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PRESENTIST TIME TRAVEL
AND THE LIMITS OF PRESENTIST CAUSALITY

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Simon Keller and Michael Nelson, in “Presentists Should Believe in Time-Travel,”¹ say that presentists can successfully follow David Lewis’s four-dimensionalist account of time travel.² However, Keller’s and Nelson’s account involves a causal relation between events at two different and discontinuous times, and presentists cannot have such causal relations because presentism rules out the existence of at least one of the two relata in such a relation due to it being non-present. Additionally, presentists cannot have parodies of such causal relations for use in time travel stories because parodies are subject, at least, to the same limitations as the things being parodied. So, the presentist cannot follow the same path that Lewis has pioneered and have not successfully given an internally consistent account of presentist time travel.³

One-Dimensional Time Travel: Definition and Implications

David Lewis has restricted his discussion of time travel to one-dimension; Keller and Nelson have followed suit. One-dimensional time travel does not occur through extra dimensions, curves in space-time, or as the result of variations in rate. That is, it does not take advantage of any of the implications of the general or special theories of relativity.⁴

Because Lewis is a four-dimensionalist and an unrestricted compositionalist, he can view any causally related set of person-stages as one person. Given this view, the connection between

¹ Simon Keller and Michael Nelson, “Presentists Should Believe in Time-Travel,” *Australasian Journal of Philosophy* 79:3 (2001), 333-345.

² David Lewis, “Paradoxes of Time Travel,” in *Philosophical Papers, Vol. 2* (New York: Oxford University Press, 1987) 67-80.

³ Lewis, and Keller and Nelson make use of backward-directed, one-dimensional time travel in their primary examples. The remaining discussion in this paper will involve the same kind of time travel. However, I think that future-directed time-travel would, when specified as one-dimensional and producing a spatial and/or temporal gap, involve the same issues. So, the current discussion addresses both past- and future-directed, one-dimensional time travel.

⁴ Lewis, “Paradoxes,” 68.

the person-stages of non-time-traveling persons is weak in comparison to that of other views of personal persistence. However it is precisely because of the weak nature of this connection that Lewis is free to propose unusual sums as parts of the same person. In the case of the time traveler, two sets of temporal parts are separated in space-time atypically. Nonetheless, Lewis still requires that these disparate and scattered sets of temporal parts be connected via a causal relation.⁵

One-dimensional time travel turns out to be an excellent way to showcase Lewis's philosophical positions. He rightly implies that only this view on personal persistence together with four-dimensionalism will allow for this kind of time travel.

Whether or not Lewis is correct, his definition of one-dimensional time travel has some important implications. The voyage of any one-dimensional time traveler must involve three things. First, there must be a temporal discontiguity, or gap, that divides the temporal parts of the traveler in an unusual way. Second, there must be a causal relation that spans this gap. Third, this connecting causal relation must involve an intrinsic change within the effect relata, which is the arriving time traveler.

The first requirement comes by means of the defining features of one-dimensional time travel. The second follows closely on its heels. Lewis thinks that without a causal link between the departing and arriving time traveler, there is no time travel at all. Instead, there are only peculiarly similar person-stages existing in an unusual temporal order.⁶ Moreover, Keller and Nelson accept the need for a causal connection, so there should be no dispute here.⁷

⁵ Lewis, "Paradoxes," 68, 72. See also, Lewis, "Survival and Identity," in *Philosophical Papers*, Vol. 1 (New York: Oxford University Press, 1987), 55.

⁶ Lewis, "Paradoxes," 72. Lewis, "Survival," 56.

⁷ Keller and Nelson, 340.

Considering the third implication, however, if events in the past are not different, intrinsically, as a result of the relation in question, it seems best not to call the situation time travel. To think otherwise would make time travel commonplace and uninteresting. It would be better to say that such relations do not involve time travel at all. If we were limited to the alternative kind of relation, which is known either as a cambridge-change relation or an extrinsic-change relation, then our discussion would be reduced to consideration of the nature of *comparisons* between present and past states of affairs. Comparisons of this sort would not involve any intrinsic change in past states of affairs, so they would not involve time travel.

The Presentist Case for Time Travel

To make a case for presentist time travel, the features of both time travel and presentism must be made compatible. The first obstacle to this goal, which Keller and Nelson address preemptively, has been called the “Nowhere Argument.”⁸ This is the intuitive concern that, in a world where only present things exist, travel to other times would be ruled out because there would be no existing destination to which the time traveler might go.⁹ Keller and Nelson state that this is not only intuitive, but a widespread assumption among philosophers.¹⁰ However, they think that this argument “proves too much.” If the *Nowhere Argument* worked, it would also rule out the normal passage of time for presentism. Presentists must be able to account for the persistence of persons as time passes normally. Thus, if presentism can work at all, it has already passed the *Nowhere Argument*.¹¹

⁸ William Godfrey-Smith, “Travelling in Time,” *Analysis* 40 (1980), 72-73.

⁹ *Ibid.*, 72. See also Keller and Nelson, 335, FN 6.

¹⁰ Keller and Nelson, 334, 335

¹¹ *Ibid.*

Nonetheless, it is plausible to think that a causal relation requires two existing relata. If one of the two relata cannot exist because it is in the distant past, then the causal relation cannot obtain. However, if this is so, one might be worried about the presentist's ability to account for every-day causation in non-time-travel situations. Keller and Nelson seem to think that they have addressed it by means of a "positive account of the possibility of presentist time travel."¹²

The resulting positive account, however, is problematic. To show why this is the case, I will start by asking a few questions. By what means does the presentist account for everyday causation? Can this same means be used in cases of time travel? I do not think it can. The means in question appear to be a contiguity of times and the contiguity of the events that occur (or exist) at those times. One-dimensional time travel, however, cannot provide contiguity since it contains a temporal gap by definition. In everyday causal relations, the cause and the effect events can both exist in a presentist framework due either to an extensive overlap in time, or at least by means of minimal, point-like temporal contact. In short, both events can exist at the same time for everyday cases of fundamental causation.¹³

So, to account for one-dimensional time travel, presentists cannot appeal to relations that cannot traverse temporal gaps. It seems that this leaves only one avenue along which to proceed; the presentist must find a way to produce a legitimate relation between temporally discontinuous events. To accomplish this goal, Keller and Nelson suggest that tensed statements about past events may properly stand in for the events themselves. This substitution, together with the claim that "relations between events are not the sorts of things that happen at a time,"¹⁴ creates a

¹² Keller and Nelson, 335.

¹³ It may seem like some causes are greatly separated in time from their effect. These are not cases of fundamental causation, however, and involve chains of causes and effects that act to propagate, in the present, a non-fundamental causal process.

¹⁴ Keller and Nelson, 341.

possible avenue around the above problem. Consider Keller's and Nelson's following two examples:

There are all sorts of (what seem to be) relations that hold between events that do not follow one after the other. How can it be true that the Sydney Olympics are more expensive than were the Melbourne Olympics, when there are no existing Melbourne Olympics for the Sydney Olympics to be more expensive than?¹⁵

If presentism can get to the starting line, then the presentist will have to be able to explain such relations in one way or another... the presentist can say that *c* will occur in 2054 and *e* did occur in 1985, and *e* was the effect of *c* and *c* will be the cause of *e*. The question of whether the strange causation involved in time-travel is really possible should not divide presentists from four-dimensionalists.¹⁶

In the two quotations above, two different *kinds* of relations are being given as examples.

In the first quotation, Keller and Nelson are addressing the issue of temporal gaps by providing an example of a relation that successfully spans such a gap. They note that a past event can be less expensive than a present event. This example involves two essential ingredients. First, there is a substitution. A tensed statement about a past state of affairs (which does not exist in the present) is used as a substitute for the state of affairs itself. Clearly, the substitution works in this example. Second, the example involves extrinsic, or cambridge change. Such a relation involves comparison rather than causation.¹⁷

However, the second quotation gives us a generic *causal* relation. So, we are led to another important question. Can this strategy of substitution be legitimately applied to causal relations? Relations may not be the sorts of things that happen at a time, but relata *do* happen at a time. Is it legitimate to substitute a tensed statement for an intrinsic change in order to accomplish the stated goal?

¹⁵ Keller and Nelson, 341.

¹⁶ Ibid., 341.

¹⁷ Certainly, the relationship might be expressed in causal language, but this usage is imprecise; it is a bad fit with the character of the relation in question. E.g., we could say that the past event *causes* the later event to be more expensive. However, this is better described as comparison or correspondence than as causation.

Keller and Nelson think that it is legitimate. Consider the following quotation:

The presentist believes that there are past- and future-tensed truths, but does not believe that the past or future exist. Should we then say that the presentist does not really believe in the possibility of time-travel, but only in the possibility of odd arrangements of past- and future-tensed truths? Perhaps we should. Perhaps presentist time-travel is not real time-travel, but only something that parodies time-travel, in the same way that the presentist arrangement of past- and future-tensed truths is only a parody of the past and future. But when it comes to telling stories, even this conclusion, we think, is strong enough.¹⁸

This statement appears to be making the following four assertions:

1. Tensed statements about the past may stand in for past events.
2. Presentist accounts of all trans-temporal relations proceed by means of such substitutions.
3. A presentist account of time travel *just is* a collection of true statements that make use of such substitutions.
4. It does not matter that the referents of the substitutionary, tensed statements no longer exist.

In contrast to the conclusions of Keller and Nelson, when considering causal/intrinsic-change relations that must span temporal gaps, I do not think that such substitutions can legitimately be made. So, 1 and 2 are true. However, the substitutions in question are limited to extrinsic-change relations. Thus, 3 and 4 are *not* true because such substitutions cannot create time travel. As for 4, not only do the referents not exist in the present, they never existed at all. This is because, in order to exist in the past, they had to have been involved in a causal relation that produced intrinsic changes within the effect relata.

Statements in the present about the past are either true or false depending upon whether or not they correspond with states of affairs in the past. In a proper correspondence relation, the past state of affairs causes, by comparison, the present statement to be true or false, not the other

¹⁸ Keller and Nelson, 345.

way around.¹⁹ If there is no intrinsic change in the past state of affairs, then statements that report an intrinsic change cannot be true. Since presentism does not allow the intrinsic-change causal relation that is required in order to create the intrinsic change in the past state of affairs, the intrinsic change itself cannot actually exist, not even in the sense of past existence.²⁰ It follows that there can be no true tensed-statement that *corresponds* to such a state of affairs. That is, the statement referring to a caused state of affairs cannot be true if there is or was no such state of affairs.

Therefore, the substitution is the crucial part of the discussion, and the substitution depends upon whether the actual time-travel event has occurred. Furthermore, the actual event depends upon a successful defense of a causal relation, involving an intrinsic change, that spans a temporal gap. Such a relation cannot obtain in a presentist world.

I will now attempt to state this chain of arguments more formally:

Given presentism, if and only if temporal contiguity obtains in a causal relation can its two relata both exist.

But, temporal contiguity does not obtain in one-dimensional time travel scenarios by definition.

Therefore, the two relata cannot both exist in such time travel scenarios.

If and only if a past relatum exists can it undergo intrinsic change.

But, given presentism, the past relatum cannot exist simply because it is past.

Therefore, a past relatum cannot undergo intrinsic change.

If and only if statements about intrinsic changes in past relata correspond to intrinsic changes in past relata can those statements be true.

But, given presentism, statements about intrinsic changes in past relata cannot correspond to intrinsic changes in past relata because such changes cannot be accounted for.

Therefore, those statements cannot be true.

¹⁹ This correspondence relation is comparative and extrinsic so it doesn't involve intrinsic change. Despite this, I think that I am using this extrinsic change relation properly within my argument without being self-contradictory.

²⁰ Lewis, "Paradoxes," 69.

Finally, if the tensed statements in question cannot be true, then they may not properly be used in the crucial substitution; this seems to be the unavoidable conclusion.

To sum up, the presentist case for one-dimensional time travel hinges upon our ability to substitute a tensed statement for an intrinsic change in a past event within a causal relation that spans a temporal gap. Such a substitution cannot be made because the tensed statement has no referent to latch onto. The referent could never have existed because the *actual* time-travel event cannot occur in a presentist world. The time travel event requires a causal relation that cannot occur given the rules of presentism.

Statements that correspond to past intrinsic changes that are caused by temporally discontinuous events in the present rely upon intrinsic-change causal relations that can only obtain in a four-dimensionalist framework. Thus, time travel stories always depend upon actual episodes of time travel for their truth. Therefore, time travel stories must presuppose four-dimensionalism.

One can tell time travel stories in a presentist world, but the key statements in those stories would not correspond to anything that exists or that could have existed in that world. Similarly, if one tells time travel stories that contain true statements, then one must be living in a four-dimensional world. To put this another way, presentist time travel stories inherently violate the rules of presentism.

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