

# Combining Philosophical Theories of Time and Modality

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## Introduction

Many authors have noted a connection between the metaphysics of time and the metaphysics of modality. The way we account for truths about the past, present or future has some structurally analogous features to the ways we account for truths about what is actual, merely possible or necessary. However, most theorists approach the two areas of metaphysics in a piecemeal fashion, developing separate accounts for each area. This essay aims to show that the perspective one takes on the metaphysics of time does place limits on one's account of the metaphysics of modality, including the surprising result that two leading theories — Mellor's tenseless theory of time and Adam's actualist theory of modality — appear incompatible.

This essay first examines McTaggart's argument against the reality of tense and generates the modal analogue to that argument. The arguments show us what the philosophical options are in both cases. Two pairs of metaphysical positions are legitimated — namely the tenseless theory and presentism with respect to time, together with modal realism and actualism with respect to modality. The question is thus raised whether one is obliged to reason in parallel in both cases — that is, if one is a realist about the past, should one also be a realist about the non-actual? Or do certain disanalogies between time and modality serve to legitimate non-parallel reasoning?

On the assumption that non-parallel combinations can be motivat-

ed, the various permutations are considered, with the conclusion forcing the tenseless theorist to decide between modal realism and an actualism that takes modal facts to be primitive.

## I — McTaggart and the Unreality of Tense

Time can be ordered in two ways, through *A-series* and *B-series* orderings. The A-series orders time through the properties *past*, *present* and *future*. The B-series orders time through the relations *earlier-than*, *simultaneous-with* and *later-than*. The two are not equivalent. Whilst it will always be a fact that 1st January 2013 is earlier-than 1st January 2014, it will not always be true that 1st January 2014 is future, for it will eventually be present and past.

McTaggart argues that this feature of the A-series generates inconsistency. What is the case is always changing, so every event has *all* A-series properties. Every event occupies every A-series location from distant future to present to distant past — as such, every event is past, present and future. But these properties are incompatible. Nothing real can have incompatible properties, so McTaggart thus famously concludes that tense is unreal.

A sceptic might wonder if there really is an incompatibility. Surely an event does not have all these properties *at once* — one need specify only *when* the event has each property. For example, once it is seen that an event *e* *was* future, *is* present and *will be* past, the incompatibility collapses.

Unfortunately, this response only generates a regress, for we still resort to *using* tenses to explain when the event *has* the various tenses. McTaggart's argument applies equally well to these new compound tenses: it will be the case that it was the case that *e* is present, but also, it will be the case that it was the case that *e* is past. This is still a contradiction. Again, it might be argued that those statements are also never true of the event *together*. We just have to say *when* the event has each compound property. But if this is done in tensed terms, the regress will still apply.

The issue at stake is clear when understood as a question of ontology. As McTaggart states:

‘That M is future and will be present and past means that M is future at a moment of present time, and present and past at different moments of future time.’ (McTaggart 1927: p. 33)

If ‘M is present at a moment of future time’ is taken literally, that is, predicating of a *future* moment the property of *presentness*, then the statement clearly cannot be true, for future and present are incompatible. The problem is therefore to spell out which metaphysical positions can avoid such inconsistencies. There is more than one solution to this problem and one’s choice depends on how one thinks about the nature of the present.

That M is future is established by its relation to the present moment — but there is an ambiguity in what we mean by the term ‘the present moment’. One option provides a metaphysically deflated account of tense. On this view, tense is relative to time of utterance, with ‘present’ analysed as an indexical. The view is metaphysically deflationary because each utterance of ‘present’ refers to the time with which it is *simultaneous*. Simultaneity is part of the B-series ordering, not the A-series. Each present-tensed (A-series) truth is thus made true by a *tenseless* (B-series) truthmaker. This project can be extended to other tenses: an utterance of ‘New Year’s Day 2014 is past’ is true iff the event occurs at a time *earlier than* the time of utterance; an utterance of ‘New Year’s Day 2014 is future’ is true iff the event occurs at a time *later than* the time of utterance. This account thus requires that all times are equally real. This is because if past or future facts did not exist, the relata for earlier-than and later-than relations would not exist, and if the relata fail to exist, then any statement about the relation would turn out false, rather than true. This view thus agrees with McTaggart that there is in reality no such thing as tense — tensed truths are analysed with tenseless facts. Call this response the *tenseless theory*, first articulated fully in Mellor (1981).

The second option is to treat the present as being ontologically significant. The term 'present' then need not be treated as an indexical, for the present time has a metaphysical distinction from other times — a special status — that can itself be the target of reference. If the present is ontologically significant, then the past was ontologically significant and the future *will be* ontologically significant. However, what *cannot* be the case is that the future or past *is* ontologically significant. For then, as McTaggart shows, it could be said of a future moment that it is present, which is a contradiction.

The upshot of *this* understanding of 'present' for the metaphysics of time is that the future and the past cannot exist. If they exist in any sense, then there will be something that is present in the future, or present in the past. But if we deny reality to past and future, we provide a solution to McTaggart's argument, for there exists nothing in the future or past which can be present. The special status that the present has, in other words, is that it alone is concretely real. Call this solution *presentism*.

When one takes McTaggart's argument in this way, it is easy to see that there is no other option. Either tense is or is not ontologically significant. As such, these two solutions are the *only* solutions to McTaggart's argument.

## II — Modal Analogue of McTaggart's Argument

Constructing a modal analogue of McTaggart's argument requires modal properties that are the analogue of tenses. Dyke (1996: 101-2) asserts that the correct analogue is properties like 'possible' and 'necessary'. But since anything necessary is also possible, these properties, unlike tenses, are compatible, so Dyke doubts there is an analogue. But we should doubt Dyke has correctly identified the analogue. For necessity is less an analogue for tense than for sempiternity, since what is present, past or future can also be sempiternal, just as what is possible can be necessary. But sempiternity is no tense and we should reject necessity as a modal equivalent of a tense.

A more plausible approach is found in Cresswell (1991). Cresswell claims that the correct analogy is what he terms the *M-positions* 'actual' and 'merely possible', where 'merely possible' means just what is possible but not actual. These M-positions are by definition incompatible, unlike possibility and necessity. Cresswell also introduces an analogue for the temporal notion of change, which he terms *contingency*. Although Cresswell is not explicit about how contingency is an analogue for change, the relevant sense is as follows: just as *change* makes it possible for something future to eventually be present, *contingency* makes it possible for something possible to be actual. The two notions thus ground the following symmetry: 'It is now the case that *a* is F' is compatible with 'It was the case that *a* is  $\sim$ F', just as 'actually *a* is F' is compatible with 'merely possibly *a* is  $\sim$ F'.

Dyke criticises this analogy by arguing that whilst A-positions between the distant past and the distant future make sense, M-positions between the actual and merely possible do not. But it is not clear what Dyke's objection amounts to. What A-positions does Dyke think there are between the past and future? Denying that there are M-positions between the actual and merely possible is analogous to denying that there are A-positions between past and present. And surely there are no such A-positions, just as there are no such M-positions. Furthermore, just as there are degrees of remoteness of the past and future, there are equally degrees of remoteness of possibilities.

If Cresswell's analogy is correct, then a McTaggart-like argument goes through. Contingency ensures all events are actual and merely possible, but actual and merely possible are incompatible properties. The analogy is clear: where McTaggart claims that a future non-present moment is present at a future moment, Cresswell claims that a possible non-actual event *e* is actual at a mere possible world. When taken literally, both are clearly contradictions.

On the face of it, the approach one takes in the theory of time now constrains the approach one must take in the theory of modality, by parity of reasoning. The presentist solution argues that the present is ontologically privileged but other times are not. On the basis of that

reasoning, the modal argument shows that the presentist cannot believe in the ontological privilege of the actual whilst simultaneously asserting that the non-actual exists. Otherwise he will say of an event that it is actual where it is merely possible, which is a contradiction. This reasoning leads us to *actualism*, the view that only the actual exists.

What about the tenseless theorist? The tenseless solution is that all times are real and no time ontologically privileged. That reasoning applied to the modal case informs him that he cannot believe in the non-actual unless he denies that the actual is metaphysically significant. So just as the tenseless theorist provides a metaphysically deflated analysis of past, present and future, so too must a metaphysically deflated account of merely possible and actual be provided in the modal case. This is done by asserting the existence of concrete *possible worlds*. Just as the tenseless account of change is an account of an object's *properties* varying over time, such that  $a$  is  $F$  at  $t_1$ , and  $a$  is  $\sim F$  at  $t_2$ , the deflationary account of contingency is for  $a$  to have incompatible properties at different *possible worlds*. At world  $w_1$ ,  $a$  is  $F$ , but at world  $w_2$ ,  $a$  is  $\sim F$ . This account is then combined with an indexical analysis of 'actual', such that an utterance of 'a is actual' is true iff  $a$  exists at the world of utterance, and the reduction of modal truths to assertions about possible worlds: 'possibly  $p$ ' is true at a world  $w_1$  iff  $p$  is true at a world  $w_2$  accessible from  $w_1$ , (where 'accessibility' is a relation between worlds). *Modal realism* is the view that these possible worlds exist and none is ontologically privileged, articulated fully in Lewis (1986).

The tenseless theorist thus seems committed by parity of reasoning to asserting the existence of non-actual worlds. However, although most theorists are willing to countenance the reality of other times, few are happy to countenance the reality of other worlds. Most tenseless theorists are actualists. Can they avoid this conclusion?

To try to avoid an obligation of parallel reasoning, the tenseless theorist might attempt to distinguish modality from time. First, we should note that he already has to distinguish time from another dimension, namely space. The tenseless account of change is an account of properties varying at different times. This appears similar to the spatial

case, where we give an account of an object having different properties at different places, such as a poker which is hot at one end and cold at the other. To explain why spatial variation of this sort is not genuine change, something must be said. But perhaps what is said can also distinguish modality from time, for the problem is analogous in that case too: an object having different properties at different worlds.

The tenseless theorist can argue plausibly that only temporal variation involves *causation* — that is, causation is not involved in spatial or modal variation, but brings about temporal variation. As time is the dimension in which causation inheres, there is an obvious metaphysical distinction between time and modality. This distinction, it might be argued, justifies adopting the tenseless theory in one case and actualism in the other. The different responses underwrite the way in which the tenseless theorist thinks time and modality differ metaphysically.

Two things need be said in response. First, is causation a *pertinent* difference? It certainly serves to *distinguish* time and modality, but why is this enough to justify a non-analogous approach to the ontology of both?

Second, assuming that his distinction is sufficient to justify non-parallel reasoning, the tenseless theorist still has a problem. Not only is there a McTaggart-like argument in the modal case, but also in the spatial case too. It can be set up quickly as follows: although I am *here*, I am nonetheless *there* from the perspective of an observer. So I am both here and there. But here and there are incompatible properties. As with the temporal and modal cases, there are two options. I can deny reality to the non-here, or deny that spatial tenses such as here-ness have any metaphysical significance. Along with most tenseless theorists, I suspect, I would claim that all spaces are real and that here-ness is not ontologically privileged. Now, although the tenseless theorist can use causation to distinguish time from modality and space, and thereby justify non-parallel reasoning in both cases, he takes a realist route in the spatial case and the non-realist actualist route in the modal case. This is once again a failure of parity of reasoning, for if space and modality have only been differentiated *from time*, what reason is there to



treat them differently *from each other*? Therefore, he must provide a similar reason as provided in the temporal case for treating modality and space differently. But what sort of difference could that be?

This line of reasoning presents a problem for the presentist too, if the presentist takes the realist solution to the spatial argument. If nothing can be said, all parties are saddled with at least one unattractive commitment: modal realism for the tenseless theorist or anti-realism about space for the presentist.

### III — Ersatzer Actualism and Ersatzer Presentism

Although the question remains unanswered, let us assume that there is some pertinent difference among space, time and modality that allows us to engage in non-parallel reasoning when giving accounts of each. If non-analogous solutions to McTaggart-like arguments can be combined, are there considerations about the positions themselves that make some combinations more attractive than others? In addition to modal realism and the tenseless theory, we should first introduce accounts of actualism and presentism.

#### *Ersatzer Actualism*

There are many varieties of actualism. Following Lewis' (1986: 136-191) excellent analysis of the various positions, I agree that the best account belongs to Adams (1974).

Adams believes only that which is actual is concretely real. Adams takes possible worlds to be maximally consistent sets of propositions, which he terms *world-stories*. World-stories are constructed out of the furniture of the actual world. World-stories are abstract entities and not spatiotemporal. They are each accessible from one another via a truth-making relationship — '*p* is possible' at a world *w* is made true by *p* being a member of a world-story accessible from *w*. The actual world is also a story on this account, but it is a special story for all its propositions are made true by what is concretely the case. There is thus a distinction between *truth-at-a-world* and *truth simpliciter*, which cap-

tures the metaphysical difference between the actual and merely possible. 'Unicorns exist' is true *simpliciter* iff there are concretely unicorns. 'Unicorns exist' is true-at-a-world iff 'unicorns exist' is a member of some world-story.

### *Ersatzer Presentism*

The corresponding temporal position is *ersatzer presentism* (Bourne 2006). Bourne postulates the existence of an abstract set-theoretic structure to provide truthmakers for the past. The abstract structure is in effect an ersatz B-series, comprising maximal sets of present-tensed propositions affixed with date stamps to form each ersatz time (analogous to Adams' world stories). These ersatz time-stories are ordered set-theoretically (*E-related*) in a way which intuitively represents the 'earlier than' relation. The present is also a time-story on this account, but this time-story is special by being made true by what is concretely the case. There is thus a distinction between *truth-at-a-time* and *truth simpliciter* which captures what is metaphysically distinctive about the present. 'Plato exists' is true *simpliciter* iff it is concretely the case that Plato exists. 'Plato exists' is true-at-a-time if it is a member of some past time E-related to the present times (i.e. the time that is made true by what is concretely the case).

The possibility of these views demonstrates how an *indexical* account of 'present' or 'actual' — that is, one which relates statements about what is present or actual to the time or world of utterance — is not the only approach. The primacy of the tenseless theory has led authors to take such an indexical account as standard. Even actualist-presentists like Ned Markosian, for example, think that the indexical analysis of 'present' and 'actual' is 'utterly uncontroversial... in the sense that no theorist *should* deny [it] and no theorist... *in fact* denies [it]' (Markosian 2001: 622, see also endnote 22). That no theorist *should* deny it is too strong, that no theorist *does* is false. Adams, for one, denies that 'actual' is an indexical — actual refers to whatever the metaphysically distinct actual world is. Whilst Bourne commits himself neither way, he too notes that 'present' need not be treated indexically.

Markosian can refer to the ontologically privileged present time and actual world by taking their metaphysical distinction as a target of reference, so his attachment to the indexical approach is not warranted.

#### IV — Combinations

Let us now examine the possible positions in the philosophy of time and modality and see how they combine together.

##### *Tenseless Theory / Modal Realism*

These two views go together straightforwardly, for the advocate of both responds in parallel fashion to the temporal and modal arguments, taking other worlds and other times to be real, with none ontologically privileged.

##### *Ersatzer Presentism / Ersatzer Actualism*

This combination also responds in parallel to both the temporal and modal arguments, claiming that only the present and actual are real and that the non-present and the non-actual belong to the realm of the abstract. However, it is not immediately obvious that the views combine unproblematically.

One problem seems to be an overabundance of truthmakers. For any true indicative utterance is made true three times over, by a proposition in the actual world-story, by a proposition in the present time-story and by the world itself! What should be said?

The holder of this combination should claim that ersatz times embed into ersatz worlds. Rather than a proposition existing distinctly in each structure, it exists once. Presentism provides a set-theoretic temporal structure and actualism provides a set-theoretic world structure over the very same propositions. Since any world needs a temporal structure in order to represent what is the case at different times, the actual world-story will feature the actual temporal structure. So there are only two claimants to make true an utterance — the proposition of the world-story or the object itself that exists *simpliciter*.

For consistency's sake, the utterance should be made true by the proposition in the world-story. For propositions in turn are made true by what is the case *simpliciter*. Both ersatzer actualism and ersatzer presentism take propositions to be timeless, non-spatiotemporal entities, so they can agree on a two-part relationship: utterances correspond to propositions in world stories (e.g. 'Santa Claus exists') and the ontologically privileged present in effect selects (via a truth-making relationship) a collection of propositions that are true *simpliciter*. An utterance pertaining to what is actual is true iff the proposition exists in a world story and is made true by what exists *simpliciter*.

One consequence of this is that proposition can be made true whilst being a member of more than one world story. Many propositions will exist in more than one world story, and given the plausible condition that propositions are differentiable from one another only if they differ in meaning, we would risk arbitrary duplication by denying that they do. But this gives rise to a second objection: what is concretely the case therefore fails to select *only* those propositions that are part of the actual world-story.

In response, the holder of these views should first deny that it is determinate which world-story is the actual world-story. This, of course, does not mean that what is *concretely* the case is indeterminate. It means that there are a number of world stories whose histories agree with what has concretely been the case up until the present moment, but as the future is yet to be the case, then each of these worlds will tell a different story about the future. Each will have as members different propositions at various future times. But the actual world-story can be deduced to be among these worlds, even though there may never be a fact of the matter which world-story is *the one and only* actual world-story. The concrete present thus splits the set of world-stories into two: those that disagree with the concrete present for some time that has been (or is) the case, and those that do not.

He should then agree that some propositions made true by the concrete present are members of world-stories that give a history quite different from what has concretely been the case. But such world-

stories will fall into the set of those excluded from consideration for being the actual-world story, for they will have disagreed about what has concretely been the case at some past time. They have been discredited and can never rejoin the pack that continues hunting for the actual, however well they agree with what takes place thereafter. The second objection is thus harmless: in no way are excluded possibilities ever claimed to be actual.

The above considerations suggest that these two views can be combined attractively. They make a parallel distinction between what is real and what is abstract and share the resources needed for world-stories and time-stories.

#### *Tenseless Theory / Ersatzer Actualism*

The advocate of this combination approaches time and modality differently, believing in the reality of other times but only the actual world. It is not easy to find tenseless theorists who state categorically that they endorse both positions, but many seem prepared to accept it as a possibility. See, for example, Robin Le Poidevin's comments in his 1991 (34-35). Is this approach commendable? I argue that it is not.

Adams' actualism requires a temporal structure, as noted, if it is to represent at any world what is true at different times. Furthermore, given that the actualist believes that the actual world is also a story, then this structure will apply as much to the actual world as to any other (with the one difference that, for the tenseless theorist, it is determinate which world-story is the actual world story, given that on his view there are facts already in the future to decide the matter). The structure, as part of Adams' worlds, will be a set-theoretic ordering of propositions, satisfying various constraints — in fact what it requires must be very similar to Bourne's theory.

Now, although the actualist component needs a theory like Bourne's, this does not imply the tenseless theorist is committed to a metaphysically distinguished present. For on Bourne's view, the present time *in the abstract structure* is just a set theoretic ordering of propositions, like any other. The problem is rather that as the tenseless

theorist gets time-stories for free, he now has ersatz times which can play the role of truthmakers for past truths. If this is so, what is the motivation for the tenseless theorist to posit an ontologically real past? He can hardly deny that propositions in time-stories are fit to be truthmakers, for just those very same propositions are his truthmakers for modal claims! In this scenario, the tenseless theorist thus needs another reason to believe in the existence of other times quite apart from conclusions drawn from McTaggart's argument.

Because the two conclusions are not based upon analogous metaphysical frameworks (with times real, worlds abstract), there lies a problem where the metaphysics of modality intersects with the metaphysics of time. For here, the two say something different with respect to the actual past.

#### *Ersatzer Presentism / Modal Realism*

On this combination, truthmakers for past and future truths are abstract, whilst modal truthmakers are supposedly concrete. It therefore postulates a multitude of spatiotemporally disjoint presents. This by itself is not incoherent. But this position is equally difficult to motivate. For the presentist, despite his professing the unreality of actual non-present times, in fact incurs an ontological commitment to all of them through his modal-realism.

The view must provide concrete truthmakers for possibilities. But all possibilities take place *at a time*. Assuming presentism, at any world, only *one* concrete time, the metaphysically distinguished present time, concretely exists. Take the concrete present  $P_1$  in possible world  $w_1$ . How can a possibility at any time  $w_1$ tn earlier than  $P_1$  be represented? Only if another possible world  $w_n$  exists, such that  $w_n$  is historically identical with  $w_1$  up to  $t_n$  and  $t_n$  is concretely the case (i.e. present). But  $w_1$  could just be *our* world, for what has been the case in our world is also surely possible. Supposing  $w_1$  to be our world, then each past time is concretely represented by some possible world like  $w_n$ .

It would thus seem that the ontological commitment of the modal realist-presentist is certainly no less than that of the tenseless theorist.

The difference is that the presentist has his actual past times spread out across many worlds! But if the presentist is prepared to countenance the existence of these concrete times and accept that they can play a truthmaking role in the modal case, why not let them represent *actual* past times and employ them to play a truthmaking role in the temporal case? But with both temporal *and* modal truthmakers concretely real, the ersatz temporal structures of the presentist are now rendered redundant.

I will just note in passing that I do not think that the choice of temporal theory has to be considered a claim about what time is like in *all* possible worlds. It is conceivably a contingent matter whether there is an ontologically privileged present or not, given the plausibility of both presentism and the tenseless theory. A modal realist-presentist might simply be saying of his world that the present is ontologically privileged whilst remaining agnostic about the existence of other, tenseless worlds. Nonetheless, the above problem remains. It does raise an interesting question about how an ersatz actualist-presentist could capture the idea of theories of time being contingent, insofar as all truths at all times in his possible worlds are, irrespective of what theory of time holds, made true by propositions. But that puzzle is beyond the scope of this essay.

## V — Can the tenseless theorist avoid modal realism?

The ersatz presentist seems unable to motivate the adoption of modal realism, but ersatz actualism is available and this is an attractive option. But what can the tenseless theorist do if, for the above reasons, the best account of actualism is unavailable to him? Must he be a modal realist?

There is one other plausible option left available, but this solution has its problems. My presentation of the actualist and presentist options has relied on ersatz theories. Surrogate worlds and times are constructed out of abstract objects — sets of propositions. The remaining option for the tenseless theorist is to insist that such surrogates are not

necessary.

To reject ersatz possible worlds is to take modal properties as primitive, a view called *modalism*. Its main benefit is to offer objectivity to modal truths, without the objects — e.g. surrogate worlds. On this view, an utterance of ‘it could be the case that  $p$ ’ is true iff ‘ $p$ ’ could be true, where  $p$  is an indicative statement. But if the tenseless theorist can make it attractive to abandon ersatz worlds, the existence of a parallel position in the temporal case might force an ersatzer presentist to abandon his ersatz times. Arthur Prior’s view is just such a position. According to his *temporal primitivism*, an utterance of ‘it was the case that  $p$ ’ is true iff ‘ $p$ ’ was true, and ‘it will be the case that  $p$ ’ is true iff ‘ $p$ ’ will be true, where  $p$  is a present-tensed statement.

First, there is a problem common to both views. Modalism fails to capture all modal truths. In particular, it fails to capture quantification over possibilities — that is, the enumeration of different ways that something could happen. ‘Jim could win the chess match’ is true iff ‘Jim wins the chess match’ could be true. But ‘there are three ways that Jim *could* win his chess match’ is true iff ‘there are three ways that Jim *does* win his chess match’ could be true. Yet this could not be true, because there is only ever *one* way that Jim wins his chess match, if he wins at all. The modalist seems unable to tease the three ways apart. (Joe Melia highlights some further problems for the modalist in his (2003: 81–98).)

Lewis (2004) provides an analogous objection for the temporal case as follows: ‘King James I was King of England’ is true iff ‘King James I is King of England’ was true. But ‘King James I and King James II were both Kings of England’ is true iff ‘King James I and King James II are both Kings of England’ was true. But this was not true, for they were Kings at different times.

This quantificational problem needs addressing. But if both positions can overcome the objection, there is reason to think that ersatz times are much more secure than the ersatz worlds.

First, in one important respect, ersatz worlds do not fulfil an analogous function to ersatz times. Ersatz times can be used to provide an



*analysis* of past, present and future in just the same way that the real B-series does for the tenseless theorist. But ersatz worlds do *not* provide a reduction of modal operators in the way that Lewisian worlds do. For as Lewis (1986: 150–157) rightly points out, maximally consistent ersatz worlds cannot be articulated without using modal notions — for example, consistent sets of propositions are sets of propositions that *could* be true together. If we have no equivalent indicative statement, then an actualist still has to assume some sort of primitive modality in order to generate enough world-stories to capture all the possibilities — ‘Possible worlds’ could not be used to explain what we *meant* by possibility, if we could not get rid of modal notions in articulating what they were.

In any case, a commitment to primitive modality is held by both the modalist and the ersatzer actualist — worlds bring no benefit on that front. If this objection is strong, then should the presentist also abandon actualism? He might. But if he has a full complement of sets and propositions to construct his ersatz times, he incurs no cost in putting them to double-duty in articulating certain modal truths. The point here is that the tenseless theorist has at least one positive argument for abandoning ersatz worlds.

Second, the coherence of temporal primitivism is doubtful. The metaphysics behind Prior’s account is a species of presentism, in that only the present time exists. But as it contains no abstract structure, whatever facts there are about the future and past must exist at the ontologically privileged present. This ontology raises a problem over the maintenance of truth-value links between times (Bourne 2006: 2–6). If it is now the case that it will be the case that *p*, then there presently exists a fact that *p* will be. But that fact only ever exists at *that* moment. So when a future time becomes present, what ensures that *p* will be the case at that time? For at that time, a *distinct* collection of facts will obtain — what kind of connection guarantees that one fact *then* will make it true that *p*?

There is no modal analogue of the truth-value links problem. The lack of analogy is bound up with the fact that whilst genuine change occurs over time, it does not occur between possibilities. Therefore,

temporal primitivism is to be rejected. However, modalism may yet be defensible. As ersatz worlds have less relative benefit than ersatz times, the tenseless theorist can motivate this approach.

## Conclusion

Where time and modality intersect, a philosopher's account of the metaphysics of modality and the metaphysics of time had better agree. Where one takes different frameworks in each case, such as combining ersatz and realist accounts, they may not. But adopting a primitivist framework in lieu of an ersatz account offers a potential solution. As shown, only modalism seems a defensible primitivism, but the modalist has many challenges ahead of him. So whilst the tenseless theorist toils over a satisfactory primitivist position that obviates a commitment to modal realism, the ersatzer presentist and ersatzer actualist combine to make merry bedfellows.

## Bibliography

- Adams, R. M. (1974), "Theories of Actuality," *Noûs*, 8: 211–231
- Bourne, C. P. (2006), "A Theory of Presentism," *Canadian Journal of Philosophy* 36: 1, 1–24
- Cresswell, M. J. (1990), "Modality and Mellor's McTaggart," *Studia Logica*, 49: 163–70
- Dyke, H. (1996), "Real Times and Possible Worlds," in Le Poidevin, R. (ed.) *Questions of Time and Tense* (Oxford: Oxford University Press, 1998), pp. 93–118
- Markosian, N. (2001), 'Critical Study: Robin Le Poidevin, editor, *Questions of Time and Tense*', *Noûs*, 35: 4, 616–629
- McTaggart, J. McT. E. (1927), 'The Unreality of Time' repr. in Le Poidevin, R. & Macbeath, M. (eds.) (1993) *The Philosophy of Time* (Oxford: Oxford University Press), 23–34
- Melia, J. (2003), *Modality* (Acumen)
- Mellor, D. H. (1981), *Real Time* (Cambridge: Cambridge University Press)
- Le Poidevin, R. (1991), *Change, Cause and Contradiction: A Defence of the Tenseless Theory of Time* (London: Macmillan)

Lewis, D. K. (1986), *On the Plurality of Worlds* (Oxford: Basil Blackwell)

\_\_\_\_\_ (2004), 'Tensed Quantifiers', in D. Zimmerman (ed.), *Oxford Studies in Metaphysics, Volume I* (Oxford: Oxford University Press), 3-14

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