



Inquiry

An Interdisciplinary Journal of Philosophy

ISSN: 0020-174X (Print) 1502-3923 (Online) Journal homepage: www.tandfonline.com/journals/sinq20

The New A-theory of Time

Jonathan Tallant

To cite this article: Jonathan Tallant (2015) The New A-theory of Time, *Inquiry*, 58:6, 537-562, DOI: [10.1080/0020174X.2015.1069067](https://doi.org/10.1080/0020174X.2015.1069067)

To link to this article: <https://doi.org/10.1080/0020174X.2015.1069067>



Published online: 21 Aug 2015.



Submit your article to this journal [↗](#)



Article views: 744



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 1 View citing articles [↗](#)

The New A-theory of Time

JONATHAN TALLANT

Department of Philosophy, University of Nottingham, Nottingham, NG7 2RD, UK

ABSTRACT The New A-theory of Time (TNAT) is the view, to be elaborated and defended in this article, that many times exist, and that time is real in virtue of every moment in time bearing each of the so-called A-properties: past, present and future. I argue that TNAT is at least as theoretically virtuous as mainstream views in the philosophy of time and may have some claim to being our best theory of time. I show that the properties ‘past’, ‘present’ and ‘future’ can be understood as compatible intrinsic properties. Having demonstrated that this account of the A-properties is coherent, I go on to demonstrate how TNAT can give us an account of passage, change and the truth-conditions for temporal sentences. In the final section of the article, I develop a tentative argument in favour of TNAT, though concede that we have to settle for the result that TNAT is on a par with our other theories of time. In the remainder of this opening section, my aim is to situate the current proposal as a direct response to McTaggart’s infamous argument against the reality of time.

I. The New A-theory

McTaggart begins through a discussion of the A-series, which may be defined as, ‘the series of positions running from the far past through the near past to the present, and then from the present to the near future and the far future’.¹ The first part of McTaggart’s argument is designed to show that time cannot be real without the existence of an A-series.² This part of the argument need not concern us here. The second part warrants lengthy quotation

Past, present, and future are incompatible determinations. Every event must be one or the other, *but no event can be more than one ...*

Correspondence Address: Jonathan Tallant, Department of Philosophy, University of Nottingham, Nottingham, NG7 2RD, UK. Email: jonathan.tallant@nottingham.ac.uk

¹McTaggart, ‘Unreality of Time’, 458.

²Ibid., 461–3.

But every event has them all. If M is past, it has been present and future. If it is future, it will be present and past. If it is present, it has been future and will be past. Thus all the three incompatible terms are predicable of each event.³

Very crudely, then, we can sum up McTaggart's argument, thus: (1) no event can be past, present and future; (2) for time to be real, every event must be past, present and future. And so time cannot be real. My claim, in this article, is that (1) is false. Every event *is* past, present and future. So time is real. Thus, what I am proposing here is a novel solution to McTaggart's alleged paradox. As promised, I now want to turn our attention to the A-properties: their natures and an explanation of their consistency. As a reminder, throughout I refer to the view defended here as the 'New A-theory of Time'—'TNAT', for short.

II. Properties

My concern in this first part of the article is to reject what I take to be the best reasons for thinking that the A-properties are incompatible. The aim, here, is to establish the consistency of the view.

I assume, to begin, that no entity can simultaneously be red (all over) and green (all over). That this is so does not hinge on some linguistic trick. The predicates 'is green' and 'is red' are normally taken to denote properties of an object's surface, properties that are thought to be exclusive of one another. But not all properties exclude one another. An object can be both square and red. For TNAT to succeed, these A-theoretic properties must be shown to be compatible. I claim that, just as an object can be square and red, so too it can be past, present and future. We can coherently understand these A-properties as intrinsic. Indeed, Bigelow assumes, without argument, that we can treat the A-properties as intrinsic.⁴ For reasons that will become apparent I think argument is required, but ultimately endorse Bigelow's position. Let us focus, to start with, upon the question of whether or not this verdict that the A-properties are intrinsic is correct. Once we have established that the A-properties can be understood as intrinsic properties, we can move on to demonstrating that we lack good reason to think them incompatible.

Roughly, a property is intrinsic if and only if the having or lacking of that property is independent of whether or not that property is accompanied.⁵ That is, a property F is intrinsic iff:

³McTaggart, 'Unreality of Time', 468.

⁴Bigelow, 'Worlds Enough for Time', 7.

⁵For discussion, see Lewis, 'Extrinsic Properties', 197–200; Dunn, 'Relevant Predication 2', 177–206; Sider, 'Intrinsic Properties', 1–27; and Langton and Lewis, 'Defining "Intrinsic"', 333–45. I focus on the Langton and Lewis view, below.

- (1) It is possible for an accompanied object to be F.
- (2) It is possible for an accompanied object to lack F.
- (3) It is possible for a lonely object to be F.
- (4) It is possible for a lonely object to lack F.⁶

I will use the property ‘future’ as a stalking horse. I assume that if ‘future’ may be classified as intrinsic, ‘past’ and ‘present’ may be classified that way also.

Could a world consist of two objects, O_1 and O_2 , where O_1 has the property ‘future’? Yes. There seems nothing conceptually prohibitive about a world at which only two objects exist and where one of them is future, the other one is present.⁷ ‘Future’ thus satisfies condition (1). It is also possible for an accompanied object to lack the property ‘future’. The world just described, where O_2 is present and O_1 is future, is one where O_2 is accompanied by O_1 , but O_2 lacks the property ‘future’.⁸

Skip to the fourth condition. Let us borrow a case from Melia and Effingham to establish the possibility of a timeless world—this will be a world at which a lonely object is not future.⁹ Subtract away all of the times *other* than t from a B-theoretic, eternalist world, at which time is real in virtue of objects standing in earlier than/after than (so-called) B-relations to one another. What’s left, t , is a possible world, p ; p is a world composed only of t . Time is not real at p . Effingham and Melia give the following reason for this verdict.

Object t bears no temporal relations to other times; there is no temporal dimension at such a world so no temporal dimension for t to be a part of; there is no change at such a world so there is no dimension of change.¹⁰

If we then further stipulate that, only object O exists at t , then O is lonely and lacks temporal property of ‘future’. (Sider has also argued that timeless worlds are possible. An opponent who thinks otherwise owes an argument.)¹¹

(There is a dialectical issue worth tackling. I appealed to the possibility of a B-theoretic eternalist world in order to demonstrate the possibility of lonely objects lacking the property ‘future’. The view that I’m outlining here is an A-theoretic view. One might therefore think it remiss of me to

⁶Cf. Cameron, ‘Intrinsic and Extrinsic Properties’, 265–75.

⁷A world may be described as ‘eternalist’ iff more times than just the present exist, at that world. Contrast this with presentism—the view that only present objects exist.

⁸Of course, I claim that the actual world is not like this and that every object at the actual world has each of the A-properties. But nothing I say here commits us to thinking that this is true of every possible world.

⁹Effingham and Melia, ‘Endurantism and Timeless Worlds’, 140–7.

¹⁰Ibid., 144.

¹¹Sider, *Four Dimensionalism*, 98–101.

appeal to even the possibility of a B-theoretic eternalist world. Positions in metaphysics are *surely* necessarily true, if they are true at all.

However, it is no part of the claim defended here that TNAT is necessarily true. As I stress below, we should think a state of affairs possible unless given good reason to think otherwise and I know of no compelling reason to think the B-theory impossible if TNAT is true. B-theoretic worlds might be rather unlike our own—for all I know—but ‘unlike our world’ does not constitute, or make the case for, ‘impossible’.)

Finally, is it possible for a lonely object to bear the property ‘future’? This is more controversial. To illustrate why I think it *is* possible for a lonely object to be future, let me borrow a representative device from Bigelow.¹² Times are represented by letters of the alphabet. Letters in bold typeface represent times that are past; a capitalised letter represents a time that is present, and an italicised letters represent future times. Thus,

abcdefg*Hijklmnopqrstuvwxyz*

There is seemingly no difficulty in conceiving of what is represented.

Suppose that only a single object occupies each time. From there, we need simply engage in combinatorial reasoning and ‘remove’ from the series all of the times other than that which is represented by (e.g.) *z*. What is left will be a lonely object that has the property of being ‘future’.

There is a natural response to this. In the combinatorial argument, it’s wrong to assume that the property of futurity would remain in the absence of presence because it’s intuitive to think that an object *can only be future if some other object is present*. In the wider literature on intrinsic and extrinsic properties, it’s typical to see definitions of what it is to be intrinsic and extrinsic rejected on the basis that they fail to capture our intuitive sense of which properties are intrinsic and which are extrinsic.¹³ In that case, we ought to respect the same intuitions here and so conclude that being ‘future’ is an extrinsic property.

I think that the response fails. First, I simply don’t share the intuition that a time can only be future if another is present. Whose intuition wins out? It’s hard to say, but I think that the onus here is on my opponent, for two reasons. First, consider the oft-discussed cases of mass and weight. It makes no sense to think of weight as being intrinsic, because the way in which weight is defined—such that the weight of an object, *O*, is the product of the gravitational force exerted upon *O* by a second body and *O*’s mass. The mention of ‘a second body’ makes it clear that weight cannot be intrinsic. But ‘being future’ is a matter of ‘going to be’; ‘still to come’; ‘yet to pass’. There is no explicit mention of another object having to present in order for a time to be

¹²Bigelow, ‘Worlds Enough for Time’, 11.

¹³For discussion, see: Eddon, ‘Intrinsicity and Hyperintensionality’, 314–36.

future. If there is no *explicit* mention of another object, or time, in the definition of what it is to be future, it is not at all *obvious* that we are *obliged* to treat ‘future’ as extrinsic.

Second, suppose that there are many instants at a world, *w*. Suppose—to deploy a *metaphor*—that God creates *w* as a world in which there will be time. In order to create such a world, God makes all of the times bear the property ‘future’. In order to begin the passage of time in this world, all that God has to do is make the first instant present and then let that property of ‘presence’ progress through each of the instants in turn. But notice that, in this case, we’re supposing that all of the times in *w* are ‘future’ and are then *becoming* present. *w* is conceivable, and hence, I shall assume, possible. Thus, it is possible for an instant to be future without some other instant being present. Now, if God can do this, then I see no reason that God could not also create a world, *v*, similar to *w*, but at which only *one time* is future.¹⁴ The world, *v*, is an exact duplicate of *w* at *w*’s first moment, but contains only what we would regard as the first moment of *w*. Such a world is one at which the only object that exists, is yet to come; it is future. A world could be such that all of its times are future; if there is only one time, then *that time* is future. We do not need God in the case, of course: the case survives even if we view God-talk as nothing more than colourful metaphor. Thus, it seems to me possible that a lonely object *could* be future and, therefore, it seems right to think that the A-properties can be understood as intrinsic properties.

II.i Are the A-properties mutually exclusive?

No object can be both green all over and blue all over, and the colour of an object is (we’ll now assume) intrinsic. Red and blue are members of the family of colour properties. Families of other intrinsic properties behave similarly. No object can be both red and blue; no object can be both a cube and a sphere.¹⁵

What we have in the colour and shape cases are cases where both determinates are of the same family of determinable.¹⁶ In order to use this to motivate

¹⁴I assume that God exists outside time, for the purposes of this metaphor. This is not an atypical view.

¹⁵If there is a requirement that we have some proper analogue for objects being red or green ‘all over’, then let us say that objects in time are ‘wholly’ past, present and future, where this is taken to mean that every part of the object is past, present and future.

¹⁶Indeed, that two properties exclude one another might be taken to indicate that they are determinates of the same determinable. Some *might* be tempted to go as far as to say that this is a necessary and sufficient condition for the properties in question being determinates of the same determinable—e.g. Johnson, *Logic, Part I*, 181. If that’s right, then the A-theorist may simply *insist* that the properties are compatible and so avoid the charge that A-properties are determinates of the same determinable. This is tempting. However, I take no stand here on whether any of this is true. Recall, my aim here is to *reject* the claim that we have any reason to say that the A-properties are determinates of the same determinable rather than defend any particular account of the relation between determinate and determinable.

the view that ‘past’, ‘present’ and ‘future’ are incompatible properties, we would then need to show the A-properties to be determinates of the same family of determinable.

The natural way to proceed would be to locate hard and fast rules for deciding when groups of predicates ought to be taken to denote determinates of a given determinable and then show that these apply to the A-properties with respect to some determinable. I know of no such rules. However, we can appeal to a number of truisms that apply to cases where we have an instance of the determinable/determinate relation. If we can show that the A-properties satisfy these truisms we will have good reason to think that the A-properties are mutually exclusive.

However, *failure* to satisfy those truisms would look to point away from the A-properties as falling under a particular determinable. That, in turn, would block a powerful reason for thinking that the A-properties exclude one another. It is this last point that I look to exploit.

II.ii. Determinable/determinate relations

Funkhouser specifies eight truisms that ought to be satisfied by any analysis of the determinate/determinable relation.¹⁷ We need consider only one. Consider the putative determinable ‘being in time’. (In a moment, we shall consider the determinable ‘A property’.) Here is the first truism:

The following canonical pairs must turn out to be related as determinable to determinate: colored/red, red/scarlet, and shaped/circular. The first two examples show that properties are determinables or determinates only relative to other properties. Red is determinable relative to scarlet, but determinate relative to colored.

This *looks* easily satisfied as follows: the canonical pair ‘being in time’/‘is past,’ looks plausible enough, as do the pairs, ‘being in time’/‘is present’; ‘being in time’/‘is future’.

However, to satisfy this condition, it *must* be the case that an object that is in time bears one of past, present and future. In other words, necessarily, if an object is in time, then it bears one of past, present and future.

But this is surely too bold. I think that we should accept that the B-theory of time *is* a genuine possibility. I know of no argument in the literature that shows the B-theory to be *impossible*, even if we deny that the B-theory is actually true. Much of the literature in the philosophy of time is concerned with accounting for the truth of tensed sentences; giving truth-makers for talk about the past and future; ensuring consistency with the laws of physics, and accounting for our sense that change occurs. If TNAT were actually true, then it still seems

¹⁷Funkhouser, ‘The Determinable-Determinate Relation’, 548–9.

coherent to suppose that there could be a B-theoretic world at which there were tensed truths; at which there were truth-makers for talk about the past; at which the B-theory is compatible with the laws of physics and at which we have some account of change. It is hard to see why we should think otherwise. Such a B-theoretic world would seem, so far as I can tell, to be one at which time is real. In the absence of arguments showing that the B-theoretic worlds are impossible if TNAT is true, we should surely conclude that the B-theory of time is true at a possible world. This result entails that none of past, present and future are determinates of the determinable ‘being in time’ for it is possible to be in time without instantiating one of these properties. And, in that case, we lose a reason for thinking the A-properties mutually exclusive.

Instead, perhaps we can identify a different determinable and show that the A-properties *are* determinates of that determinable: perhaps, ‘being an A-property’. But it is unclear that the term ‘A-property’ *is* a determinable. McTaggart stipulatively introduces the term ‘A-series’ to group together objects bearing said properties. In itself that gives us no reason to suppose that ‘A-property’ *is* a determinable; it merely demonstrates that McTaggart introduced some terminology into the philosophical lexicon. I *could* stipulatively introduce a determinable ‘telegreen’. Determinates of ‘telegreen’ are *either* telephones *or* are green, not both. Merely that I can stipulatively introduce a predicate and declare it a determinable *certainly doesn’t* mean that the putative determinable *is* a determinable. The stipulation that there *is* a genuine determinable ‘telegreen’ that admits of two determinations ‘telephone’ and ‘green object’ is false; I have seen green telephones.

The lesson we should draw is not that ‘past’, ‘present’ and ‘future’ are determinates of the determinable ‘A-property’, but that where we stipulatively introduce a determinable and a contradiction ensues, we have the wrong determinable. The right lesson to draw is that *there is no such determinable as* ‘A-property’.¹⁸

II.iv. Categories and the incompatibility of A-properties¹⁹

Another putative reason to think A-properties incompatible concerns their categorical status. We do not think that objects can be both ‘an odd number’ and

¹⁸Similar remarks can be made in response to the suggestion that the correct determinable is ‘tensed property’.

¹⁹I assume that further instances of incompatible properties (eg ‘being water’ and ‘having a molecular mass of 32’) are similarly cases where the properties in question are either incompatible due to their being of different families of determinables or determinates (eg ‘being water’ and ‘having a molecular mass of 32’ certainly both fall under the determinable of ‘having a molecular mass’; but being water does not fall under the determinate ‘having a molecular mass of 32’); or are cases where incompatible properties are incompatible due to their being of different ontological categories (eg ‘being happy’, and ‘being greater than 7’) There might be more troublesome cases: in that case, it would be up to my opponent to show (i) why these other cases of incompatible property are incompatible; (ii) why we should think that the A-properties are like those properties.

‘red’; ‘have zero extension’ and ‘be square’, but it’s certainly not the case that these are instances of an object instantiating two determinates of the same determinable.

I will assume, here, that the reason that no object can be both an odd number and red, is that objects capable of bearing the property ‘redness’ belong to the category of *concrete* objects; objects capable of bearing the property ‘being an odd number’ belong to the category of *abstract* objects. That no object can then bear both of these incompatible properties is then due to the fact that the,

very general division between *concreta* and *abstracta* is exhaustive and exclusive; necessarily, every entity either belongs to the ontological category of the concrete or belongs to the ontological category of the abstract, and there could not be an entity belonging to both of these categories.²⁰

The thought might then be that: (i) A-properties belong to different ontological categories to one another; (ii) those ontological categories are mutually exclusive. This argument seems, to me, to be very hard to maintain. According to the view I am sketching, these so-called A-properties are *properties*. They do not belong in the same family of determinables, but, in much the same way that the properties of shape and charge can both be born by the same object, so too can objects bear each of the A-properties. Consider, for example, a balloon that has been rubbed repeatedly on a shirt. The balloon has a shape and it has a static charge. The New A-theorist merely claims that we can introduce three further properties. An object can bear any combination of shape property and charge property; so too an object *can* bear any combination of past, present and future. As a matter of fact, all actual objects bear all three A-properties.

I.v. Analytic exclusion

Here is another way of objecting to TNAT. We understand ‘is future’ as analytically entailing ‘not present and not past’. Thus, in much the same way that the truth of ‘there is snow’ analytically excludes ‘there is no snow’, so ‘is future’ analytically excludes ‘is past’ and ‘is present’.

This point is not persuasive. At one point in history, the claim that ‘space is Euclidean’ would have been *regarded as* analytic, though it’s now held to be false. Thus, *seemingly* analytic claims are clearly negotiable. Further, what I’ve tried to show is that the A-theorist does have ways to understand A-properties that seems to render them compatible.

It might then be objected that although I’ve shown that there’s no compelling reason to think that the intrinsic A-properties are mutually exclusive, that doesn’t show such properties compatible. We need to do

²⁰Hoffman and Rosenkrantz, *Substance Among Other Categories*, 15.

rather more than just reject some superficial reasons for these properties incompatible.

In response: first, more has been done than simply show that there's no *prima facie* contradiction. In the previous section, I described how the A-properties might fit into a system of properties. A-properties are, categorically, just like the properties of charge and shape. The description of a coherent way in which we may categorise properties goes some way to doing more than simply denying that there's a problem.

Second, I borrow from Ross Cameron:

For my part, I am guided by the thought that possibility is the default mode, and that we should grant the possibility of a proposition unless we have an explanation for the necessity of its negation.²¹

I share Cameron's guiding thought. The *compatibility* of properties—any properties—ought to be the default assumption *unless good argument can be put forward to show otherwise*. The most obvious reasons to think that A-properties *are* mutually exclusive have been defeated, so, in the absence of good reason to think otherwise, we should think the A-properties compatible.

As a consequence, I think that I've now done enough to show that we have a response to McTaggart—which I promised at the end of Section 1. We have an account of the natures of the A-properties. We have rebutted all of the best reasons for thinking that the A-properties *must* be incompatible.

III. Other Constraints

Merely demonstrating that it is not incoherent to suppose that the A-properties are coherent does not give us much. It might give us a response to McTaggart's argument, but it does not yet give us a convincing theory about the nature of reality. In this section, I look to put that right.

I show that TNAT can preserve the truth-conditions necessary to give what we might call 'temporal' sentences a satisfactory semantics (Section III.i). In the sections following Section III.i, I defend TNAT from the accusation that there are now too many tensed truths (Section III.ii) and I account for change and passage (Section III.iii). My intention in Section III is to get the resulting A-theory 'to the starting line' as a theory of time, by showing that it satisfies many of the desiderata that we have for a theory of time. Think of this, then, as going some way to motivating us to endorse TNAT as a plausible theory. In Section IV, I'll offer an argument intended to motivate TNAT.

²¹Cameron, 'From Humean Truthmaker Theory', fn14.

III.i. Truths

To begin, let us consider truths of the form ‘x is past’: e.g. the battle of Hastings *is past*; the presidency of Barack Obama *is present*; the construction of Mars outposts *is future*. According to TNAT, the truth-conditions for these sentences are straightforward. ‘x is present’, is true, iff x bears the property ‘present’; ‘x is past’, is true, iff x bears the property ‘past’; ‘x is future’, is true, iff x bears the property ‘future’.

Next, the so-called the tenseless truths: e.g. ‘the battle of Hastings is earlier than the First World War’. To account for these truths, we need some metaphysical back-story to be in place. It will help to appropriate some remarks from Huw Price. In discussion of the difference between time being asymmetric, and particular processes being asymmetric *in time*, Price offers an illustration in the form of a spatial analogy.

Imagine a long narrow table, set for a meal. The contents of the table might vary from end to end. There might be nonvegetarian food at one end and vegetarian at the other, for example; there might be steak knives at one end but not at the other; all the forks might be arranged so as to point to the same end of the table; and so on. This would constitute an asymmetric *on* the table. Alternatively, or as well, the table itself might vary from end to end. It might be wider or thicker at one end than another, for example, or even bounded in one direction but infinite in another ... These would be asymmetries *of* the table itself, rather than its contents.²²

The distinction between an asymmetry *in* time and the asymmetry *of* time is a useful one. The proponent of TNAT should insist that the A-series is bounded at one end and unbounded in the other direction. This gives us an asymmetry. Time itself is asymmetric because it is bounded at one end, not the other. I assume, since physicists would have us believe that time ‘began’ with a Big Bang, that we wish to say that the bounded end is the earliest point in time. We may then say that:

‘E is earlier than event E*’ is true iff E is closer to the bounded end of the series than E*.

And that,

‘E is later than event E*’ is true iff E* is closer to the bounded end of the series than E.

²²Price, *Time's Arrow and Archimedes' Point*, 16.

This makes a substantial demand on the A-theorist—the postulation of a series bounded at one end, though not at another. But there is no obvious reason to think the demand untenable. It merely turns out that it is an *a priori* commitment of TNAT that the temporal series is asymmetric. Absent any reason to think this genuinely problematic, and given the *apparent support, it receives from contemporary science*, I conclude (albeit somewhat tentatively) that this issue poses no immediate threat to TNAT.²³

We might raise a slightly different concern. Perhaps science gives us a reason to think that there is a first moment. But there's no obvious commitment from such science to time being unbounded in the other direction in the series. What reason, then, can I give you for thinking that the temporal series *is* unbounded in the way that I describe? And, if I can't give any such reason, does this pose a threat to TNAT?

The answers to these questions are 'no' and 'yes', respectively. I cannot give a positive *reason* for thinking that the temporal sequence is bounded at one end and unbounded in the opposite direction. But I do not think that this matters. Rather, I think that we ought to treat this as a *prediction* of TNAT. TNAT *predicts* that this series is unbounded at one end, and it predicts that is so because otherwise our true claims to the effect that some events are earlier than others (and so on—the tenseless truths, described above) would not be true.

It is unusual, I concede, to see an *a priori* philosophical thesis carry with it a prediction in this fashion. But I do not see that it is a weakness of TNAT that it generates this prediction. Indeed, it may turn out that it is an advantage of the view when it is compared with its primary opponents: presentism and the B-theory of time.²⁴ To explain why, I shall briefly divert to a consideration of an argument due to Huemer.²⁵

One of the reasons that Huemer gives for preferring parsimony in scientific (non-philosophical) theories, he dubs the 'Likelihood account'. The central idea is that simpler theories are better because they are better supported by the data as follows:

The essential point is that typically a simple theory can accommodate fewer possible sets of observations than a complex theory can: the simple theory makes more specific predictions. The realization of its predictions

²³Matters would be different were I claiming that the resulting position is necessarily true. Plainly, it seems possible that the world has a finite duration and be bounded (or unbounded) in both directions: past *and* future.

²⁴The B-theory was described above. I here treat presentism as the view that only present objects exist—for this definition see Markosian, 'In Defense of Presentism', 47. On a point of interest, I prefer to describe the view in a slightly non-standard way. See Tallant, '(Existence) Presentism and the A-theory', 673–81; and Tallant, 'Defining Existence Presentism', 479–501.

²⁵Huemer, 'When is Parsimony a Virtue?', 216–36.

is consequently more impressive than the realization of the relatively weak predictions of the complex theory.²⁶

Given Bayes' Theorem, it follows that we can calculate the probability of simple theory, *S*, and our complex theory, *C*, given data, *E*, as follows:

$$P(S|E) = [P(S) \times (P(E|S))]/P(E) \quad P(C|E) = [P(C) \times P(E|C)]/P(E)$$

Allowing that the prior probability of both simple and complex theories is equal (and not equal to zero or one), it follows that the simple model is more likely. As Huemer points out the following:

If *S* is compatible with and neutral between possible items of evidence E_1 and E_2 , while *C* is compatible with and neutral among E_1 , E_2 , E_3 and E_4 (where E_i are mutually exclusive), then $P(E_1|S) = 1/2$, whereas $P(E_1|C) = 1/4$.²⁷

Or, in more colloquial terms:

Complex models typically have lower likelihoods relative to a given set of data, because complex models have more parameters which can be adjusted to accommodate the data.²⁸

Let us now return to TNAT and see how to apply this. It seems that both presentism and the B-theory are compatible with a sequence of temporal events that is both bounded in and unbounded in each direction. In contrast, TNAT is compatible only with a series of events that is bounded in one end and not in the other.

At the current time, there is no scientific orthodoxy on the issue of whether or not the universe will continue to expand for perpetuity, whether it will reach a point of balance where neither expansion nor contraction occur, or whether it will contract back to a 'big crunch'. I shall assume, therefore, that we lack good reason to prefer any one of these options to the others.

Eventually, let us assume that science (or philosophy) will settle the question as to whether or not this sequence is bounded at both ends. If this is what we find, then TNAT is disconfirmed—and so much the worse for TNAT. But by taking this risk, TNAT stands to gain. Suppose that the temporal structure of reality *is* bounded at one end (the Big Bang) and unbounded in the other direction. In that case, TNAT gains a good deal more from this than do either presentism or the B-theory. The reason for this is that, borrowing from Huemer's

²⁶Huemer, 'When is Parsimony a Virtue?', 221.

²⁷Ibid., 223.

²⁸Ibid., 231.

reasoning, TNAT is better confirmed by such a finding than would be either presentism or the A-theory.

To see this, let us treat S_1 as TNAT, S_2 as presentism and S_3 as B-theory. The items of (potential) evidence that we have are that the temporal structure of reality is found to be bounded or unbounded in each direction. Call E_1 the potential item of evidence that the temporal structure of reality is unbounded in both directions; E_2 the potential item of evidence that the temporal structure of reality is bounded at one end (the Big Bang), though not in the other direction; E_3 that the temporal structure of reality is bounded at one end (a big crunch) though not, as we currently think, at the other (so that we deny the Big Bang hypothesis); E_4 that that the temporal structure of reality is bounded at both ends.

S_2 and S_3 , presentism and B-theory, are compatible with and neutral between possible items of evidence E_1 , E_2 , E_3 , and E_4 . In contrast, S_1 (TNAT) is compatible with only E_2 . (where E_i are mutually exclusive). For both S_2 and S_3 : $P(E_2|S_2(\text{or } S_3)) = 1/4$. In contrast, for S_1 (TNAT): $P(E_1|S_1) = 3/4$.

In short: because TNAT would be confirmed only by one result, out of the four, it stands to gain more support from that one result than would either of presentism or the B-theory, that are both compatible with each outcome.

It follows, then, that TNAT would be *better* confirmed by this result— E_2 . So, I concede that it is unusual to see a philosophical theory making a prediction. However, I hope to have shown what advantages a philosophical theory *may* accrue by virtue of this, if it turns out to be confirmed. I certainly do not see it as a *cost* of the theory that it is incompatible with reality having a particular temporal structure. The only situation in which such a prediction would be a cost for TNAT is if it turns out to be a false prediction. But such are the risks that our scientific theories take on a near daily basis; they seem to do tolerably well in spite of these risks.

II.i.i. A metaphysical diversion

I've claimed that the temporal structure of reality is bounded in one direction. But, if we already have an asymmetric structure that is bounded in one direction, then to what purpose would we introduce A-properties? We do not have any obvious reason to think that we require that A-properties over and above the asymmetric structure.

My response is simple: the series is temporal iff each part of the series bears each of the A-properties. In order to adequately conceptualise the proposal, consider the following. Suppose that we begin with a four-dimensional structure. None of the dimensions is temporal and so time cannot be said to be real. Three of the dimensions (the dimensions that we will later come to think of as our three-dimensional spatial structure) are either bounded in both directions or unbounded in both directions (depending upon whether or not we think that space is infinite in every direction). The fourth dimension (the dimension we

will later come to think of as our temporal dimension) is bounded at one end, but unbounded at the other.

TNAT then commits to the following: an asymmetry in structure, in addition to every element of that structure bearing the properties of being ‘past’, ‘present’ and ‘future’ gives us a reductive analysis of the earlier than/later than relation. The conjunction of the asymmetric structure and temporal properties is sufficient for the reality of the B-relations. These B-relations serve to generate the truth of (e.g.) ‘the battle of Hastings is earlier than the First World War’.²⁹

A concern: suppose that we took another series that is bounded at one end and unbounded at the other: the natural numbers. Consider the following counterfactual:

CF: were it to be the case that every number bore the properties past, present and future, then the numbers would themselves generate a temporal series.

CF is preposterous. Numbers can’t be earlier than or later than one another, so we face a problem.

The absurdity in the suggestion is, however, not a consequence of TNAT, but of thinking both that (i) numbers exist and that (ii) numbers can bear A-properties/temporal properties. There is no threat to TNAT, here. Even if numbers *do* exist, they are not the sorts of entity that *can* bear temporal properties.

III.i.ii. The remaining truth-conditions

Sentences of the form ‘there was an x’/‘x occurred’, ‘x is happening now’, ‘there will be an x’ are to be given tenseless token reflexive truth-conditions. Thus, a sentence token of the type, ‘there will be Mars outposts’ is true iff Mars outposts exist later than the moment at which the sentence is uttered. More fully:

III.i.ii.i. Present tense sentences. For any token, *u*, of the form, ‘x is happening now’, *u* is true iff (if and only if) x is simultaneous with *u*.

III.i.ii.ii. Future tense sentences. For any token, *u*, of the form, ‘x has happened’, *u* is true iff x is earlier than *u*.

III.i.ii.iii. Past tense sentences. For any token, *u*, of the form, ‘x will happen’, *u* is true iff x is later than *u*.³⁰

²⁹I will argue in Section IV that we have reason to think the B-relations not up to a particular task that is required of them.

³⁰Cf. Dyke, ‘Tokens, Dates and Tenseless Truth Conditions’, 337.

The final class of sentence for which we shall specify truth-conditions are those that describe entities as being ‘in the past’, ‘in the present’ or ‘in the future’. These sentences should be given the same as the tenseless theorist of time *typically* gives for tensed locutions that have just been stated. To illustrate, at *t*, ‘*x* is in the past’ is true, iff *x* is earlier than *t*. At *t*, ‘*x* is in the future’ is true, iff *x* is later than *t*. This detail will turn out to be important in Section IV.

III.ii. Problematic truths

According to TNAT, as I type these words, the sentence ‘the battle of Hastings is future’, is true. It has to be. The battle of Hastings exists in time, so bears all of the ‘A-properties’, including the property ‘future’. Given the truth-conditions specified in 2.1, the sentence is true. But this is the wrong result.

The A-theorist must bite the bullet here. For any *x*, *x* is past, present *and* future.

The battle of Hastings *is* future. But at the risk of mangling the metaphor, the A-theorist can sweeten the bullet that is to be bitten. I concede, of course, that the locution ‘the battle of Hastings is future’ sounds false. But it is far from being a Moorean truth that ‘the battle of Hastings is not future’. To see this, consider the fact that sentences of the form ‘*x* is past’ are, in fact, incredibly rare in written and spoken English. Staying with the example, it is straightforward enough to identify instances where the battle of Hastings is described as ‘having occurred’, or ‘having been fought’. But the only instance (in philosophical discourse) with which I am familiar of the battle of Hastings being described in a sentence such that ‘the battle of Hastings is past’ occurs in work by Jonathan Lowe.³¹ The locution seems similarly rare in non-philosophical discourse.

So for the time being, I shall pause with this: it is counterintuitive to think that ‘*x* is past’ does *not* entail ‘it was the case that *x*’; it is also counterintuitive to think that ‘the battle of Hastings is future’ is true. However, because our linguistic practice makes little-to-no use of the locutions ‘*x* is past’ and ‘*x* is future’, this is less of a problem than it would be were we required to give up on something towards the centre of our web of beliefs.³² It seems false to say that we have very strong intuitions about a species of case that arises so rarely in our linguistic practices. I shall return to the issue in Section IV where I

³¹Lowe, ‘The Indexical Fallacy’, 62–70; Lowe, ‘Reply to Le Poidevin and Mellor’, 539–42; and Lowe, *The Possibility of Metaphysics*.

³²Of course, such locutions *do* occur. The OED includes a quotation from *The Times* (28 August 2001). ‘This is the week when the holiday season is past’. That’s acceptable, of course. My claim is not that such locutions do not occur. My claim is simply that such occurrences are very rare—sufficiently rare for us to think it reasonable that we not have strong intuitions about them. Providing a single example does nothing to undermine that claim. Indeed, it’s probably good to find at least *a* mention in the non-philosophical literature in order to support the thought that ‘*x* is past’ is the kind of sentence that we might grammatically form at all.

argue more positively in favour of TNAT. Nonetheless, I concede that, although the bullet has been sweetened, this still counts as a point against TNAT.

III.iii. Change and passage

As McTaggart puts it:

in order to get change, and change in a given direction, it is sufficient that one position in the C series should be Present, to the exclusion of all others, and that this characteristic of presentness should pass along the series in such a way that all positions on the one side of the Present have been present, and all positions to the other side of it will be present.³³

TNAT leads to us giving up on the idea that one time is present *to the exclusion of all others*. This will require us giving up on the idea that ‘presentness’ literally *moves* through time and requires us to deny that there is passage. This threatens to take us back to McTaggart’s paradox, for is it not the very demand for this exclusion that generates the paradox?

In reply, we ought to be clear about what is required from a theory of change and temporal passage. A theory of change had better allow that things may be different at one moment that at another. In that minimal sense, there is no reason to think that TNAT fails. TNAT is compatible with all of the main theories of persistence and so can account for change in material objects.³⁴

What we require from a theory of temporal passage is much less clear.³⁵ At a minimum, our theory of time should preserve the truth of our sentences about time. It must be true that ‘there will be mars outposts’ for instance and that ‘there was a battle of Hastings’. TNAT secures this. Is more required?

Here’s an argument to the effect that no more is required. We should not try to constrain our best metaphysics because of the adoption of particular literary, rhetorical devices. The claim that ‘time passes’ *is* a literary device. It is an instance of hypallage. Hypallage, sometimes known as a transferred epithet, is the transfer of an attribute away from its ‘proper’ subject, to an ‘improper’ subject.³⁶ Examples include as follows: ‘Jones made a careless mistake’, and,

³³McTaggart, ‘Unreality of Time’, 463.

³⁴The New A-theory is a form of eternalism, and there are eternalist variants of perdurance, exdurance and endurance.

³⁵See, *inter alia*, Price, ‘The Flow of Time’, 276–311.

³⁶If time is the *improper* subject of the epithet, then what is the *proper* subject? I take it that it is true to say that (typically) objects pass one another during the course of there being change. Thus, a feather floating down a stream will pass the root of a tree that marks a point on the bank—and similarly for other changes. I assume that, generally, when we talk of ‘time’s passing’, we are looking to talk of ‘time’s passing us by’. But, once more, it is not time that does the passing, but other objects. In that case, I take it that the *proper* subjects of the epithet are *objects* and that *these* may be said to pass one another.

‘Verity had a sleepless night. In the first case, it is not true that the mistake is careless: mistakes are not able to be careless. The ‘proper’ way to attribute carelessness is to say something of the form, ‘Jones was careless and made a mistake’. Likewise, in the second case: it is not the night that is sleepless; rather, it is Verity who has not slept well during the night.

Matters are similar in ‘the passage of time’. The straightforward reason to not think that ‘time passes’ is the absence of an existent that is ‘time’ to do the passing. If there is no such thing as time, then *it* cannot pass, and the claim that ‘time passes’ *must* be read non-literally. If our intuition is that ‘time passes’, then we have grounds to ignore the intuition: if there is no such thing as time, then it’s necessarily not the case that time passes. In that case, we ought to ignore our intuition. We should not take seriously intuitions that require us to believe propositions that are necessarily false. An opponent might respond that there is *something* to the intuition and then try to capture *what our intuition is really committed to* by spelling out the claim that time passes in some other way. I find such moves unconvincing. My intuition is that time passes, but time does not pass for there is no such *thing* as time.

Thus, if the claim that ‘time passes’ is what is at the heart of McTaggart’s paradox, as it carries with it the need for there to be events that are present to the exclusion of all others, then, I submit, we have good reason to reject McTaggart’s arguments; they trade upon a faulty intuition born of incautious use of hypallage.

IV. Theory choice

My aim in this section is to demonstrate that there are reasons to prefer TNAT to presentism, the traditional A-theory and *perhaps* also the B-theory.³⁷

IV.i. TNAT vs. presentism and the traditional A-theory

The reasons to prefer TNAT to presentism concern the special theory of relativity. Very crudely: the special theory of relativity appears to imply that there is no frame-invariant fact of the matter as to which events are simultaneous with which others. If presentism is true, then only present objects exist and there *is* a frame-invariant fact of the matter as to which events are simultaneous with which others. So much the worse for presentism—or so we might think.³⁸

I don’t claim that presentism is decisively refuted by the conflict with relativity. I simply assume we should want to preserve science as we find it, rather than make substantial alterations to it. It is surely a *cost*—even if an ultimately

³⁷I ignore the so-called growing-block view e.g. Tooley, *Time, Tense and Causation*. I do so for reasons discussed in Tallant, ‘There’s no future in no futurism’, 37–52.

³⁸For a nice presentation of the argument against presentism, see Saunders, ‘How Relativity Contradicts Presentism’, 277–92.

bearable cost—of presentism if it demands that we alter or refine scientist’s interpretation of scientific theories.

I think that very similar remarks can be made against other, traditional versions of the A-theory that treat pastness, presence and futurity as incompatible properties.³⁹ Each version of the traditional A-theory posits only a single time as present. One time is present and so, contratraditional interpretations of the special theory, there are absolute facts of simultaneity. As I say, this seems to contradict the special theory—at least as it’s commonly interpreted. And, as I’ve said, this is a consequence we might prefer to avoid. Once more, I don’t deny that there may be responses that could be made. But it strikes me that this is a serious problem that many *will* wish to avoid.

TNAT faces no such challenge. All times exist. All times bear the properties past, present, and future. It is not the case that there is a single plane of existence that is privileged. TNAT is compatible with STR. I think that this gives us motivation to endorse the A-properties as I describe them, rather than in the way that they are normally described. Thus, we should prefer TNAT to presentism and traditional interpretations of the A-theory.

IV.ii. TNAT vs. the B-theory

Why should we prefer TNAT to the B-theory, when, as we left matters in Section III, the New A-theorist must endorse the counterintuitive result that ‘the battle of Hastings is future’ is true? Even if we grant that this is perhaps less counterintuitive than it first appears—as I suggested in Section III—it still seems that we have a point against TNAT and so we should endorse the B-theory.

Let us begin with consideration of the following three claims, each *prima facie* intuitive.

- (A) ‘the battle of Hastings is past’.
- (B) ‘the battle of Hastings is in the past’.
- (C) ‘the battle of Hastings is past’, entails, and is entailed by, ‘the battle of Hastings is in the past’.

The structure of my argument is as follows. In the remainder of this section, I demonstrate that we have good reason to give up on (C). I then argue that this requires the B-theorist to tell us more about the truth-conditions for sentence (B)-type sentences. The way in which the B-theorist will specify the truth-conditions for (B)-type sentences in fact commits them to the truth of (C). Because we have the aforementioned good reason to give up on (C), it follows that we should not endorse the B-theorist’s view. This, I will argue, turns out to be the new A-theorist’s advantage, since by endorsing the semantics

³⁹For a description of what is to be an A-theorist, see Markosian, ‘Time’.

that they do, with its attendant counterintuitive consequences that we discussed in (Section III.iii), they are able to preserve the truth of (A) and (B) type sentences, and also deny (C). It turns out, therefore, that their counterintuitive commitment to the truth of sentences like ‘the battle of Hastings is future’ is precisely what enables the A-theorist to avoid this technical problem. I suggest that this is a price worth paying.

Let’s start with the reasons to deny (C) and return to sentences of the form ‘x is F’, e.g. ‘David is chicken’. Compare the truth-conditions for this sentence with the truth-conditions for ‘x is in the F’, e.g. ‘David is in the chicken’. The semantic contribution made ‘in the’ is substantive. In ‘x is F’, we merely attribute a property to x. In ‘x is in the F’, we locate x within something: *the F*.

Most of the time such moves aren’t grammatical—we can’t simply insert ‘in the’ into a sentence and generate a well-formed sentence (e.g. ‘the bottle is in the yellow’). In situations where it is grammatical to move from ‘x is F’ to ‘x is in the F’, there is a radical change of truth-conditions brought about by the introduction of ‘in the’ such that we cannot infer ‘x is in the F’ from ‘x is F’. For instance, we might move from ‘x is chicken’ (perhaps using somewhat colloquial language in order to describe an individual who lacks the virtue of bravery) to ‘x is in the chicken’ (perhaps being used to identify the location of some recently eaten corn). Clearly, we cannot infer the latter from the former.

Let us generalise. We endorse a compositional semantics. The locution ‘in the’ appears to have a specific semantic function—at the very least it serves to *modify* the truth-conditions of a sentence into which it is inserted. In particular, the insertion carries with it a commitment to moving from the attribution of a property, to a claim that the subject occupies some position within a wider structure. Thus, the truth-conditions of $\langle x \text{ is } F \rangle$ *must*, if we are to retain a compositional semantics, be *altered* by the inclusion of ‘in the’ in such a way as to move us from making a claim about a property, to a claim about the occupation of some object or structure.⁴⁰

Keeping this in mind, let us return to sentence types (A) and (B). We said that, intuitively, each entails the other. However, since ‘in the’ has the kind of semantic function that it does, the truth-conditions for ‘x is past’ and ‘x is in the past’ will have to be very different. The sorts of changes to truth-conditions affected by the addition of ‘in the’, and described above, are precisely *not* ones in which the truth-conditions of the original sentence are identical to, or specify, the truth-conditions of the sentence into which ‘in the’ is inserted. If, in general, the truth-conditions of ‘x is F’ and ‘x is in the F’ vary so substantially and in such a way as to *prevent* the one entailing the other, then specific instances of those forms should not entail one another, either. That being the case, we have good reason to deny that ‘x is past’ entails ‘x is in the past’.

⁴⁰The only exceptions to this in normal usage are cases involving metaphor: someone may, for instance, be said to be ‘in the black’ to indicate their financial solvency.

This, of course, is our reason to deny (C). We should therefore look to avoid a commitment to tokens of (A) entailing tokens of (B).

The natural thought would be that the B-theorist will give the following truth-conditions for (A) and (B):

TC1: A token, *a*, of ‘the battle of Hastings is past’ is true iff *a* is later than the battle of Hastings.

TC2: A token, *b*, of ‘the battle of Hastings is in the past’ is true iff *b* is later than the battle of Hastings.⁴¹

To see the problem with this, we need to turn engage in something of a diversion and turn our attention to another problem, due to Smith, faced by the B-theorist.⁴² Consider two sentences,

(D) The hurricane is occurring now.

(E) The hurricane is now occurring.

The B-theorist of time will, as noted above, give the following truth-conditions for the sentences.

TC3: A sentence token, *u*, of ‘The hurricane is occurring now’ is true iff *u* is simultaneous with a hurricane’s occurring.

TC4: A sentence token, *v*, of ‘The hurricane is now occurring’ is true iff *v* is simultaneous with a hurricane’s occurring.

Smith’s complaint with this is that (D) and (E) are logically equivalent, but that TC3 and TC4 cannot account for this equivalence. (D) entails the right-hand side of TC3 and (E) entails the right-hand side of TC4. The problem is that the right-hand side of TC3 does not entail the right-hand side of TC4. The right-hand side of TC3 does not entail the right-hand side of TC4 because the right-hand side of TC3 specifies the existence of a token of the sentence type *u* and the right-hand side of TC4 specifies the existence of a token of the sentence type *v*. It is obviously false to say that ‘(*v* is simultaneous with a hurricane’s occurring) entails that ‘*u* is simultaneous with a hurricane’s occurring’’. Thus, the right-hand side of TC3 does not entail the right-hand side of TC4. This means that we lose any way that we have of understanding why ‘the hurricane is occurring now’ entails the truth of ‘the hurricane is now occurring’.

Here is Dyke’s response with the enumeration from this article, rather than the original.⁴³

⁴¹Where the ‘is’ in the right-hand-side is read tenselessly.

⁴²Smith, *The Language of Time*, 73.

⁴³Dyke, ‘Tokens, Dates and Tenseless Truth Conditions’, 348.

What occurs to the right of the biconditional in these truth-conditional formulae is the same in each case. So, if a token, *u*, of [(D)] is produced simultaneously with the hurricane, it will satisfy this truth-conditional formula. Given that [(E)] has the same truth-conditional formula, it follows that a token, *v*, of [(E)] produced simultaneously with *u* will also satisfy its truth-conditional formula. The production of a token of [(D)] does not entail that a simultaneous token of [(E)] is also produced, but it does entail that if such a token is produced it will be true.

Thus, Dyke's strategy is to say that what explains the logical equivalence of (D) and (E) is that, although their truth-conditions are not strictly identical (making mention, as they do, of different sentence tokens), they serve to *explain* the logical equivalence *nonetheless* because a true sentence token of (D) will be true in every case that a sentence token of (E) *would be true, were it to be tokened* (and vice versa).⁴⁴

How does this generate a concern for the B-theorist? Recall the two sentence types with which we began this section and their truth-conditions

- (A) 'the battle of Hastings is past'.
- (B) 'the battle of Hastings is in the past'.

TC1: A token, *a*, of A is true iff *a* is later than the battle of Hastings.

TC2: A token, *b*, of B is true iff *b* is later than the battle of Hastings.

Dyke's point is that giving sentence types (D) and (E) truth-conditions such that, a true sentence token of (D) will be true in every case that a sentence token of (E) *would be true, were it to be tokened* (and vice versa), is what explains the logical equivalence of (D) and (E). If that's right, then the right-hand sides of TC1 and TC2, which replicate the truth-conditions for (D) and (E), ought to explain the logical equivalence of (A) and (B).

In this case, however, the lesson we learned from our study of the semantic function of 'in the' is that it substantially *modifies* the truth-conditions of sentences into which it is embedded in very particular ways. And, in that case, it *should not be* the case that A and B are logically equivalent. Since the truth-conditions offered by the B-theorist serve to explain their logical equivalence, and A and B are not logically equivalent, we should not think that the truth-conditions of A and B are adequately captured by TC1 and TC2. Since both A and B *are* true sentences, something must give.

The A-theorist has an easy time of it. As noted in Section III.i, the A-theorist claims that 'x is past' is true iff x bears the property *being past*. In contrast, the A-theorist claims that a token, *w*, of 'x is in the past' is true iff *w*

⁴⁴The explanation of the equivalence seems to be the same if we adopt a Kaplanian account.

is later than *x*. According to the A-theory, there are events that are past that are not *in the past* (the creation of Mars outposts is past, but is not in the past). That being the case, there are situations in which tokens of one sentence type are true, but in which tokens of the other type are not. As a consequence, there is no threat of logical equivalence between the two.

The options for the B-theorist seem to be to: deny that ‘in the’ has the same semantic role in this case as it has in others; specify some other truth-conditions that remove the problem; and, argue that there is something distinctive about indexicals that means that ‘in the’ may be treated differently. *Proving* that these strategies will fail is beyond the scope of this article, but there are reasons to be sceptical about them. We shall take each in turn.

IV.ii.i. Revising the semantic role of ‘in the’

The B-theory of time and the associated tenseless account of the truth-conditions of tensed sentences seems to be inconsistent with ‘in the’ playing the kind of semantic function that I have attributed to it. Since, intuitively, the temporal case under discussion is *not* one where the move from ‘*x* is *F*’ to ‘*x* is in the *F*’ *should* bring about a difference in truth-conditions, so we should treat this as a reason to reject the claim that ‘in the’ has the semantic function that I have attributed to it.

The natural response to this is that, having endorsed a compositional semantics and identified the role played by ‘in the’, this argument is simply question-begging. In the same way, that the role played by the logical connectives is fixed, so the role played by other terms with a given semantic function is fixed. Since ‘in the’ appears to have a semantic function, so we really ought to take that into account, here.

In fact, I think that it’s worth pressing on this a little. So far as I am aware there are *no* identical cases in the English language where such a transition is grammatical. By way of example: ‘that apple core is garbage’ and ‘that apple core is in the garbage’. But notice: in this case, it is clear that ‘is garbage’ and ‘is in the garbage’ mean different things. An object can be ‘in the garbage’ without in fact being garbage (and vice versa). The position being imputed to the B-theorist here is that ‘*x* is *F*’ and ‘*x* is in the *F*’ *entail* one another. This, it seems to me, cannot reasonably be maintained in the light of our wider evidence about the way in which the locution ‘in the’ functions.⁴⁵

⁴⁵Note: I do not mean to say that ‘in the’ forces upon us a ‘spatialization’ of any sentence in which it occurs. I’m not claiming that ‘in the’ brings with it a commitment to a spatial structure. As will become clear—e.g. TC3, below—all that seems to be required is that something that is said to be ‘in the’ resides within some kind of structure. Not all structure need be spatial. The case I describe in TC3 is mereological.

IV.ii.ii. *New truth-conditions*

We might argue that (A) and (B) *can* be given different truth-conditions to reflect the distinctive contribution made by ‘in the’. One way to make sense of this is:

TC3: A sentence token, b, of ‘x is in the past’ is true iff x is the mereological fusion of everything that is earlier than b.

The resulting truth-conditions for A and B are as follows:

TC4: A sentence token, a, of ‘the battle of Hastings is past’ is true iff the battle of Hastings is earlier than v.

TC5: A sentence token, b, of ‘the battle of Hastings is in the past’ is true, iff the battle of Hastings is a part of the mereological fusion of everything that is earlier than v.

I’m not persuaded. Necessarily: x is earlier than y iff x is a part of the mereological fusion of events that is earlier than y. The limiting case of a fusion of x, is x itself, for x is an improper part of itself.⁴⁶ The right-hand sides of TC4 and TC5 are still such that they are necessarily co-extensive. We saw above that the lesson Dyke would have us draw is that necessarily co-extensive truth-conditions explain the logical entailment of the sentences for which truth-conditions are being given. So, once more, the right-hand sides of TC4 and TC5 serve to explain that A and B are logically equivalent where our wider evidence about the role of ‘in the’ suggests that they are not.

IV.ii.iii. *Indexicals are different*

One might argue that in *this particular case* ‘in the’ does not play its typical role because indexicals are, in some sense yet to be articulated, ‘special’. We cannot expect our semantics for ‘in the’ to function in the way that we usually do when we are dealing with cases involving indexicals.

Notwithstanding the absence of a good reason to think that ‘in the’ *should* change its function here (we have merely been given an assertion that indexicals are special and so for unspecified reasons ‘in the’ should function ways other than those specified above), *other* indexical sentences are *radically* effected by the inclusion of ‘in the’. This effectively blocks the proposed argument. Consider,

(F) That is him.

We *cannot* insert the locution ‘in the’ (F) and generate a true sentence; (G) is ungrammatical.

⁴⁶Cf. Sanford, ‘Fusion Confusion’, 1–4.

(G) That is in the him.

Likewise,

(H) Verity is here.

(I) Verity is in the here.

So, although indexical terms *may* require special treatment when contrasted with other sentences in our language, ‘in the’ continues to radically effect the truth-conditions of indexical sentences into which it is inserted.

IV.ii.iv. The difference

In English, when we move from ‘x is F’ to ‘x is in the F’, the ‘F’ specified in the latter is normally taken to be some kind of entity or structure. When we say that ‘x is in the cupboard’, or that, ‘x is in the tunnel’, we require the existence of some physical structure, (the cupboard, the tunnel) for x to reside within, in order for the sentence to be true. In the truth-conditions that I’ve specified for sentences like ‘x is in the past’, no structure is mentioned; true ‘x is in the F’ locutions require the existence of a structure, so TNAT fails.

In reply, notice that the move from ‘x is past’ to ‘x is in the past’ *does* make this requirement for the New A-theorist. ‘Being past’ is a matter of bearing a property. ‘Being in the past’ is a matter of occupying a particular location, within the set of all temporal objects, with respect to a given token of an utterance. Thus, it turns out that TNAT preserves the intuitive way in which we think ‘in the’ functions. So although TNAT does require us to deny some intuitions, the intuitive function of ‘in the’ is preserved.

Here, at the end, we can do a little to turn the tables on the opponent of TNAT. It is, I think, highly intuitive that the distinction between *being F* and *being in the F*, is that which was identified just a moment ago; it is a distinction between having a property and occupying a position within a structure.⁴⁷ The B-theorist has no obvious way of respecting this difference for, as we have seen, there is no obvious way of cashing out such a difference.

So, let us agree that TNAT has a steep price to pay for not respecting the intuition that ‘the battle of Hastings is future’ is false. We may now respond to the B-theorist. As we have already seen, the B-theory not consistent with a uniform compositional semantics. Further, TNAT also does a better job than the B-theory of respecting our intuitions concerning the way that ‘in the’ *should* function in a sentence. Perhaps that then does enough to motivate TNAT—if not to the conclusion that the view is *clearly* and *obviously* our best theory of time, at least to the conclusion that it is a live theory, worthy of our attention.

⁴⁷Though, to repeat, that structure need not be a *spatial* structure.

Let me stress this last point. My claim in this article is not that TNAT is a magical silver bullet that solves all of our problems in the philosophy of time. However, given the arguments presented here, I think that the view is coherent. The view solves (or perhaps, ‘dissolves’) McTaggart’s argument. I think that the view can give us what we require of a theory of time with regards persistence, a semantics for talk about the past and future, and so on. I think that TNAT deals better with the problem case I’ve described in 3.2 than does the B-theory and I think that TNAT avoids the problem of relativity that is faced by presentism. It does, still, retain the problem of being deeply counterintuitive. This is not an outright ‘win’ for TNAT. But, this is a view in its infancy. It can do a great deal. I think that it is deserving of our attention.

In connection with the fact that TNAT is so very counterintuitive, let me say one last thing. Whilst I agree that TNAT is counterintuitive, I’ve tried to show that it is not paradoxical—contra McTaggart. I’ve tried to show, in contrast, that the B-theory looks like it might not be consistent with a uniform compositional semantics. That’s a serious cost for the B-theory. If I’m right, then what this comes down to is a straight shoot-out: a counter-intuitive but theoretically elegant view (TNAT) vs. a far more intuitive but less elegant view (the B-theory) and an intuitive view that appears to be in tension with our best physics (presentism). I concede that I do not know how we are supposed to make a choice between these options, and it’s in part because of this that I claim that I’ve done nothing more than show TNAT to be a contender—rather than that I’ve shown TNAT to be our best theory of time.

V. Conclusion

Let’s be clear. All theories face their challenges. TNAT commits to a counter-intuitive consequence. The B-theory seems to violate a compositional semantics and also fails to respect our intuitions about the way in which ‘in the’ functions. Even if that’s not quite a slight advantage for TNAT, it should at least do enough to get TNAT to the starting line when we come to the weighing and balancing of competing views of time.

Acknowledgements

The author is grateful to audiences in Durham and Sheffield for comments on a previous draft.

Disclosure statement

No potential conflict of interest was reported by the author.

References

- Bigelow John. 'Worlds Enough For Time'. *Nous* 25 (1991): 1–19.
- Cameron, Ross. 'Intrinsic and Extrinsic Properties'. In *The Routledge Companion to Metaphysics*, ed. Robin Le Poidevin, Peter Simons, Andrew McGonigal and Ross Cameron, 265–75. London: Routledge, 2009.
- Cameron, Ross. 'From Humean Truthmaker Theory to Priority Monism'. *Nous* 44 (2010): 178–98.
- Dunn, Michael J. 'Relevant Predication 2: Intrinsic Properties and Internal Relations'. *Philosophical Studies* 60 (1990): 177–206.
- Dyke, Heather. 'Tokens, Dates and Tenseless Truth Conditions'. *Synthese* 131 (2002): 329–51.
- Eddon, Maya. 'Intrinsicity and Hyperintensionality'. *Philosophy and Phenomenological Research* LXXXI (2011): 314–36.
- Effingham, Nikk, and Joseph Melia. 'Endurantism and Timeless Worlds'. *Analysis* 67 (2007): 140–7.
- Funkhouser, Eric. 'The Determinable-Determinate Relation'. *Nous* 40 (2006): 548–69.
- Hoffman, Joshua, and Gary Rosenkrantz. *Substance among Other Categories*. Cambridge: Cambridge University Press.
- Huemer, Michael. 'When is Parsimony a Virtue?'. *The Philosophical Quarterly* 59 (2009): 216–36.
- Johnson, W.E. *Logic, Part I*. Cambridge: Cambridge University Press, 1921.
- Langton, Rae, and David Lewis. 'Defining "Intrinsic"'. *Philosophy and Phenomenological Research* 58 (1998): 333–45.
- Lewis, David. 'Extrinsic Properties'. *Philosophical Studies* 44 (1983): 197–200.
- Lowe, E. Jonathan. 'The Indexical Fallacy in McTaggart's Proof of the Unreality of Time'. *Mind* 96 (1987a): 62–70.
- Lowe, E. Jonathan. 'Reply to Le Poidevin and Mellor'. *Mind* 96 (1987b): 539–42.
- Lowe, E. Jonathan. *The Possibility of Metaphysics*. Oxford: Oxford University Press, 1998.
- McTaggart, J.E. 'The Unreality of Time'. *Mind* 17 (1908): 457–74.
- Markosian, Ned. 'In Defense of Presentism'. *Oxford Studies in Metaphysics* 1 (2004): 47–82.
- Markosian, Ned. 'Time.' *The Stanford Encyclopedia of Philosophy* (Winter 2010 Edition), E.N. Zalta ed. <http://plato.stanford.edu/archives/win2010/entries/time/>
- Price, Huw. *Time's Arrow and Archimedes' Point*. Oxford: Oxford University Press, 1996.
- Price, Huw. 'The Flow of Time'. In *The Oxford Handbook of Time*, ed. Craig Callender, 276–311. Oxford: Oxford University Press, 2011.
- Sanford, David. 'Fusion Confusion'. *Analysis* 63 (2003): 1–4.
- Saunders, Simon. 'How Relativity Contradicts Presentism'. In *Time, Reality and Experience*, ed. Craig Callender, 277–92. Cambridge: Cambridge University Press, 2000.
- Sider, Ted. 'Intrinsic Properties'. *Philosophical Studies* 83 (1993): 1–27.
- Sider, Ted. *Four Dimensionalism*. Oxford: Oxford University Press, 2001.
- Smith, Quentin. *The Language of Time*. Oxford: Oxford University Press.
- Tooley, Michael. *Time, Tense and Causation*. Oxford: Blackwell, 1997.
- Tallant, Jonathan. 'There's No Future in No-Futurism'. *Erkenntnis* 74 (2011): 37–52.
- Tallant, Jonathan. '(Existence) Presentism and the A-theory'. *Analysis* 72 (2012): 673–81.
- Tallant, Jonathan. 'Defining Existence Presentism'. *Erkenntnis* 79 (2014): 479–501.