

SELF VISITATION, TRAVELER TIME AND COMPATIBLE PROPERTIES

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Canadian Journal of Philosophy (in press)

1. Introduction

Ted Sider aptly and concisely states the self-visitation paradox thus: “Suppose I travel back in time and stand in a room with my sitting 10-year-old self. I seem to be both sitting and standing, but how can that be?” (2001, 101). I will explore a *relativist* resolution of this paradox offered by, or on behalf of, endurantists.¹ It maintains that the sitting and the standing are relative to the *personal time* or *proper time* of the time traveler and is intended to yield the result that Ted is sitting at a certain initial personal/proper time but is not standing relative to that time. Similarly, it is also supposed to yield that Ted is standing relative to a later personal/proper time, but not sitting relative to that time. Such a *traveler-time relativism* has been offered by Paul Horwich (1975, 433-435 ; 1987, 114-115) and also by Simon Keller and Michael Nelson (2001, 344). I will show that this relativist approach is a non-starter. It is so because Ted is sitting *and* standing at *both* the initial and the later personal/proper time. Though I will do my best to recapture what these authors found appealing in traveler-time relativism, I will conclude by suggesting that

endurantists resist all relativist resolutions and instead recognize that sitting and standing are compatible properties.

2. Traveler-Time Relativism

For relativists, Ted's sitting is somehow relative, and so is his standing. So, for example, *spatial-location relativism* holds that Ted is sitting at some place, say, *here*, though it is not the case that he is standing here. While Ted is standing somewhere else, say, *there*, it is not the case that he is sitting there. He can be sitting here and standing there so long as he is not also standing here and sitting there. What is impossible is for the person to be simultaneously sitting and standing in one location. Kristie Miller (2006, see especially 315-316) defends a variation of this approach that makes the sitting and standing relative to a spacetime region. The primary attraction of spatial-location relativism or any plausible relativism is that it thwarts a threat to endurantism from Leibniz's Law by undermining the thought that the sitter and the stander differ on their properties. Relativizing to time, a familiar endurantist move in treatments of the problem of change (i.e. the problem of temporary intrinsics), is obviously of no help to the endurantist regarding self-visitation. The sitting and standing take place at the same time. Being told, for instance, that Ted is standing *now* and sitting *now* does nothing to block the threat from Leibniz's Law.²

Regarding this threat, for all relativisms, it is important that the relativized property not be analyzable as a certain conjunction. For example, the spatial-location relativist should not accept that being sitting here is equivalent to the conjunction of being sitting (simpliciter) and being here.

By taking the analogous position about being standing there, the relativist would still be stuck holding that Ted is sitting and Ted is standing. The relativist denies that Ted is sitting (simpliciter) and denies that he is standing (simpliciter).³

According to traveler-time relativism, sitting and standing are relative to the traveler's personal time or proper time. Both these temporal concepts are, roughly, time as measured by the traveler's wristwatch. Personal time is a concept introduced and defined by David Lewis (1976, 146). It is based on a numerical assignment to an ordering of the temporal stages of a person such that regularities—like that food digests and hair grows—match those that commonly hold with respect to time itself, what Lewis calls *external time*. Proper time is a concept employed in the theory of relativity. It is calculated using an assignment of coordinates to events along a spacetime path and is given by the spatiotemporal “length” of that path. “In general, the proper time measured by a clock is the time relative to the frame of reference in which the clock is at rest. The Charles-proper-time of an event is defined as its time in the frame in which Charles is permanently at rest” (Horwich 1975, 434, n. 8).

Keller and Nelson suggest relativizing to personal time as one viable way to make endurantist sense of their time traveler, Jennifer, who at the time of the self visitation seems to have two different hair colors:

...[Y]ou can trade on the distinction between personal time and external time, and say that Jennifer has the properties *being white-haired at 1985 and age 84* and *being black-haired at 1985 and age 14* (or that Jennifer *has-in-1985-at-age-84*

the property *being white-haired*, and *has-in-1985-at-age-14* the property *being black-haired*). These are not incompatible properties (2001, 344).

Similarly, for a traveler Charles, who seems to have a beard and no beard at the time of the self-visitation, Horwich suggests relativizing to proper time:

When it is said that Charles₁ does have a beard in 1960 but Charles₂ does not, the proper-time index is suppressed. But were we more explicit we would say that Charles₁ has no beard in 1960 at some proper time t , whereas Charles₂ has a beard in 1960 at some different proper time t' (1975, 434-435).

For the most part, whatever differences there may be between personal time and proper time will not be important to this paper. So, usually, I will not distinguish between the two, talking about both at once by speaking of *traveler time*.⁴

Keller and Nelson conveniently indicate different traveler times by citing different ages of the traveler, but this convention is not without risk. Relativization to traveler times as an answer to the self-visitation paradox is supposed to be parallel to relativizations to times as an answer to the problem of change.⁵ It is just a matter of deploying something like a different kind of time, about which temporal notions like simultaneity and occurrence-at-a-time make good sense. So, despite Keller and Nelson's use of phrases like 'in-1985-at-age-14' and how such phrases are ordinarily understood, the relativizations specify a traveler time of occurrence; the traveler-time relativist treats ' x is F ' as an incomplete version of ' x is F at t ', where t indexes the amount of

traveler time that has passed since the time traveler was born. We should not think of the relativizations as entailing something about the age of x . On an ordinary understanding of the sentence ‘Super Bowl XIX occurred in 1985 at age 14’, it seems to assert that this football game was 14 years old when it took place in 1985! What the relativization really amounts to, however, is that the game occurred in 1985 at, say, Jennifer’s traveler time age 14.

3. What Else is Happening at the Traveler Times?

Traveler times are temporal indices and different events in different locations can be happening at a given traveler time. Lewis tells us, “We may assign locations in the time traveler’s personal time not only to his stages themselves but also to the events that go on around him” (Lewis 1976, 146). This feature was important for Lewis; it was employed to make sense of sentences like ‘Soon Caesar will die, long ago’ said by a time traveler about to depart on a trip to Ancient Rome. Regarding proper time, selection of a frame of reference brings frame-relative simultaneity relations.⁶

When Ted is sitting at age 10, he is also, say, wearing a blue shirt, coffee is brewing nearby, and let’s suppose Super Bowl X is concluding. So far so good, but something else is going on then: At that traveler time, Ted is standing. Ted is doing it over there at that traveler time, not over here, but he is standing then. Similarly, as Ted is standing at traveler time age 37, something else is going on, at that traveler time, Ted is sitting. Therefore, Ted is sitting *and*

standing relative to *both* his traveler time age 10 and age 37. Traveler-time relativism is of no help to the endurantist.

This serious problem has been overlooked because of our inclination to focus on *just* what is going on where Ted is sitting or else on *just* what is happening where Ted is standing. When we do focus on just where Ted is sitting, it is somewhat natural to think that Ted is not standing at the traveler time of the sitting. If we focus our attention on just where Ted is standing, it is somewhat natural to think that Ted is not sitting at the traveler time of the standing. These, however, are poor ways to judge what is happening at a traveler time. Traveler time of occurrence is not limited to the location of the traveler; occurrence at a traveler time holds of all events—no matter their location—that are simultaneous with any other event that occurs at that traveler time.

Those who have previously been critical of relativizing to traveler time have focused on problems with the notion of personal time itself. For example, Sider (2001, 106) thinks appealing to personal time cannot add anything new to the problem because Lewis's notion of personal time is a defined notion; facts about personal times supervene on ordinary facts involving external time.⁷ What I have shown is that the exact details about what traveler time is do not matter. Even if the relativization is to proper time, or even if traveler time is some sort of irreducible notion of personal time, so long as traveler time is something like time according to the traveler's wristwatch, traveler-time relativism is in trouble.

4. Age Relativism

There may be an alternative, something in the spirit of traveler-time relativism, that avoids the pivotal problem revealed in Section 3. The most promising route is to introduce a relativization to age modeled on spatial-location relativism. According to *age relativism*, though Ted is not sitting (simpliciter), he is sitting at age 10 and he is standing at age 37. His sitting at age 10 is not reducible to being sitting (simpliciter) and being 10 years old. His standing at age 37 is not reducible to being standing (simpliciter) and being 37 years old. Plausibly, then, one might hold that, though Ted is sitting at age 10, he is not standing at age 10. Similarly, it looks like we are in position to hold that Ted is standing at age 37 and not sitting at age 37. The connection with traveler time is pretty straightforward. The relativized property is treated as relative to a *quantity* of traveler time, a measure of how much time the person or other entity that instantiates the property has experienced along the path that has led to this instantiation. If this is all reasonable, then the traveler-time relativist reinvented as an age relativist is back in business.

In Section 5, I will advance my primary concern with age relativism. It also applies to spatial-location relativism and all other initially plausible relativist treatments of self visitation. It is a theoretical concern about the explanatory value of the irreducible relativizations that all relativists employ. For the remainder of the present section, Section 4, however, since we do seem capable of consistently making the relevant judgments about when the irreducible relativizations obtain, I consider some more direct challenges. The challenges stem from certain esoteric possibilities.

Age relativism fails if one is prepared to recognize that fission can result in a bilocated person. The manner of the fission is not important; it can be a case involving a teletransporter simultaneously beaming someone to two locations or it can be some sort of brain bisection. What

does matter is that we take seriously the idea that the person who is fissioned survives to wholly exist at two different spatial locations (Miller 2006, 331-332; also cf., Ehring 1987), an idea that should appeal to the endurantist who favors the kind of answers to the self-visitation paradox under consideration here. Suppose along one side of the fission Jennifer has dyed her hair red, but along the other path has left it black. Then Jennifer is red-haired and black-haired at a single age. For this example, spatial-location relativism does better than age relativism: Jennifer is red-haired at one spatial location and is not black-haired at that location; she is black-haired at a different location but not red-haired there.

The table turns on these two relativisms with a case of a ghost-like time traveler. Suppose Jennifer has a ghost-like ability; though she bumps into other persons and objects, she passes through her own self.⁸ Suppose she dyes her hair from black to red as she is about to turn 18, just before jumping into the time machine. Once she arrives in the past, she is careful to occupy the exact same spatial location as her black-haired, 14-year-old self. She is both black-haired and red-haired, but how can that be? Spatial-location relativism does not address this puzzle. Jennifer is red-haired and black-haired in one location. Age relativism does better on this case: At the time of the self visitation, Jennifer is black-haired at age 14 and not red-haired at age 14; she is also red-haired at age 18, but not black-haired at age 18.

Both age relativism and spatial-location relativism are threatened by a combination of the two prior cases. Suppose Jennifer has that ghost-like ability, undergoes fission and the ghost-like ability is preserved along both sides of the fission. Along one side of the fission, Jennifer dyes her hair red but doesn't do so along the other side. Subsequently, the red-haired and black-haired persons along the two sides come to occupy a single spatial location as ghostly things sometimes

do. For this combination case, there needs to be something else besides age and spatial location to relativize to, as exactly the same amount of traveler time may have passed along both of Jennifer's paths to this fission-instigated self visitation. Jennifer is black-haired and red-haired at a single age at one spatial location.

5. Relativism vs. Property Compatibilism

Perhaps there is some alternative relativism that handles the ghostly fission case. Whether there is or not, cases of persons occupying a single spatial location are extremely controversial; some will want to argue that what I have called an esoteric possibility is not really a possibility at all. Surely some will also want to deny that the described endurantist position on the fission case can be taken seriously. Nevertheless, rather than discuss these worthy and difficult issues further, we will make more progress by turning to an independent concern that challenges all relativist resolutions to the self-visitation paradox.

The endurantist has two goals. My focus so far has been on the first. This is the goal of preserving the endurantist intuition that the sitting thing is the standing thing by avoiding a violation of Leibniz's Law. Of relativism, this requires that (i) it is not the case that Ted is sitting (simpliciter) or standing (simpliciter), (ii) that it is the case that Ted is sitting relative to some consideration and that Ted is not also standing relative to that same consideration, and (iii) that Ted is standing relative to some other consideration without being sitting relative to this other consideration. Traveler-time relativism fails regarding (ii) and (iii), but if a relativism successfully

maintains (i)-(iii), then there is no pressure from Leibniz's Law to count the sitter and stander as numerically distinct. There are ways of accomplishing this much. About Ted's self visitation, relativizing to spatial locations and relativizing to age are two ways that meet the endurantist's first goal, but even relativizing to the footwear being worn does the trick, assuming Ted changed his shoes just before traveling back in time.

There is, however, a second goal in answering the self-visitation paradox. It is an explanatory one, that of *explaining how* someone could be simultaneously sitting and standing. There is a certain amount of puzzlement generated by the self-visitation situations. It is not really about whether the situation is possible. Most participants in this philosophical debate take it as given that the situation is possible. The puzzlement is about how to make sense of an at-least-apparent contradiction that we philosophers like to highlight: that Ted is sitting and standing. There really isn't some huge mystery here, not if one is the least bit informed about what a world with time travel would be like. There is just some philosopher-provoked puzzlement about how to understand what is going on, especially from an endurantist perspective.

Nevertheless, the explanatory goal imposes standards. For example, *generality* is favored in explanations. Even assuming that Ted did change his shoes, it would be a poor relativism that addressed the original case of self visitation by pointing out that Ted was sitting wearing sneakers and not standing wearing sneakers, standing wearing work boots but not sitting wearing work boots. It would be a poor relativism because different relativizations are required for a case in which Ted didn't change his shoes. Similarly, we would reject a relativism that worked for the case of Ted and the apparent impossibility that he is sitting and standing, but didn't work for Jennifer and the apparent impossibility that she is black-haired and white-haired. The importance

of generality was also on display in Section 4. I raised the issue of whether relativizing to age and whether relativizing to location would work across a range of cases.

We also expect *the amount of explanatory satisfaction to be proportional to our theoretical expense*. Consider spatial-location relativism. The spatial-location relativists' answer to the question of how Ted could be simultaneously sitting and standing is that Ted is sitting here and Ted is standing there. It is not, however, any less mysterious how Ted could be sitting here and standing there than it is how he could be sitting and standing. Given the reference to different locations and that ordinarily people are not wholly located in two places at once, that Ted has the properties of *being sitting here* and *being standing there* also generates some puzzlement.⁹ The same goes for age relativism and Ted's being sitting at age 10 and simultaneously being standing at age 37. How could that be? Even if he were sitting at age 10 and *sitting* at age 37, I would initially be a little bit puzzled about how that could be, just as puzzled as I was about Ted sitting and standing.

To explain away the appearance of impossibility, all relativizers try to relativize to something that serves to distinguish Ted's sitting and his standing. They try to make it plausible that Ted is sitting relative to ### and that Ted is not standing relative to ###. They also try to make it plausible that Ted is standing relative to *** and that Ted is not sitting relative to ***. But, ultimately, for endurantists, whatever serves to distinguish Ted's sitting and his standing must be tied through the relativizations to Ted. Thus, we should always ask whether the chosen relativizations generate puzzlement. Roughly, we need to ask how the traveler could be standing relative to ### and sitting relative to ***? How could our traveler be sitting here and standing there? How could he be sitting at age 10 and standing at age 37? Any philosopher who adopts the

relativist strategy seems bound to presuppose that certain apparently incompatible relativized properties are really compatible properties.¹⁰

This problem, I suspect, has been overlooked in part because it really isn't that hard to live with the fact that Ted is sitting here and standing there or that he is sitting at age 10 and standing at age 37. Recognizing these relativized properties as compatible is not a big deal if one is the least bit informed about what a world with time travel would be like. The tough question for the relativist is why we need to relativize in the first place. Relativism does a fair amount of theorizing and provides not much by way of illumination. Irreducible relativizations are introduced to address the seeming incompatibility of sitting and standing, but we are still left with different, apparent incompatibilities. There really wasn't a big mystery to begin with. It would nicely minimize the theorizing to simply recognize sitting and standing as compatible properties.

With that in mind, here's a minimalist resolution of the self-visitation paradox: *Property compatibilism* holds that our self-visitation scenario *reveals* that one person sitting and standing is not impossible.¹¹ Just check out Ted. He is simultaneously sitting and standing, thus demonstrating that sitting doesn't entail not standing and standing doesn't entail not sitting. Just as considering the possibility of time travel to a time before one's birth may reveal to us that one can exist before being born, so self visitation reveals to us that one can stand and sit at the same time. According to property compatibilism, the appearance of paradox, the appearance of the incompatibility of the properties, arises due to a tendency to generalize from ordinary situations about which it may well be true that anyone who is sitting is not standing at the same time.

In admitting that Ted is both sitting and standing, the compatibilist does not thereby accept the contradiction that *Ted is sitting and it is not the case that Ted is sitting*. As the

compatibilist sees it, that second conjunct simply isn't true about our self-visitation scenario. Furthermore, the compatibilist needn't hold that every two properties are compatible. Horwich's example of having a beard and having no beard may provide an example of incompatible properties. Arguably, Charles couldn't have those two properties, and, if not, the compatibilist should deny that he does have both in Horwich's self-visitation scenario. Yes, Charles is such that he has a beard at the time of the self visitation, but he is not such that he has no beard. You might think that he had no beard were you to see him where he is clean shaven and had no clue that he had time traveled back to this time with a beard, but you would be wrong: At the time of the self visitation, Charles has a beard. It is not the case that he has no beard.

Thus, what the relativist needs to show is why the favored relativizations are needed at all. In other words, the relativist needs to show why it is neither true that Ted is sitting (simpliciter) nor that he is standing (simpliciter). With compatibilism, endurantism is preserved; there is nothing to suggest that the person sitting is not the person standing because it is part of the compatibilist position that standing does not entail not sitting and sitting does not entail not standing. The compatibilist also does a better job than the relativist on the matter of explanatory success since it introduces less theoretical apparatus without sacrificing illumination. It is time for endurantists to give property compatibilism more serious consideration. Some of the paradoxes of time travel really are oddities, not impossibilities (cf., Lewis 1976, 145).¹²

REFERENCES

- Ehring, D. 1987. "Personal Identity and Time Travel." *Philosophical Studies* **52**: 427-433.
- Horwich, P. 1975. "On Some Alleged Paradoxes of Time Travel." *Journal of Philosophy* **72**: 432-444.
- . 1987. *Asymmetries in Time*. Cambridge, MA: Bradford.
- Keller, S. and M. Nelson. 2001. "Presentists Should Believe in Time Travel." *Australasian Journal of Philosophy* **79**: 333-345.
- Lewis, D. 1976. "The Paradoxes of Time Travel." *American Philosophical Quarterly* **13**: 145-152.
- Markosian, N. 2004. "Two Arguments From Sider's Four-Dimensionalism." *Philosophy and Phenomenological Research* **68**: 665-673.
- Miller, K. 2006. "Traveling in Time: How to Wholly Exist in Two Places at the Same Time." *Canadian Journal of Philosophy* **36**: 309-344.
- Sider, T. 2001. *Four Dimensionalism*. Oxford: Clarendon Press.
- Simon, J. 2005. "Is Time Travel a Problem for the Three-Dimensionalist?" *Monist* **88**: 353-361.

ENDNOTES

1. There are certain resolutions of the self-visitation paradox that are not addressed here. For instance, there is a perdurantist answer described by Lewis (1976, 147) and Sider (2001, 101), and Markosian (2004, 671-2) floats an endurantist resolution modeled after their perdurantist answer. For Lewis and Sider, there is a person stage that is sitting and a person stage that is standing, and neither is the time traveler. Instead, they are two spatial parts of the temporal part of the time traveler at the time of the self visitation. Markosian suggests that there is a person-like spatial part (Young Ted) that is sitting and a person-like spatial part (Old Ted) that is standing and that neither is Ted. Instead, they are two spatial parts of Ted at the time of the self visitation. I would be disappointed should either of these approaches turn out to be the only viable one. I am wholly right here, right now; there is no part of me somewhere or somewhen else that is needed to make me whole. That, for me, is the basic intuition that makes endurantism seem like just so much common sense. While Markosian's view is endurantist, his suggested resolution strays from the core endurantist intuition. For Markosian, in the self-visitation scenario, though there appears to be a person sitting that is all of Ted, in fact, that is only a spatial part of Ted. A similar concern is expressed by Simon (2005, 360, n. 3).

2. For convenience, I will often suppress any reference to the time of the self visitation when talking about Ted's sitting and standing. My concern will almost always be only with what is going on at that time and so usually it will not need mention.

3. For the purposes of this paper, it is not important exactly how the relativizing of sitting and

standing is handled. For the spatial-location relativist, perhaps the properties of standing and sitting are thought really to be relations between a person and a place. Or, maybe, the *having* of these properties is really a relation between a person, a property, and a place. Or, maybe again, these properties themselves are spatially indexed; they might really be the properties of sitting here and standing there.

4. There is an analogous lack of discrimination in my talk of *time*. For a discussion focusing exclusively on relativizing to personal time, the appropriate contrast would be external time. For a discussion of relativizing to proper time, the appropriate contrast would be some notion of *observer* or *coordinate time*, time with respect to some other frame.

5. Despite Horwich's use of terms like 'suppressed' and 'explicit' in the passage quoted in my text, it is doubtful that our property attributions include an *implicit* reference to a traveler time. Its tenability is certainly not on a par with the thought that our ordinary property attributions are implicitly relative to times, which is standardly offered as solution to the problem of change. Keep in mind that proper time and personal time are semi-technical notions, and not exactly something we usually keep track of, at least not in any obvious way. So, the traveler-time relativists are most charitably seen as *recommending* a plausible way to treat our property attributions so that they are consistent with a plausible endurantism. They should not be seen as *revealing* the actual meaning of those attributions.

6. In *Asymmetries in Times*, his more recent work that discusses self-visitation, Horwich explicitly

restricts the application of the proper-time index to events that take place close to the traveler (1987, 115). This does not affect the issue in any significant way; in our self-visitation scenario, Ted might be standing right next to where he is sitting; it might be that he is even leaning over and giving himself a hug.

7. Simon (2005, 360 n. 19) says that his concern with this move is making appropriately rigorous sense of personal time. The remark is brief and unspecific enough that it might be that he had something like my criticisms in mind.

8. Cases of two material objects with a single spatial location have been discussed for some time and are controversial. I heard a version of this example during a discussion with John Pollock many years ago.

9. Sometimes the self-visitation paradox is raised specifically in terms of location. For example, Keller and Nelson introduce their discussion of self visitation, endurance and perdurance by saying, “For an hour, Jennifer simultaneously occupies two spatial regions. How is such a thing possible? Call this the bilocation problem” (2001, 341).

10. There may be a corresponding problem for time relativism as an answer to the problem of change. The standard relativist answer to this problem tells us that Ted is sitting at one time and standing at another. Those properties could conceivably be seen as just as incompatible as being sitting and standing. If there is a problem here, I do not expect it to get much traction with

endurantists; existing at more than one time, no matter how existing at a time is to be spelled out, is a core element of endurantism.

11. Sider (2001, 102) formulates this view but goes on to reject it. He thinks there is a distinct possible case where the sitting Ted and the standing Ted are in each other's location and position. He believes that the property compatibilist has no way to distinguish the two cases. Simon (2005, 353-355) argues that, once Sider fully specifies the two cases in such a way that it is plausible that they cannot be differentiated, it is no longer intuitively clear that there are really two distinct possibilities under consideration.

12. Thanks to Majid Amini, Yuri Balashov, Joe Campbell, Randy Carter, James Harrington, Chris Hitchcock, Ned Markosian, Michael Pendlebury, Ann Rives, John Roberts, and especially some anonymous referees for superb comments. A version of this paper was presented at the 2008 Pacific Meetings of the American Philosophical Association. I have also benefitted enormously from discussions about the self-visitation paradox with some of my excellent students, including Melissa Schumacher and especially Allyson Hutchinson for her insight on relativism's need to appeal to apparently incompatible relativized properties.