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JEEPERS REAPERS!

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ABSTRACT: I begin by discussing two scenarios involving independent light bulbs. I then consider extensions of these scenarios in which the states of light bulbs depend upon the states of other light bulbs. Given the discussion of these various scenarios, I argue that there is a challenging question for those who wish to make use of patchwork principles: if the scenarios that we duplicate involve successful execution of dispositions, can there be failure of execution of those dispositions in the patchworked scenarios? In the last two parts of the paper, I apply the earlier discussion to the argument against bounded non-well-founded sequences of time intervals given in Koons (2014), and to the argument against causal finitism given in Pruss (2018).

KEYWORDS: Benardete, causal finitism, Grim Reaper, Robert Koons, patchwork principle, Alexander Pruss

Introduction

Koons (2014) claims that Benardete's Grim Reaper Scenario affords grounds for denying that there can be bounded non-well-founded sequences of time intervals. Pruss (2018) claims that Benardete's Grim Reaper Scenario affords grounds for affirming causal finitism. I shall argue that what you take to be a minimal response to the Benardete scenario is not something that you can arrive at independently from making a determination about whether causal finitism is true. In particular, whether you think that the specification of the dispositions of the reapers in Benardete's scenario is *complete* depends upon whether or not you think that causal finitism is true.

I begin with brief accounts of (i) Benardete's scenario; (2) Koons's argument; and (3) Pruss's argument. I then turn to a discussion of two simple scenarios involving lightbulbs, with a focus on the interplay between the patterns that are exhibited by lightbulbs and the dependencies that hold between them. I conclude by applying the results of this discussion to the arguments of Koons and Pruss.

I claim that this response to the arguments of Koons and Pruss is worthy of attention because it assumes so little. In particular, it is worth noting at the outset that I take no stance here on any substantive questions about causal and/or past temporal finitism. My target is merely the claim that you can make a good case for causal and/or past temporal finitism from the Benardete scenario.

Moreover, I claim that this response to the arguments of Koons and Pruss is novel. Unlike Schmid and Malpass (forthcoming), I am not endorsing an "unsatisfiable pair" diagnosis. Unlike Schmid (2024b) and Dana and Schmid (forthcoming), I am giving a general objection that applies to both Koons (2014) and Pruss (2018), rather than an objection that applies only to arguments that appeal to patchwork principles. (I do grant that, in its application to Koons (2014), this more general objection covers some of the same ground as Schmid (2024b) and Dana and Schmid (forthcoming).) And, unlike Schmid (2024a), I am not suggesting that the arguments of Koons and/or Pruss can be adapted to reach conclusions that Koons and/or Pruss would reject. In saying these things, I am speaking only to the novelty of the argument that I give; I take no stand here on the question whether these other objections to the arguments of Koons (2014) and Pruss (2018) are also successful.

Benardete's Grim Reaper Scenario

According to Benardete's original version of the Grim Reaper story, a particular person is alive at 10:00. At each of an infinite sequence of times $t_1 > t_2 > \ldots$, strictly between 10:00 and 11:00, a Grim Reaper assigned to that particular time checks to see whether the person is alive. If the person is dead, the Grim Reaper does nothing. However, if the person is alive, the Grim Reaper kills the person by swinging its scythe. (Note that $t_1 > t_2$ just in case t_1 is later than t_2.) Following Pruss (2018), we shall consider a less macabre version of the story in which a particular light bulb is off at 10:00, and each Reaper turns the light bulb on by flicking a switch *if* the light bulb is off, and otherwise does nothing.

There is a significant literature on the Benardete Paradox. See, for example: Benardete (1964), Cook (2019), Hansen (2011), Hawthorne (2000), and Laraudogoitia (2003; 2023). There is also a burgeoning literature that discusses the relationship between the Benardete Paradox and certain kinds of finitism about causation and time. See, for example: Dagher (2023), Dana and Schmid (forthcoming), Gel (forthcoming), Koons (2014), Luna (2009), Luna and Erasmus (2020), Pruss (2018), Schmid (2023; 2024a; 2024b), and Schmid and Malpass (forthcoming).

Shackel (2005) gives a clear demonstration that the Benardete scenario is logically impossible. No one disputes that this is the case. Consequently, it might seem odd that one could try to argue for certain metaphysical theses – e.g., causal finitism and/or temporal finitism – by way of the Benardete scenario. The guiding idea, for both Koons and Pruss, is that we can show that it follows from the rejection of causal finitism and/or temporal finitism that the Benardete scenario is possible. Since it is agreed on all hands that the Benardete scenario is impossible, we go wrong if we reject causal finitism and/or temporal finitism.

Koons's Argument for *Temporal Finitism*

Koons claims that there is an argument for a certain kind of temporal finitism from his Infinitary Patchwork principle. In his view, given the truth of his Infinitary Patchwork principle – and certain other assumptions that seem to be unproblematic – we must reject the claim that there could be a bounded and not-well-founded temporal sequence. For, if there could be a bounded and not-well-founded temporal sequence, then – by the Infinitary Patchwork Principle and those other unproblematic assumptions – Benardete's "Grim Reaper" scenario would be possible. But – as more or less everyone agrees – Benardete's "Grim Reaper" scenario is impossible.

Koons's argument relies on the following claims:

Possible Grim Reaper (PGR): There is a possible world W and a region R such that R has a finite temporal duration d seconds, there is a Grim Reaper wholly contained within R, and throughout R the Grim Reaper has the power and disposition to issue a death warrant by placing a dw-particle at a designated position d meters from the plane P if there is no dw-particle closer to the plane than d meters, and otherwise to maintain any dw-particle that is within d meters of the plane in its initial position.

Intrinsicality: A property P is *intrinsic* to a thing x within region R in world W if and only if x is P throughout R in W, and every counterpart of x in any region R′ of world W′ whose contents exactly duplicate the contents of R in W also has P throughout R′.

Binary Spatiotemporal Patchwork: If possible world W1 includes spatiotemporal region R1, possible world W2 includes region R2, and possible world W3 includes R3, and R1 and R2 can be mapped onto non-overlapping parts of R3 (R3.1 and R3.2) while preserving all the metrical and topological properties of the three regions, then there is a world W4 and region R4 such that R3 and R4 are isomorphic, the part of W4 within R4.1 exactly duplicates the part of W1 within R1, and the part of W 4 within R 4.2 exactly duplicates the part of W2 within R2.

Infinite Spatiotemporal Patchwork (PInfSP). If S is a countable series of possible worlds, and T a countable series of regions within those worlds such that Ti is part of Wi (for each i), and f is a metric and topology structure-preserving function from T into the set of spatiotemporal regions of world W such that no two values of f overlap, then there is a possible world W* and an isomorphism f* from the spatiotemporal regions of W to the spatiotemporal regions of W* such that the part of each world Wi within the region Ri exactly resembles the part of W* within region f*(f(R_i)).

Intrinsicality of the Grim Reapers' Powers and Dispositions (PDIn). The powers and dispositions ascribed to each Grim Reaper are properties intrinsic to that Reaper in its corresponding region and world.

Compressibility of Spacetime (CompST). If property P is intrinsic to x in region R of world W, and R has a finite temporal duration, then there is a counterpart x′ of x and a counterpart P′ of P such that P′ is intrinsic to x′ in region R′ in a world W′, and an isomorphism f from the parts of R to that parts of R′ that preserves the topological properties of R, and such that, for each sub-region S of R, f(S) has exactly one-half the temporal duration and one-half the length of S in every spatial dimension.

Hypothesis of the Possibility of a Bounded and Not-Well-Founded Time Sequence (BNWF): There is a possible world W and a spatiotemporal region R in W such that (i) there is a time t within R and a finite temporal interval d such that no part of R begins earlier than d before t, and (ii) R has infinitely many temporally extended parts such that these parts can be put into a sequence (ordered by the natural numbers) in which each successive part in the sequence is wholly earlier in time than its predecessor.

The argument runs as follows:

1. Start with a possible Grim Reaper in world W and region R, with finite duration d_0. (From PGR)
2. Next, locate a world W′ with a region R′ containing a non-well-founded infinite series of non-overlapping temporal parts. (Assumption of BNWS, for *reductio*)
3. For each number n, locate a possible world W_n and region R_n, with duration $d/2^n$, containing a counterpart of the Grim Reaper. (From 1, PDIn, and CompST)
4. Find a single possible world W∗ with region R∗ containing a non-well-founded infinite series of non-overlapping temporal parts (R_0, R_1, etc.), with each R_i containing a counterpart of the Grim Reaper. (From 3, 4, and PInfSP)
5. In world W∗, at the end of each period R_i, a particle is located some distance $d/2^j$ from the plane P, for some j≥i. (From PGR)
6. In world W∗, at the end of each period R_i, if a particle is located at distance $d/2^i$, then at the end of period $R_{(i+1)}$, no Fred particle was located at distance $d/2^j$ for any j>i. (From PGR)
7. In world W∗, at the end of period R_0, some particle is located some distance $d/2^n$, for some n. (Instantiation of 5, replacing “i” by 0)
8. So, at the end of period $R_{(n+1)}$, no particle was located at distance $d/2^j$, for any j>n. (From 6, 7)
9. But, at the end of period $R_{(n+1)}$, some particle was located at distance $d2^j$, for some j > n. (Instantiation of 5, replacing “i” by “n+1”) Contradiction.
10. So, there is no possible world containing a non-well-founded infinite series of non-overlapping temporal parts. (Negation of BNWS)
11. Consequently, if temporal structure is symmetrical, then it is impossible for time to be dense. (From 10 and H4.STS, by Lemma 3)

Pruss's Argument for *Causal Finitism*

Pruss (2018) claims that the *Grim Reaper* story provides compelling grounds to adopt causal finitism, that is, to adopt the claim that it is not possible for infinitely many causes to bear on one thing. Pruss argues as follows:

1. If causal finitism is false, then the Grim Reaper story is possible.
2. The Grim Reaper story is not possible.
3. (So) Causal finitism is true.

According to Pruss, the best objection to this argument is the "absurd conclusion" objection, first articulated in Shackel (2005). As we noted above, according to this objection, the *Grim Reaper* story is impossible simply because an impossibility follows from it. Pruss's reply to this objection considers two variations of the original *Grim Reaper* story.

First, Pruss notes that there is no absurdity in *Reversed Grim Reaper*, in which $t_1 < t_2 < \ldots$, that is, in which t_1 is *earlier* than t_2 … . Second, Pruss notes that there is no absurdity in *Prefixed Grim Reaper* in which a further Reaper is added at 9:59. In *Reversed Grim Reaper*, the Reaper at t_1 turns on the light, and the remaining Reapers do nothing; and in *Prefixed Grim Reaper*, the Reaper at 9:59 turns on the light, and the remaining Reapers do nothing. Third, Pruss notes that we can suppose that Grim Reapers have dials that can be set to adjust their activation times. But, under these assumptions, according to Pruss, the proponent of the "absurd conclusion" objection is committed to the following claims: (i) it is impossible to set the dials to the values in the Grim Reaper story; (ii) any finite set of dials can be set to the values in the Grim Reaper story; and (iii) it is possible to set the dials to the values in the *Reversed Grim Reaper* story and the *Prefixed Grim Reaper* story. Pruss then says:

> This seems wrong. Physical objects like dials should generally be able to be shuffled, moved around, and recombined in minor ways. It is a mark against a theory that it makes the Grim Reaper story impossible but the Reversed and Prefixed ones possible. (p. 49)

In case this argument is not thought to be dispositive, Pruss provides two further scenarios for consideration. (1) We can suppose that there are infinitely many tinkerers with indeterministic free will who adjust the dials on the Reapers. It is clearly possible for them to set all of the dials to the settings in the original story, unless some strange metaphysical force prevents some settings. (2) We can suppose that there is a disable button on the 10:00 Grim Reaper and a tinkerer capable of pushing that button. But surely it is completely implausible to suppose that Prefixed Grim Reaper is possible and yet adding a disable button and a tinkerer is completely impossible!

Two Scenarios

As a preliminary to constructing a reply to the arguments of Koons and Pruss set out above, I now give a fairly detailed examination of two scenarios involving light bulbs.

Scenario 1: There is a single scheduler with a single light bulb. The scheduler chooses a period of time. The scheduler divides the period of time into intervals. The number of intervals can be finite or infinite. The period of time can be finite or infinite, and, if infinite, it can have the order type of the negative integers, or the order type of the positive integers, or the order type of the integers, or – though I shall not discuss this possibility explicitly – some other infinite order type. The number of intervals can be finite or infinite. In any given interval in the chosen period, either the light bulb is on throughout that period or the light bulb is off throughout that period. The scheduler determines, for each interval in the period, whether the light bulb is on for that interval or the bulb is off for that interval.

Scenario 2: There is a scheduler with an infinite supply of light bulbs. The scheduler chooses a quantity of light bulbs. The quantity can be finite or infinite. The scheduler also chooses a spatial orientation that determines left and right along a particular straight line. The scheduler forms the light bulbs into a row along this line from left to right. Given the assumptions already made, the array can be finite, or it can have the order type of the negative integers, or the order type of the positive integers, or the order type of the integers, or – though I shall not discuss this possibility explicitly – some other infinite order type. The scheduler determines, for each bulb in the array whether, when the array is operative, that bulb is on or that bulb is off. The scheduler makes the array operational.

An instance of either scenario can be represented by a string of ″1″s and ″0″s, where ″1″ represents that the given light bulb is on, and ″0″ represents that the given light bulb is off. So, for example, <1, 0, 1, 0> represents, in an instance of the first scenario, that the single bulb goes through the sequence on, off, on, and off, over the course of four time intervals, and, in an instance of the second scenario, that, when the array is operational, the bulbs, from left to right, are on, off, on, and off. For periods and arrays of infinite order types, the representation is an infinite string of ″1″s and ″0″s of the same order type.

If there are no further constraints imposed by the scheduler – and if time, space, matter, and endurance permit – then every possible sequence of ″1″s and ″0″s represents a possible history for the single light bulb and a possible state for a left to right array of light bulbs. (See Knuth (1974) for further discussion of these kinds of sequences of ″1″s and “0″s.)

Dependence and Dispositions

In Scenario 1, there is no dependence relation between the states of the light bulb over time. The scheduler determines the state of the light bulb for any given interval. In Scenario 2, there is no relation between the states of the light bulbs. The scheduler determines the state of each of the light bulbs in the given array. Theists who wish to add more detail to these scenarios might suppose the following: the scheduler is eternal; the scheduler creates each scenario in a single, eternal, creative act.

We can, if we wish, introduce dependencies between states to provide variants of each of the scenarios.

In variants of Scenario 1, we can have the state of the light bulb in any given non-first interval depend upon the state of the light bulb in earlier intervals.

For any finite string of ″1″s and ″0″s – and for any infinite string of ″1″s and ″0″s of the order type of the positive integers – there is, for example, a pattern of dependence in which the first state is automatically the state corresponding to the initial digit in the string, and all subsequent states are determined by a disposition to be in the state corresponding to the appropriate digit iff the prior state corresponds to its appropriate digit. So, if our string is <1, 0, 1>, then the initial state is independently on, and the second state is determined by the disposition to be off iff the first state is on, and the third and final state is determined by the disposition to be on iff the second state is off.

For any finite string of “1”s and “0”s – and for any infinite string of ″1″s and “0”s of the order type of the positive integers – there is also, for example, a pattern of dependence in which the first state is automatically the state corresponding to the initial digit in the string, and all subsequent states are determined by a disposition to be in the state corresponding to the appropriate digit iff *all* prior state corresponds to their appropriate digit. So, if our string is <1, 0, 1>, then the initial state is independently, on, and the second state is determined by the disposition to be off iff the first state is on, and the third and final state is determined by the disposition to be on iff the first state is on and the second state is off.

Quite generally, for any finite string of ″1″ and ″0″s – and for any infinite string of ″1″s and ″0″s of the order type of the positive integers – we can have a pattern of dependence in which any non-first state depends upon any subset of states that precede it. Moreover, when we formulate the dependence, it need not be a single ″iff″ condition: it can be an ″if″ condition, with a further – possibly highly complicated – specification of what happens if the preferred set of conditions does not occur. So, for example, if our string is <1, 0, 1>, is might be that, the initial state is on, and the second state is off iff the initial state is on, and the third and final state is on if the first state is on and the second state is off, and off if the first state is on and the second state is on, and on if the first state is off.

For any infinite string of ″1″ and ″0″ of the order type of the negative integers or the integers – there are patterns of dependence in which: (i) there are ″marker″ states that satisfy the following condition: for any marker state, there is an earlier marker state; (ii) marker states do not depend upon other states; and (iii) non-marker states depend, somehow, on earlier states. For example, in a string of the order type of the negative integers, we could let the prime states be marker states: states -1, -2, -3, -5, -7, -11, -13, etc. And we could have, for example, state -10 depend on any sub-collection from the states -11, -12, -13, … .

In variants of Scenario 1, we can also have the state of the light bulb in any given non-final interval depend upon the state of the light bulb in later intervals. And we can have the state of the light bulb in any non-terminal interval – whether first or last – depend upon the state of the light bulb in some mix of earlier and later intervals. However, we may not suppose that these patterns correspond to genuine possibilities: even if we have enough time, space, matter, and endurance, we may be stymied by the impossibility of retro-temporal dependence.

There are very similar things to say about patterns of dependence in variants of Scenario 2. In this case, we can suppose that there are many different types of light bulbs, with different dispositional tendencies. Some bulbs are automatically on. Some bulbs are automatically off. The state of some bulbs is determined by the state of their immediate neighbours to the left. The state of some bulbs is determined by the state of their immediate neighbours to the right. The state of some bulbs is determined by the state of all of their neighbours to the left. The state of some bulbs is determined by the state of all of their neighbours to the right. And so on. If a network is infinite in a given direction, then there may be an infinite sequence of ″marker″ bulbs – i.e., bulbs whose state is not dependent on the state of other bulbs – in that direction. And so on.

Flickering

Consider the following game. Participants in the game are given instructions about when to hold their right arm up, and when not to hold their right arm up. Suppose that we have two players, ″1″ and ″2″. 1 is told to hold their right arm up iff 2 does not hold their right arm up. 2 is told to hold their right arm up iff 1 holds their right arm up. Suppose that we start with neither 1 nor 2 holding their right arm up. What happens? Whatever happens, 1 and 2 do not settle into a stable position in which no arms are moving. There is no stable equilibrium that can be reached if the players ″try″ to act as the instructions given to them would have them act.

Transpose this to networked variants of Scenario 2. Suppose that we have two light bulbs, ″1″ and ″2″. Suppose that 1 has the following disposition: it is on iff 2 is off. And suppose that 2 has the following disposition: it is on iff 1 is on. If the scheduler tries to make the array operational, what happens? Whatever happens, 1 and 2 do not settle into a stable position in which each of them is in exactly one of the two available states: on or off. There is no stable position of that kind that can be reached if the light bulbs ″try″ to behave as their dispositions would have them behave.

One possible way out here is to envision a third state for the light bulbs. We can imagine that there is a fundamental disposition that all light bulbs have of the following kind: if the network in which you have been embedded will not go into a stable position given the lower-level dispositions assigned to all of the light bulbs, then flicker. If, however, the network in which you have been embedded will go into a stable position, given the lower-level dispositions assigned to all of the light bulbs in the network, then act according to your lower-level disposition.

If we go this way, then all combinations of bulbs and dependencies are realisable, but those combinations of bulbs and dependencies that were unrealisable under the original formulation of networked variants of Scenario 2 are now combinations in which all bulbs flicker. Obviously, there are other ways of making it the case that all combinations of bulbs and dependencies are realisable that draw on different fundamental dispositions, etc.

Response to Koons

Given certain simple provisos, Infinitary Patchwork clearly licenses the claim that, for each instance of Scenario 1 or Scenario 2 – both finite and infinite – there is a possible world in which that Scenario is embedded. In Scenario 1, all that we are patching – to a sufficiently large temporal region over a fixed spatial span – is interval-length time slices (with that fixed spatial span) that contain a particular kind of light bulb that is either on or off. In Scenario 2, all that we are patching – to a sufficiently large spatial region over a fixed temporal span – is 4D-slices (with that fixed temporal span) that contain a particular kind of light bulb that is either on or off. So, all we need is that there can be sufficiently partitionable spatial and temporal regions, and that requisite materials can be contained in those regions, and that things made from those materials can maintain their form and function everywhere within those regions.

What are the implications of *Infinitary Patchwork* for the variants of Scenario 1 and Scenario 2 in which there are dependencies between the bulbs? The general case, I think is that that the patched together regions are either: (i) *independent*, so that what happens in a given patched region is, in all relevant ways, independent of what happens in any other patched region; or (ii) *networked*, so that (a) the dispositions that are assigned to the stages of the light bulb in variants of Scenario 1 or the light bulbs in variants of Scenario 2 and (b) the states that are assigned to the stages of the light bulb in variants of Scenario 1 or the light bulbs in variants of Scenario 2, are jointly satisfiable. Consider the pattern <1, 0, 1, 0, 1>, and the assignment of dispositions: <Off, same as first, same as second, opposite of third, same as fourth>. The pattern can be realised. The assignment of dispositions can be realised. But the pair cannot realise the dispositions, if the pattern and the dispositions are jointly realised.

If I am right about the general case, then it *seems* that Infinitary Patchwork is false. It holds when the patched together regions are independent; but it seems that it can fail if the patched together regions require networking. Moreover, the problem that arises has nothing to do with the "infinitary" nature of Infinitary Patchwork: we have exactly the same kind of worry in the case of Finitary Patchwork, as per the example in which we have two light bulbs, one of which is on iff the other is off, and the other of which is on iff the one is on. Whether we are framing a Finitary Patchwork principle of an Infinitary Patchwork principle, we need to include a requirement that networking conditions are met. And, so long as we can have recourse to something like "flickering", we will be able to meet this requirement in both finitary and infinitary cases. Of course, it is consistent with everything argued here that infinitary cases are impossible. But we do not get from considerations about patchwork principles to this conclusion.

Response to Pruss

In the face of Pruss's objections, I think that someone who looked favourably on the "absurd conclusion" objection should deny that the Grim Reaper story is impossible *simply* because an impossibility follows from it. It is not just there the story is impossible because an impossibility follows from it; rather, the story is impossible because, there is no distribution of properties to the lamp that is consistent with the successful execution of all of the dispositions of the Reapers. Consider the original Reaper scenario. Holding fixed successful execution of all of the dispositions, we have a very short argument to the conclusion that any arbitrarily chosen time t_n, the light is not on, and a very short argument to the conclusion that any arbitrarily chosen time t_n the light is not off, and yet we are assuming that any arbitrarily chosen time t_n the light is either on or off. It is simply impossible to jointly satisfy our assumptions about the successfully executed dispositions of the Reapers and the claim that, at each time, either the light is on or the light is off.

We can generalise. Consider any scenario involving Grim Reapers and lamps. What the Benardete scenario makes clear is that we can put a line through stories for which there is no distribution of properties to the lamp that is consistent with the successful execution of all of the dispositions of the Reapers. This is a minimal response to the Benardete scenario that is grounded in serious metaphysics.

This minimal response does not give us everything we want. In particular, it does not tell us what proponents of the "absurd conclusion" objection should say about *Reversed Grim Reaper* and *Prefixed Grim Reaper*. I offer the following suggestion. The dispositions of a thing tell us what the thing will do in *all* possible circumstances in which the dispositions are executed. If we suppose causal finitism, then we shall suppose that the disposition of a Reaper is fully specified by the claim that, at t_n, the Reaper switches the light on iff the light is off. However, if we do not suppose causal finitism, then this claim simply does not specify what the Reaper will do at t_n if it is part of a beginningless sequence of Reapers. We know – by the straightforward argument given above – that it neither switches the light on nor switches the light off. As I noted earlier, we can fill in this lacuna by supposing that, in this circumstance, all of the Reapers go in for some kind of flickering. On this view, it turns out to be true that the addition of a Reaper at 9:59, or the time reversal of the sequence of Reapers, shifts all of them from flickering to a determinate state. But that is not implausible in the way that the details in Pruss's stories are implausible. After all, what makes the difference between flickering and the alternative is just whether there is a first Reaper.

It is perhaps important for me to remind you that I have not been offering an argument *against* causal finitism. The point that I am urging here is that those who offer the ″impossible because it has an impossible consequence″ objection to Pruss's Grim Reaper argument for causal finitism should insist that whether you think that the dispositions of the Grim Reapers have been adequately specified by the characterisation that Benardete gives depends crucially on whether or not you think that causal finitism is true. What you take to be a minimal response to the Benardete scenario is not something that you can arrive at independently from making a determination about whether causal finitism is true.

Perhaps some will baulk at the application of the notion of ″flickering″ in the case of the reapers. For those readers, here is a further filling out of the idea, set in the original, violent scenario. We assume that reapers know whether they are part of an infinite team or a finite team. If there are part of a finite team, then they kill iff they are the first in line. If they are part of an infinite team, then, at the appointed time, they start emitting a loud noise, and continue to do this until all of the reapers have done the same. As it happens, whenever all of the reapers act collectively in this way, anyone else in the vicinity falls dead at the very moment at which all of the reapers fall silent. Adapted to a lightbulb scenario: the switch is moved (say to on) exactly at the moment at which the reapers all fall silent, as a result of the collective action of all of the reapers. While causal finitists will think that this embellished scenario is impossible, their infinitist opponents can quite happily embrace it.

An interesting feature of this analysis is that there is a sense in which it assimilates the Grim Reaper scenario to the Thomson lamp scenario. Just as the standard telling of the Thomson lamp scenario simply fails to specify the end state of the lamp, so, too, the standard telling of the Grim Reaper scenario simply fails to specify the end state of the target of the reapers. In both cases, we can remedy this defect by giving more information. In the case of the reapers, this further information corrects the under-specification of the dispositions of the reapers.

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