# Temporal Ersatzism and Relativity

Nina Emery

emery@mtholyoke.edu

*This is a preprint of an article whose final and definitive form will be published in the Australasian Journal of Philosophy 2020 or 2021. The Australasian Journal of Philosophy is available online at: http://www.tandf.co.uk/journals/.*

**Abstract:** *Temporal eliminativism* is the view that the present is privileged because past and future entities do not exist. *Temporal ersatzism* is the view that the present is privileged because although past and future entities exist, they are not concrete. I argue that shifting from temporal eliminativism to temporal ersatzism can help address objections to the former theory that are due to relativity theory—but only if temporal ersatzism is understood in a fairly specific way and only insofar as the temporal ersatzist is willing to take on some *prima facie* surprising commitments. I close by showing how the claims I make with respect to temporal ersatzism generalize to other theories of time on which the present is privileged, including McDaniel's (2018) presentist existential pluralism.

## 1 Introduction

According to various *A-theories* of time, the present is privileged in some important sense. According to one especially familiar A-theory, *temporal eliminativism*, the present is privileged because past and future entities do not exist. According to another, somewhat less familiar version, *temporal ersatzism*, the present is privileged because, although past and future entities exist, they are not concrete.[1] Temporal ersatzism is analogous to *modal ersatzism*, according to which merely possible entities exist, but are not concrete.

Why be a temporal ersatzist? Here is a natural way to motivate the view. Start from the fact that it seems highly intuitive that there is something privileged about the present. But then notice that there are serious philosophical worries that arise insofar as one eliminates past and future entities entirely. These include:

> *The cross-temporal relations worry*. Present entities seem to stand in relations to past and future entities. But how can this be if past and future entities do not exist?
>
> *The truthmaker worry*. There are truths about past and future entities. But how can this be if past and future entities do not exist to make those truths true?
>
> *The worry from special relativity*. According to the special theory of relativity there is no way of drawing a fundamental distinction between present entities, on the one hand, and past and future entities, on the other. But how can that be if present entities exist while past and future entities do not?

[1] Versions of temporal ersatzism have recently been put forward by, among others, Bourne (2006), Crisp (2007), Meyer (2013), Sullivan (2012), Wüthrich (2012), and Orilia (2016).

Temporal ersatzism holds out hope that we might find a way of avoiding these worries without giving up entirely on the idea that the present is privileged. Since past and future entities are not concrete, there is still an obvious sense in which the present is privileged. But since past and future entities exist, we may yet be able to avoid the worries that arise for full-fledged temporal eliminativism.[2]

That the shift from temporal eliminativism to temporal ersatzism should be of at least some help with the cross-temporal relations worry and the truthmaker worry is straightforward. Since past and future entities exist, according to the temporal ersatzist, they are able to stand in relations and to make truths true. But what about the worry from special relativity? Is temporal ersatzism any help there? In Emery 2017, I suggested that it might be. In this paper, I develop this suggestion in more detail. Ultimately, I will claim that the move from temporal eliminativism to temporal ersatzism does indeed open novel ways of responding to the worry from relativity, but there will be some fairly big caveats: temporal ersatzism must be understood in a fairly specific way and some of the claims that the temporal ersatzist ends up committed to are at least *prima facie* surprising. The same goes, I will claim, for other, related versions of the A-theory, including McDaniel's (2018) presentist existential pluralism.

## 2 Three clarifications

[2] I am avoiding the term 'presentist' because it can be difficult to tell whether presentism, as it is usually defined, is compatible with temporal ersatzism. Consider this passage from Zimmerman 2011: "Presentism is the view that all of reality (with the possible exception of utterly atemporal things, if such there be) is confined to the present—that past and future things simply do not exist" (168). If presentism is the view that "all of reality…is confined to the present", it is compatible with temporal ersatzism. But if presentism is the view that "past and future things simply do not exist", it is not.

Let's begin with three important clarifications regarding temporal ersatzism.

First, it will be helpful to distinguish between *ersatzism* about some group of entities and *proxyism* about those entities. According to ersatzism about some entities, those entities exist, they just aren't concrete. According to proxyism, those entities do *not* exist, but there are some non-concrete things that play the role that those entities would play if there had been any such things —that serve as *proxies* for the non-existent entities.

As a clear example of proxyism, consider *thisness presentism*, as defended by Ingram (2016). According to Ingram, there are presently existing haecceities of past entities and those haecceities play the role in singular propositions about past entities that past entities would play if they existed. Socrates no longer exists, but his haecceity does, and his haecceity plays the role in propositions like 'Socrates was wise' that Socrates himself would play if he still existed.

As a clear example of ersatzism, consider Sullivan's (2012) *minimal A-theory*. According to Sullivan, when an object seems to us to go out of existence it is not in fact going out of existence. Instead it is becoming a non-concrete object.[3] So Socrates himself—not just his haecceity—still exists. He can still stand in various relations and be the truthmaker for various propositions and play any other roles that we might have thought we needed concrete past entities to play. He just plays those roles as a non-concrete entity.

In some cases, the distinction between ersatzism and proxyism seems pretty minimal. Consider, for instance, the ersatzist who says that past times are maximal consistent sets of propositions (MCPs) and the proxyist who says that past times don't exist but that maximal

[3] Sullivan herself doesn't using the terminology 'non-concrete' (instead she says that objects lose their location), but her view is meant to build on Williamson's (2002), which does explicitly talk about non-concreteness.

consistent sets of propositions play the role that past times would play if there were any such things. It is tempting to say that there isn't any substantive difference between these two views. But as we will see below, the difference between ersatzism and proxyism matters quite a bit when thinking about the relativity objection. It is only certain versions of ersatzism, not mere proxyism, that prove helpful when thinking about the relativity objection.

The second clarification has to do with the interpretation of 'exists' in the definition of temporal ersatzism. It is common in the literature on temporal ontology to distinguish between straightforward present-tensed claims about what exists now and tenseless claims about what exists simpliciter. When the past eliminativist says that past and future entities do not exist, they are using 'exist' in the latter sense. "Of course past and future entities don't exist *now*!" the past eliminativist says. "That much is obvious. What I wish to claim is that, in addition, they don't exist *simpliciter*."

As I will understand the view here, it is precisely the seemingly obvious claim just put forward that the temporal ersatzist wishes to dispute. They think that past and future entities exist *now*—they are now non-concrete objects. Insofar as they endorse the notion of existence simpliciter, the temporal ersatzist will presumably then go on to claim that past and future entities exist simpliciter, but note that many philosophers find that notion to be difficult to understand or countenance. These philosophers will think that a distinct advantage of temporal ersatzism as described here is precisely that it can avoid any commitment to the notion of existence simpliciter.

Understanding temporal ersatzism as a straightforward present-tense claim in the way just described raises several important questions for further research. First, it makes salient the existence of a nearby view—perhaps we can call it *tenseless ersatzism*—according to which past and

future objects do not exist now, but do exist simpliciter, and are (tenselessly) non-concrete. Second, it follows from temporal ersatzism as I have defined it here that non-concrete objects can have temporal locations.[4] This is perhaps a surprising consequence and puts some pressure on the temporal ersatzist to investigate the concrete/non-concrete distinction in more detail. I won't say anything more about either of these issues here.

It is also the case that that understanding temporal ersatzism as a straightforward tensed claim requires that the temporal ersatzist means something different than the temporal eliminativist means when they talk about 'past' and 'future' entities. It will be worth saying a bit more about this. (I will focus throughout on the notion of a past entity. Everything I say will apply, *mutatis mutandis*, to future entities.)

According to the temporal eliminativist, past entities are those entities that once existed but do not now exist. But for the temporal ersatzist, past entities *do* now exist. What, then, does it mean for the temporal ersatzist to call an entity a past entity? The straightforward view, at least with respect to past *objects*, is that past entities are entities that were concrete but are not now concrete. Socrates was once concrete, for instance, but he is not any longer, and for that reason he counts as a past object. But this straightforward account will not work for all types of past entities. Consider, for instance, the view that past *times* are maximally consistent sets of propositions. On this view the present is not privileged because the present time is concrete; instead the present is privileged because the present time is the only time that has a concrete instantiation. So on this view a past time is not past in virtue of having once been concrete. Instead, the temporal ersatzist

[4] Although a relatively standard presentation of the concrete/non-concrete distinction says that only the former entities have spatiotemporal relations, the recent literature on that distinction has independently raised some serious questions about that way of thinking about things. See, for instance, Thomasson 1999 and Irmak 2012. See Juvshik forthcoming for an argument that, given relativity theory, any entity that has a temporal location also has a spatial location.

should say, a past time is past in virtue of having once had a concrete instantiation.[5]

Insofar as the temporal ersatzist says that some past entities are past because they were once concrete but are no longer concrete, they owe us some sort of story about how those entities go from being concrete to being non-concrete. The details of this story may differ in different cases, and part of the point of this paper is that it is worth investigating these details more thoroughly, but as a paradigm example, look again at Sullivan's minimal A-theory of time. According to Sullivan, the process that we would usually describe as some object going out of existence, is in fact just a process of the objection losing various properties. Frosty the snowman, for instance, (to use Sullivan's example), first loses the property of being frozen, then the property of being man-shaped, then the property of being located somewhere (2012: 166). The past ersatzist about objects can point to this as a description of what it is for some object to be going from being concrete to being non-concrete.[6]

Here is the third and final clarification. Temporal ersatzism as defined here comes in many varieties. In particular, anyone who wishes to be a temporal ersatzist faces two natural choice points. First, the temporal ersatzist needs to tell us *which* past and future entities exist.

---

[5] What should the ersatzist say about past events? Here are several options. First, if they are attracted to the view that events are concrete, they might just adopt the straightforward view: past events are past in virtue of having once been concrete. (How does a concrete event become non-concrete? Perhaps it does so just in virtue of the objects that feature in that event becoming non-concrete.) Second, they can build the notions of past events from whatever notion of past times they prefer; a past event, e.g., is just an event that happens at a past time. Third and finally, note that the ersatzist might simply eliminate events in general from their ontology. Then they wouldn't be an ersatzist about events but they might still be an ersatzist about objects and times. For a view that endorses the existence of past objects and times but not past events see Orilia 2015.

[6] The temporal ersatzist will also need to think of spatiotemporal structure in a somewhat different way than the temporal eliminativist. Consider a spacetime diagram where the y axis is the temporal axis and with a particular horizontal plane picked out as the present moment. For the ersatzist, everything that is represented on a spacetime diagram is simultaneous with everything else in the sense that everything that is represented on the diagram exists now. The key point, however, is that whereas for the temporal eliminativist, everything that is represented by the region above or below the present plane does not exist, for the temporal ersatzist, everything that is represented by the region above or below the present plane is not concrete. More generally, the temporal ersatzist will think of spacetime diagrams as representing not when things happen in the sense of when things exist, but rather as representing when things are concrete. Thanks to Sam Baron for encouraging me to think more about this.

(Times? Events? Objects? All three? And only the past ones? Or the past and future both?) Second, they need to tell us what sort of non-concrete things the past and future entities that exist are. (Sets of sentences or propositions of some kind? Some kind of property? Something wholly *sui generis*?) But neither of these choice points is going to be the focus of the discussion below. Instead, in what follows I will be interested in all and only those versions of temporal ersatzism that satisfy the following condition:

*Permanentism*. There are no entities that come into or go out of existence.[7]

As we will see, insofar as a version of temporal ersatzism satisfies permanentism, then it is able to avoid the relativity objection in ways that are not possible for the eliminativist. Insofar as it does not satisfy permanentism, then those novel avenues of response are not available. The further details of the view, beyond whether it satisfies permanentism, are not relevant.

Or at least: those further details do not matter with respect to the objections from relativity. They do of course matter insofar as the version of temporal ersatzism in question needs to be at least *somewhat* plausible, if the argument below is going to have any real significance. It will perhaps be helpful therefore to have a particular example of permanentist temporal ersatzism in mind when thinking about the discussion below. Here is such an example:

*Paradigm Permanentist Temporal Ersatzism (P-PTE).* Past and future objects, events,

[7] Here and in what follows, I will only be interested in the combination of permanentism and temporal ersatzism. It is of course possible to combine permanentism with a B-theory of time (on which the present is not privileged). It is also arguably possible to combine permanentism with temporal eliminativism, via what Monton 2006, p. 264 calls *Parmenidean presentism*. I won't discuss Parmenidean presentism at all below, but it is perhaps worth noting that even if such a view is compatible with permanentism, it does not avoid the relativity challenge for temporal eliminativists below. This shows that it is not permanentism itself which is doing the work in opening up new ways of responding to the relativity objection, but rather the combination of ersatzism and permanentism.

> and times all exist, but none of them are concrete. Presently existing objects are concrete. Past objects are past in virtue of having once been concrete and future objects and events are future in virtue of being such that the will be concrete. Times are sets of maximally consistent propositions (MCPs). The present time is the MCP that has a concrete instantiation. Past times are MCPs that had a concrete instantiation. Future times are MCPs that will have a concrete instantiation. Events are abstract entities; past and future events are past and future in virtue of the time at which they exist being past or future.

I submit that even though there are details P-PTE that are not fully worked out and even though P-PTE has not been explicitly endorsed elsewhere in the literature, this version of temporal ersatzism is plausible enough to make the argument that follows substantive.[8] It is not at all unlikely that part of the reason why philosophers haven't spent a great deal of time working out the details of various versions of permanentist temporal ersatzism is because they assumed that any such view would face precisely the same sort of serious objection from relativity theory as is faced by temporal eliminativism. What the argument below shows is that this assumption is incorrect. The worries from relativity for these versions of temporal ersatzism are still serious, but they are at least somewhat less serious, and in any case are importantly different from the worries faced by the eliminativist.

Before we go on to discuss those worries in detail, let me emphasize one particular feature of P-PTE. P-PTE is committed to there being at least some entities that go from being concrete to non-concrete as they go from being present to past. Indeed this will be a commitment of any plausible version of permanentist temporal ersatzism. After all, surely any plausible version of permanentist temporal ersatzism countenances the existence of objects that are presently

[8] Perhaps the most surprising part of P-PTE is the commitment to past objects existing now. "Really?" One might think. "Socrates exists now?!" But it is worth noting that this part of P-PTE *has* been explicitly endorsed in the literature, namely in Sullivan 2012, and that Sullivan actually argues that all things considered the view that past objects still exist is less surprising than competing views.

concrete. But, in virtue of being a version of ersatzism, it cannot say that past objects are *also* concrete, and in virtue of being a permanentist version, they cannot say that past objects don't exist. So the permanentist temporal ersatzist must say that objects go from being concrete to non-concrete as they go from being present to past. As we will see, this commitment will play an important role in what follows.

## 3 The relativity challenge

It will be important in what follows to recognize that there are at least two subtly different ways to formulate the worry for temporal eliminativism from relativity theory. Here is the first way (cf. Markosian 2004, Hawley 2009):

P1 There are some pairs of events $e_1$ and $e_2$ such that whether $e_1$ is before or after $e_2$ depends on which reference frame you choose to use when describing them, and no reference frame is privileged.

P2 If past and future entities do not exist, then there are some things such that whether those things exist depends on the reference frame you choose to use when describing them, and no reference frame is privileged.

P3 It is not the case that there are some things such that whether those thing exist depends on the reference frame you choose to use when describing them, if no reference frame is privileged.

C Past and future entities exist.

I will call this argument *the relativity challenge* for temporal eliminativism.

Let's look at the justification for each of these premises in turn. P1 is a key component of relativity theory, often called the *relativity of simultaneity*. It can be helpful to think of the relativity of simultaneity of consisting of two distinct claims: (i) the claim that there are some pairs of events $e_1$ and $e_2$ such that whether $e_1$ is before or after $e_2$ depends on which reference frame you choose to use when describing them, and (ii) the claim that no reference frame is privileged. Let's take (i) for granted. They key thing to notice is that (ii) is clearly an extra-empirical claim. My own view is that the justification for this extra-empirical claim is more philosophically nuanced than is usually recognized and that it is open to the temporal eliminativist to reject this extra-empirical claim and insist that there is a privileged reference frame, but that this move comes with serious costs.[9] In particular, one might worry that the sort of reasoning that allows for a privileged reference frame might also allow for other kinds of seemingly superfluous spacetime structure, like a privileged 'up' direction.[10] But these issues won't come into play in what follows.

[9] It is worth emphasizing that fixing a privileged reference frame only allows you to separate spacetime into sets of simultaneous events (i.e. instants of times). Therefore if you're a temporal eliminativist, in order to determine what exists, you need to do more than just fix a privleged reference frame, you need to also specify which set of simultaneous events is the present. But this second step is nothing new to relativity theory. In classical spacetimes (e.g. Galilean spacetime), although there is a privileged way of identifying instants of time, the structure of the spacetime itself doesn't determine which instant is present.

[10] This is a point made nicely in Saunders 2002 (see p. 290).

The purpose of this paper is to evaluate whether the shift to temporal ersatzism opens up any *novel* ways of responding to the worry from relativity. Although it will turn out that the temporal ersatzist could respond to the relativity challenge by rejecting P1, that sort of response is already available to the temporal eliminativist—it would be nothing new.[11]

What about P2 or P3? What is the justification for these premises? P2 follows straightforwardly from P1, though the form that this argument takes depends on the precise commitments of the version of temporal eliminativism in question. Most straightforwardly, suppose that you are committed to the existence of present events but think that past or future events do not exist. Now consider some event which you are confident is happening now—your reading of these very words, for instance.[12] Call this event $e_R$. And now consider some other event that is such that whether it is earlier or later or simultaneous with $e_R$ depends on the reference frame that you choose to use when describing them. Call this event $e_S$. Now suppose that non-present entities do not exist, and consider $e_S$. Does $e_S$ exist? It depends. If $e_R$ happens simultaneously with $e_S$ then it does. If $e_R$ happens before or after $e_S$ then it does not. But by stipulation whether $e_R$ happens simultaneously with $e_S$ depends on which reference frame you choose to use to describe it. So whether $e_S$ exists depends on which reference frame you choose to use to describe it.

P3 is an assumption. The motivation for it is that were you to give up P3, you would have to accept the following, highly implausible principle:

---

[11] For an example of a temporal eliminativist who rejects P1 see Markosian 2004. Emery 2019 discusses the justification for P1 in further detail.

[12] Note that eliminativists about past and future events had better think that there is such an event, otherwise they will think that there are no events at all!

*Existence Relativity.* Which entities exist is relative to a reference frame, and no reference frame is privileged.[13]

It is this third premise that will be the subject of most of our attention below. For this premise is slightly different in the relativity challenge for temporal ersatzism, and that difference proves to be important.

In order to see why, notice first that an argument similar to the one above is likely to work against any version of temporal ersatzism that violates permanentism. Any version of temporal ersatzism that is not permanentist will still be committed to there being *some* past or future entities that do not exist. And insofar as they are, they will run into difficulty with P3. For one can identify some of those entities that are such that whether they exist or not depends on which reference frame you chose to use to describe them and that contradicts P3.[14]

Another way to put this point is that any non-permanentist version of temporal ersatzism will still be committed to P2*.[15]

P2* If there are any entities that come into or go out of existence, then there are some things such that whether those things exist depends on the reference frame you choose to use when describing those things, and no reference frame is privileged.

[13] This view is endorsed in Balaguer ms.

[14] In principle, the plausibility of finding entities whose existence is reference frame relative depends on which entities the non-permanentist temporal erstazist thinks come into or go out of existence. But for any relatively natural way of picking out such entities the claim above will follow.

[15] More carefully, any non-permanentist version of temporal ersatzism that is committed to P1 will also be committed to P2*. Remember that my goal here is to see whether the move from temporal eliminativism to temporal ersatzism opens up any novel ways of responding to the relativity challenge. As a result, I'm not interested in versions of temporal ersatzism that deny P1, since that move is also available to the temporal eliminativist.

And P2*, combined with P1, is enough to generate a commitment to existence relativity. So P1, P2*, and P3 together will still lead to the conclusion that past and future entities exist.

Suppose, however, that one endorses a permanentist version of temporal ersatzism. Then one can avoid any commitment to P2 and P2*, and thus avoid any commitment to existence relativity.

Of course, one still faces a nearby challenge. This challenge combines P1 as stated above with the following two premises.

Q2 If some entities go from being concrete to being non-concrete when they go from being present to being past, then there are some things such that whether those things are concrete depends on the reference frame you choose to use when describing those things, and no reference frame is privileged.

Q3 It is not the case that there are some things such that whether those things are concrete depends on the reference frame you choose to use when describing those things, if no reference frame is privileged.

Together, P1, Q2, and Q3 entail that no entities go from being concrete to being non-concrete when they go from being present to being past. And, as I argued the end of the last section, all plausible versions of permanentist temporal ersatzism are committed to at least some entities going from being concrete to being non-concrete when they go from being present to being past.

In this argument, the justification for the move from P1 to Q2 is analogous to the move

from P1 to P2. But Q3 is interestingly different than P3. If you were to give up P3 you would have to accept Existence Relativity. But if you were to give up Q3, you need only accept the following principle:

> *Concreteness Relativity.* Which entities are concrete is relative to a reference frame, and no reference frame is privileged.

And I submit that the difference between Existence Relativity and Concreteness Relativity is significant. Existence Relativity is a non-starter. How could it be that what exists depends on the reference frame you use to describe it? Things either exist, or they do not. Concreteness Relativity, while unquestionably surprising, does not seem as obviously unacceptable.

In conversation, I rarely have philosophers dispute the first part of my claim here: that Existence Relativity is a non-starter.[16] (This isn't especially surprising, since after all, if Existence Relativity were plausible, more A-theorists would have adopted it in order to avoid a conflict with relativity theory.) Here are three points that might help the second part of my claim—that Concreteness Relativity is not as obviously unacceptable—seem more palatable.

First, notice that relativity theory has already committed us to the reference-frame-relativity of many seemingly objective properties and relations. Consider the shape of some object. Does a particular box have sides that are square or rectangular? On the face of it, and certainly before one learns anything about relativity theory, that question seems like the kind of question that must have a single, objective answer. Shape, after all, is supposed to be a paradigm

[16] Those who *are* willing to consider existence relativity as a response to the relativity challenge should read on, since the issues that I discuss in section 4 for those who endorse concreteness relativity will also be issues—and perhaps even more serious issues—for those who endorse existence relativity.

case of an intrinsic property. But as relativity theory has taught us, this is a mistake. One and the same cube may have sides that are square in one frame and rectangular in another. Perhaps concreteness is similar. Whether something is concrete doesn't *seem* to be relative to anything, but maybe this is a way in which appearances are misleading.[17]

Second, as I argued above, any plausible version of permanentist temporal ersatzism is *already* committed to at least some entities going from being concrete to being non-concrete as they go from being present to being past. Concreteness, on this view, is already relative to a time. Perhaps it is not all that much more surprising to think that concreteness is also relative to a reference frame.

Third, let me emphasize that I am not claiming that Concreteness Relativity is intuitive or unsurprising or straightforward. My claim is only that there is an opportunity here for the temporal ersatzist to try to avoid the relativity objection—an opportunity that is not similarly available to the temporal eliminativist. That opportunity comes with costs—in particular, it requires accepting an at least somewhat surprising claim about concreteness. Whether those costs are ultimately worth paying will depend on the details of how one thinks about the intuitive idea that the present is privileged, about the nature of the concrete/non-concrete distinction, and about the other ways in which the eliminativist might resist the worry from relativity theory. Part of my goal here is to convince the reader that since there is an important opening here that hasn't been recognized previously, those details are worth working out.

Here is a final point: even if one simply cannot bring oneself to take Concreteness Relativity seriously, it is still worth reading on. In section 5, I will describe two other versions of

[17] Demarest (ms) has also argued that causal relations, as ordinarily conceived of, are reference frame relative. This is especially suggestive since a relatively standard view is that there is an important connection between concreteness and causal efficacy.

the A-theory that are structurally similar to temporal ersatzism and that can avoid the relativity challenge by accepting a principle that is importantly analogous to—but also distinct from—Concreteness Relativity. The reader who cannot bring herself to accept Concreteness Relativity may still be able to accept one of those alternative principles. If so she shouldn't be a temporal ersatzist, but she might still be able to be endorse a nearby A-theory.

Before we get to other A-theories, however, we need to investigate an alternative way of presenting the potential conflict between temporal ersatzism and relativity theory that raises additional concerns.

## 4 The spacetime challenge

Here is a second way of formulating the worry for temporal eliminativism from relativity theory: the temporal eliminativist must identify which region of Minkowski spacetime is present. And none of the options available to her are very plausible (cf Sider 2001, Zimmerman 2011). Call this *the spacetime challenge* for temporal eliminativism.[18]

The spacetime challenge is connected to the relativity challenge insofar as you think that one of the constraints on any plausible response to the spacetime challenge is that the region that is identified as present must be *Lorentz invariant*—that is, the region must be such that it does not depend on which reference frame you chose to use to describe it.

[18] Of course, the temporal eliminativist might try to reject or avoid this challenge. They might say, for instance, that there is no need to identify which region of Minkowski spacetime is present because they think our actual spacetime has more structure than Minkowski spacetime. I won't spend any time evaluating this position, since the purpose of the paper is to focus on whether a shift from eliminativism to ersatzism opens up *novel* ways of responding to the challenges posed by relativity. A more complete discussion of ways that the eliminativist might respond can be found in Wüthrich 2013.

*Lorentz invariance constraint*. The present must be a region of spacetime that does not depend on which reference frame you use to describe it.

Why would one insist that the temporal eliminativist obey the Lorentz invariance constraint? Because otherwise one would be committed to existence relativity. And one should not be committed to existence relativity.

The temporal ersatzist, however—assuming they endorse a permanentist version of temporal ersatzism—will not be committed to existence relativity even if they violate the Lorentz invariance constraint. They *will* be committed to concreteness relativity. But that is a different, and at least somewhat more plausible claim.

Since the permanentist temporal ersatzist need not be committed to the Lorentz invariance constraint, they have more options open to them in responding to the spacetime challenge. In particular, the permanentist temporal ersatzist can endorse the following position:

*The present plane proposal* (PPP). What is present is some particular point p and every point that is simultaneous with p.[19]

PPP is not Lorentz invariant. Which points are simultaneous with p depends on which reference frame you use to describe them. So the temporal eliminativist cannot endorse PPP on pain of

[19] Notice that this view is importantly different than the view that the present is some particular set of points {p1, p2, … pn} that picks out a particular plane. Call the latter view the *primitive plane proposal*. Although the temporal ersatzist can endorse the primitive plane proposal, it doesn't represent a *novel* way of responding to the worry from relativity—the temporal eliminativist can just as easily endorse that proposal. It is also worth noting that this sort of proposal is closely related to the idea of introducing a privileged reference frame, since there will be a single reference frame in which the plane picked out by {p1, p2, … pn} has spatial but no temporal extension.

also having to endorse existence relativity. But the permanentist temporal ersatzist can endorse PPP. They need only be willing to endorse concreteness relativity.

There are, however, two further surprising consequences that follow insofar as the permanentist temporal ersatzist endorses PPP. In particular, consider what some particular permanentist temporal ersatzist—let's call her Pam—should think about herself. Here are three options:

> *No Overlap.* Pam does not overlap point p at all. She is located in a region that is simultaneous with p in some reference frames, but not others. So Pam is concrete in some frames, but not others.

> *Partial Overlap.* Pam partially overlaps p. So some part of Pam is concrete in every reference frame. But most parts of Pam are concrete in some frames but not others.

> *Complete Overlap.* Pam is wholly located at p. All parts of Pam are concrete in every reference frame.

I take it that both No Overlap and Partial Overlap are at least somewhat surprising—it is surprising to think that you are (even partially) non-concrete in some reference frames. For that reason, Pam might be initially inclined toward Complete Overlap. But Complete Overlap comes with significant consequences as well. If she endorses Complete Overlap, Pam should think (a) that she is not at all spatially extended and (b) that she has gotten extremely lucky, in that she is

located precisely at p.

For these reasons, I think Pam should probably endorse either No Overlap or Partial Overlap. Both options allow Pam to be spatially extended. The main difference is that Partial Overlap requires that Pam have gotten lucky enough that at least one part of her is located precisely at p.[20] That seems like a cost of the theory—why should Pam think that she just happened to get so lucky? But perhaps it is a cost worth paying if the upshot is that at least part of Pam is concrete in every reference frame? I won't try to answer this question here. The main point for our purposes is that permanentist temporal ersatzists who endorse PPP needs to accept that at least some part of themselves is not concrete in every reference frame. That is surprising. Call this *the self-concreteness worry.*[21]

That was the first surprising consequence of endorsing PPP. Here is a second: for anyone who is not located exactly at point p, at least some of the entities that are in that person's past or future light cone will also be concrete in some reference frames. How much of one's past and future light cone is concrete in some reference frame will depend on how far one is located from point p.[22] Call this the *diminished privilege worry*.

One reason to find the diminished privilege worry especially worrisome is that it threatens to undermine the motivation for temporal ersatzism to begin with. Consider again the

---

[20] Note that No Overlap still requires a little bit of luck. It requires that Pam be located in a region that is simultaneous with p in at least some reference frames.

[21] Another way of responding to the self-concreteness worry is to modify PPP and claim that what is present is some particular region R (where R is defined in terms of some point p and all points within some spacetime interval of p) and all points that are simultaneous with any point in R. (Here the *spacetime interval* is a Lorentz-invariant way of measuring distance in relativistic spacetime.) This would make it possible for something that is spatially extended to exist in the part of spacetime that is concrete in every reference frame. But there are two consequences. First, it still seems like quite a lucky coincidence to find yourself there. Second, the region R that is concrete will be such that in every reference frame it is both spatially and temporally extended. It is unclear whether an A-theorist should be willing to accept a temporally extended present.

[22] In section 3, I said that existence relativity was a non-starter. But note that those who think that existence relativity is viable will face exactly analogous issues to those I discuss here with respect to the spacetime challenge.

natural motivation for temporal ersatzism that I presented at the beginning of this paper. A key part of that motivation was the thought that the present is privileged. But why do we find this thought so intuitive? Presumably because there is something about our experience which suggests that what is happening now is real in a way that what was happening and what will happen is not. But according to the temporal ersatzist who endorses the PPP, this experience is at least somewhat misleading. At least some of the things that seem to me to have happened already (or to not be happening yet) are privileged in precisely the same way as the events that seem to me to be happening now—they are concrete in some reference frames but not in others.

How much of an issue is this for the temporal ersatzist? It's hard to say. Here are two important considerations to keep in mind. First, note that there may be other ways of motivating temporal ersatzism besides the thought that the present is special. For instance, you might start off as a temporal eliminativist primarily because the view is an especially parsimonious one—why posit past and future entities unless one needs to? Call this *the parsimony motivation*, as opposed to the original motivation I identified above, which we might call *the special present motivation*.

Suppose you start off as an eliminativist because you endorse the parsimony motivation. Then the worries from cross-temporal relations and from truthmaking convince you that you need past and future entities to exist. Fine, you think, but let's at least try to be parsimonious with respect to what is concrete. This gets you to temporal ersatzism. The discussion above about the worry from relativity, then, may convince you that you need to allow that at least some of the entities that are in your past and future light cone are concrete in some reference frames. This is a progression that, however disappointing, still seems to make sense in terms of your original motivation. Insofar as you really had internalized the parsimony motivation, there is no reason

why the discussion above should make you throw in the towel on temporal ersatzism altogether.[23]

That was the first consideration: there are at least some motivations for temporal ersatzism that will survive the discussion above. Here is the second consideration: the special present motivation, which seems to be in serious trouble given the discussion above, was *already* in trouble, even before we brought in considerations to do with relativity. According to the special present motivation, the reason why the present seems special is that our experience of things that are happening now is importantly different from our experience of things that were happening in the past or will happen in the future. But now consider the fact that light takes time to travel any distance. So among the things that seem to me to be happening now—that I see happening now—are some that happened some time ago (i.e. the ones that took place at some spatial distance). Even prior to considerations to do with relativity, then, we couldn't have said that a view like temporal eliminativism or temporal ersatzism that privileged a single hyperplane within a Newtonian spacetime were straightforwardly capturing our experience of some particular subset of events as special.

There are, of course, moves that someone who endorses the special present motivation can make in response to this worry. They can say that, although temporal eliminativism and ersatzism do not perfectly capture our experience of some particular subset of events as special, they still come close in some important way. Alternatively they can try telling a more complicated story about what exactly it is that we are experiencing as privileged—perhaps when we look through the telescope at the supernova we aren't experiencing the supernova as happening now; instead we are experiencing some particular bit of light as reaching our eye now, or as some

[23] Perhaps another alternative motivation has to do with the thought that the world is dynamic in some important sense. Temporal ersatzism + PPP can presumably still capture that motivation to some degree. Things will still go from being concrete to non-concrete as time passes.

particular mental state of perceiving the supernova (directly or indirectly) as happening now. I won't say anything here about whether these sorts of moves might be successful. My point here is just that if they are, they might be adopted by the temporal ersatzist who endorses the PPP, and thus result in an A-theoretic view that is compatible with relativity theory.

The upshot of these two sections, then, is as follows. The shift from temporal eliminativism to temporal ersatzism does indeed open up a novel route by which to respond to the worry from relativity theory. At the same time it raises serious questions about how high a cost the temporal ersatzist is willing to pay, and about the motivation for ersatzism to begin with. Whether this new route is ultimately worth taking depends both on the extent to which we are able to provide satisfactory answers to those questions and the extent to which we think the existing ways for the temporal eliminativist to respond to the worry from relativity are inadequate.[24]

## 5 Other versions of the A-theory

Here are two other versions of the A-theory:

> *Presentist existential pluralism.* (PEP) The present is privileged in the sense that past and future entities exist in a different way than present entities. (McDaniel 2018.)

[24] There is a third way of presenting the relativity objection, according to which the objection is really one about the kinds of explanations that objection presents. See Balashov and Janssen 2003. Since the temporal ersatzist is retaining all and only the spacetime structure of relativity theory, it seems plausible that she will be able to appeal to all the same explanations, and thus that she will be able to avoid that sort of objection.

*Property A-theory.* (PAT) The present is privileged in the sense that past and future entities lack an important property—the property of nowness—that present entities have.

Like temporal ersatzism, these version of the A-theory fall short of full-fledged eliminativism. But for that very reason, they also can make use of all the same moves that the temporal ersatzist made above in responding to the relativity objection.

Presentist existential pluralism, for instance, faces a version of the relativity objection that combines P1 with the following two premises:

R2 If past and future entities exist in a different way than present entities, then there are some things such that the way those things exist depends on the reference frame you choose to use when describing those things, and no one reference frame is correct.

R3 It is not the case that there are some things such that the way those things exist depends on the reference frame you choose to use when describing those things, where no one reference frame is correct.

The combination of P1, R2, and R3 entail that past and future entities exist in the same way that present entities exist.

But here again the difference between P3 and R3 is important. In particular, it is more plausible for the PEP-er to reject R3 than it is for the eliminativist to reject P3. Rejecting P3 is not without costs, of course, since it entails:

*Way of Being Relativity.* The way something exists is (at least sometimes) relative to a reference frame, and no reference frame is privileged.

And that principle is at least somewhat surprising. But it is presumably not the same kind of non-starter as Existence Relativity.[25]

In addition, the PEP-er needs to respond to the spacetime structure challenge. And in doing so, he will end up facing analogues to the self-concreteness worry and the diminished privileged worry that were discussed in section 4. For the very same reasons discussed above, the PEP-er will therefore almost certainly end up committed to the following consequences: (i) he himself has the same way of being as present entities only in some reference frames, and (ii) at least some of the events in his past and future light cone also have the same way of being as present entities. And as in the case of temporal ersatzism, the PEP-er needs to acknowledge (i) as a non-trivial cost of his theory and needs to explain the motivation for his view in a way that is not undermined by (ii).

What about PAT? The reader can now see the pattern so I won't belabor the details. The key point is that the PAT-er can escape the initial relativity challenge by rejecting the analog of P3, Q3, and R3 and accepting the following principle:

*Nowness Relativity.* Whether some entity has the property of nowness is (at least sometimes)

[25] Of course this claim is a little hard to evaluate without knowing more about ways of being. Here's a different way to put the point, though: those who like ways of being talk should try to spell that talk out in such a way as to make Way of Being Relativity as plausible as possible, since it may be of some help in responding to the relativity challenge.

relative to a reference frame, and no reference frame is privileged.

Again, this principle might be surprising. But it isn't a non-starter. What is perhaps more surprising are the commitments that the PAT-er must take on in response to the spacetime structure challenge. For in responding to that challenge, the PAT-er will face analogues to the self-concreteness worry and the diminished privileged worry that were discussed in section 4. As a result, the PAT-er will almost certainly end up committed to the following two consequences: (iii) she herself has the property of nowness only in some reference frames; and (iv) at least some of the events in her past and future light cone have the property of nowness. As with the other versions of the A-theory discussed above, the PAT-er needs to acknowledge (iii) as a non-trivial cost of her theory, and needs to explain the motivation for her view in a way that is not undermined by (iv).

## 6 Conclusion

The shift from temporal eliminativism to temporal ersatzism opens up novel ways of responding to the worry from relativity theory, but some fairly significant caveats apply. The temporal ersatzist must be willing to admit that concreteness can vary depending on reference frame and that she herself is concrete only in some reference frames. In addition she must be able to spell out the motivation for thinking that the present is privileged in such a way that it is compatible with at least some of the things that seem past or future actually being privileged in the very same way as the things that seem present. Similar conclusions apply to related A-theories like the

Property A-theory and Presentist Existential Pluralism.

I'm happy to admit that the kind of bullets that these A-theorists would be biting are pretty substantial, and I have said nothing above as to whether, all things considered, they are bullets worth biting. Ultimately, I suspect that in order to decide whether these A-theorists make real progress when it comes to the relativity objection—whether they are in any better position with respect to that objection than the temporal eliminativist is in—we need to think more about the extra-empirical criteria that rule out a privileged reference frame in relativity theory. But those who find themselves attracted to the A-theory should be able to take at least *some* comfort in the idea that there is at least *some* way of proceeding with their theory if they convince themselves that they just can't accept a privileged reference frame.[26]

**Citations**

Balaguer, M. (ms) 'How to Make Presentism Consistent with Special Relativity'.

Bourne, C. (2006). *A future for presentism.* Oxford: Oxford University Press.

Crisp, T. M. (2007). Presentism and the grounding objection. *Noûs*, 41(1), 90–109.

Demarest, H. (ms). It matters how you slice it: Special relativity and causation.

[26] Thanks to Jonathan Tallant, Sam Baron, Heather Demarest, Dave Ingram, and the audience at the 2019 International Association for the Philosophy of Time Conference at the University of Boulder.

Emery, N. 2017. Temporal Ersatzism, *Philosophy Compass* 12/9, URL = <https://onlinelibrary.wiley.com/doi/abs/10.1111/phc3.12441>

Emery, N. 2019. Actualism without Presentism? Not by way of the Relativity Objection, *Nous* 53/4: 963-986.

Hawley, K. (2009). Metaphysics and relativity. In R. Le Poidevin, P. Simons, R. Cameron, & A. McGonigal (Eds.), The Routledge companion to metaphysics. New York: Routledge.

Ingram, D. (2016). The virtues of thisness presentism. *Philosophical Studies*, 173, 2876–2888.

Irmak, N. Forthcoming. 'An Ontology of Words'. *Erkenntnis*.

Juvshik, T. Forthcoming. 'Relativity and the Causal Efficacy of Abstract Objects'. *American Philosophical Quarterly.*

Markosian, N. 2004. 'A defense of presentism.' Oxford Studies in Metaphysics, 1(3), 47–82.

McDaniel, K. 2018. *Ways of Being*. Oxford University Press.

Meyer, U. (2013). *The nature of time.* Oxford: Oxford University Press.

Monton, B. (2006). "Presentism and quantum gravity", in Dieks, Dennis (ed.), *The Ontology of*

*Spacetime*, Amsterdam: Elsevier, 263-280.

Orilia, F. (2016). Moderate presentism. *Philosophical Studies*, 173(3), 589–607.

Saunders, Simon. 2002. "How Relativity Contradicts Presentism". *Royal Institute of Philosophy Supplement* 50: 277–92.

Sullivan, Meghan. 2012. "The Minimal A-Theory." *Philosophical Studies* 158 (2): 149–74.

Thomasson, A. 1999. *Fiction and metaphysics*. New York: Cambridge University Press.

Williamson, T. (2002). Necessary existents. *Royal Institute of Philosophy Supplement*, 51, 233–251.

Wüthrich, C. (2012). Demarcating presentism. In H. de Regt, S. Okasha, & S. Hartmann (Eds.), *EPSA Philosophy of Science: Amsterdam 2009* (pp. 441–450). Springer.

Wüthrich, C. (2013). The fate of presentism in modern physics in R. Ciunti, K. Miller, and G. Torrengo (eds.), *New Papers on the Present—Focus on Presentism*. Philosophia Verlag: Munich. 91 - 132.

Zimmerman, D. 2011. 'Presentism and the space-time manifold'. In C. Callender (Ed.), The *Oxford handbook of philosophy of time*. Oxford: Oxford University Press.