

More Than a Flesh Wound: Reply to David Oderberg

In Oppy (2001), I argued that non-theists can reasonably reject the claim—which plays a key role in some versions of the *kalam* cosmological argument—that the temporal series of (past) events is formed by successive addition. David Oderberg (2001) makes some interesting criticisms of the arguments that I gave in Oppy (2001). As I said in the concluding footnote to that previous paper of mine, I do not think that there is much that I need to change or retract in what I said there. However, Oderberg’s criticisms do give me the opportunity to expand on some points which only appeared in very compressed form in that earlier paper. Moreover, there are some points where Oderberg misunderstands or misrepresents what I said previously; at the very least, it will be worthwhile to try to get clearer about exactly where it is that we have major disagreements. In what follows, I will respond—in turn—to the four criticisms that Oderberg makes of Oppy (2001).

However, before I turn to Oderberg’s criticisms, I shall need to say something about the argument of my previous paper, so that the present paper does not presuppose familiarity with either that paper or Oderberg’s reply. In Oppy (2001), I discussed the second premise in the following argument (which is a well-known variant of the *kalam* cosmological argument):

1. It is not possible for a series formed by successive addition to be both infinite and completed.
2. The temporal series of (past) events is formed by successive addition.
3. The temporal series of past events is completed (by the present).
4. (Hence) It is not possible for the temporal series of past events to be infinite.
5. (Hence) The temporal series of past events is finite.
6. (Hence) The universe began to exist.
7. Whatever begins to exist has a cause of its existence.
8. (Hence) The universe has a cause of its existence.
9. (Hence) God exists.

I argued that premise two can be reasonably rejected by non-theists on the grounds that they don’t have good enough reason to believe that the past has been laid down in finite “lumps”. The key point in my argument is that, if the series of past events is formed by “successive addition”, then it must be the case that the series of past events was laid down “one lump after another” (this follows from the meanings of the words “successive” and “addition”). I took care to point out that I do not suppose that this is the strongest—or most important—objection which non-theists can make to the argument; the important point is just that it could be reasonable to reject the target variant of the *kalam* cosmological argument on these grounds.

Before I turn to consider Oderberg’s objections to my argument, there is also one concession to make. At the beginning of the conclusion of Oppy (2001), I said that I had argued, in effect, that proponents of the *kalam* cosmological argument presuppose strict finitist metaphysics: they presuppose that the world is fundamentally discrete in all respects. Plainly, there is a sense in which this is not so. There are doubtless

proponents of the *kalam* cosmological argument¹ who hold that there was a first moment of time—at which the universe began to exist—and that everything which begins to exist has a cause, while also accepting that there are actual infinities (so that, for example, there is an aggregate of continuum many chronons). In general, it is not true that proponents of the *kalam* cosmological argument must presuppose strict finitist metaphysics. However, as I argued in my paper: (1) proponents of the argument from “successive addition”—i.e. the argument which is set out above—are committed to strict finitist metaphysics; and (2) proponents of the empirical *kalam* cosmological argument from Big Bang cosmology may well not get to the conclusion that they want without the assumption of strict finitist metaphysics. Since well-known proponents of the *kalam* cosmological argument support both of these sub-arguments², there may be some justification for the claim that proponents of *kalam* cosmological argument are likely to presuppose strict finitist metaphysics; however, it is just a mistake to suppose that one could not reasonably combine endorsement of the *kalam* cosmological argument with acceptance of the claim that there is an aggregate of continuum many chronons.

1

The first objection which Oderberg makes is that my argument overlooks the possibility that the supporters of *kalam* cosmological arguments are committed neither to strict finitist metaphysics, nor to actual infinitary metaphysics, but instead to the claim that time forms a “natural continuum” which is merely “*potentially* infinitely divisible”. To this line of objection, I have two replies. First, I am very sceptical that it is possible to form a coherent conception of “merely potentially infinite divisibility”. Second, even if it is possible to form a coherent conception of “merely potentially infinite divisibility”, the claim that time forms such a “natural continuum” is perfectly consistent with the claim that the world is fundamentally discrete in all respects (and hence does nothing at all in the way of undermining my argument).

I shall begin with my scepticism about the coherence of the notion of “merely potentially infinite divisibility”, and, in particular, with my scepticism about the suggestion that time is “merely potentially infinitely divisible”. According to Oderberg, supporters of the *kalam* cosmological argument are committed to the idea that the moments of time follow each other like beads on a string. However, according to Oderberg, supporters of the *kalam* cosmological argument deny that there are chronons, i.e. metaphysically indivisible atoms of time. Rather, according to Oderberg, supporters of the *kalam* cosmological argument suppose that time is a “natural continuum”, which is laid down in lumps.

Consider one of these lumps. It has a magnitude: a millisecond, say. Potentially, it could have been divided in half, though it wasn't. (For example, no events occupied just the first half of the millisecond.) Had it been divided in this way, then there would have been a first half of the millisecond, and then a second half of the millisecond.

¹ I.e., the argument which has as its premises 7. and 8. above, and which has 9. as its conclusion.

² See, for example, Craig (1979)

But, as things stand, there was no first half of the millisecond, and no second half either—there was just the millisecond.

Now, of course, there must be something that makes it true that this millisecond was potentially divisible in the way described—and there must also be something which makes it true that the millisecond is indeed a millisecond, i.e. that it has the duration which it actually has. It can't be that there is nothing which makes it the case that one lump is an interval of one millisecond while another lump is an interval of half a millisecond; these cannot just be “primitive” properties of the lumps. Now, it is clear enough what the believer in a continuum of chronons will say—the one millisecond “lump” actually contains a first half millisecond and a second half millisecond, whereas the half-millisecond “lump” does not have this structure.³ But what can the person who rejects a continuum of chronons—and who opts instead for a “merely potentially infinitely divisible continuum”—say?⁴ As far as I can see, there is nothing to which they can appeal which can serve as truthmakers for the claims in question. So, one very good reason for rejecting “merely potential infinities” is that they require rejection of a compulsory principle about actual truthmakers, viz. that actual truths require actual truthmakers.

In my view, there are many further good reasons for denying that there can be merely potentially infinite divisibility; however, I shall not attempt to give these reasons here. Instead, I turn to my reasons for thinking that it makes no difference to my argument if time is “merely potentially infinitely divisible”. For, suppose that this were the case. Then it would be true that the actual history of the world is laid down in undivided but divisible lumps: first this one, then the next one, and so on. So, if time is “merely potentially infinitely divisible”, then—by the argument given earlier—the world actually is fundamentally discrete in all respects. Thus, Oderberg's claims about “natural continua” are just a red herring: what he calls a “natural continuum”—because it has the mere potential for further division—is nonetheless something which is actually discrete—because it contains no more than finitely many actual parts. I can give him the words “natural continuum” if he likes; but the point remains that it seems that one can reasonably reject the claim that history is laid down in lumps in the way that his “natural continuum” requires.

2

The second objection that Oderberg develops is that it seems to be rather obscure what the argument of Oppy (2001) is supposed to achieve. Oderberg writes:

³ Of course, that is only the first step in the story. For the full account, there is no better place to look than Grunbaum (1952).

⁴ There are, of course, other options. For instance, one could follow Whitehead in holding that, while time is actually infinitely divided—into regions of any finite magnitude, however small—there are no chronons: it's just “regions all the way down”. For convenience, I shall ignore this kind of option in what follows, since it makes no difference to my argument. (It is equally plain that the possibility of a “densum” rather than a continuum also makes no difference: if time has the structure of the rational numbers rather than the structure of the real numbers, my arguments can be reconfigured to fit the facts.) The point of my argument is NOT to defend the claim that time is constituted by chronons—though I am sympathetic to this claim; rather, the point of the argument is just that it is very controversial to suppose that time is actually fundamentally discrete.

It is not clear what Oppy's paper is supposed to have achieved. Rather, what it is supposed to have achieved—showing that KCAs are 'pretty useless things'—is clear enough, but how it is supposed to have achieved this is not. Oppy thinks that he has shown that since time is continuous, the temporal series of past events could not have been formed by successive addition. It is not clear to me how this follows. All it amounts to is the use of natural continuity as a kind of sceptical acid to dissolve our intuitively plausible beliefs about discrete events.⁵

What I claimed to be trying to do is set out very clearly in my original paper: "I shall argue that non-theists can have good reason to refuse to accept [the claim that the temporal series of events is formed by successive addition], and hence that non-theists can have good reason to reject arguments which make use of this premise." Moreover, the way in which the case is supposed to proceed is also set out clearly: I claim that, if one holds that the temporal series of events is formed by "successive addition", then one is committed to the claim that the world is fundamentally discrete in all respects. Why? Well, if one supposes that the temporal series of events is formed by "successive addition"—and if one supposes that the past is finite—then one must be supposing that there are only finitely many "elements" which have been successively laid down as history has unfolded. (This is required by the meanings of the terms "successive" and "addition".) And—as I argued in my previous paper—once one supposes that there are only finitely many "elements" which have been successively laid down as history has unfolded, then it seems to follow pretty directly that the world must be discrete in all respects. But it seems clear that reasonable people can reject the claim that the world is fundamentally discrete in all respects—and that suffices to establish the desired conclusion.

Oderberg plainly rejects my claim that if one supposes that the temporal series of events is formed by "successive addition"—and if one supposes that the past is finite—then one must be supposing that there are only finitely many "elements" which have been successively laid down as history has unfolded. However, his attempt to ridicule my claim seems to me to misfire. Here is what he says:

Does Oppy want to say: "Well, Tristram Shandy thinks he is living day by day, and thinks he is recording his life story year by year. But in fact, if only he realised that time is continuous, and that most (if not all) natural processes are continuous, he would see that he is not really living day by day, and the years aren't really rolling by one after the other ('like beads on a string'). What's really happening is that he is living his life by accretion [a knowing philosophical wink might be given at this point]; his life story grows, but the years don't really roll by."

⁵ Note, by the way, that while I did suppose that I had shown that, because time is continuous, the temporal series of events could not have been formed by successive addition, it is a mistake to suppose that what I did was to use "natural continuity" as a sceptical acid to dissolve intuitively plausible beliefs about discrete events. Nothing in my argument requires denial of the point that there are historical chains of discrete events; nothing in my argument requires denial of the claim that much of the past can be viewed as a succession of, say, years. Rather, the point is that it is not at all obvious that it is right to suppose that the past can be viewed as a succession of unstructured "lumps" of time of finite magnitude. If time cannot be viewed in this way—and, in particular, if time must be taken to be composed of uncountably many chronons—then it is simply a mistake to talk of "successive addition" in the context of the unfolding of history.

But, in the relevant sense, Tristram does not live his life day by day. Days are not the smallest chunks into which time is divided; it would be a disastrous mistake to say that his life elapses one day at a time, in day-size chunks, with no finer discriminations (e.g. first the part before noon, and then the part after noon). And it would be even worse to say that, in the relevant sense, Tristram Shandy lives his life year by year. The point isn't, as Oderberg seems to think, to deny the passage of time; rather, the question is how to give an exact description of the ontology of time. If time is constituted of chronons—continuum many of them—then they cannot be laid out one by one, like beads on a string; there are too many of them for that. But since that is what addition requires—first one, and then another—a continuum of chronons cannot be laid out by “successive addition”. Moreover, if the past is to be laid down by successive addition—first one bit, and then the next, as the premise in the supporting argument *says*—then it is clear that time will have to be actually discrete, i.e. actually laid out in lumps. But that conclusion—i.e. that time is actually laid out in lumps—is surely something which reasonable people can reject.⁶

In fact, of course, Oderberg goes even further in his attempts to ridicule my point of view:

Does Oppy also want to say as some (viz. liberal bioethicists) have said about events involving fertilisation and embryogenesis: “You think you can kick a football. Well, no you cannot. For, you see, time is continuous, as are the physical quantities involved in your putative act of kicking. There is no first moment when you make contact with the ball. No video recorder, no matter how precise, will ever capture that supposed first moment when the kick begins.

Now, of course, I don't want to deny that it is possible for a person to kick a football. In particular, I don't want to deny that it is possible for a person to kick a football on the grounds that time is continuous.⁷ But, clearly, there isn't even *prima facie* ground for the claim that, if there is no first chronon at which you make contact with the ball, they you cannot kick it. No believer in an actual continuum of chronons would say that! On the contrary, it just falls out of the analysis of continuous processes that many processes have no first chronon at which they occur, and that many processes have no last chronon at which they occur.⁸ There is nothing particularly puzzling about this. True, it is not very intuitive—but nothing in this area of metaphysics is both acceptable and intuitive.

3

⁶ As I noted in the previous section, it is completely irrelevant to the argument at this point to insist that the lumps in question are potentially divisible. The point upon which friends of “merely potentially infinitely divisibility” insist is that things are not actually infinitely divided: i.e. things actually come in undivided “lumps”. It is this point which forms the basis of my argument.

⁷ Note, by the way that it would be perfectly proper to reply that the continuity of time in no way rules out the possibility that there is a first chronon at which you make contact with the ball; all that is required is that there is no last chronon at which you have not yet made contact with the ball. However, to answer in this way would just be to quibble; for even if there were no first chronon at which you made contact with the ball, it surely would still be possible for you to kick it.

⁸ Oderberg claims that “[Oppy's] scepticism is a cheap knife” (194); but, in fact, it seems to me that I have more to fear from those who claim that what I believe is incredible than from those who claim that I am a sceptic. Here, again, I just commend perusal of Grunbaum (1952).

The third objection that Oderberg makes concerns: (1) the question whether there actually was a first moment of time, and (2) the relevance of this question to the premise of the *kalam* cosmological argument which says that the universe began to exist. According to Oderberg, the half-open interval $(0, 1]$

... has a beginning because it has a first point, the origin, which has spatial priority over the rest, whether or not the origin is considered as an actual point or merely a limit, just as zero is the first point on the positive real number line even though for any positive real number on the line there is another prior (though not immediately prior) to it. The same can be said for the universe, whether or not its origin be taken to be a limit or an actual point.

The claim about zero may be true. If zero is the first point on the positive real number line, then it must itself be a positive real number (and we can define “positive real number” so that our definition has this consequence). Moreover, in that case, zero can—like any other real number—be considered as the limit of an infinite number of different series of real numbers. But, if we consider $\mathbb{R}^+/\{0\}$ —i.e. the positive real numbers with zero excluded—then zero cannot be the first point on that line. For, if it were the first point on that line then, *a fortiori*, it would be a point on that line. But, by definition, it isn’t. We cannot say that a universe that is finite but open in the past has a first point if there is no such first point. True enough, we can say that there is a sequence of points which tends towards a certain limit—but, that a given sequence of points tends towards a given limit point does not entail that the limit point belongs to the sequence. Perhaps it does, perhaps it doesn’t: what matters is that it is a further question, not settled by the facts about tendency towards a limit.

The crucial point is that, from a topological point of view—and that is what is important here—there is an equivalence between a half-open interval and an infinite interval. In each case, one can have a sequence of events, each of which is caused by an earlier event, but for which there is no first event. If that is right, then arguments for the conclusion that the universe is temporally finite—and that it all that the arguments from Big Bang cosmology can possibly be—do nothing at all to advance the case for claiming that the universe has a cause. True enough—as Oderberg goes on to argue—one can have recourse to the Principle of Sufficient Reason and Leibniz’s argument that any such infinite series still requires an external cause. But, in that case, the *kalam* cosmological argument—which makes no use of that principle—has been admitted to be utterly ineffectual.

4

The fourth objection which Oderberg makes is that my argument mistakenly supposes that the impossibility of “traversing the infinite” depends upon whether time is laid down in chronons or in lumps. Oderberg gives two separate reasons for thinking that this is so.

First, Oderberg claims that the formation of an infinite past series of events—whether by the laying down of lumps or of chronons—violates the Principle of Sufficient

Reason, i.e. the claim that every event has an adequate explanation. According to Oderberg, if, for some continuous process, it is “turtles all the way down”, then there is no explanation of why that process has reached a given state at a given time:

Suppose I see a two-foot bay tree in Oppy’s garden. “When did you get it?”, I ask. “Oh, it’s always been there, growing away from eternity past.” “But,” I protest, “it has a finite and fixed rate of growth, so it can’t have been”. “Well you see”, he replies, “the rate of growth decreases infinitely into the past.” So what, I would ask, is the explanation for its being two-foot tall now?

It is very tempting to reply to this question as follows: For any time, we can explain why it has the height that it does, by appealing to its height at earlier times and the law which governs its rate of growth. The tree doubles in height every year. A year ago, it was one foot tall. So now you have an adequate explanation of why it is two feet tall now.

No doubt Oderberg will reply that this is not an adequate explanation: for I haven’t told you why the tree doubles in height every year; and I haven’t told you why it was one foot tall a year ago. Granted, I haven’t told you those further things. But if what you mean by “adequate explanation” is what I would rather call “complete explanation”—i.e. explanation which leaves no further questions unanswered—then I think that the allegedly “innocuous” Principle of Sufficient Reason is simply something which must be rejected. There are very good reasons for thinking that there must be brute contingencies, i.e. contingent aspects of the world which do not themselves have “complete explanations”. Moreover—though this is not relevant to the present discussion—it is not merely non-theists who can have good reason to hold that there are brute contingencies; theists can have good reason to believe this too.⁹ Since one cannot reasonably demand complete explanations, it is no criticism of my proposed explanation in the case of the bay tree that I haven’t given a complete explanation of why it is two feet tall now.

Second, Oderberg claims that it is simply “implausible” to suppose that any process—whether continuous or not—could consist of “turtles all the way down”.

What gets the process going, if it is infinite in the past? What explains the fact that the train of past events moves at all? To take the old metaphor of the moving but engineless train of infinite length: if we have in mind successive addition, then it virtue of what is the front carriage moving, if it is carriages all the way back? What makes this true? If we have in mind continuous processes, then if we suppose for argument’s sake the transfer of energy to be continuous, in virtue of what does the

⁹ Many theists claim that we have libertarian freedom, i.e. that we are able to make free choices which are not determined by the prior state of the world, etc. Suppose, for example, that I ask why you freely chose the chocolate ice cream rather than the strawberry ice cream when you were presented with a choice between the two. Suppose, further, that you simply exercised your libertarian freedom in making the choice. Then there is no further answer to the question why you made the choice that you did. Compare the actual world, in which you chose chocolate, with a world, identical up to the point at which you chose, in which you chose strawberry instead. Libertarians hold that there need be no difference between these two worlds, other than the choice which is made. But, if that is right, then there is nothing which can be invoked to explain why you chose chocolate rather than strawberry: it is just a brute fact that you made the choice which you actually made.

energy get to the front carriage? What makes it true that the front carriage moves, if it is carriages all the way back?

In the case of the engineless train, I think that we should resist the temptation to say that Oderberg's questions are easy to answer. Plainly enough, giving into this temptation is one thing which we could do. Why does the front carriage move? Because the next carriage pulls on it. Why does that carriage pull on it? Because the next carriage pulls on it. And so forth. (Exactly the same points can be made about the transfer of energy, etc.) Each carriage moves because the one next to it moves, and hence pulls it along.

However, I think that it would be a mistake to respond to the case in this way. If we imagine a finite row of carriages moving along a flat track with a given initial velocity, then—given the actual laws of physics—we should expect that energy loss due to friction, etc. will eventually see the train come to a halt. The case is no different if we suppose that the row of carriages is infinite: each carriage will experience the same energy loss, and so the train will eventually come to a halt. If we think about the case in this way, then the answer to the question *Why is this carriage moving with this velocity now?* is that it was moving at a slightly higher velocity a little while back, and it is subject to net deceleration as a result of external forces. Of course, if you want to know how the carriages came to be moving in the first place, then I haven't told you—but there is nothing in the story which Oderberg tells which provides any indication of how to answer this question either. Indeed, the very framing of the question seems to presuppose an Aristotelian rather than a Newtonian conception of matter: what requires explanation is motion rather than change in motion!

Perhaps it might be said that this discussion misses the point. Isn't there a good analogy between the passage of time and the motion of an engineless train? Just as a train without an engine will grind to a halt after a finite length of time, won't ...? No, that can't be the right analogy! Just as a train without an engine won't be able to get moving, won't ...? No, that can't be the relevant analogy either.¹⁰ So what is the relevant analogy supposed to be? I do not think that the lapse of time—under the assumption that it is “turtles all the way down”—is very much like the motion of an infinitely long engineless train; at the very least, I think that more needs to be done to show that the cases are relevantly similar.

5

At the conclusion of his paper, Oderberg writes:

William Lane Craig suggests at one point in his writings on the Kalam Cosmological Argument that it just is the old First Cause argument. Maybe he's right. Maybe it is just that old chestnut with an Arabic spin. If so, I would say that it might be old, and it might be a chestnut, but the atheist still has not cracked it and never will.

¹⁰ Note that, in both of the case mentioned, it makes no difference whether the train is supposed to be finite or infinite. Yet the whole point of the analogy is to cast doubt on the idea that there could be an actual infinity in which it is “turtles all the way down”.

Two comments come immediately to mind. First, whether or not the atheist has “cracked” traditional theistic arguments may depend upon what one supposes is required in the “cracking” of an argument. If you want atheists to give theists reasons which, by the lights of theists, ought to bring them to reject the premises of the arguments in question then, I agree, atheists may never “crack” these arguments. But, of course, this point has nothing to do with the virtues of these arguments *qua* arguments. (It may well be that atheists will never “crack” the following argument: Either God exists or $2+2=5$; $2+2\neq 5$; so God exists. But that doesn’t show that this is a good argument.) On the other hand, if you want atheists to have reasons that, by the lights of atheists, are sufficient to justify their refusal to accept the conjunctions of the premises of these arguments, then it is already perfectly obvious that atheists have such reasons. In that sense, the traditional theistic arguments were all “cracked” long ago.

Second, one should not be too quick to endorse Craig’s comments about the identification of the *kalam* cosmological argument with the familiar Thomistic first cause argument. On the one hand, Craig himself has since been careful to distinguish between these arguments.¹¹ And—more importantly—on the other hand, given the most plausible principle for identification of arguments—namely, identity of explicit premises—it is quite clear that the *kalam* argument and the Thomistic argument are distinct. Nothing but trouble comes from failing to have precise identity conditions for arguments; indeed, nothing but trouble comes from failing to talk about particular formulations of arguments (since a slight change in the formulation of a single premise can completely change the standing of an argument).¹²

6

I began with a concession; I shall close with a related one. In my previous paper, I claimed that the kinds of considerations upon which I drew in arguing that one could reasonably reject premise 2 could be “generalised” to give reasons for rejecting the conjunction of the premises 7. and 8. in the *kalam* cosmological argument. It is not at all clear that this is right.

What I had in mind is this. If we reject strict finitistic metaphysics, then there are plenty of “turtles all the way down” processes in the world. Of course, for processes of this kind with which we are familiar, the initial limit point actually exists—and what happens at that initial limit point causes the subsequent “turtles all the way down” process. So—to take Oderberg’s example—when I kick a ball, the impact of my foot causes the movement of the ball even if there is no first moment at which the impact occurs. However, this evidence seems to be compatible with the thought that there are “turtles all the way down” processes which have no cause; and, in particular, one might expect that, since there is no first moment at which the universe begins to exist, the universe itself could very easily have a “turtles all the way down” structure. (Of course, in the case of the universe, apart from the non-existence of the initial limit

¹¹ See, for example, Craig (2001:373ff.)

¹² For much more on this theme, see Oppy (forthcoming)

point, it is also true that there are no earlier points either. So we might well be puzzled about where to look for a cause in this case.)

While it still seems to me that non-theists may very well have good reason to hold that the universe has a “turtles all the way down” structure of the kind just described, I do not think that there is anything in the argument against “successive addition” which establishes that this is the case. Thus, the stronger claims which I made at the end of my previous paper are not justified by the weaker claims which preceded them. This is not to say that those claims are not justified; rather, it is just to say that you can’t get as much mileage from considerations about “successive addition” as I had initially supposed. More must be added to the case against 2.—of the kind indicated in the preceding paragraph—if one is to have good reasons for rejecting the empirical *kalam* cosmological argument.¹³

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¹³ It follows from the concession in this section that the confusions which I find in Oderberg’s second objection are to some extent my fault rather than his. It isn’t surprising that it was unclear to Oderberg exactly what I was trying to do, because the vague talk about “generalisation” covered up the fact that further substantive assumptions are needed in order to get an objection to the empirical *kalam* cosmological argument.