Presentists Should Not Believe in Time Travel

Takeshi SAKON

Abstract

The issue of (in)compatibility between presentism and time travel has intrigued many philosophers for the last few decades. Keller and Nelson [2001] have argued that, if presentism is a feasible theory of time that applies to ordinary (non-time travel) cases, then it should be compatible with time travel. Bigelow [2001] and Sider [2005], on the other hand, have independently argued that the idea of time travel contradicts the presentist conception of time because it involves the ‘spatialisation of time’ (in a metaphysical sense), which is something that presentists should resist. In support of the latter claim, I offer a new argument via a different route. More specifically, I clarify basic components of the view that I take as ‘orthodox’ presentism by examining how presentists have considered temporal notions of the existence of things and their property possession. It is because of these notions that presentists can sensibly maintain a dynamic theory of time and should not believe in time travel.

1. Presentism and Time Travel

For the last few decades, the issue of (in)compatibility between presentism and time travel has intrigued many philosophers. At first glance, it may seem that the presentist thesis that everything is present is at odds with the possibility of time travel, since there are no past or future moments to which presentists can travel. However, very few philosophers (either for or against presentism) have actually raised or considered such an objection; for if it succeeded, then
presentism itself would be rejected so easily on the ground that it could no longer make sense of the commonplace phenomenon in which ‘everything passes constantly forward into the future and away from the past’ (whatever this expression really means). As Sider [2005: 329] points out, there should be something wrong with such a rough refutation of presentism.

In fact, Keller and Nelson [2001] have argued that, if presentism is a feasible theory of time that applies to ordinary (non-time travel) cases, then it should be compatible with time travel. Basic concepts required to understand time travel include past and future truths, causal connections between events, personal identity, and the distinction between perdurance and endurance, all of which are necessary in normal situations. Time travel also involves the possibility of a causal loop and backward causation, which may allow for some strange stories, for instance that of a time travelling millionaire who had only possessed one dollar. However, whether these unfamiliar processes are possible is another issue, and they matter not only for presentists but also for their opponents. Thus, Keller and Nelson concluded that presentists should believe in time travel, and Monton [2003] reinforced this claim by arguing that presentists should also believe in closed time-like curves.

Conversely, Bigelow [2001] and Sider [2005] have independently argued that presentists should deny the possibility of time travel, since it contradicts the presentist conception of time. Bigelow and Sider believe that time travel involves the ‘spatialisation of time’ (in a metaphysical sense), which is something that presentists should resist. Along this line of thought, I offer a new argument for the incompatibility between presentism and time travel via a different route. In doing so, I assume, along with Keller and Nelson, that presentism is at least a feasible theory of time in ordinary cases.

Through the discussion below, I also assume the classical notion of time travel [Lewis 1976]. For the purpose of this study, it is sufficient to notice that time travel should allow a scenario in which one can travel into the remote past (or future) when he/she sees no familiar face, or a scenario in which one can travel into the near past (or future) when he/she meet his/her earlier (or later) self. In fact, a typical science fiction of time travel involves a scenario of a temporally foreign trip or self-visitation. With this in mind, I do not discuss whether time travel in general is really possible or not; rather I take an agnostic attitude towards this matter.
In what follows, I first clarify the view that I take as ‘orthodox’ presentism by examining what presentists have thought of such basic temporal notions as the existence of things and their property possession. Then, I suggest that presentism is best understood as a dynamic theory of time that strongly resists the spatialisation of time (Section 2). Based on this, I argue that orthodox presentists should deny time travel (or at least its actual occurrence), since its acceptance implies that they cannot maintain the core notions of existence simpliciter and property possession simpliciter (Section 3). Finally, I provide some supplementary comments (Section 4) and the conclusion (Section 5).

2. Orthodox Presentism

Presentism is often introduced as the thesis that everything is present, whereas eternalism is taken as the thesis that something is not present. Regardless of whether presentism in this simple form may fall prey to severe objections, it should be noted that it has an ideological component concerning what it means for something to exist and to have a property. Presentists typically claim that to exist now is to exist simpliciter (whereas past or future existence is either irreducibly tensed or relative to a certain time), and that to have a property now is to have it simpliciter (whereas past or future property possession is either irreducibly tensed or relative to a certain time). While presentism is sometimes motivated in terms of ontological parsimony (i.e. ontological commitment to present things only), it should be also supported from an ideological viewpoint.

2.1 Existence (Simpliciter)

Presentists claim that time is not analogous to space. Let us examine this claim in more detail. As for existence in space, it is natural to state the following:

- To exist (simpliciter) is to be located in some place.

For any physical object to exist, it must be located in some place, and vice versa; for instance, if the laptop that one uses is located on a desk, it exists simpliciter. Similarly, eternalists believe that the following is true of existence in time:

- To exist (simpliciter) is to be located at some time.
By contrast, orthodox presentists, such as Merricks [2007: 124–5] and Prior [1970], deny this outright, since they believe that there are no real times at which things are located. This is not to say that, while past or future times do not exist, only the present does. For those presentists, all times (present or non-present) are mere representations of the world that are derived from the way things were, are and will be; therefore, they are not fundamental but derivative entities. This may be regarded as a temporal analogue corresponding to the actualist claim that all possible worlds (actual or non-actual) are derived from the way things are and might have been. As for the notion of existence, presentists typically claim the following:

- To exist (simpliciter) is to exist presently.

In other words, the term ‘presently’ indicates that present existence is not time relative. This is where eternalists and presentists disagree on the notion of existence (simpliciter).

It is worth noting that non-presentist A-theorists (either Growing Block theorists or Moving Spotlight theorists) would agree with eternalists and disagree with presentists on what it means to ‘exist’. Moving Spotlight theorists who accept eternalism plus something extra (i.e. the moving NOW) would also think that to exist (simpliciter) is to be located at some time. This equation is accepted only for past and present existence by Growing Block theorists who believe that what is actual as of the present incessantly increases towards the future. After all, those A-theorists may count as eternalists of some sort; in my formulation, they are in fact classified as A-theorists who nonetheless tend to spatialise time with respect to temporal (past, present or future) existence. Presentists should resist such tendency.

2.2 Property Possession (Simpliciter)

To clarify the presentist notion of property possession, it is helpful to consider the problem of ‘temporary intrinsics’, which refers to how one and the same thing can persist through intrinsic changes. Given that the past, present and future all exist equally, it is difficult to see how things can have incompatible properties such as being straight and bent. Consequently, eternalists typically end up conceding either that property possession is always time relative in some way (including the notion of a proposition’s being true relative to a time),
or that each (instantaneous) temporal part of a persisting thing has a property *simpliciter*. In regard to the former, nothing can have a temporary intrinsic property *simpliciter*, whereas in the latter, nothing can persist through changes while maintaining its identity.

Hinchliff [1996] finds it advantageous that presentists can avoid this problem without abandoning the idea of property possession *simpliciter*. From a slightly different perspective, Crisp [2003] has argued that one of the merits of presentism is that it can reconcile the endurantist thesis that one and the same thing can persist through time with the change thesis that things can undergo changes in properties. Presentists may hold, for instance, that when one and the same poker *is* hot, it *will be* cold, and when it *is* cold, it *was* hot. Given that nothing has incompatible properties presently, they can safely maintain the following:

- To have a property (*simpliciter*) is to have it presently.

In other words, the term ‘presently’ indicates that present property possession is *not* time relative. Thus, presentists can be endurantists, paying no cost. Non-presentist A-theorists who espouse different kinds of change (movement of the spotlight or growth of the block universe) have the same difficulty that eternalists face in dealing with the problem of temporary intrinsics.

Instead of accepting endurantism, presentists *could* adopt the ontology of temporal parts. Lewis [1986: 202–4, 2002] has infamously argued that the best way to maintain the notion of property possession *simpliciter* is to accept the perdurantist thesis that things persist by having different temporal parts at different times: each temporal part has its intrinsic properties *simpliciter* at the time when it exists. Against this proposal, I agree with Zimmerman [1998] that presentists should refuse perdurantism in favour of endurantism, although this is not to say that presentism is incompatible with perdurantism. In fact, Brogaard [2000] has suggested such a combination for her own purpose; however, this option is minor in the literature to say the least, for it seems that perdurantist presentism not only has few merits, but also it invites serious problems, some of which Benovsky [2009] has already identified.

In addition, presentists should have a stronger reason for not adopting perdurantism. Perdurantists typically presuppose that time is just another dimension added to the three spatial dimensions, and these four dimensions
jointly *constitute* a thing as well as an event in the sense that everything has both spatial and temporal parts. Endurantists should not accept the latter claim. For endurantists who are also eternalists, time is not a constitutive element of a thing but only indicates a temporal location in which it is placed. Orthodox presentists are more radical in this respect, denying real times at which things are located and have properties: there are no such temporal locations in the first place. Orthodox presentists should not be perdurantists but austere endurantists.

### 2.3 Presentism as a Dynamic Theory of Time

The aforementioned brief survey suggests that the basic tenet of orthodox presentism should be encapsulated into something like the following:

**Orthodox Presentism (1): Present Existence and Property Possession**

The present existence of things and their property possession are not time relative.

I also believe that the connection between presentism and endurantism is much closer than it may be expected, even though it cannot be considered logical. At any rate, I agree with Merricks [1995 and 1999] that it is not an arbitrary combination at all. Thus, I take the following as another basic component of orthodox presentism:

**Orthodox Presentism (2): Endurantism**

One and the same thing persists through time, being wholly present whenever it exists.

These two core theses establish what I call ‘orthodox presentism’. They need not be taken as giving the definition of presentism, since it can be formulated in different ways for different purposes. Nonetheless, I believe that this line of thought should at least point presentists in the right direction.

My suggestion would be surprising to those who simply regard presentism as the ontological thesis that everything is present. In my view, however, the ontological aspect of presentism should be taken as a consequence of the more substantial theses given above, and it may only be mentioned as a useful
Presentists Should Not Believe in Time Travel

(though often misleading) shortcut to what they really convey. The fact is that whatever satisfies the two basic requirements determines or results in the suitable ontology. In particular, the notion of present existence and property possession and the endurantist view on persistence are by no means optional add-ons but essential components of orthodox presentism. In showing the incompatibility between presentism and time travel, I will argue on the two premises that are made explicit here rather than on presentist ontology itself.

Orthodox presentism should count as a dynamic theory of time because the following holds:

**A Dynamic Theory of Time**

What exists presently (*simpliciter*) and how it is presently (*simpliciter*) can vary according to the passage of time.

Presentists may say that ontological and qualitative changes in things *are* what is ordinarily called ‘the passage of time’ [cf. Prior 1968]. By contrast, eternalism implies a static theory of time via what I call ‘spatialisation of time’:

**Spatialisation of Time**

To exist is to be located at some time (akin to a spatial point or a place), and to have a property is either to have it at some time or for some temporal part to have it *simpliciter*.

What exists relative to a time and how it is relative to a time cannot change. Hence, the spatialisation of time itself implies a static theory of time, unless no extra ingredient is added.

**A Static Theory of Time**

What exists relative to a time should remain constant, and how things are relative to a time cannot change through time.

The spatialisation of time explicitly eliminates any possibility for change. From this perspective, the debate between eternalists and presentists is far from trivial as they dispute over whether and how ontological and qualitative changes are possible.
Based on these preliminaries, I will argue that presentists should not believe in time travel. Those who are less interested in this conclusion may instead consider the following consequence of the argument:

1. Eternalism spatialises time.
2. Either presentism or eternalism (including non-presentist A-theories) is true.
3. Presentism is incompatible with time travel.
Therefore, time travel implies the spatialisation of time.

I have already discussed the first premise. It is safe to assume the second premise in the present context because no other theories of time have been taken up for discussion so far. (As seen before, Growing Block Theory can be regarded as half eternalism and Moving Spotlight Theory as hybrid eternalism. I suspect that these two theories are also incompatible with time travel because of their extra ingredients that make time dynamic, but this does not affect the point that time travel implies the pure spatialisation of time.) Thus, if I succeed in showing the incompatibility between presentism and time travel, it also follows that time travel implies the spatialisation of time. This may shed some light on the nature of time travel, apart from the issue of presentism.

3. Incompatibility between (Orthodox) Presentism and Time Travel
This section presents two typical time travel cases. The first case involves travelling into the remote past (or future), where a time traveller meets something previously unfamiliar and is separated from something familiar. I argue that orthodox presentists should not believe in such travel. Following this, I consider the second case that involves travelling into the near past (or future), where a time traveller is present with his/her earlier or later self. In this case, I argue that it also violates presentism as a dynamic theory of time. Since a typical time travel story must fall under either of these cases, the conclusion will be that presentists should not believe in time travel. As for some loopholes in this argument, they will be addressed in the following section.

3.1 Travelling into the Remote Past: Suicide or Mass Destruction?
Let us consider a simple case of travelling into the remote past or future. A
young physicist named Sophia is excited to get into her newly invented time machine to chat with Marie Antoinette. Upon her arrival, Marie cannot believe that Sophia came from the twenty-first century. To convince Marie, Sophia proposes that she travel back to the future together; however, Marie is hesitant and fearful. Sophia tries to explain that the machine is safe and tells Marie the dreadful event that is to happen to her in a few years. After considering it, Marie answers, ‘No, I just don’t want to kill my people!’ This is the last thing that Sophia expected to hear from the person known as Marie Antoinette.

For Marie, time travel is either suicide or mass destruction. Convinced that it is not suicide, she then concludes that it must be mass destruction. This suggests that Marie does not really understand the idea of time travel after all, which is the first punch line of the story. Needless to say, the second punch line concerns the rumoured character of Marie Antoinette.

Of course, the moment will come when one must say goodbye to those he/she loves. It could be due to one’s death or others, and these ontological changes are part of the orthodox presentism shown earlier. However, the aforementioned story implies more, since it suggests that what exists simpliciter depends on the time traveller’s simple act of pushing a button on the time machine. To be more precise, there are three possibilities: (i) that the things at the departure time and at the arrival time both exist simpliciter; (ii) that either the things at the departure time or at the arrival time exist simpliciter; or (iii) that existence is always time relative. Regarding (i), it is not a viable option for presentists, since it implies that things at different times exist. As for (ii), it implies that a time machine does not work as it is supposed to, but it is, in fact, like a killing machine, a strange way of performing suicide or mass destruction. In either case, it cannot be properly referred to as ‘time travel’.6

This point does not rest upon whether time travel results in a kind of suicide or not; nor does it rest upon whether time travel results in a kind of mass destruction. I only claim that either the things at the departure time or at the arrival time exist simpliciter and that a time machine is just a killing machine in either case. Let us examine this problem in more depth. Presentists must say that the following two statements cannot be both true (simpliciter), but either one is true immediately after Sophia pushes the button to return to the past:
Marie and Sophia existed in the past, and all but Sophia exist.

Marie and Sophia exist, and all but Sophia will exist in the future.

For eternalists, the two statements may not make any ontological difference: whichever temporal perspective one happens to take, both should mean that Marie and Sophia exist at one time and all but Sophia exists at another time. For presentists, they do make a significant difference: while one is a case of suicide, the other is a case of mass destruction. Whether pushing a button on the time machine results in suicide or mass destruction, one of the cases must obtain if (ii) is true, and it cannot be properly called time travel.\(^7\)

The only option for presentists may seem to be (iii), but it is not a neat solution either. Presentists (as well as eternalists) should reject this option if they wish to maintain the notion of existence \textit{simpliciter}. To be sure, this notion may mean different things in eternalism and presentism, since the former claims that temporal existence (past, present or future existence) implies existence \textit{simpliciter}, whereas the latter claims that only present existence implies existence \textit{simpliciter}. Although presentists may think of past or future existence as time relative, this is \textit{not} to say that present existence is also time relative. Unless presentists are ready to become hardcore temporal relativists, who abandon the notion of existence \textit{simpliciter} altogether, accepting (iii) would be no different than jumping out of the frying pan and into the fire.\(^8\)

In addition to the outright rejection of temporal relativism, orthodox presentists should not accept (iii) for another reason. As shown earlier, orthodox presentists believe that ontological changes are at least possible; that is, what exists \textit{simpliciter} can change. This claim is part of orthodox presentism as a dynamic theory of time. The problem is that temporal relativism automatically rules out such ontological changes. Were existence always time relative, no ontological changes could occur; for whatever exists at a time exists then. Therefore, if presentists wish to maintain the notion of existence \textit{simpliciter} (i.e. present existence) for the purpose of defending temporal dynamism, then they should resist the temptation to adopt temporal relativism.

I have argued that travelling into the remote past contradicts the presentist notion of existence \textit{simpliciter}, and it seems that no other options are available for presentists to avoid the problem. By contrast, no analogous difficulties would arise in eternalism. Eternalists in general can make perfect sense of
travelling into the remote past because they believe that things in the past, present and future all exits *simpliciter*. A time machine (if it exists) should work as it is supposed to, and it is not a killing machine for eternalists.

### 3.2 Travelling into the Near Past: Self-Visitation?

Let us consider another time travel story of self-visitation. A young physicist named Phillip is sitting in a laboratory and contemplating how to design a time machine. As he waits for the key idea to come to mind, he gazes at the wall. A few seconds later, Phillip sees someone who looks just like him materialise out of nowhere. With a surprise, Phillip asks the visitor who he is. Standing in front of Phillip, the man answers, ‘I’m you! I came from the future just to tell you the final step for building the time machine’. After the meeting, it takes Phillip less than a week to create the machine and travel back to the past.

This is another example of a typical time travel story. Now, let us suppose that the time of self-visitation is the present, as the story suggests. At this time, Phillip is sitting on a chair in the laboratory, and the visitor is standing in front of him. Sitting and standing, of course, are incompatible intrinsic properties that an object can never possess simultaneously. Phillip has one of these incompatible properties *simpliciter* and the visitor has the other *simpliciter* because to have a property now is to have it *simpliciter* according to orthodox presentism. However, Phillip is strictly identical to the visitor, according to the endurantist notion of persistence, which is also an essential component of orthodox presentism. Hence, one and the same person (Phillip) has the incompatible intrinsic properties *simpliciter*, which is a contradiction. The same contradiction can be derived for other intrinsic or relational properties such as locations.

No analogous difficulties would arise in eternalism. Perdurantist eternalists may say that Phillip and his later self are no more one and the same object than one’s right and left hands, but they are different (temporal) parts that constitute one and the same object, namely Phillip, who persists through time. It is not a contradiction that different parts have different (incompatible) properties. In particular, Phillip can have a part that is sitting and another part that is standing. Thus, no contradiction arises.9

Endurantist eternalists can also deal with the self-visitation problem by introducing the distinction between personal (or proper) time and external (or
global) time. Lewis says that personal time of a time traveller is ‘roughly, that which is measured by his wristwatch’ [Lewis 1976: 146], and external time is time itself. Sider also explains the idea by stating that ‘[p]ersonal time is time experienced by the time traveler, whereas external time is time *simpliciter*, time according to the public ordering of events’ [Sider 2001: 106]. To make sense of time travel, philosophers typically resort to this distinction. In the present context, it is worth noting the following two points.

First, the distinction can be used to define the idea of time travel itself. According to Lewis [1976], an object time travels if and only if there is a discrepancy between personal time and external time in its journey. While this definition as it stands may seem unsatisfactory in that mere time dilation would count as a case of time travel, it is undeniable that genuine time travel should also involve such a discrepancy. Second, the distinction makes it coherent to say, for instance, that a time traveller spends five minutes in his/her personal time measured by a wristwatch and arrives at the time designated as ‘one hundred years from now’, according to the external temporal coordinate for non-time travelling objects. Thus, the distinction between personal time and external time is necessary for (Lewisian) time travel.

Using this distinction, endurantist eternalists may suggest that Phillip can have different (incompatible) properties relative to different moments of his personal time. For instance, Phillip can be both sitting at a moment \( p_1 \) of his personal time and standing at another moment \( p_2 \) of the same personal time, where \( p_2 \) is later than \( p_1 \), even though he is both sitting and standing at the same external time \( t \). To say that Phillip is sitting at \((p_1, t)\) and standing at \((p_2, t)\) is not a contradiction.\(^1\)

One may suspect that the contradiction can only be avoided if \( p_1 \) and \( p_2 \) are not simultaneous with each other. As Carroll [2011] sees a potential problem lurking here, it may be argued that because the two moments of Phillip’s personal time are in fact simultaneous, they can be regarded as denoting one and the same moment. If they denote the same moment, the objection runs, the initial difficulty will emerge again: Phillip is both sitting and standing at the same moment of his personal time, as well as at the same external time.

In reply, I say that \((p_1, t)\) and \((p_2, t)\) are not simultaneous in respect of Phillip’s personal time but only of external time. Let us start with the assumption that
Phillip’s sitting at \((p_1, t)\) is simultaneous with his standing at \((p_2, t)\).

To be sure, this implies that

\[(p_1, t)\] is simultaneous with \((p_2, t)\) in respect of external time.

However, it does not mean that

\[(p_1, t)\] is simultaneous with \((p_2, t)\) in respect of Phillip’s personal time.

Any two moments of time denote one and the same moment only if they are simultaneous in respect of that time series. The two moments of Phillip’s personal time do not denote one and the same moment, since they are not simultaneous in respect of his personal time but only of external time. Generally speaking, any moment of one’s personal time can only be simultaneous with itself in respect of that personal time because those moments in the personal time are linearly ordered according to the physical process that the object in question undergoes. Hence, it is perfectly coherent to say that Phillip is sitting at \((p_1, t)\) and standing at \((p_2, t)\).

Relativising Phillip’s property possession to different moments in his personal time is not an ad hoc strategy for endurantist eternalists, since they must adopt the same type of temporal relativisation in ordinary (non-time travel) cases after all, due to the problem of temporary intrinsics. As seen earlier in 2.2, endurantist eternalists cannot but abandon the notion of property possession \textit{simpliciter}, admitting that any persisting thing can only have different properties relative to different times. (As a matter of choice, they may wish to relativise a property itself or a fact of property possession, but it would not affect the present point.) The notion of personal time seems to play no significant role in a normal case, but this is simply because it is assumed that personal time for a particular object and external time for other things are in accordance with one another, especially in a case where relativistic effects are so small that they can be ignored. When such effects are considered, every instance of property possession must be relativised to different moments of personal time for a given object.

Finally, although I believe that presentists can also make use of the distinction between personal time and external time\textsuperscript{11}, they should add that present property possession is not a relative matter. Consequently, the
aforementioned contradiction is unavoidable: Phillip has the two incompatible properties (i.e. sitting and standing) *simpliciter*. Presentists might attempt to solve this problem by stating that, in a time travel case, a persistent thing can only have a property relative to time; however, such a move is poorly *ad hoc*. Moreover, if they abandon the idea of property possession *simpliciter*, then they must throw away their theoretical virtue altogether. Therefore, presentists should not believe in time travel into the near past.

### 3.3 Can Presentists Still Believe in Time Travel?

This nearly completes my argument for the incompatibility between time travel and presentism. After considering the two types of time travel, I admit that there is a coherent scenario that presentists could still believe in, which is as follows. Mr. X is a diehard presentist who has a time machine but is fully convinced by the argument of the present paper. Since he is a sci-fi lover, he is saddened to know that presentists can neither travel into the remote past to see historical persons nor travel into the near past to see his earlier self. After some consideration, he finally finds a solution. Without hesitation, he pushes the button on the time machine and vanishes. Immediately after this moment, he reappears out of nowhere but looks much older because he has spent 30 years in his personal time and has arrived at the departure time.

Now, although presentists may accept this scenario, it is not an interesting time travel story as we typically entertain it. Time dilation (though in much more moderate form) is actually observed as a relativistic effect. Presentists have no problem with interpreting this phenomenon: they might state that things could persist and instantiate properties at different rates, or that they could persist constantly while instantiating properties at different rates; neither of which causes anything contradictory. To accept the phenomenon of time dilation does not make presentism compatible with other typical time travel stories. A *fortiori*, a mere relativistic effect should not count as an interesting case of time travel. Thus, my point still holds: presentists should not believe in time travel while recognising the phenomenon of time dilation.

This does not prohibit presentists from enjoying a time travel story as mere fiction. Some presentists, such as Crisp [2003: 215], think that presentism may not be a necessary truth. Other presentists, such as Sakon [2015], suggest that presentism is necessarily true if it is true, since the claim is that ontological
and qualitative changes in things are possible even though there may be some worlds in which no changes occur. Both admit that some possibilities may be unfriendly to presentists; however, no presentists would concede that their thesis is actually false. Thus, it is safe to conclude that presentists should not think that time travel is possible.

4. Supplementary Comments

Although I have made a significant argument to establish the incompatibility between presentism and time travel, I consider the recent discussion on time travel from a neutral perspective so as to cover some loopholes. More specifically, I contemplate other manoeuvres to avoid the paradox of time travel that may or may not be available to orthodox presentists. First, I critically examine a strategy that utilises spatial relativisation rather than temporal relativisation and briefly mentions new ways of considering time travel.

4.1 Spatial Relativisation

It may be thought that, in a self-visitation case, one and the same thing exists in two places at the same time, having different properties relative to these different places. In particular, Phillip is sitting here at a certain time and standing there at the same time. This may be acceptable if the sitting Phillip and the standing Phillip are two different spatial or temporal parts of the same object. As we have seen, perdurantists readily choose this option, whereas endurantists explicitly deny the ontology of temporal parts. The question is whether endurantists could make sense of the self-visitation story by saying that the sitting Phillip and standing Phillip are different spatial parts of one and the same Phillip.

To be sure, any spatially extended object and its parts can have different properties in different places. However, this understanding of the self-visitation time travel is highly problematic in two respects. First, neither the visiting man nor the visited man would be identical to Phillip, but their mereological fusion should be taken as Phillip himself. Were this to happen, Phillip would have to transform himself radically, sometimes having two arms and two legs and sometimes four arms and four legs, which seems counterintuitive. To make matters worse, Phillip could not be regarded as a time traveller meeting his earlier self as the scenario would involve occasional self-fusion rather than self-
visitation. At any rate, it does not count as a time travel story of the relevant sort.

Instead of thinking that the mereological fusion of the sitting Phillip and the standing Phillip has different properties in different places, one may suggest that one and the same Phillip is wholly present in each place he exists, sitting in one place and standing in the other at the same time. In my view, this could only be true of entities such as ‘universal’, which are said to be repeatable and wholly present in each place they are instantiated. Clearly, Phillip is not such an entity but a concrete particular, even though he has various properties regarded as universals. Even in the bundle theory, according to which any particular is nothing but a bundle of properties which are co-instantiated, the sitting Phillip and the standing Phillip are not taken as identical because they are different bundles of properties by hypothesis.

Miller [2006] has suggested that one and the same thing can be located in different places at the same time by using the idea of spatial relativisation. However, it seems to me that the argument begs the question in the present context; for it only shows that if self-visitation were possible, then spatial relativisation might work as a useful conceptual device to understand the hypothetical situation coherently. To motivate the spatial relativisation strategy, Miller also focuses on a case of fission, where one person branches into two. Even if spatial relativisation makes it intelligible to say that the two persons are identical, it remains open to discuss how this fission case should be understood. At least, there are two other possibilities: (i) Either person is strictly identical to the person before fission; or (ii) neither is identical to the person before fission. Of course, it depends largely on how the situation is described, but both options may be as good (or bad) as regarding the two persons as identical. Seen this way, the case of fission differs from that of time travel where self-identity is presupposed.

As noted earlier, endurantist eternalists have a way of making sense of the self-visitation story, which involves temporal relativisation of one’s property possession to different moments of the personal time. If this temporal relativisation works as expected, no further relativisation is required to understand the story. Therefore, my diagnosis is that Miller’s proposal of spatial relativisation is either begging the question or redundant for the present purpose because it assumes that self-visitation is possible beforehand and then
asks how it should be understood coherently without using temporal relativisation. I do not oppose the notion of spatial relativisation itself and believe that it does work in some cases. It helps us to say, for instance, that it is raining heavily here but it is not there; or that some person X is famous in Japan but not in China. All I point out is that endurantists, whether presentists or eternalists, may wonder how useful spatial relativisation is in the case of time travel.

4.2 Non-Classical Time Travel

As in the fission case, time travel involves many strange scenarios. For instance, it has been argued whether time travel violates human freedom and the ability to act otherwise (Vihvelin [1996], Sider [2002], Kiourti [2008], Vranas [2010]), while other studies have focused on the basic principles in mereology (Effingham [2010], Effingham and Robson [2007], Smith [2009]). It may turn out that time travel is only possible in a fatalistic world in which a time traveller cannot act otherwise and/or in a lawful world where things must occur according to a certain type of mereology. This may eliminate some of what seems possible in time travel but not all possibilities.

Through the discussion of the present paper, I have assumed the classical notion of time travel and, for the sake of argument, agree with Lewis and other philosophers that some time travel stories are coherent. After all, time travel is not supposed to be what makes the impossible possible. However, one might challenge this assumption, shifting from the classical notion of time travel to a non-classical notion. For instance, Carroll [2011] offered his own solution to the self-visitation problem, according to which apparently incompatible properties (e.g. sitting and standing) are made compatible in the case of time travel. I think that the classical time traveller should resist such revisionist proposal: time travel is not supposed to be what makes the incompatible compatible.

In this vein, it is also worth noting the following point. According to the classical argument for the possibility of time travel [e.g. Horwich 1975 and 1987], a time machine is thought to be a device that affects the past without changing it: otherwise, it would produce a contradiction. Some philosophers, such as Goddu [2003, 2011] and van Inwagen [2009], have challenged this assumption and suggested that a time traveller could rewrite history. This issue has been taken up for recent discussions, none of which have reached a
conclusion insofar as I can see. I have argued that presentists should not believe in the classical time travel (even though it is coherent in itself). I am not sure if they should (or can) believe in the non-classical time travel since it seems uncertain whether this is possible in the first place.

One may well doubt the assumption that time travel (classical or non-classical) is possible. If time travel itself turns out to be impossible, this does not falsify the validity of what I have argued: presentists should not believe in what is impossible. In this case, the argument would become redundant, but it is far from trivial to see how the idea of time travel contradicts the nature of time that presentists should endorse. However, if time travel is found to be in fact possible, then orthodox presentists should give up their view on time. My point is that presentists should not believe in such travel, regardless of whether one eventually obtains conclusive proof of the possibility or impossibility of time travel.13

5. Conclusions

I conclude that presentists should not believe in time travel. This conclusion is not intended as a simple refutation of presentism, but it can be used to articulate the basic premises of presentism and its worldview. For instance, Bigelow [2001], in defence of presentism, has claimed that people before the nineteenth century could not even entertain the idea of time travel and that no consistent time travel stories can be produced or consumed until the emergence of new metaphysics. Although his argument differs from mine, I agree that presentists should resist what he refers to as the ‘spatialisation of time’.

During initial discussions on this topic, many prominent philosophers, such as Williams [1951] and Smart [1963], were also sceptical of the possibility of time travel and rejected it as ‘modern fiction’. In my view, they were correct in stating that the nature of time makes time travel impossible, though it may neither be Williams nor Smart who should have made this point. Presentists can reasonably claim that time travel cannot actually occur.

Acknowledgements

Earlier versions of this paper have been presented on several occasions. I thank the audience, especially Takuo Aoyama, Akiko Frischhut, Tora Koyama, Kunihsa Morita,
Presentists Should Not Believe in Time Travel

and Giuliano Torrengo for their helpful comments and suggestions. I also appreciate reviews from two anonymous referees, which helped me to improve the paper to a great degree. This work is a result of the research project supported by the Ishimoto Research Fund for Young Researchers 2014 and JSPS KAKENHI (Grant Number: 19H01187).

Notes

1. Roughly speaking, what I mean by the ‘classical’ notion of time travel is characterised by the idea that some time travel scenarios are coherent, as Lewis [1976] and Horwich [1975] have claimed. In the recent discussion, philosophers have challenged some of the assumptions that remained unsuspected for a long time. For instance, it has been taken for granted that a time traveller cannot change the past but can only affect it (because changing the past involves a contradiction), and this assumption is sometimes challenged. In the present paper, I assume the classical notion of time travel for the reason that the possibility of non-classical time travel is a topic of ongoing debate. I briefly mention the recent development in Section 4.

2. Ersatzist presentists may analyse past or future existence and property possession as existence at some (earlier or later) time and property possession at some time, respectively (but this does not mean that present existence and property possession are tenseless). For a relevant discussion, see Sakon [2015 and 2016].

3. Roughly speaking, whereas ontology concerns what there is, ideology asks what it means to exist.

4. Meyer’s [2013] version of eternalism is difficult to classify. He advances a modal theory of time, according to which times are entities similar to (ersatz) possible worlds, while affirming the existence of past, present and future things. In this respect, his view should be distinguished from standard eternalism. For the sake of simplicity, I omit this option here.

5. Recent attempts to formulate presentism include Correia and Rosenkranz [2015], Deasy [2017], Fiocco [2007], McDaniel [2014], Orilia [2016], Sakon [2015] and Tallant [2014 and forthcoming], some of which may conflict with what I refer to as orthodox presentism. It is beyond the scope of the present paper to examine the feasibility of each attempt.

6. I do not simply argue that presentists cannot travel into non-present times. The argument may be thought as showing that presentists can travel into the distant past or future only to commit either suicide or mass destruction; however, such travel would not really be considered as time travel. For a relevant discussion, see Hales [2010, 2011], Hall [2014] and Licon [2011, 2012, 2013]. As we will see in the
next paragraph, I do not rely on any particular notion of suicide or mass destruction. The point is that either arrival time or departure time must be *ontologically privileged* (in the sense that only things at one of these times can exist *simpliciter*) if presentism is true.

7. It may be objected that, if Marie could travel back and meet her old friends again, there would be no problem. This may be true only if Marie could survive each time she pushed a button on the time machine. Unless Marie was somehow ontologically special, there would be no such guarantee. No time travellers are ontologically privileged.

8. Le Poidevin [2003: 177-8] also made a similar point.

9. As Effingham [2011] noted, perdurantist eternalists should address a particular theoretical problem in the case of self-visitation. In brief, the problem is that, while (intuitively) the visiting man and the visited man should count as Phillip’s distinct temporal parts at the time of the self-visitation, their mereological fusion counts as his temporal part at that time, according to Sider’s [2001: 60] standard definition of temporal part. Insofar as the visiting man and the visited man still count as different parts, this should not be taken as a contradiction but only indicates that perdurantist eternalists have some extra work for desirable consequences. Effingham himself provided his own solution to the problem, while Kim and Sakon [2017] offered another solution that uses the distinction between personal time and external time, which is discussed in the next paragraph.

10. Horwich [1975 and 1987: Ch. 7] has suggested a similar method for solving the problem.

11. *Pace* Sider [2005], I suggest that presentists can make use of the distinction if external time is taken as personal or proper time for the global object. If presentists believe in the world or the universe and can make sense of personal time defined by some regular physical process for each object, then they can accept the notion of external time. However, this issue would not affect the main point of the present paper; so much the worse for presentists in the case of time travel, if they cannot make use of the distinction.

12. For the use of GPS, it must be taken into consideration that there is some time gap between a clock on the earth and another clock on a satellite. Does this fact make a GPS user or the satellite a time traveller? Although there is no obstacle to call any present thing a time traveller, that would make the term trivial.

13. Recently, Wasserman [2018] offered a comprehensive examination of paradoxes of (classical and non-classical) time travel, including those I have mentioned.
Presentists Should Not Believe in Time Travel

References

Bigelow, J. 2001. Time Travel Fiction, *Reality and Humean Supervenience: Essays on the Philosophy of David Lewis*, G. Preyer and F. Siebelt (eds.), Lanham: Rowman & Littlefield Publishers: 57–91.

Benovsky, J. 2009. Presentism and Persistence, *Pacific Philosophical Quarterly* 90/3: 291–309.

Brogaard, B. 2000. Presentist Four-Dimensionalism, *The Monist* 83/3: 341–54.

Carroll, J. 2011. Self-Visititation, Traveler Time, and Compatible Properties, *Canadian Journal of Philosophy* 41/3: 359–70.

Correia, F. and Rosenkranz, S. 2015. Presentism without Presentness, *Thought* 4/1: 19–27.

Crisp, T. 2003. Presentism, in M. J. Loux and D. W. Zimmerman (eds.), *The Oxford Handbook of Metaphysics*, Oxford: Oxford University Press: 211–45.

Deasy, D. 2017. What is Presentism?, *Noûs* 51/2: 378–97.

Effingham, N. 2011. Temporal Parts and Time Travel, *Erkenntnis* 74/2: 225–40.

Effingham, N. 2010. Mereological Explanation and Time Travel, *Australasian Journal of Philosophy* 88/2: 333–345.

Effingham, N. and Robson, J. 2007. A Mereological Challenge to Endurantism, *Australasian Journal of Philosophy* 85/4: 633–40.

Fiocco, M. O. 2007. A Defense of Transient Presentism, *American Philosophical Quarterly* 44/3: 191–212.

Goddu, G. C. 2011. Avoiding or Changing the Past?, *Pacific Philosophical Quarterly* 92/1: 11–7.

Goddu, G. C. 2003. Time Travel and Changing the Past: (Or How to Kill Yourself and Live to Tell the Tale), *Ratio* 16/1: 16–32.

Hales, S. D. 2010. No Time Travel for Presentists, *Logos and Episteme* 1/2: 353–60.

Hales, S. D. 2011. Reply to Licon on Time Travel, *Logos and Episteme* 2/4: 633–36.

Hall, T. 2014. In Defense of the Compossibility of Presentism and Time Travel, *Logos and Episteme* 5/2: 141–59.

Hinchliff, M. 1996. The Puzzle of Change, *Philosophical Perspectives* 10: 119–36.

Horwich, P. 1975. On Some Alleged Paradoxes of Time Travel, *Journal of Philosophy* 72/14: 432–44.

Horwich, P. 1987. *Asymmetries in Time*, Cambridge MA: MIT Press.

Keller, S. and Nelson, M. 2001. Presentists Should Believe in Time-Travel, *Australasian Journal of Philosophy* 79/3: 333–45.

Kim, S. and Sakon, T. 2017. Instantaneous Temporal Parts and Time Travel, *Korean Journal of Logic* 20/1: 113–41.

Kiourti, I. 2008. Killing Baby Suzy, *Philosophical Studies* 139/3: 343–52.
Le Poidevin, R. 2003. *Travels in Four Dimensions*, Oxford: Oxford University Press.
Licon, J. A. 2011. No Suicide for Presentists: A Response to Hales, *Logos and Episteme* 2/3: 455–64.
Licon, J. A. 2012. Still No Suicide for Presentists: Why Hales’ Response Fails, *Logos and Episteme* 3/1: 149–55.
Licon, J. A. 2013. Dissecting the Suicide Machine Argument: Insights from the Hales–Licon Debate, *Logos and Episteme* 4/3: 339–52.
Lewis, D. 1976. The Paradoxes of Time Travel, *American Philosophical Quarterly* 13/2: 145–52.
Lewis, D. 1986. *On the Plurality of Worlds*, Oxford: Blackwell.
Lewis, D. 2002. Tensing the Copula, *Mind* 111/441: 1–14.
McDaniel, B. 2014. A Defense of Lucretianism, *American Philosophical Quarterly* 51/4: 373–85.
Merricks, T. 2007. *Truth and Ontology*, Oxford: Clarendon.
Merricks, T. 1999. Persistence, Parts, and Presentism, *Noûs* 33/3: 421–38.
Merricks, T. 1995. On the Incompatibility of Enduring and Perduiring Entities, *Mind* 104/415: 521–31.
Meyer, U. 2013. *The Nature of Time*, Oxford: Oxford University Press.
Miller, K. 2006. Travelling in Time: How to Wholly Exist in Two Places at the Same Time, *Canadian Journal of Philosophy* 36/3: 309–34.
Monton, B. 2003. Presentists Can Believe in Closed Timelike Curves, *Analysis* 63/3: 199–202.
Orilia, F. 2016. Moderate Presentism, *Philosophical Studies* 173/3: 589–607.
Prior, A. N. 1970. The Notion of the Present, *Studium Generate* 23: 245–8.
Prior, A. N. 1968. Changes in Events and Changes in Things, in P. Hasle, P. Øhrstrøm, T. Braüner, and J. Copeland (eds.), Papers on Time and Tense (New Edition 2003), Oxford: Oxford University Press, 7–19.
Sakon, T. 2015. Presentism and the Triviality Objection, *Philosophia* 43/4: 1089–109.
Sakon, T. 2016. A Presentist Approach to (Ersatz) Possible Worlds, *Acta Analytica* 31/2: 169–77.
Sider, T. 2001. *Four Dimensionalism*, Oxford: Oxford University Press.
Sider, T. 2002. Time Travel, Coincidences and Counterfactuals, *Philosophical Studies* 110/2: 115–38.
Sider, T. 2005. Travelling in A- and B- Time, *The Monist* 88/3: 329–35.
Smart, J. J. C. 1963. Is Time Travel Possible?, *The Journal of Philosophy*, 60/9: 237–41.
Smith, D. 2009. Mereology without Weak Supplementation, *Australasian Journal of Philosophy* 87/3: 505–11.
Tallant, J. 2014. Defining Existence Presentism, *Erkenntnis*, 79, 479–501.
Tallant, J. (forthcoming). Presentism Remains, *Erkenntnis*. 

212
van Inwagen, P. 2009. Changing the Past, in D. Zimmerman (ed.), *Oxford Studies in Metaphysics*, Vol. 5, Oxford: Oxford University Press: 3–28.

Vihvelin, K. 1996. What Time Travelers Cannot Do, *Philosophical Studies* 81/2&3: 315–30.

Vranas, P. B. M. 2010. What Time Travelers May Be Able to Do, *Philosophical Studies* 150/1: 115–21.

Wasserman, R. 2018. *Paradoxes of Time Travel*, Oxford: Oxford University Press.

Williams, D.C. 1951. The Myth of Passage, *Journal of Philosophy* 48/15: 457–72.

Zimmerman, D. 1998. Temporary Intrinsics and Presentism, in P. van Inwagen and D. Zimmerman (eds.), *Metaphysics: The Big Questions*, Oxford: Blackwell: 206–19.

（大阪市立大学）