MUST THE PAST HAVE A BEGINNING?

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Abstract: In defense of his claim that the universe must have been created, William Lane Craig gives two distinct philosophical arguments against the possibility of an infinite past. The first appeals to various paradoxes allegedly generated by the idea of an actual infinite. The second appeals to a dynamic theory of the nature of time, and tries to show on that basis that an infinite series of events could not have been "formed by successive addition." The present paper is concerned with the second of these two arguments. I try to show that it cannot stand on its own independently of the first argument, that Craig does not succeed in defending it against standard objections, and that even those who are inclined to accept a dynamic theory of time should not be convinced by what Craig says in its defense.

Must there have been a First Event in the history of the universe? Or might it be the case that something or other (maybe something very small) has *always* existed? Aquinas famously held that this question could not be settled by natural reason—that without divine revelation we would have no way of knowing that God created the world out of nothing finitely many years ago. But other medieval theologians, less under the sway of Aristotle, rejected this view of the matter. According to these thinkers, it could be *proved* that the universe had a beginning in time. And to their way of thinking, this provided the crucial premise for a very simple demonstration of God's existence—or at least of the existence of a First Cause that brought the universe into existence finitely many years ago.

In recent years, William Lane Craig has vigorously defended this way of "proving" God's existence. In recognition of the Islamic sources of this argu-

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ment, Craig calls it the *kalam* cosmological argument. The argument has a very simple structure.

1. Whatever begins to exist must have a cause.
2. The universe began to exist.
3. Therefore the universe has a cause.

Craig regards premise 1 as an obvious metaphysical truth.[1] His defense of the argument focuses mainly on premise 2. In addition to various scientific considerations,[2] Craig believes that there are two decisive philosophical arguments for thinking that a finite stretch of time ago the universe began to exist. Both arguments seek to establish that there must have been a first past event. Both seek to secure this point by arguing that there could not be infinitely many distinct and nonoverlapping events in the past, but they do this in rather different ways.

The first argument appeals to various paradoxes surrounding the idea of an actually infinite set. All the paradoxes are, in one way or another, generated by the fact that any denumerably infinite set has infinitely many proper subsets with just as many members as it has. (For example, there are just as many even numbers as even and odd together, exactly as many days as years in an infinite series of years.) Craig thinks these paradoxes are genuine absurdities, showing that, whatever may be the case in the realm of abstract thought, there can be no actual infinite in reality. Given the way in which we define them, there are infinitely many numbers, but there could not, for example, be infinitely many atoms. Since a beginningless series of past events would constitute an actual infinity of real existences, Craig thinks it follows that there must be a First Event.

The second argument tries to show that, even *if* an actual infinite were possible in some domain or other of reality, *the series of past events* could not be actually infinite. Why? Because past events happen one after the other, and because no series formed in this way can be actually infinite. The past is *potentially* infinite—growing without limit as more and more future events become present and then past. But it is never an actual infinite, since, at every stage of its "growth,"there are only finitely many *past* events.

This argument has a long and distinguished history. It was used by medieval Jewish and Muslim theologians, and in the Christian tradition Bonaventure used it against Aquinas. Kant took it very seriously in the First Antinomy, and it continues to be very influential—much more so, I think, than the first of Craig's two philosophical arguments against the infinite past.

The first argument has more to do with philosophy of mathematics than with the philosophy of time. Whether one thinks that there can be an actual infinite must depend, in part, on whether one is "realist" about mathematical entities. If, for example, all the natural numbers *actually exist,* then there is at least one actual infinite.

Craig sees the paradoxes of the actual infinite as a strong argument *against* realism in the philosophy of mathematics.[3] On the other hand, he also endors-

es Alvin Plantinga's claim that God provides the best explanation for the existence of abstract entities. In his debate with Michael Tooley, Craig writes:

> In addition to tangible objects like people and chairs and mountains and trees, philosophers have noticed that there also appear to be abstract objects, things like numbers and sets and propositions and properties. These sorts of things seem to have a conceptual reality rather like ideas. And yet it's obvious that they're not just ideas in some human mind. So what is the metaphysical foundation for such abstract entities? The theist has a plausible answer for that question: they are grounded in the mind of God.[4]

Whatever the merits of this argument,[5] it is difficult to see how it succeeds in avoiding the actual infinite. An infinite set of concepts in God's understanding is surely not less actual than an infinite set of free-floating abstracta.[6]

In the present paper, however, my concern lies in a different direction. I shall say no more about Craig's general argument against the actual infinite. Instead, I shall take a very close look at the second, more popular, of the two arguments, with a view to determining whether it is sound, and whether it can stand on its own independently of the first, more general, argument. My answer to both questions will be negative. I shall try to show that the standard criticisms of this argument are correct, and that Craig's attempts to defend it against those criticisms are unsuccessful.

I

Let us begin with Craig's own summary of the argument.

> 2.21 A collection formed by successive addition cannot be actually infinite.
> 2.22 The temporal series of past events is a collection formed by successive addition.
> 2.23 Therefore, the temporal series of past events cannot be actually infinite.[7]

It is important to see that when Craig says that the series of past events is "formed by successive addition" he does not mean merely that it is *constituted* by a series of events located at earlier and later temporal positions as defined by some temporal metric. If that were all Craig meant, then an actually infinite *temporal* series of distinct events would be no *more* objectionable to him than an actually infinite *spatial* series of distinct objects, and the truth of premise 2.21 would be wholly dependent on the soundness of Craig's general argument against the actual infinite. But Craig thinks there is something *especially* objectionable about the claim that the series of past events is infinite—something having to do with the nature of time itself.

> Premise (2.22) presupposes a dynamical view of time according to which events are actualized in serial fashion, one after another. The series of events is not a sort of timelessly subsisting world-line which appears successively in

consciousness. Rather becoming is real and essential to temporal process.[8]

Why does this matter? What difference does a "dynamical view of time" make? The answer appears to be that if time really "passes" then an *infinite* series of events ending in the present would actually have been *traversed,* one at a time. In this process, an infinite series would have reached completion—something Craig believes to be absurd. "Since one can always add one more before arriving at infinity,"he says, "it is impossible to reach actual infinity."[9]

But what exactly is the argument here? It looks as if it goes like this:

1. One cannot "reach actual infinity" by "successively adding one member after another."
2. Therefore, an actually infinite series cannot have been "formed" by "successively adding one member after another."

It is not easy to see how 2 is supposed to follow from 1. The only sense in which 1 is clearly true is this: one cannot, *beginning with any one member* of an infinite set, complete the task of successively adding in all the others. But what follows from this is only that an infinite series could not have been "formed" by a "successive addition" *that started with a first member.* Why could it not have been formed by a "successive addition" that did *not* start with a first member? Even given the dynamic theory of time that Craig's argument presupposes, why could the series of past events not have been formed by a successive addition in which each and every member of the series *became* past after an earlier one had *become* past? Granted that an infinite series of distinct and non-overlapping events cannot be "formed by successive addition" in a *finite* amount of time, may it not have been so formed in an *infinite* (because *beginningless*) past?

This is, of course, a fairly standard objection to the argument Craig is defending, and he is well aware of it. But he insists that the "impossibility of traversing the infinite" has "nothing to do with the amount of time available." On the contrary, he says, "it belongs to the nature of infinity that it cannot be so formed."[10]

It is not at all clear that any such thing "belongs to the nature of infinity." Two ways in which a series of distinct, nonoverlapping events might have been "formed by successive addition" have been distinguished: (i) "having started with one of the members and then having added in the rest"; and (ii) "always having been adding them in." (i) is incompatible with "the nature of infinity." (ii), on the other hand, is not—or at least we do not yet have an argument for thinking that it is.

But Craig insists that the second alternative only makes matters worse.

> . . . the beginningless character of an infinite temporal series serves only to underscore the difficulty of its formation by successive addition. For in this case the past would be like the second version of Zeno's Dichotomy paradox, in which Achilles to reach a certain point must have traveled across an infi-

> nite series of intervals from the beginningless and open end, with this exception: in the case of the past, unlike the case of the stadium, the intervals are actual and equal. The fact that there is no beginning at all, not even an infinitely distant one, makes the difficulty worse, not better.[11]

The reference to the Dichotomy Paradox is puzzling. Zeno's puzzle is based on precisely those features of the situation that are *not* present in the case Craig is interested in. In Zeno's story, Achilles must first cover half the distance, and in order to do that he must first cover half of that half, and so on *ad infinitum*. On one interpretation of the paradox, Zeno is exploiting the intuition that an infinite number of tasks cannot be performed in a finite amount of time. But of course *this* intuition in no way supports Craig's claim about the impossibility of an infinite amount of time.

On another possible interpretation, Zeno's point is that Achilles cannot *complete* the journey because he cannot *begin* it. He cannot *begin* his journey because, in order to begin, he must perform one of the tasks that make up the journey, but he cannot perform any of them without already having performed another (and thus already having begun). If this is the interpretation of the Dichotomy Paradox that Craig has in mind, then it is not easy to see how the comparison helps his argument. One can hardly refute the claim that the past has no beginning by arguing that a beginningless past could never begin!

To bring the case closer to the one we are interested in, let us suppose that Achilles has to travel, not a finite distance, but an infinite one. And that he has had an infinite amount of time in which to do it. Finally, contra Zeno, suppose it is stipulated that Achilles can proceed at the rate of one foot per second. Is there still a problem? Could Achilles—now—have completed this task?

It might seem that there is one (and only one) way in which Achilles could have crossed over infinitely many feet. He must *always* have been running. There must have been no "first foot" traversed by Achilles. But Craig insists that this only "makes the difficulty worse, not better."[12]

It is hard to see why. Certainly the difficulty of traversing an infinite number of feet in a finite number of seconds has been overcome. So is the difficulty of not being able to *begin*. There is no such difficulty, because, unlike the race in Zeno's example, this one is not supposed to have a beginning.

But perhaps Craig thinks it is obvious that *any* "traversing" of *any* distance *must* have a beginning. That this is what he thinks is strongly suggested by another consideration he brings to bear on the problem. He argues that, since an infinite series of numbers must be "defined" starting with some number, an actually infinite series could not be "formed" by successive addition. To make this point, he imagines an "infinite counter" who has completed the task of counting all the negative numbers.

> For the past to have been formed by successive addition, to have been "traversed," would be equivalent to saying someone has just succeeded in enumerating all the negative numbers ending at 0. But this seems to be inconceivable; as G. J. Whitrow urges, a collection of order type *w is simply not con-

> structible. Whitrow notes that the question of how a sequence of events of this order-type could actually be produced is all too frequently ignored by those who base the possibility of an infinite past on Cantor's theory of infinite sets. In fact, the only way in which we can define the infinite set of negative integers is by beginning with –1, but this does not correspond to the order in which the events that we may wish to associate with them occur in time.[13]

Here Craig *seems* to be suggesting that the way in which we *define* the series of negative numbers tells us something about the way in which a series in which each member of the sequence <0, – 1, . . .– n . . . > is "counted" would have to be "produced." And this, in turn, is supposed to show that the series of past events cannot be infinite. Perhaps the argument goes like this.

1. The series <0, – 1, . . . – n, . . . > is "defined," *beginning* with zero.
2. Therefore, if one were to attempt to count all the members of <0, – 1, . . . – n . . . >, one would have to start with zero.
3. It is not possible, *starting* with zero, to complete a count of all the members of the series <0, – 1, . . . – n, . . . >.
4. Therefore it is not possible to complete a count of all the members of this series.
5. If the series of past events were both infinite and formed by successive addition, then it would be possible to complete a count of all the members of the series <0, – 1, . . . – n, . . . >.
6. Therefore an infinite series of past events could not have been formed by successive addition.

This is not a good argument. For one thing, 2 does not follow from 1. If one were foolish enough to *begin* counting all the members of this series, one would have to start *somewhere,* but one need not start with zero. One could, for example, count them in the following order: <–1, 0, –3, –2, –5, –4 . . . >.

It is true, of course, that no matter where one starts, it will be impossible to complete a count of all the members of <0, – 1, . . . – n, . . . >. But this is no help to Craig's argument unless it can be shown that the count must *start* somewhere. That was the whole point of bringing in the way in which the series is "defined." But if the count does *not* have to start with the number in relation to which all the other members of the series are "defined," we are left without any reason for thinking that it has to *start somewhere,* and thus without any reason to think that a *beginningless* enumeration *ending* at zero is impossible. Unless that point is secured, we are left without any way to derive step 4, and the argument fails.

We must keep in mind that two quite distinct "series" are under discussion here. The first is a *logical* series of *numbers.* The second is a *temporal* series of "countings" in which the numbers in the first series are successively enumerated. Even if, in a *logical* sense, a series of numbers "begins" with zero (since all the other numbers are "defined" in relation to zero), it might still be possible that, in the *temporal* order of events, an *enumeration* of all the num-

bers of the series *ends* with zero.

I conclude that the appeal to the way in which the series is "defined" provides no support for Craig's contention. But Craig offers another reason for thinking that a beginningless count is impossible. He suggests that, if it were possible for someone to have counted all the negative numbers ending at zero, then it would also be possible to reverse direction and count them all starting from zero.

> If one cannot count to infinity, how can one count down from infinity? If one cannot traverse the infinite by moving in one direction, how can one traverse it by simply moving in the opposite direction?[14]

> Now if the past were infinite, it would be as though someone had claimed to have just finished counting down all the negative numbers ending in "0," and surely this is absurd. If you can't count to infinity, how can you count down from infinity? If you can't traverse an infinite distance by running in one direction, how can you traverse it by simply turning around and running in the opposite direction?[15]

"Counting down *from* infinity" is not well described as "turning around and running in the opposite direction." This sounds like the definition of a series that does have a beginning—a series that "begins" when one "turns around," whereas the count *from* infinity has no *beginning*. But perhaps Craig really does think that if there were an infinite counter who had just completed his count down to zero, then he *should* be able to "turn around" and retrace his steps, eventually arriving at a point where he has retraced all of them. But why think such a thing?

Perhaps Craig thinks that *any* enumeration can (in principle) be reversed. That is, of course, true of any *finite* series of whole numbers. For any whole numbers m and n, if the series $<m...n>$ can be completely enumerated starting with m, then it can also be completely enumerated starting with n. If I can count forwards and hit them all, then I can also count backwards and hit them all. But when the set in question is infinite, things are not so clear. I cannot, *starting* with zero, reach a point where I have enumerated *all* the negative numbers. But it does not follow that it is impossible to have enumerated all the negative numbers *ending* with zero. If the enumeration had *no beginning*—if the "counter" had always been "counting"—he could have enumerated all the negative numbers, ending with zero. Consequently, I do not see how we can know that *all* enumerations are reversible without *already* knowing whether the series of past events could be infinite—a point that cannot simply be assumed by an argument against the possibility of an infinite past.

Interestingly, Craig claims that his opponents are the ones who are begging the question. Responding to Quentin Smith, he writes:

> But Smith retorts, "the collection of events cannot add up to an infinite collection in a finite amount of time, but they do so add up in an infinite amount of time." . . . This familiar rejoinder to the kalam argument seems,

> however, to be question-begging. *For the argument can be restated in terms of time itself.* If we divide time into temporal segments of equal duration, say, hours, then if the past is actually infinite, before the present hour could arrive an infinite number of previous hours would have to have successively elapsed, which, according to the argument, is absurd. Now clearly it would be nonsensical to reply that it is only impossible for them to elapse in a *finite time,* for the argument concerns time itself. *It is thus question-begging to explain how one purportedly infinite collection (the series of past events) can be formed by successive addition merely by correlating it with another purportedly infinite collection (the series of past hours) also formed by successive addition.*[16] [My emphasis.]

Following up Craig's hint, let us restate his argument "in terms of time itself."

2.21* A collection formed by successive addition cannot be actually infinite.
2.22* The series of past years is a collection formed by successive addition.
2.23* Therefore, the series of past years cannot be actually infinite.

It would seem that Smith could still make much the same objection. "The years could have added up to an infinite collection" he might say, *"if there were no first year."* This reply can hardly be characterized as an attempt to explain "how one purportedly infinite collection can be formed by successive addition merely by correlating it with another purportedly infinite collection." Craig might say that it begs the question by just assuming that there *could* be a series in which there is no first year. But I think this would be to miss the point of the objection. The point is not to *prove* that an infinite past is possible, but only to show that Craig has failed to prove that it isn't. If, *for all we know,* there *might* have been no first year, then, *for all we know,* an infinite number of years *might* have passed by, and Craig's argument fails.

If Craig is to succeed in showing that 2.21* is true, he must find some independent ground for excluding this obvious possibility. If he replies that it *is* excluded by virtue of the fact that an infinite series of events cannot be formed by successive addition, then *he* is the one who is begging the question.

II

Craig does have another string to his bow. He argues that a countdown from infinity is impossible on the ground that such a countdown should "always already" have been completed.

> . . . suppose we meet a man who claims to have been counting from eternity and is now finishing: . . ., - 3, - 2, - 1, 0. We could ask, why did he not finish counting yesterday or the day before or the year before? By then an infinite time had already elapsed, so that he should already have finished by then. . . .

> 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 have already finished.[17]

It is true that yesterday the infinite counter would have counted *infinitely many* numbers. Indeed, it is true that on any day during his count he would already have counted infinitely many numbers. But it does not follow that on any day prior to today he has *finished* his count. Why? Because he was counting down to *zero,* and on no day prior to today had he reached *zero.* Yesterday, he had only reached – 1, the day before he had only reached – 2, and so on. So there is no reason to conclude that the man has "always already" finished the countdown to zero.

It seems, then, that Craig's argument confuses counting *infinitely* many negative numbers with counting *all* the negative numbers.[18] But Craig denies that he is guilty of any such confusion. On the contrary, he says, it is his opponent who is in trouble here. It is the friend of the infinite past (so Craig supposes) who must say that the infinite counter would have counted down to zero by today on the ground that enough time has already passed in order for him to do so, thus laying himself open to the objection that there has *always already* been enough time.

> If we were to ask why the counter would not finish next year or in a hundred years, the objector would respond that prior to the present year an infinite number of years will have already elapsed, so that by the Principle of Correspondence, all the numbers should have been counted by now. But this reasoning backfires on the objector: for, as we have seen, on this account the counter should at any point in the past have already finished counting all the numbers, since a one-to-one correspondence exists between the years of the past and the negative numbers.[19]

But surely the proper response to the question why the counter would not finish next year or in a hundred years is *not* to say, "Because prior to the present year an infinite number of years will have already elapsed, so that, by the Principle of Correspondence, all the numbers should have been counted by now." The Principle of Correspondence entails at most that all the numbers could have been counted by now, not that they *would* have been. The proper response is therefore to say, "Yes, there *could* have been a counter who wouldn't be finished until next year or a hundred years from now. But there could *also* be one who is finishing now."

If Craig is not confusing the task of counting infinitely many negative numbers with that of counting all the negative numbers, he has made another, equally damaging, mistake—that of supposing that the Principle of Correspondence entails that *all* the numbers would have been counted as *soon* as they *could* be. What else could lead him to suppose that, before any given time, *zero* must *already* have been reached? But this whole way of thinking is mistaken. There might be any number of infinite counters. One might have "finished" counting all the negative numbers yesterday. Another might be finishing

today. Yet another might not be finished counting down to zero until tomorrow.

Craig would undoubtedly insist that this is absurd. Even though the tasks are performed *at the same rate,* they *seem* to take different amounts of time, as is shown by the fact that the three counters finish at different times. But of course all three counts take an *infinite* time to complete; so, whatever the appearances, they do not take *different* amounts of time to complete. *If* there is an absurdity here,[20] it is one that has nothing to do with *time* or with the impossibility of an infinite *past* that is *formed by successive addition.* It is an absurdity that afflicts *any* actual infinite. If one is not troubled, for example, by the possibility of an infinite library that would not be made smaller by the removal of every other book, then one will not be troubled by the idea that just as much time is taken by the infinite counts that are completed earlier as by those that are completed later.

It seems, then, that in order to defend his claim Craig must retreat to the first of his two arguments against the infinite past. The second argument cannot be sustained independently of the first. And sure enough, Craig concludes the paragraph quoted above by returning to his attack on the whole idea of an actual infinite.

> But at this point a deeper absurdity bursts in view: for suppose there were another counter who counted at a rate of one negative number per day. According to the Principle of Correspondence, which underlies infinite set theory and transfinite arithmetic, both of our eternal counters will finish their countdowns at the same moment, even though one is counting at a rate 365 times faster than the other! Can anyone believe that such scenarios can actually obtain in reality, but do not rather represent the outcome of an imaginary game being played in a purely conceptual realm according to adopted logical conventions and axioms?[21]

That is as may be. It is the *other,* "less deep,"absurdity that I am interested in here. Is it the case that *even if* an actual infinite were possible in the real world, there would *still* be something impossible about a beginningless series of past events? These two lines of thought are easily confused, and Craig has done a real service by distinguishing them. But the second of the two arguments is my sole concern here.

III

Similar remarks apply to Craig's discussion of the case of Tristram Shandy. It will be recalled that Tristram Shandy is a character in a novel by Sterne who is writing his autobiography. He is writing so slowly that it takes him a year to cover one day, and he does not get up to his birth until the third volume! However, Craig argues, if the past were infinite then a Tristram Shandy could indeed have finished his autobiography.

> Would he now be penning his final page? Here we discern the bankruptcy of the Principle of Correspondence in the world of the real. For according to that principle, . . . a one-to-one correspondence between days and years

> could be established so that given an actual infinite number of years, the book will be completed. But such a conclusion is clearly ridiculous, for Tristram Shandy could not yet have written *today's* events down. In reality, he could never finish, for every day of writing generates another year of work. But if the Principle of Correspondence were descriptive of the real world, he should have finished—which is impossible.[22]

There are two things wrong with this argument. (1) The Principle of Correspondence does not have the required entailment. (2) The paradoxes resulting from the year-to-day mapping that is of the very essence of the Tristram Shandy story do not speak to the question whether an infinite past could have been formed by successive addition, but rather to the question whether there could be *any* actual infinite.

The conjunction of the Principle of Correspondence with the thesis that the past is infinite does not entail that Tristram Shandy *would* be *finished.* At most it entails that he has had *enough time* to be finished. The reason he cannot—now—be finished has nothing to do with the *amount* of time available to him, but rather with the implicit assumption that he cannot write about a day until that day is past. Given this assumption, it follows that the most recent day he could be recording today would have occurred a year ago. Even if it had taken him only a *day* to record one day, he could still not be finishing his autobiography today, for *today's* events would remain to be recorded.

Under pressure from Quentin Smith, Craig seems to acknowledge that this is correct. "The argument's critics," he writes, "would thus far seem to be vindicated."[23] Undaunted, however, Craig insists that yet another paradox arises—one that does prove that an infinite past is impossible. As time passes, Tristram Shandy, writing at the rate of one year to the day, would inevitably fall farther and farther behind. "Should we not, therefore, have argued, not that Tristram Shandy would have completed his autobiography by now, but on the contrary that he would now be infinitely far behind?"[24] Indeed, he must *always* have been infinitely far behind, and this, to Craig's way of thinking, entails that in order for him to be writing anything he must be writing about a day that took place infinitely many years ago. Since that is obviously impossible, Craig concludes that "an infinite series of past events is absurd."

What, exactly, is Craig's argument at this point? I believe it must go something like this.

1. If the past is possibly infinite, then it is possible that Tristram Shandy has *always* been writing his autobiography at the rate of one year to a day.
2. If Tristram Shandy had been doing that, then he would always have been infinitely behind.
3. But this is impossible.
4. Therefore it is impossible that the past is infinite.

If we can assume that 1 and 2 are necessary truths, then the argument is

valid. But I don't see how they can be. To begin with, it looks as if there is a way for 1 to be true that makes 2 false. All we have to do is to relax the restriction that says Tristram Shandy must always be writing about a day that has already gone by. If we allow him to write about future days as well as past ones, then the years can in principle be mapped onto the days in such a way that Tristram Shandy is now finishing writing about every day of his life. Here is one possible mapping.

> This year, he writes about the last day of this year. Last year, he wrote about the next to the last day of this year, and so on. . . .

But if this were what Tristram Shandy had done, there would be no point at which he is *infinitely* far behind. Every year would be a finitely many years and days later than the day being recorded.

Craig anticipates this sort of response. We have, he says, "achieved logical consistency only at the cost of metaphysical absurdity":

> . . . for how can Tristram Shandy record *future* days of which he knows nothing? The task of slowly writing one's autobiography is evidently a coherent one; but if it becomes paradoxical when carried out for infinite time, then the solution is not to posit the additional absurdity of making records of the future, but to deny the metaphysical possibility of infinite past time.[25]

Is it logically or metaphysically "absurd" for Tristram Shandy to write about his future? Craig apparently thinks so—otherwise it is difficult to see how the alleged "absurdity" has any bearing on the issue under discussion. But if this is what Craig thinks, that is not a little surprising, since, after all, he holds that *God* always possesses complete and infallible knowledge of the future. Presumably God could make a complete "record" of any part of the future he pleased. If it pleased him, God could even tell Tristram Shandy what to write!

But let us assume, for the sake of argument, that it is metaphysically impossible for Tristram Shandy to make records of his future. Surely Craig has drawn the wrong conclusion from this? If the alleged "metaphysical absurdity"of pre-cognition must be invoked to explain why Tristram Shandy cannot *always* have been writing his autobiography at the rate of one year to a day, then we are not forced to "deny the metaphysical possibility of infinite past time." We may instead deny that premise 1 is necessarily true. If the mere possibility of an infinite past is not by itself sufficient to make it possible that Tristram Shandy had *always* been writing his autobiography at the rate of one year to a day, then premise 1 is not a necessary truth, and the argument is invalid.

What Craig's argument shows is only that the following three propositions form a logically inconsistent set.

a. It is possible that the past is infinite.
b. If the past were infinite, then it would be possible that Tristram

Shandy has always been writing his autobiography at the rate of one year to a day.

c. During no year can Tristram Shandy be writing about a future day.

One of these propositions must be false. Craig thinks (c) is necessarily true and that proposition (a) must therefore be rejected. He fails to notice the possibility of rejecting (b). What is clearly true, one might say, is not (b), but rather:

b*. If the past is infinite and *Tristram Shandy can write about future days,* then it is possible that Tristram Shandy has always been writing his autobiography at the rate of one year to a day.

But if we substitute (b*) for (b), we no longer have an inconsistent set of propositions, and the truth of (b*) and (c) does not entail the falsity of (a). Consequently, it does not seem to me that Craig's reflections on the Tristram Shandy case provide any support for his thesis that an infinite series of past events could not have been formed by successive addition.

IV

I have been operating on the assumption that there is no more to the idea of an infinite past than this: for every past event, there is an earlier past event that became past before it did. But this may be an assumption that Craig would dispute. Certainly G. J. Whitrow (often quoted with great approval by Craig) rejects it. Whitrow claims that if each event in a series of events has passed by *the series as a whole* must have passed by. And where n is the number of past events, Whitrow thinks it follows that there must have been an *nth* event, counting backwards from the present. If n were aleph-zero, he thinks there would have been events that occurred "aleph-zeroeth many events" prior to the present. Starting from any one of these, infinitely many events would have been traversed between then and now—something he takes to be clearly impossible.[26]

Perhaps an outline of Whitrow's argument will be helpful. Let E_0 be the name of the last event in the series, and for any i let E_{-i} be the name of the $-i_{th}$ event in the series. Then Whitrow's argument runs as follows.

1. Let Δ be a series in which aleph-zero distinct, nonoverlapping events have passed by.
2. Then Δ itself has "passed by" (from 1).
3. And there must be events E_{-a}, such that each E_{-a}, and such that infinitely many events occur *between* E_{-a} and E_0 (from 2, reading a as aleph-zero).
4. Therefore, starting from any of the E_{-a}, infinitely many events must have been traversed in order to reach E_0 (from 3).
5. But this is impossible. E_0 would never have been reached, and Δ would not have passed by.

6. Therefore, it is not the case that aleph-zero events have passed by.

I do not find this argument persuasive. One wants to know just what is implied by the expression "passed by." Suppose it is defined in such a way that nothing "passes by" *unless it begins, endures for a while,* and *comes to an end.* Then I see no reason to think that 2 follows from 1. To suppose that it does follow is to commit the fallacy of composition. What is true of any particular member of Δ, and even of any finite subseries of Δ, need not be true of Δ. Each member, and each finite subseries of Δ, *began, endured for a while,* and *came to an end.* But this can hardly be true of Δ. Since it comes to an end with its last member, there is only one way for it to have aleph-zero distinct, nonoverlapping members. Δ must have no first member.

Now suppose that the expression "passed by" is defined in such a way that it does *not* entail that anything that has "passed by" must have a beginning, but only that it has endured for a time (with or without beginning) and has come to an end. Then in this sense Δ has passed by, but there is no pressure to think that 3 follows from 2. Unless it is assumed that Δ has a beginning, the fact that it has aleph-zero members does not in the least entail that aleph-zero is a possible value of i or that any of the E_{-i} in Δ must be "aleph-zeroeth many events" prior to E_0. There is thus no reason to think that any of the E_{-i} would have to be infinitely distant from E_0.

V

If, like Craig, we believe in the objective reality of "temporal becoming," we must hold that that *time passes*—that every "present" becomes a past present and is replaced by a fresh "present." This does *not* imply that *time as a whole* becomes present and then becomes past—whatever that might mean. Nor does it imply that there is a first "present" or that time has a beginning. But if there is no first "present," then infinitely many "presents" have become past, and the series of past "presents" is an actual infinite.

If Craig is to succeed in showing that this is not possible, he must give some reason for thinking that there cannot have been a first "present." He must explain precisely how an infinite series of past presents is supposed to be incompatible with the nature of *time.* It will not do just to point out that one cannot—starting at a point—traverse the infinite.

Where does this leave the kalam argument? The answer, I think, is that, in order to prove that there must have been a First Event, the argument will have to depend very heavily on the *general* philosophical argument against the possibility of an actual infinite. The critical assessment of that argument is a topic for another paper.[27, 28]

References

1. I believe this is a serious mistake. See my "Does the Beginning of the Universe Have a Personal Cause?" (forthcoming in *Faith and Philosophy.*)

2. Specifically, Craig appeals to the Big Bang Theory of the origin of the universe and to the second law of thermodynamics.

3. Craig, *Theism, Atheism, and Big Bang Cosmology* (Oxford: Oxford University Press, 1993).

4. "A Classic Debate on the Existence of God" (with Michael Tooley at the University of Colorado, Boulder, November 1994). A transcript of this debate can be found at **http://www.leaderu.com/offices/billcraig/docs/craig-smith1.html**.

5. I do not myself think Craig's argument against the actual infinite is successful. For a penetrating critique of this argument, see Paul Draper, "A Critique of the Kalam Cosmological Argument," in *Philosophy of Religion: An Anthology,* ed. Louis P. Pojman, 3rd. ed. (Belmont, Calif.: Wadsworth 1998, pp. 42–46). See also William Wainwright, "Critical Review of William Lane Craig, *The Kalam Cosmological Argument,*" *Nous* 16, no. 2 (May 1982): 328–34).

6. I owe this point to Andy Egan.

7. Craig, "The Existence of God and the Beginning of the Universe," **http://www.leaderu.com/truth/3truth11.html**.

8. Ibid.

9. Ibid.

10. Ibid.

11. Craig, "Professor Mackie and the Kalam Cosmological Argument," **http://www.leaderu.com/offices/billcraig/docs/mackie.html**.

12. Craig, "The Existence of God and the Beginning of the Universe": "The beginningless character of the series only serves to accentuate the difficulty of its being formed by successive addition. The fact that there is no beginning at all, not even an infinitely distant one, makes the problem more, not less, nettlesome."

13. Craig, "Professor Mackie and the Kalam Cosmological Argument."

14. Craig, "The Existence of God and the Beginning of the Universe."

15. Does God Exist? A Debate between William Lane Craig and Quentin Smith" (March 22, 1996, on the campus of Southern Methodist University). A transcript of this debate can be found at:
http://www.leaderu.com/ofices/billcraig/docs/craig-tooley0.html.

16. Craig, *Theism, Atheism, and Big Bang Cosmology,* p. 105.

17. Craig, "The Existence of God and the Beginning of the Universe."

18. Richard Sorabji, *Time, Creation and the Continuum* (Ithaca, N.Y.: Cornell University Press, 1983), pp. 213, 222–23.

19. Craig, "The Existence of God and the Beginning of the Universe."

20. I am not convinced that there is. See Draper, "A Critique of the Kalam Cosmological Argument."

21. Craig, "The Existence of God and the Beginning of the Universe."

22. Craig, *Theism, Atheism, and the Big Bang Cosmology.*

23. Ibid.

24. Ibid.

25. Ibid.

26. G. J. Whitrow, "On the Impossibility of an Infinite Past," *British Journal for Philosophy of Science,* 29 (1979): 42–43.