

Analysis of Koons, Robert C. (2014), "A New Kalam Argument: Revenge of the Grim Reaper," *Nous* 48:2, 256-67.

By Vern Crisler, 2014

I. Abstract:

Koons discusses the Grim Reaper paradox in relation to the Kalam Cosmological Argument.¹ The Kalam argument is as follows: (a) Everything that begins to exist has a cause; (b) The universe began to exist; and (c) Thus, the universe has a cause. It is presumed that the beginning of the universe also means the beginning of time. The Grim Reaper paradox is a response to anti-Kalam arguments which deny that time had a beginning. It attempts to show that the denial of a beginning in time results in a contradiction. Koons will attempt to defend Grim Reaper by examining whether a simple, actual, infinite past is possible and he will conclude that such a view of time is not possible. I will argue in this essay that Koons is correct and that Grim Reaper provides a counterexample to the

¹ Philosopher William Lane Craig is primarily responsible for reviving the discussion of the Kalam Cosmological Argument in our day. See his online article at: <http://www.reasonablefaith.org/in-defense-of-the-kalam-cosmological-argument>. Note that "Kalam" is pronounced kah-LAWM.

notion of an actual infinite past, thus establishing premise (b) of the Kalam Cosmological Argument.

II. Introduction: Grim Reaper Paradox

Koons begins with a discussion of the Grim Reaper Paradox.² Assume that there are an infinite number of Grim Reapers who are appointed to kill someone named Fred at a certain time. If Fred is already dead, the Reaper does nothing, but if Fred is alive, the Reaper destroys him. The last Grim Reaper is appointed to kill Fred at one minute after noon if he's still alive up to that point. The next to last Grim Reaper is appointed to kill Fred at one half minute after noon if he's still alive up to that point. The next to next to last Grim Reaper is appointed to kill Fred at one half of one half minute after noon if he's still alive up to that point, and so on. There is no first Grim Reaper, and each increment gets smaller and smaller, being halved each time. The infinite number of smaller

² This paradox is so new it does not yet have a Wikipedia entry! Koons references Jose Benardete's paradox and John Hawthorne's discussion of Benardete. For an online discussion of Benardete, see Michael B. Burke (1999), "Benardete's Paradox," *Sorites*, Issue 11, 82-85. http://www.sorites.org/Issue_11/item08.htm In addition to Benardete and Hawthorne, Koons makes reference to Alexander Pruss's discussions of Grim Reaper, which can be found on his blog: <http://alexanderpruss.blogspot.com/2008/01/grim-reaper-paradox.html>

increments corresponds to the existence of a Grim Reaper, so there are an infinite number of Grim Reapers.³

However, Fred cannot be killed by the last Grim Reaper at 1:00 because the second to last Grim Reaper would have already killed him at 12:30. Similarly, Fred cannot be killed by the second to last Grim Reaper because the third to last Grim Reaper would have already killed him at 12:15, and so on to infinity. It follows from this that Fred cannot be killed by a Grim Reaper, but it is stipulated that if he survives up to one minute after noon, the last Grim Reaper will kill him. So Fred cannot be killed and Fred can be killed. The premises lead to a contradiction, and so time must have had a beginning.

The main component of the Grim Reaper paradox relies on positing something like a Zeno-type supertask similar to Zeno's arrow or tortoise scenarios. Zeno's paradoxes attempt to show that motion is impossible by arguing that a runner (or arrow) cannot traverse the whole distance

³ Koons says: "In general, each Reaper number n is assigned the moment $1/2n$ minute after noon. . . . In the same way, we can prove that Fred cannot survive until $1/2n$ minutes after 12, for every n ." (Koons, p. 256.) Technically, the formula should only include each Reaper *before* the last Reaper. The first to last Reaper would kill Fred at 1 divided by (2 times 1), that is, at half of one minute. The second to last Reaper would kill Fred at 1 divided by (2 times 2), that is, at one fourth of one minute. The tenth to last Reaper would kill Fred at 1 divided by (2 times 10), that is, at one twentieth of one minute, and so on to infinity.

between two points because the runner must traverse half the distance, and the runner cannot traverse half the distance because the runner must traverse half of half of the distance, and so on. One blogger named Mk on Alexander Pruss's blog summarized Grim Reaper in this way: (a) that there are an infinite set of events (Grim Reaper visits), (b) of increasingly small duration, and (c) contained within a finite, bounded time interval. As Pruss said in his response, the Grim Reaper is different from a pure Zeno-paradox in that it combines the Zeno-type process of successive divisions in time with the stipulation that Fred will be killed, thus creating a contradiction.⁴

III. A Variation: Grim Placer

Koons modifies Grim Reaper somewhat with what he calls Grim Placer. In this variation, the Grim Reaper doesn't kill Fred but rather issues a death warrant, represented by a localized particle. Each Grim Reaper checks to see if this particle is in place. If it is, then the Grim Reaper does nothing. If it is not, then the Grim Reaper issues a warrant in the form of a localized particle. As with Zeno-arguments, no Grim Reaper could have issued a warrant-particle as this was done already by the previous Grim

⁴<http://alexanderpruss.blogspot.com/2008/01/grim-reaper-paradox.html>. Koons is interacting with Pruss's discussion of Grim Reaper.

Reappear, and so on to a converging infinity.⁵ When the supertask of particle placement is combined with the premise that the last Grim Reaper will place a warrant particle representing a death certificate, a contradiction will result, just as in the original Grim Reaper paradox.⁶

⁵ The Grim Reaper and Grim Placer paradoxes are somewhat reminiscent of Erwin Schrodinger's argument regarding the ill-fated cat in a box. This cat is said to be both alive and dead until the box is opened. The paradox was meant as a *reductio ad absurdum* of the Copenhagen Interpretation of quantum mechanics, just as Grim Reaper is meant as a similar *reductio* to the notion of an infinite past.

⁶ Koons discusses the assumptions of the Grim Reaper paradox. Some of the online criticisms of Grim Reaper challenge these assumptions, but we will not pursue them in this essay. It is not too easy to follow Koons with regard to these assumptions but they are as follows: (a) that the Grim Reaper scenario is metaphysically possible, i.e., that there is at least one possible world in which a Grim Reaper localizes a warrant particle; (b) an appeal to patchwork principles; borrowing from David Lewis, this holds that anything can coexist with anything else, and our knowledge of what is possible is patchy and we have to borrow from the actual world in various reconfigurations and coexistences; (c) the assumption that an intrinsic property is one of exact duplication of contents in every possible world; (d) that the relevant powers are intrinsic to the Grim Reapers; (e) the assumption that Grim Reaper processes are compressible in space and time; because if this were not true, then spacetime might have an essential feature, such as granularity, which would contradict the notion of (Zeno-like) infinitely dense time (where infinitely many Reapers exist); and (f) the assumption of the possibility of bounded and non-well founded time sequence.

IV. The Argument Explained:

Koons summarizes the views of Alexander Pruss that according to the Grim Reaper paradox “no finite time period can be divided into infinitely many sub-periods, but also that it is impossible that there should exist infinitely many times periods, all of which are earlier than some event.”⁷ This is simply the denial of an infinite time existing before the beginning of the Universe, which is also the beginning of time.

In demonstrating the impossibility of an infinite past, Koons uses a *reductio* form of proof. He first asks us to assume for purposes of argument that an infinite, composite past (or time) is possible. “Possible Infinite Past with Infinitely Many Parts—as the hypothesis for *reductio*.”⁸ An infinite composite past should not be confused with an infinite, *non-composite* past. An infinite *non-composite* past is a “simple” infinite past. A simple infinite past would be a past of infinite duration but without parts. Koons argues that the notion of a *composite* infinite past runs up against Grim Reaper. However, at the same time, he does not think Grim Reaper shows the impossibility of a *simple* infinite past.

⁷ Koons, p. 60.

⁸ *Idem*.

The heart of Koons's argument then will deny the notion of a simple, infinite past (or time).⁹ Koons holds that by definition a simple region of infinite temporal duration has no processes that have parts and therefore cannot be measured. Anything without parts cannot be measured because there is no starting or ending point. Time is the measure of change but it cannot measure change if there is no starting or ending point to a process. This means that since a simple infinite past has no processes with starting or ending points and since something without a starting or ending point cannot be measured, it follows that a simple infinite past cannot be a span of time, much less an infinite span of time, contrary to the assumption.

Koons considers a possible way around the problem by entertaining the assumption that time is self-measuring. It is difficult to understand what a self-measuring time could be but Koons describes it in terms of an infinity of actual sub-periods in which no simple unit of time can be extended. This description does not help much in understanding time as a self-measuring phenomenon, but perhaps Koons means that a simple unit of time is a

⁹ It should be noted that a simple infinite past differs from an infinite future in that the latter could only be a "potential" infinity (since it hasn't happened yet). An infinite past is one that has *ex hypothesi* already happened, meaning that it is an "actual" infinity. Presumably the infinite past goes back from our present to a never ending span of time into the past.

metaphysical isolate and has no relation to any other simple unit of time, and therefore lacks extension. In addition, Koons discusses the assumption that time is not self-measuring. In such a view, a simple period of time has no process that begins or ends and therefore cannot have temporal extension. This lack of temporal extension in both cases is regarded by Koons as the proof that "Either way, an infinitely extended simple past is impossible."¹⁰ In other words, an infinitely *extended* past requires temporal *extension*, but a simple infinite past, whether self-measuring or not, does not provide the required extension. In other words, the notion of a simple, infinitely extended past is incoherent.

V. Possible Counterexamples to Koons's Argument

The best counterexample to Koons's defense of Grim Reaper would be a possible world in which the premises are true but the conclusion is false. In this case, it would be to show that there is a possible world in which Grim Reaper holds but a finite past is still false. There have been some suggestions regarding the notion of imaginary time, and this may provide a way of denying the finiteness of time without falling prey to Grim Reaper.¹¹ Nevertheless, such a view of time is difficult to analyze in terms of how

¹⁰ Koons, p. 261.

¹¹ Stephen Hawking popularized the notion of imaginary time in his (1988, 1996), *A Brief History of Time*.

we normally conceive time, whether as cardinal duration (one moment, two moments, etc.), or as ordinal duration (first moment, second moment, and so on). If one has to redefine time in order to escape the Kalam argument, this perhaps shows that Grim Reaper is a very powerful counterexample to the denial of a finite universe.

St. Thomas Aquinas famously argued for a First Cause but took issue with premise (b) of the kalam argument and claimed that reason could neither prove nor disprove the infinity of the world. In his view, the world could be created by God, and yet exist from eternity, and belief in the finiteness of the world is an article of faith, not a conclusion of reason. This would presuppose that God could be an instantaneous cause of all contingencies, which would not require him to be prior to any effects but simultaneous to all.

Aquinas's conclusion is flawed in that he only considered a small range of arguments for the finiteness of the world. He does not, for instance, deal with arguments regarding the impossibility of an actual infinity.¹² For the same reason, Grim Reaper type paradoxes represent a real challenge to Aquinas's agnostic position. As Koons says: "An argument like the Grim Reaper could surely be used to

¹² Creighton Rosental (2011), *Lessons from Aquinas: A Resolution of the Problem of Faith and Reason*, Macon, GA: Mercer University Press, p. 167.

show that such simultaneous infinite regresses were . . . impossible, if we could use something analogous [to patchwork principle] substituting a 'place' in a causal chain for a spatiotemporal region. The conclusion would be that no possible world has an infinitely regressive causal structure (whether temporal or instantaneous)."¹³

Given that Grim Reaper is a relatively new paradox, it is difficult to find any counterexamples to Koons's actual argument, which focuses on a denial of a simple, infinite time. The ideal situation would be to find a case where Grim Reaper could be true and the conclusion of a finite universe false, but so far arguments against Grim Reaper have generally attacked the assumptions made by Grim Reaper rather than the concept of a simple infinity.

Perhaps this is because as Koons argues, there are only two possible types of infinity, either a composite one or a simple one. The first cannot escape Grim Reaper, while the second is incoherent in that it posits an infinitely extended simple past, but one that cannot possibly be extended, given either the self-measurement or non-self-measurement of time. For this reason it is unlikely that Koons's argument will be found invalid due to the Grim Reaper

¹³ Koons, p. 266. Koons does, however, think that Grim Reaper's patchwork assumption is incompatible with causal principles used to construct the argument for an uncaused first Cause, though it is difficult to see how he defends this claim.

being true and a finite past being false. If it is going to be found invalid, it will likely be due to some questionable assumption that serves as a condition for Grim Reaper, or perhaps due to a revisionary concept of time that at present escapes us.¹⁴

¹⁴ Koons does list a few objections to the validity of Grim Reaper/Placer and also provides responses as follows: (a) Not all dispositions or powers are intrinsic to their bearers, e.g., weight, etc., but in response all we need assume is that some dispositions are intrinsic to the Grim Reapers and that each Grim Reaper has a power to produce a warrant-particle. (b) Dispositions or powers can fail, but in response, Grim Reaper does not require that powers are always exercised with success, only that it is possible for them to be, and that Grim Reaper assumes an arrangement of infinitely many successful Grim Reapers. (c) Neo-Humean critics argue that patchwork principle does not apply, which entails extrinsicality of powers, and for that reason should be rejected. (d) Amazing Vanishing Particle. Grim Reaper variation assumes persistence of particles; in contrast, if may be assumed that infinitely many Grim Reapers are generating infinitely many particles with each particle vanishing just before each next particle appears; but in response, an assumption needs to be made about the persistence of signals, so that when a particle vanishes the Reaper only receives a null signal from a previous Reaper, and the Reaper is then supposed to send a signal (or particle) to his successor; in this case each Reaper has the intrinsic power of receiving and the intrinsic power of sending; and the Grim Reaper paradox assumes that each Reaper has the power to act directly on a successor. (e) Grim Reaper implies that endless time is possible, but the paradox does not establish an end to time.

VI. Conclusion

Koons is not an easy writer to follow and his arguments are densely packed and difficult to untangle, but his basic argument is that Grim Reaper/Placer strengthens the Kalam argument. There must be a Cause for the Universe since there must be a beginning in time, or else Grim Reaper would be true, which entails a contradiction. In the course of this argument, Koons provides arguments against the concept of a simple infinite past by showing that such a past could never be temporally extended and so could not even really be a *past*. If there is no simple infinite past, then there is not plausible objection to Grim Reaper, and therefore no plausible objection to the Kalam argument.

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