that *ends* at t=0, since t=0 is the first time at which God is temporal.

Since every event has a finite, non-zero duration, E(0) has some duration e>0, and ends at t=0.

Then, there is a time interval of duration e prior to t=0.

That **contradicts** the hypothesis that t=0 is the beginning of time. **[6]**

2) A tensed theory of time entails that it's not the case that the actual world contains a state of affairs S at which God exists timelessly:

Let's assume, under a tensed theory of time, that the actual world contains a state of affairs S at which God exists timelessly.

At S, God does not have any knowledge of tensed facts - if he did, he would know that some events are *past* (or present), and then God's state would not be timeless; if some events are past at S, then S is past or present.

Yet, today, God knows tensed facts: he knows, for instance, that World War Two has already ended.

So, we can consider the event E(2): "God changes from not having any knowledge of tensed facts, to knowing some tensed facts".

Since E(2) is an event, it has a duration e>0, and ends at some time t1.

If there is a time t2 < t1, then God does not yet have knowledge of tensed facts. However, there are tensed facts. But that's impossible.

Therefore, there is no time earlier that t1.

But then, given that E(2) is an event of duration e > 0 that ends at t1, there is an interval of duration e that comes before t1, **contradicting** the conclusion that there is no time earlier than t1.

Someone might object that, perhaps, there are events that have a zero duration, after all, and that E(2) is one such event.

Let's suppose that the event E(2), which ends at t1, and has duration 0.

Then, since E(2) ends at t1, then its beginning is also at t1. Hence, at t1, it is not the case that God has knowledge of any tensed facts – since the event starts at t1 -, but also, at t1, God has knowledge of

some tensed facts – since the event ends at t1. But that is impossible.

So, this objection fails.

Another objection might be that E(2) does not start at t1, but at timeless state S.

However, using the word "timeless" does not allow one to get around logic: if the event E(2) ends at a time t=t1, and its duration is actually *zero*, it follows its beginning is also present at t=t1.

Finally, as a desperate move, I suppose that someone might try something like "The concept of duration doesn't apply to E(2), because E(2) is a partially timeless event".

However, a partially *timeless change* is a contradiction in terms.

So, the conclusion is that if a tensed theory of time is true, the actual world contains no state of affairs at which God exists timelessly.

Also, the previous reasoning does not depend on other assumptions about time that Craig makes, such as relationalism or an intrinsic metric, or whether presentism or a "growing-block" theory is true.

In the cases of relationalism vs. substantivalism, as well as "growing-block" vs. presentism, it's clear that they're orthogonal to the previous points, which don't mention any of the contentious issues.

As for a metric, if there is no intrinsic metric, the duration of E(2) would depend on the metric, and that's conventional.

However, the fact that E(2) has a non-zero duration would *not*: on metric relativism about time, events still have a positive, nonzero duration; the previous reasoning against E(2) having a zero duration holds.

An alternative way of seeing this is that, even on metric conventionalism, there still is a relation of *before and after*; moreover, it's *events* that determine before and after.

So, the beginning of the event E(2) would still happen *before* the end of it, and so there would be a time prior to t1 contradicting the conclusion that there is no time prior to t=t1.

Therefore, if a tensed theory of time is true, then it's not the case that the actual world contains a state of affairs at which God exists timelessly.

3) A tensed theory of time and the first premise of the KCA together entail that either there is a beginningless infinite regress of events, or God does not exist:

The first premise of the KCA states that everything that begins to exist, has a cause.

While I don't think that Craig's understanding of the terms [8] matches the usual meaning of "comes into being", or the meaning of "begins to exist", I will assume Craig's understanding of the meanings in this section.**[9]**

So, let's assume a tensed theory, and suppose that the first premise is true and God exists.

Since God does not have a cause, then he does not have a beginning.

Since the actual world contains no state of affairs at which God exists timelessly, then there is no first time t at which God exists.

So, it follows that for every time t, there is a time u < t, such that God exists at u. **[10]**

Now, at t, God has knowledge of at least one tensed fact that he does not know at u: namely, that u is past, and t is present. In other words, God's knowledge of tense facts is upgraded as time goes by, regardless of whether there is any other change in any other entity.

So, if u < t, then we can consider the event E(u,t): "God comes to know that u is past, and t is present".
[11]

Therefore, considering a sequence of times t(k), for every natural number k, in which t(k+1) < t(k), and considering that God exists at t(k) for every natural number k, we can conclude that there are infinitely many events E((k+1),k)), for every natural number k.

From the way the sequence is constructed, it's clear that it has no beginning point; moreover, since God does not begin to exist and doesn't exist timelessly, there is no t=0.

Also, in the previous arguments in this section, no assumption other than a tensed theory of time and the first premise of the KCA were made.

In particular, the result is independent of the issues time relationalism vs. substantivalism, intrinsic metric vs. metric conventionalism, and presentism vs. "growing-block" theory.

On the other hand, if there is an intrinsic metric of time and any entity with a metric-finite past begins to exist, then under these assumptions (i.e., the first premise of the KCA, plus a tensed theory of time), either there is a metric-infinite past, or God does not exist - since God did not begin to exist and doesn't exist timelessly.

4) Assuming a tensed theory of time, arguments against an infinite regress of events do not provide any support for theism in the context of the KCA:[12]

William Lane Craig provides two philosophical arguments intended to show that an infinite regress of events is metaphysically impossible, and in that way support the second premise of the KCA.

However, neither the first nor the second argument, nor any other argument against such possibility, provide any support for theism in the context of the KCA[12], and under a tensed theory of time.

In fact, given the result of section 3, on a tensed theory of time, if such an infinite regress of events is

impossible - *or just not actual* -, then either the first premise of the KCA is false, or God does not exist.

Thus, no argument intended to establish that an infinite regress of events is logically or metaphysically impossible, or even that there is no such regress in the actual world, can help a theistic case based on the KCA.

This result is general in the sense that it's not limited to Craig's particular philosophical arguments, and also in that it does not depend on assumptions such as time relationalism, an intrinsic metric of time, or presentism - since the result of section 3 does not depend on any such assumptions, either.

It still uses Craig's understanding of "begins to exist", but later I will show that alternative readings of "begis to exist" do not help a case for theism, either.

5) Assuming a tensed theory of time, modern cosmology does not support theism in the context of the KCA:[12]

In addition to the two philosophical arguments, Craig maintains that modern (scientific) cosmology supports the second premise of the KCA. However, that's not our concern in this section.
The issue is whether, if that were true, that would provide support for theism in this context**.**
If a cosmological model entails an infinite regress of events**[13]** in the universe, and a beginning, that's incompatible with a tensed theory of time, since an infinity can't be reached by successive addition from a beginning point.
If a cosmological model entails that there is only a finite regress of past events and a beginning at some time t=0, then in light of section three, a theist who supports a tensed theory of time and the first premise of the KCA ought to accept, on pain of inconsistency, that there are infinitely many events prior to the beginning of the universe.
But if so, someone might posit a multiverse, megaverse, older universe - or whatever one calls it - as a possible candidate to be the cause of the universe - i.e., as an alternative to God.
Cosmological models of the universe do not contain a claim that a beginning of what they call "the universe" is also a beginning without any previous universes, multiverses, etc., and the second premise of the KCA does not provide any support for theism if "universe" is understood in a restrictive sense, excluding older universes, multiverses, etc.
So, this alternative to support theism with scientific cosmology fails.
A possibility that we still need to consider is a scientific model with a metric-finite past but with an infinite regress of past events in the universe, and no beginning point.
Under such model, and under the main alternative understandings of "begins to exist", the universe did

not begin to exist, so that would be of no help for the KCA.

However, under Craig's understanding of "begins to exist", the universe did begin to exist in that case. There are, however, insurmountable problems for the theist defender of the KCA here. One of them is analyzed in the fifth appendix, but for now let's ignore that problem.

Even then, the fact is that, under these conditions, a metric-finite past entails a beginning of existence. Hence, if God exists, then he does not have a finite past, since he did not begin to exist.

That entails that if God exists, he existed at some time t *before* the infinitely regress of past events in the metric-finite past of the universe occurred. That means that, from t to, say, the year 2000, an infinite *progress* of events has happened, by successive addition and from a beginning point, which is impossible under a tensed theory. Hence, God does not exist.

6) Alternative readings of "begins to exist" do not support a case for theism in the context of the KCA:[12]

I will analyze two alternatives, and conclude that they provide no such support.

While I can't rule out that someone might come up with a different alternative, it seems to me they would probably include highly counterintuitive scenarios like two-coordinate time, or undifferentiated time, etc. - the usual ones seem to be covered.

If so, it's not clear that we would have any reliable intuitions about causation in such scenarios - apart from the fact that that would probably not match any common usage, either -, so it's not clear how they would derive support for the first premise.

So, it seems to me that the following two variants cover most ground:

6.1) First alternative reading:

On this reading, "B begins to exist" is understood as meaning the same as "B comes into being" - as Craig claims -, but "B comes into being" (and so, "B begins to exist") is not understood in the sense posited by Craig, but in the sense that there is an *event* "B comes into existence" - i.e., a change from a state of affairs at which B does not exist, to one at which B does exist.

On this understanding of "B begins to exist", a first moment of the universe would *not* entail the universe began to exist.

In order for the universe to begin to exist, there would have to be a change from a state at which the universe does not exist, to one at which it does.

Moreover, that state of affairs at which the universe does not exist would have to be something other than a multiverse, etc. - "universe" in the second premise has to be understood broadly, including such

multiverses.

Modern cosmology makes no claims about that kind of state and/or event, and even if an argument established that an infinite regress of events is logically or metaphysically impossible, or that at least there is no such infinite regress in the actual world, that alone would not entail that the actual world contains a state at which no universe, multiverse, etc., exists, and then an event "the universe comes into existence".

Someone could try to establish such state and event by means of other kinds of arguments - say, a contingency argument, or an argument to design -, and then draw support for theism from that.

I don't believe any such argument succeeds; however, if one such argument were successful, it would be inaccurate to say that the KCA provides any support for theism. Rather, the fact would be that the other argument provides support both for theism, and for the second premise of the KCA as well.

So, the conclusion is that this alternative reading of "begins to exist" does not help a case for theism in the context of the KCA**[12]**, either.

The results of this subsection make no special assumptions about a theory of time; so, they hold regardless of whether relationalism is true, whether time has an intrinsic metric, or even whether a tensed theory of time is true.

6.2) Second alternative reading:

Another alternative reading - which I think is the closest match of the meaning of the words; see appendix 1 for more details - would be:**[14]**

> A. x begins to exist at [t1,t2] iff there is a finite closed interval [t1,t2] such that x does not exist at any time prior to t1, and x exists at t2.
>
> B. x comes into being iff there is an *event* - that is, change - from a state of affairs at which x does not exist, to a state of affairs at which it does.

I will address the matter of whether belief in the first premise is justified in appendix 1, but for the moment let us assume, for the sake of the argument, that it is justified under this understanding of "begins to exist".

Could the KCA be used to support theism, then?

The answer is still *no:* under this understanding of "begins to exist", all the relevant results of sections three, four and five can be derived as well, by means of essentially the same reasoning, and just minor adaptations. For the sake of brevity, I will not repeat those points here.

7) No version of the KCA provides any support for theism, assuming a tensed theory of time:

The previous sections show that, under Craig's reading of "begins to exist":

> a) Craig's version of the KCA provides no support for theism.

b) Assuming a tensed theory of time, dropping assumptions like an intrinsic metric of time, time relationalism or presentism does not help a case for theism, either.

c) In general, assuming a tensed theory of time, arguments against the logical and/or the metaphysical possibility of an infinite regress of events - or even against the existence of such regress in the actual world - would not help the theist's case, either.

d) Arguments allegedly based on science do not provide support for theism in this context, either.

That seems to leave no possibilities left, at least assuming a tensed theory of time, and Craig's reading of "begins to exist".

Moreover, assuming a tensed theory of time, section 6 shows that two alternative readings of the first premise would not help a case for theism, either: Those readings seem to cover most possible non-unusual readings.

So, the previous sections show that, on a tensed theory of time, the KCA provides no support for theism.

At this point, there appears to be no options left to consider, if one accepts Craig's assertion that a tensed theory of time is a requisite for the KCA [15].

Still, one need not agree with Craig on that, so let's assess whether someone could assume a tenseless theory of time, and then use the KCA to support theism.

8) No version of the KCA provides any support for theism, assuming a tenseless theory of time:

On a tenseless theory, and going by Craig's understanding of "begins to exist", then the second premise of the KCA is not true.

As a matter of fact, on a tenseless theory of time, *nothing* begins to exist in the sense of "begins to exist" proposed by Craig, since there are no tensed facts.

On the other hand, under the first alternative reading of the first premise considered above, things can begin to exist on a tenseless theory of time.

However, under that reading, the KCA provides no support for theism, even under a tenseless theory of time.

So, let's consider an argument based on the second alternative reading of "begins to exist", assuming a tenseless theory of time.

Would a variant of the KCA based on that reading provide any support for theism?

I will argue in the first appendix that belief in the first premise is not justified, anyway, but that's another matter.

Here, the question is whether - granting both a tenseless theory and the first premise under the second

[alternative reading](#) -, the KCA provides support for theism.

It seems not:

On a tenseless theory of time, it appears that the past, the present and the future are ontologically equivalent.

So, it seems then that any successful argument for the metaphysical (or logical) necessity of a beginning of time could be adapted to be an argument for the metaphysical (or logical) necessity of an *end of time*.

Hence, a theist attempting this line of argumentation ought to accept that, *necessarily*, if God exists, he will eventually become still and never act again.

Of course, if a theist also holds that God exists necessarily, she ought to accept that, necessarily, God will eventually become still and never act again.

That necessity could be metaphysical or logical depending on the case, but given usual descriptions of God, it's hard to see a way around that in either case, even if the precise moment at which the end of time will happen is still a contingent matter.

In addition to that problem, it seems clear that there is no contradiction involved in the claim of an infinite future progress of events.

Also, there appears to be no intuitive support for the idea that the future is closed in that way - in fact, that's highly counterintuitive -, so attempts to use intuitions to show metaphysical impossibility would fail just for that reason, independently of other considerations about such arguments.

Perhaps, an alternative would be for a theist to argue for the claim that even if a beginning of time may not be logically or metaphysically necessary, it is at least factual.

However, that kind of argument would have to be empirical, and there is no support in present-day cosmology for such a claim: even if a scientific model posited no infinite regress of events the universe *in a very narrow sense of the word "universe"*, they would probably make no claim about an entire series of past events, which might comprise an older universe, multiverse, etc.

9) Conclusion:

The arguments made above show that the KCA provides no support for theism, at least if either a tensed or a tenseless theory of time is true.

The results may not cover all interpretations of the premises, or perhaps uncommon theories of time.

However, they are quite general, covering not only William Lane Craig's version of the Kalam Cosmological Argument, but a number of alternatives as well, including, it seems to me, all the main possibilities in current philosophy.

10) Appendix 1: The meaning of "begins to exist":

Let's compare Craig's hypothesis about the meanings of "begins to exist" and "comes into being", with the second alternative considered in section six (let's call this alternative hypothesis "hypothesis 2") [14], and test the two hypothesis to see which one is closer to matching the meaning of the words.

> A. x begins to exist at [t1,t2] iff there is a finite closed interval [t1,t2] such that x does not exist at any time prior to t1, and x exists at t2.
>
> B. x comes into being iff there is an *event* - that is, change - from a state of affairs at which x does not exist, to a state of affairs at which it does. .

Under a tensed theory of time, everyday examples will not help us test one vs. the other, since both hypotheses yield the same results.

However, under a tenseless theory of time, the difference is striking.

Let's assume a tenseless theory, and let's consider, for instance, Napoleon.

It seems clear that, even if the past, present and future are ontologically equivalent, there is a time at which Napoleon did not exist, and a later time at which he did. So, it seems to me that he *came into being*, and *began to exist.* That's in line with hypothesis 2.

On the other hand, under Craig's hypothesis, assuming a tenseless theory of time, *nothing* begins to exist, and nothing comes into being. In particular, Napoleon neither came into being, nor began to exist. But that seems clearly wrong.

In fact, the questions of whether a tensed theory is true and whether Napoleon came into being, or began to exist, appear to be orthogonal.

It seems rather odd that Craig would include tense in the definition of "begins to exist", but he argues that, under a tenseless theory of time, a universe with a first event did not begin to exist just as a meter stick does not begin to exist just because it has a first centimeter.[16]

It seems the argument fails, though:

While a meter stick does not *begin to exist* in virtue of having a first *centimeter*, that's not relevant, since having a first centimeter is a *spatial*, not a *temporal* claim, while "begins to exist" - at least, in this context - is clearly about time, not space.

In fact, the stick in question *does* have a beginning *in space* because it has a first centimeter, and similarly, even if a tenseless theory of time is true, the stick does have a beginning *in time* as long as there is, say, a *first year at which it exists.*

It is true that, in order for us to say a year is *first*, we need to pick an order in time - from past to future, not the other way around, but that direction is actually implicitly built-in hypothesis 2, and in our language about time.

Also, to say that the stick has a spatial beginning require that one picks a direction in space to say which centimeter is first - in this case, explicitly or by context.

A difference is that, in the case of space, one needs to pick the direction explicitly or by context, whereas in the case of time, it's built in the meaning of the words, but that does not appear to be relevant.

Since to say that the stick begins to exist - in the sense that's relevant in the context of the KCA, at least - is the same as to say that the stick has a temporal beginning, or a beginning in time, then it follows that the stick does begin to exist, even on a tenseless theory of time.

Then, it seems to me that hypothesis 2 gives the right result, whereas Craig's hypothesis does not.

Let's consider a different scenario; scenario S1:

> Let us suppose that there is a t=0, and an entity B that exists at t=0. Let us suppose that there is no time earlier than t=0. Let's further suppose that there is no state of the world at which B does not exist, and the actual world does not contain any timeless states of affairs whatsoever, or any kind of two-coordinates time, or undifferentiated time, or any such temporally counterintuitive state of affairs[17].

Does B begin to exist?

Does B come into being?

According to Craig's hypothesis, if a tensed theory is time is true, then B begins to exist and comes into being, whereas if a tenseless theory of time is true, then B neither begins to exist nor comes into being. On the other hand, according to hypothesis 2, regardless of the tensed vs. tenseless issue, B does begin to exist, but does not come into being.

Readers will use their own intuitive grasp of the words, of course, but mine tells me that hypothesis 2 gives the right result again: to *come into* being seems to entail that there is a state at which the entity in question does not exist, followed by one in which it does, whereas to *begin* to exist seems to indicate an initial time or moment of existence.

I don't know whether hypothesis 2 is entirely accurate, but it does seem to be much closer to capturing the meaning of the words than Craig's hypothesis is.

Another alternative (say, hypothesis 3) would be just like hypothesis 2 but allowing open and semi-open finite intervals.

Hypotheses 2 and 3 given the same verdict in daily cases, under either a tensed or a tenseless theory of time, but there would be a difference in, say open models of the universe with a metric-finite past, assuming an intrinsic metric.

In any case, both alternatives seem to fare much better than Craig's hypothesis, at least in all the cases

tested above - in which both alternatives 2 and 3 seem to give the right results.

Conclusion:

Based on the previous analysis, it seems that Craig's analysis of the meaning of the terms "begins to exist" and "comes into being", is mistaken.

Alternatives such as hypotheses 2 and 3 seem to resemble the usual meaning more closely.

11) Appendix 2: Is belief in the first premise warranted?

Let's turn now to the question of whether there are good grounds for believing that everything that begins to exist has a cause.

William Lane Craig maintains that the first premise, namely the claim that everything that begins to exist has a cause, is intuitively clear. Moreover, he claims that there is empirical confirmation of that. He tries to back up that claim by appealing to our intuitions about causation - what he calls "metaphysical" intuitions -, and by bringing up scenarios that purportedly show the absurdity of denying it, such as, say, horses popping into existence uncaused. **[18]**

However, all of those scenarios would also be a case of denying *other* candidates to being intuitive principles, such as the claim that every *event* of the form "B comes into existence" - or, more generally, every *event* - has a cause.

In other words, someone may not accept that everything that begins to exist has a cause (they don't need to actually deny that everything that begins has a cause, but simply not affirm it), while accepting that, for instance, every *event* has a cause; that's also debatable, but the point is that it's an alternative that avoids any of the issues raised by Craig.

In fact, none of the scenarios that Craig brings up - like a horse coming into existence uncaused - would present any problem for that position, since that position holds, of course, that those *events* would not happen without a cause.

In any case, a question is: would belief that everything that begins to exist has a cause be warranted? Another one is: is lack of belief in that claim, unreasonable?

Using Craig's definition of "begins to exist", the issue of "timelessness" alone is a serious problem: without a good understanding of what that means, plus good reasons to adopt it, there appears to be no justification for believing that kind of principle. In other words, we *ought not to believe it.*

Even if we leave the issue of timelessness aside, there appears to be no good reason, either intuitive or empirical, to believe that everything that begins to exist has a cause, either in the sense of hypothesis 2 , or hypothesis 3, or Craig's hypothesis about the meaning - minus the "timeless" condition.

Even if one leaves "begins to exist" undefined and tries to use just an intuitive understanding, the result appears to be the same.

Let's see why:

While it's true that, *in daily life*, whatever begins to exist seems to have causes, it's also the case that every event seems to have causes, and what seems intuitively clear is, precisely, that every event - every *change* - has a cause.

So, the question is: Do we have sufficient reasons for believing not only that every event has a cause, but that everything that begins to exist *even when no event is involved,* has a cause?

In other words, do we have sufficient reasons for believing that every X that begins to exist has a cause, even when there is no *change* from a state of affairs at which the X in question does not exist, to a state at which it does?

In order to assess our intuitions on the matter, we would need to consider unusual scenarios, such as S1.

I have to say that I don't have any general intuition that, in such scenario, B would have a cause.

In fact, in some cases, my intuitions tell me otherwise:

For instance, in S1, let us stipulate that B is the universe, or a multiverse, and there is nothing else that exists. Or let's stipulate that B is an omnipotent, omniscient being, and let's stipulate that, at t=0, there are no other beings.

In those cases, intuitively, I'd say that B begins to exist but probably does not have a cause. At least, I have no intuition that it does have a cause.

Someone might protest that I'm constructing scenarios that would be exceptions to the principle, but the scenarios in question are counterintuitive and we shouldn't use them as a guide.

However, in order to construct scenarios in which one could test whether one has an intuition that every X that begins to exist has a cause, independently of whether there is an event "X comes into existence", it seems to me one needs precisely to separate beginning of existence from events - which does not happen in ordinary cases.

Otherwise, it could be that what's intuitive to us is just the principle that every event - that is, any *change* - has a cause, and the correlation with a beginning arises because it just happens to be the case than, in daily life, things that begin to exist are just those X for which there is an event "X comes into existence" - i.e., a change from a state of affairs at which X does not exist, to one at which it does.

Of course, a problem may be the reliability of our intuitions in such cases, but that's no help for someone claiming that the principle ought to be accepted, or even that it's rational to do so.

I suppose that other people may have different intuitions about the previous scenarios, but in order to accept something like "everything that begins to exist, has a cause" as intuitive, one would not only have to lack an intuition that, in some scenarios, some beings that begin to exist would probably *not*

have causes: one would have to have an intuition that those beings *would* have causes.

A possible alternative line of arguing, in support of claim that everything that begins to exist has a cause, would be to say that if X begins to exist, then it's clear - either intuitively or empirically - that there is an *event* "X comes into being" - i.e., a change from a state of affairs at which X does not exist, to one at which it does.

However, there is a serious problem for that line of argumentation: *time*.

Clearly, there is no event "time comes into existence", since the beginning of that event would exist *before* time begins, which is impossible.

On the other hand, it's not intuitively clear that time did not have a beginning. At least, after reflection, I don't have any clear intuitions on the matter: - actually, I find *both* a beginning of time and a time without beginning quite odd!

As for empirical evidence, there is no conclusive evidence that time did not have a beginning - I'm not even sure the matter will ever be settled, but in any case, it hasn't been so settled.

So, it seems that we're not justified in believing that every X that begins to exist comes from an event "X begins to exist", at least under any of the interpretations of "begins to exist" considered in the [first appendix.](#)

On the other hand, that every event has a cause seems intuitively plausible, though still debatable, so under an understanding of "begins to exist" like that of the [first alternative interpretation considered earlier,](#) there might be some justification for believing that everything that begins to exist has a cause. That's not the same as establishing that one ought to believe it, though, and in any case, [as explained before](#), that interpretation is of no use for a defender of the KCA.

Finally, someone might raise the issue that cosmologists who worked on the Big Bang model did not come to the conclusion that they had resolved all the mysteries and moved on, instead of looking for causes.

However, it's clear that the model does *not* provide an understanding of the universe beyond a certain point, where effects from forces other than gravity should be taken into consideration.

In other words, it makes perfect sense that scientists would try to figure out the causes of a very hot, dense, and small universe that existed about 13.7 billion years: indeed, we don't know the causes; a theory that only considers gravity but no other forces is inadequate to provide a good understanding of it.

But those scientists seem to be asking the question: "where did that hot, dense, really small universe come from?" (or similar ones), on the understanding that *before* the first state of the universe that can be analyzed with present-day models, there were other states that are beyond current scientific

understanding - states that later *changed* into a state that is within current scientific understanding. In other words, they apparently were/are looking for the causes of an *event,* as well as for a model of how the universe works under conditions not covered by present-day models.**[19]**

Conclusion:

Based on the previous analysis, and even leaving aside potential challenges from some interpretations of Quantum Mechanics, there appear to be no good reasons to accept the first premise of the Kalam Cosmological Argument, under any more or less intuitive understanding of "begin to exist" that would be of use for a defender of the Kalam Cosmological Argument.

12) Appendix 3: Do Craig's arguments show that an actual infinity is metaphysically impossible?

One of the arguments that Craig gives in support of the second premise of the Kalam Cosmological Argument intends to establish that an actual infinity is metaphysically impossible - though there is no claim of logical impossibility.

Let's assess Craig's arguments:

> **William Lane Craig and J.P Sinclair[20]:**
>
> But now let us imagine a hotel with an infinite number of rooms and suppose once more that all the rooms are occupied. There is not a single vacant room throughout the entire infinite hotel. Now suppose a new guest shows up, asking for a room. "But of course!" says the proprietor, and he immediately shifts the person in room #1 into room #2, the person in room #2 into room #3, the person in room #3 into room #4, and so on out to infinity. As a result of these room changes, room #1 now becomes vacant, and the new guest gratefully checks in. But remember, before he arrived, all the rooms were occupied! Equally curious, there are now no more persons in the hotel than there were before: the number is just infinite. But how can this be? The proprietor just added the new guest's name to the register and gave him his keys – how can there not be one more person in the hotel than before?

Such questions are the result of a confusion about what it means for there to be "more persons" in the hotel.

For instance, if by "more persons" one means "all the persons who were there remain, and there is at least one who wasn't there, but now is there", or if one means that the set of guests after the new arrival (let's call it "**GF1**") minus the set of guests before the new arrival (let's call it "**GI**"), has a greater cardinality than **GI** minus **GF1** **[21],** then there is one more person after the new guest checks in.

On the other hand, the set of guests in the beginning **GI** has the same cardinality as the set of guests after a new guest arrives, **GF1**, so if by "more persons" one means that the cardinality of **GF1** is greater

than that of **G1**, then there are no more persons.

That the sets have the same cardinality only means that there is a bijection between the two sets, which is not only not counterintuitive, but is actually *obvious*: it's the same as comparing the set of natural numbers N (i.e., $\{1, 2, 3, \ldots\}$), with the set of non-negative integers N_0 (i.e., $\{0, 1, 2, 3,\ldots\}$).

So, in the usual mathematical sense of cardinality, N and N_0 have the same number of elements, but that only means there is a bijection between the two (which is obvious, since we can define $F: N_0 \to N$, $F(k) = (k+1)$).

On the other hand, there is one number in N_0 that is not in N (namely, 0), so in that sense, there is one more element – also, the cardinality of N_0 minus N is 1, which is greater than the cardinality of N minus N_0, which is zero.

So, understanding "more elements" in either of those senses, it is the case that N_0 has more elements than N (one more, to be precise).

The case of the hotel is no different in that regard; making the example concrete does not change the fact that any puzzlement arises from a confusion about what's meant by "same number":

In the same sense of "same number" in which N_0 has the same number of elements as N - namely, in the sense that there is a bijection between the two-, the sets of guests after and before the arrival have the same number of guests.

And in the two senses I mentioned above in which N_0 has one more element than N, there is one more guest after the new guest arrived.

If the example shows something counterintuitive, that's not the actual infinity, but the infinite *hotel* - which of course we could never build - the practical impossibility of communicating with infinitely many people at once, etc.

But that does not appear to be a problem for, say, infinitely many galaxies, or infinitely many universes (in some sense of "universe"), infinitely many particles, etc.

If one explains what one means by "more", then there is no problem whatsoever, regardless of whether there is a unique usual meaning of "more", according to which there are (or there aren't) more persons after the arrival.

I actually doubt that only one common meaning of "more" exists, but that is beside the point. The point is that there simply appears to be nothing remotely puzzling here, but merely a confusion that arises from some ambiguity in what is meant by "more".

The rest of the arguments against an actual infinity are the result of that confusion as well.

For instance, Craig expresses some sort of amazement at the alleged strangeness that even if (denumerably) *infinitely* many more guests arrive, the number of guests is the same as before.**[20]**

As in the previous case, there is no puzzlement at all if what's meant be "same number" is explained: The set of guests after the infinitely many (more precisely, $\aleph_0$) new guests arrive (let's call it $\mathbf{GF\aleph_0}$) has all the members of the initial set of guests **GI**, and it also has infinitely many guests that **GI** does not have.

Also, $\mathbf{GF\aleph_0}$ minus **GI** has infinitely many guests or members, whereas **GI** minus $\mathbf{GF\aleph_0}$ has zero.

On the other hand, there is a bijection between **GI** and $\mathbf{GF\aleph_0}$.

All that is clear, and there is no puzzlement. The question "are there any more guests?" would not be problematic once one explains what's meant by "more".

It would be somewhat ambiguous to say that there would never be a single person more in the hotel than before, as Craig does**[20]**, but once one clarifies what one is saying, the puzzlement should disappear: in the usual mathematical sense of cardinality, there are no more persons, which is to say nothing but that there is a bijection between the set of guests before the new infinite ones arrive, and the set of guests after they do arrive.

In the two other senses I mentioned above, there are more people after the arrival.

All of this is straightforward, so there should be no need to delve any further into it.

Conclusion:

The argument against an actual infinity can provide no good reason to reach any conclusion about whether actual infinities exist, or whether or not they're "metaphysically possible", since it is just the result of terminological confusion.

13) Appendix 4: The Standard Hot Big Bang Model, a tensed theory of time, and the KCA:

Craig claims that what he calls the "Standard Hot Big Bang Model" (SHBBM), supports the second premise of the KC. He also claims that a tensed theory of time is true.

> **W. L. Craig and J. P. Sinclair[22]**
>
> The standard Hot Big Bang model, as the Friedmann–Lemaître model came to be called**, t**hus describes a universe which is not eternal in the past, but which came into being a finite time ago. Moreover – and this deserves underscoring – the origin it posits is an absolute origin *ex nihilo*. For not only all matter and energy but also space and time themselves come into being at the initial cosmological singularity. As Barrow and Tipler emphasize, "At this singularity, space and time came into

existence; literally nothing existed before the singularity, so, if the Universe originated at such a singularity, we would truly have a creation *ex nihilo*" (Barrow and Tipler 1986, p. 442). On such a model the universe originates *ex nihilo* in the sense that it is false that something existed prior to the singularity.

There is no good reason to think that we can assume the model to be an accurate description of the universe beyond a point at which there was a hot, dense and very small universe - but *not* - a singularity.

Moreover, there is no need to add a singular point, even if one keeps extrapolating backwards in time, nor a way of getting out of the singularity, so to speak.

However, that's not our concern here, so let all that pass, and let's assume, for the sake of the argument, that the model Craig offers in support of his arguments is indeed an accurate portrayal of the early universe.

Then, under such assumption:

1) There is a time t(1) in the past, such that the average density d(1) of the universe at t(1) was greater than the density at a time in the year 2000 (any time t(0) will do), d(0), so there is a change from a universe with a density d(1) to a universe with a density d(0).

Thus, the model entails that there is at least one event, E(1).

2) Let's suppose the model entails there are at least k events, E(1), E(2), E(k), where E(j) starts at time t(j), and 0 < t(j+1) < t(j), for all j between 1 and k.

The average density of the universe from the moment E(k) began to the present day, is bounded, and so is less than some number d(M).

Since the model predicts that the density *tends* to infinity as we move back in time, there is some time t(k+1)), such that 0 < t(k+1) < t(k), and such that d((k+1)) > d(M).

So, there is a change from a state of the universe with density d((k+1)) to a state with density d(k), and that's the event E((k+1)), which starts at t(k+1).

Thus, on this model, there *is an infinite temporal regress of events,* which Craig claims is impossible. Hence, all the philosophical arguments provided by Craig fail to support the second premise - since they both try to show that infinite temporal regress of events is not possible.

Moreover, given that Craig *assumes a time t=0, a beginning at a singularity,* we can then conclude, on the assumption of this model, that the universe contains an infinite regress of events with a beginning point.

Even if one leaves aside the fact that the model offers no way to get out of the singularity, the fact is that if a tensed theory of time were true, it would be impossible to transverse infinitely many events

from a beginning point, and by successive addition.

Hence, this model, endorsed by Craig, *entails that no tensed theory of time is true,* contradicting Craig's claim that a tensed theory of time is true.

Moreover, the model also entails an actual infinity, so it follows that Craig's "Hilbert Hotel" arguments have a false conclusion.

But what if we drop the assumption that we can extrapolate arbitrarily back in time, and actually take into consideration the fact that we're not justified in applying General Relativity to a very small universe, where forces other than gravity should be taken into consideration?

In that case, all we could say is that the universe was in a hot, small, dense state S1 at some time t over 13 billion years ago, which seems to have came *after* a state S2 whose description is beyond present-day understanding of physics.

So, the state S2, and the *event* E(S2,S1): = "The universe changes from its condition at S2 to its condition at S1" are both beyond the present-day understanding of physics. And *that is it*: There is no suggestion of a beginning of time, or of the universe, or anything of the sort. There is clearly a beginning *of the states of the universe whose description is within the present-day understanding of physics.* Of course, that fact provides no support whatsoever for the second premise of the Kalam Cosmological Argument.

14) Appendix 5: Theism under a tensed theory of time:

In this appendix, I will analyze some of the consequences of theism plus a tensed theory of time, at least in usual conditions: in other words, I won't address issues such as two-coordinate time and the like, as it's not clear at all how a tensed theory of time would work under such conditions.

Still, the following covers theories such as presentism and "growing-block" theories.

Let's assume that God exists, and a tensed theory of time is true.

Then, as established in <u>section two,</u> the actual world contains no state of affairs at which God exists timelessly.

Further, as explained in <u>section three</u>, for every times u and t such that u < t, there is an event "God comes to know that t is present, and u is past".

Hence, since any finite closed interval [t1,t2] contains only finitely many events, it follows it contains only finitely many points in time; time is discreet, not continuous. Every instant in time has a previous one, and a next one.

Let's take an arbitrary point in time, say some t(0) in the year 2000, as a base.

Prior times are denoted t(-k), and later times are denoted t(k), where k is a natural number, and t(k+1) is the instant that immediately follows t(k), etc.

It seems, then, that it would make no sense to say that an interval [t(k), t(k+1)] lasts for longer than another one [t(n),t(n+1)], or [t(-(m+1)),t(-m)]: If one lasted for *longer* than the other, that would indicate that more *time* passes in one than in the other, but in both cases, the distance between the two is just from one point in time to the next.

Similarly, as long as we use the word "year" to refer to an time interval of a certain length, and we keep that length fixed, it would make no sense to say that a year lasted longer than another one, or that a year contains more points in time than another year, since each year would contain the same number of instants, or points in time.

Hence, every year contains a certain finite fixed number of points in time n(year); similarly, there is an n(second), etc.

So, if there are infinitely many past events, there are infinitely many past *years*.

On the other hand, if there are finitely many past events, then there are finitely many past years, and finitely many past instants in time, with some first instant t(-M) (which I've denoted t=0 elsewhere in the article, but I'm keeping the notation of this appendix here).

So, if there are finitely many past events, then God exists at some time t(-M), and that is the first point in time at which God exists - indeed, it's the first point in time.

Under Craig's interpretation of "begins to exist", or under hypothesis 2 or 3, that would entail that God began to exist, and so not everything that begins to exist has a cause.

Under another reading of "begins to exist", God did not begin to exist, but neither did time.

15) Appendix 6: Theism and presentism:[23]

In the previous appendix, some of the consequences of the combination of theism and a tensed theory of time were established.

In this appendix, I will focus on the specific kind of tensed theory of time that William Lane Craig appears to prefer, namely presentism - which Craig calls a "pure A-Theory of time"[24]

As Craig explains, given such a theory, only the present exists.[24]

Also, as Craig also points out[25], on an A-Theory of time, the future cannot have a causal influence over the present, since in that case, the cause of the effect would not exist when the effect is present. Of course, if the tensed theory is presentism, the past is also non-existent in the present.

So, using exactly the same reasoning as Craig does, we can conclude that, on presentism, the past cannot have a causal influence on the present.

Therefore, ***all causation is simultaneous***.

As we've already established, on theism and a tensed theory - and presentism is a tensed theory -, time is discreet: for every moment t(n), there is a next one t(n+1), and no instant of time in between.

Let's see some of the consequences of this:

For instance, suppose Joe plants a bomb with a timer, and leaves.

Later, the bomb explodes as planned, and many people die violently, others lose some of their limbs, etc.

Given that Joe's action happened *before* those people were killed, it seems that Joe's action is not a cause of their deaths. Moreover, the explosion of the bomb itself happened at least a fraction of a second before anyone was killed, and thus did not cause anyone's death, or maiming, or suffering. Since no action of Joe's simultaneous to their deaths was the cause, either – let's say Joe was asleep when the bomb went off and for several hours later, or just dead -, it seems no action of Joe's caused their deaths.

In other words, Joe, the bomber, did not cause anyone's death or suffering, even if his bomb, just as he planned, killed many people, and made many others suffer...well, actually, the bomb did not cause anyone's death or suffering, either. They just happened to die, lose legs, etc., after the bomb went off. If Joe shoots a person and the person dies after the bullet pierces his skull, Joe's actions did not kill his victim, either, because the event "Joe pulls the trigger" happened before the victim was even hit by the bullet.

That seems absurd.

Using similar arguments, it seems humans wouldn't be able to cause anything from a distance, at least, since a purported cause of an event would be an event that happened before the "effect" did, but on presentism, past events are literally nonexistent, and so the "effect" would be in fact uncaused – so, the purported cause is not a cause at all.

However, it gets even worse:

I want to, say, write a letter, I cannot cause it, because anything I do in order to achieve that goal will happen earlier (even if by a fraction of a second) than the writing of the letter.

In fact, on presentism, one can't even cause one's own hands to move, since one's decision is prior to their moving.

When one moves a hand, the movement is not simultaneous to the decision, but it happens later: after the decision is made, some events happen across one's head, neck, etc., and then the hand moves - in fact, if, say, one's relevant nerves were severed, one's decision to move a hand would not be effective. But on presentism, all causation is simultaneous, so we cannot cause our own hands to move.

Simply put, any mental state at some time t(n), or any mental event that ends at t(n) cannot have any effects at t(n+1), the very next instant in time, since it does not exist at t(n+1).

However, a mental event cannot cause the movement of the hand without a series of later events - in

the arm, for instance -, which may be fast - a fraction of a second -, but not as fast as the time from t(n) to t(n+1) - which we could call a *temporal unit*, and which is shorter than, say, a nanosecond.

The result is that we can't even cause the movement of our hands - or eyes, etc.

Modern physics suggests that some of our intuitions about how the world is, including intuitions about causation, do not appear to be reliable in some contexts that are very different from daily life, such as the subatomic realm.[26]

However, if presentism is true, our intuitions about cause and effect are not only mistaken in realms like the subatomic, etc., but also in our daily life.

Perhaps, someone could argue that continuous time prevents that. I don't see how, but in any case, on presentism plus theism, that is not possible.

Alternatively, someone could posit God as the cause that is capable of acting instantaneously, and somehow that would enable humans to act.

However, that does not help: humans still wouldn't be able to cause anything in the future because of the reasons explained above:

If, say, God makes Joe's bomb explode, causes directly and in real time the pain in the mind of the surviving victims, etc., it remains the case that *Joe didn't cause it; God did.*

Joe can't cause that pain even indirectly: it can't be that Joe causes God to know that he (Joe) wills the bomb to explode, and then God completes the causal chain.

That's impossible as well, because even if Joe somehow can cause God to know what he (i.e., Joe) wants at time t(n), God's knowledge and intentions at t(n) *cannot cause God's knowledge and intentions at t(n+1), or at any later time.*

So, there is no room for any causal chain that lasts through time: Joe can't cause death or pain on his victims, I can't bring about this article, and essentially humans are powerless to cause anything at all - and so is everything and everyone else in our daily lives, so is any lifeform in the universe, etc.

Conclusion:

Presentism plus theism - and probably just presentism - has absurd implications; they may not be contradictory, but it amounts to dismissing some of our most clear intuitions, with no apparent justification.

16) Notes and references:

[0]

Source: William Lane Craig and J.P. Sinclair, "The Kalam Cosmological Argument", in "The BlackWell Companion to Natural Theology", Edited by William Lane Craig and J. P. Moreland, ©

2009 Blackwell Publishing Ltd. ISBN: 978-1-405-17657-6

Page 102.

[1]

With the difference that any statements like "the actual world contains no state of affairs S at which God exists timelessly" should be simply ignored if "timeless" is meaningless. But the main result is the same.

[2]

Source: William Lane Craig and J.P. Sinclair, "The Kalam Cosmological Argument", in "The BlackWell Companion to Natural Theology", Edited by William Lane Craig and J. P. Moreland, © 2009 Blackwell Publishing Ltd. ISBN: 978-1-405-17657-6

Page 106.

[3]

Source: http://www.reasonablefaith.org/site/News2?page=NewsArticle&id=5673&printer_friendly=1

[4]

Source: http://www.reasonablefaith.org/site/News2?page=NewsArticle&id=5971

[5]

The choice of the change in God from timelessness to temporalness as the event is only one possibility. There are alternatives. For instance, let say the actual world contains a state of affairs S at which God exists timelessly.

Then, at S, time does not exist, so it's not the case that God knows that time exists. On the other hand, at t=0, God knows that time exists.

Let E(1) be the event "God comes to know that time exists"

Another alternative would be:

At S, there are no tensed facts. So, it's not the case that God knows any tensed facts. At t=0, there are tensed facts, so God knows tensed facts. Thus, God's mind changed - he came to know tensed facts -, and one can consider the event E(2) "God changes from not knowing any tensed facts at S, to knowing some tensed facts at t=0".

[6]

On his website, Craig[7] says that it's not clear to him that creation itself is an event which determines a before and an after.

However, that E(0) – or, for that matter, E(1), or E(2) [5]– is an event follows straightforwardly from the definition of "event": an event is any change, and Craig himself says that God changed.

Also, Craig claims that any event takes time. A contradiction follows.

But in any case, let us suppose the the event E(2) "God changes from not knowing any tensed facts at S, to knowing some tensed facts at t=0" has zero duration - contradicting Craig's claim that any event has a non-zero, finite duration.

So, at the beginning of the event, it is not the case that God knows any tensed facts - since the event is precisely the change in God from not knowing any tensed facts, to knowing some tensed facts.

On the other hand, at the end of the event, God does know some tensed facts.

Now, since the event ends at t=0 and its duration is *zero*, it begins also at t=0.

Thus, at t=0, God does not know any tensed facts, and at t=0, God knows some tensed facts. But that's impossible.

Someone might object that E(2) does not begin at t=0, but at the "timeless state" S.

However, using the word "timeless" is not a license to circumvent logic: if the event ends at t=0, and its duration is literally *zero*, then its beginning is also present at t=0 as well.

[7]

http://www.reasonablefaith.org/site/PageServer?pagename=q_and_a

[8]

> **W. L. Craig and J. P. Sinclair**
>
> In affirming that things which begin to exist need a cause, the *mutakallim* assumes the following understanding of that notion, where "x" ranges over any entity and "t" ranges over times, whether instants or moments of nonzero finite duration:
>
> A. x begins to exist at t iff x comes into being at t.
> B. x comes into being at t iff (i) x exists at t, and the actual world includes no state of affairs in which x exists timelessly, (ii) t is either the first time at which x exists or is separated from any $t' < t$ at which x existed by an interval during which x does not exist, and (iii) x's existing at t is a tensed fact.

Source: William Lane Craig and J.P. Sinclair, "The Kalam Cosmological Argument", in "The Blackwell Companion to Natural Theology", Edited by William lane Craig and J. P. Moreland; pages 184, 185.

[9]

Later, I will consider alternative readings of "begins to exist", showing that alternative versions of the KCA based on them provide no support for theism, either.

Also, I will analyze the meaning of "begins to exist" in more detail in the first appendix.

[10]

Someone might not accept the claim that, on a tensed theory of time, the fact of temporal becoming alone - i.e., the passage of time - counts as an event.

According to such a view, even if there were infinitely many times t(n+1) < t(n), for all n, without any change in any entity, that would not be enough to establish that there are infinitely many past events.

I don't agree with that idea, but there is no need to settle that matter here, since in this case, by assumption, *God* exists at t and at u < t, and that entails an event, as I show in <u>section three</u>.

[11]

A consequence that might be of interest is the following one:

Since, for every two times u < t, one can consider the event E(u,t): "God comes to know that u is past, and t is present", it follows that for every two points in time, there is a corresponding event.

Since, on a tensed theory, there can't be infinitely many events between two given points, then it follows that there can't be infinitely many points in time between two given points in time.

In other words, on a tensed theory of time, there cannot be infinitely many events, one after the other, in a closed temporal interval [t1,t2].

Thus, given the God assumption, such an interval can't contain infinitely many instants, either.

It follows that time is discrete, not continuous.

[12]

By "in the context of the KCA" I mean that I make no claim here as to whether something provides support for theism in other contexts - i.e., whether something would support an argument for theism different from the KCA, in any of its versions.

Such a claim would far exceed the scope of this article.

[13]

As always, an event is any change.

[14]

Here, "x"is just as in Craig's hypothesis - i.e., it can be any being -, and 0 ≤ t1 ≤ t2.

As for the interval [t1,t2], an interval seems to be required because otherwise, there might be a problem in cases of vagueness: e.g., there may not be a specific instant t such that the Moon existed at t, but at no u < t: the word "Moon" may be too vague for that.

That also seems to be in line with common speech: when we say that something began on a day, or a year, etc., we're considering intervals, not instants. Even when we speak in terms of seconds, or millisecond, we're speaking in terms of intervals, even if very short ones.

[15]

Source: William Lane Craig and J.P. Sinclair, "The Kalam Cosmological Argument", in "The BlackWell Companion to Natural Theology", Edited by William Lane Craig and J. P. Moreland, © 2009 Blackwell Publishing Ltd. ISBN: 978-1-405-17657-6; page 183.

[16]

Source: William Lane Craig and J.P. Sinclair, "The Kalam Cosmological Argument", in "The BlackWell Companion to Natural Theology", Edited by William Lane Craig and J. P. Moreland, © 2009 Blackwell Publishing Ltd. ISBN: 978-1-405-17657-6; page 184.

[17]

The fact that "timeless" is at best unclear is not a problem for assessing this example: one needs to understand the states that exist in the example, which only has run-of-the-mill ordered time; one doesn't need understand other states - whatever they are.

[18]

Source: William Lane Craig and J.P. Sinclair, "The Kalam Cosmological Argument", in "The BlackWell Companion to Natural Theology", Edited by William Lane Craig and J. P. Moreland, © 2009 Blackwell Publishing Ltd. ISBN: 978-1-405-17657-6; page 182.

[19]

That aside, of course adopting the view that all events have causes does not require one to adopt the view that only events have causes, and not adopting the view that everything that begins to exist has a cause does not require one to adopt the view that some things that begin to exist have no causes.

[20]

Source: The Blackwell Companion to Natural Theology

Edited by William lane Craig and J. P. Moreland; page 109.

[21]

By "Set A minus set B" I mean the set C whose elements are all the elements that are in A, but are not in B.

[22]

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[23]

Actually, it seems to me that these problems follow from presentism alone, without the assumption of theism.

However, some previous results - such as the discreetness of time - have been establish for a tensed

theory of time and theism; in order to drop the theistic assumption, one would have to show that, on a tensed theory of time, the mere passage of time counts as an event. I think this is clear, but for the sake of simplicity, I will keep the theistic assumption.

[24]

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Page 187.

[25]

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Page 191.

[26]

Of course, subatomic particles are everywhere; however, in daily life, we don't usually talk about them or about events involving a few of them, even if we talk about things that are composed of a huge number of them, but which behave very differently from the individual particles, or small numbers of them.