

# THE PROBLEM OF CHANGE

Ryan Wasserman  
Western Washington University

Our world is a world of change. Children are born and grow into adults. Material possessions rust and decay with age and ultimately perish. Yet scepticism about change is as old as philosophy itself. Heraclitus, for example, argued that nothing could survive the replacement of parts, so that it is impossible to step into the same river twice. Zeno argued that motion is paradoxical, so that nothing can alter its location. Parmenides and his followers went even further, arguing that the very concept of qualitative change is inconsistent. Change in *any* respect is impossible, they argued, since change requires difference and nothing differs from itself.<sup>1</sup>

Few today would accept the Eleatic conclusion that change is impossible. But the topic of change continues to be a source of much debate, as it brings together various issues that are central to metaphysics, language and logic – including identity, persistence, time, tense, and temporal logic. As we consider various approaches to our topic, it will become clear that one’s perspective on change is often determined by one’s position in the broader philosophical landscape.

Change can appear paradoxical, as it requires both *sameness* and *difference*. Consider the banana that changes from green to yellow as it ripens. The unripe banana must be the same as the ripe banana or else *the banana* does not change. The unripe banana must also be different from (i.e., *not* the same as) the ripe banana or else the banana does not *change*. The problem of change is the problem of reconciling these seemingly incompatible truths.

Faced with apparent contradiction, philosophers often suspect equivocation. One might think, for example, that the stated “problem” simply confuses *numerical* and *qualitative* identity. The unripe banana and the ripe banana are one and the same object. In this sense they are “the same”. But the properties of the one are different from the properties of the other. In this sense they are “different”. This response underestimates the problem, for it ignores the intimate relation between numerical and qualitative identity that is captured by *Leibniz’s Law* (LL): For any  $x$  and any  $y$ , if  $x = y$  then  $x$  and  $y$  have all the same properties. Given this entailment, the prospects for reconciliation through equivocation appear dim. Change requires both numerical identity and

---

<sup>1</sup> Though the general problem of change will be our focus, the more specific issues raised by Zeno and Heraclitus are no less worthy of attention. See Salmon (1970) and Rea (1994), respectively, for excellent introductions to the problems of motion and material constitution.

qualitative difference. Yet numerical identity entails qualitative identity, which precludes qualitative difference. Sameness and difference remain antithetical, even under disambiguation.

Leibniz's Law is one of several principles that generate the problem of change. Let's continue to focus on the case of the ripening banana as we make the rest of these assumptions explicit.

First, note that the unripe banana and the ripe banana differ in colour. And, in general, whenever a change takes place from one time to another, there is some difference in how things are at those times. Change requires variation. This is the *Difference Condition* (DC): The unripe banana is green and the ripe banana is yellow.

We add to this the observation that *being green* and *being yellow* are incompatible properties. This, again, is taken to be a general requirement for change. If there is something red at one time and something square at another time, we do not thereby have an instance of change since there is no conflict between *being red* and *being square*. Change requires opposition. This is the *Incompatibility Condition* (IC): Nothing is both green and yellow.

Variation and opposition are necessary for change, but not sufficient. When a blue house burns down to a black pile of ash, we have something blue and something black. *Being blue* and *being black* are incompatible properties. Yet there is a sense in which nothing changes, since there is no *thing* that moves from one state to the other. Change (in the sense that concerns us) requires identity. This is the *Sameness Condition* (SC): The unripe banana = the ripe banana.

With these principles in place, contradiction quickly follows. LL, DC and SC jointly entail that the ripe banana is both yellow and green, which is contrary to IC.<sup>2</sup> The possibility of change has been reduced to absurdity. (Cf. Haslanger 2003, Heller 1992, Hinchliff 1996, Merricks 1994)

Some philosophers embrace the absurdity. Zeno's paradoxes of motion, for example, have led some to say that change (of position) is contradictory, but not thereby impossible. (Hegel 1969, von Wright 1984, Priest 1987) Others reject SC and with it the possibility of qualitative change. Heraclitus, Buddha, and Hume can all be read as suggesting that there are no persisting objects and, thus, no genuine alteration – each moment is a new beginning, populated by new objects with new properties.<sup>3</sup> The vast majority of philosophers, however, focus on the Difference Condition, DC. Most agree

---

<sup>2</sup> Proof:

|   |          |
|---|----------|
| (1) The unripe banana is green.             | [DC]     |
| (2) The unripe banana = the ripe banana.    | [SC]     |
| (3) So the ripe banana is green.            | [1,2,LL] |
| (4) The ripe banana is yellow.              | [DC]     |
| (5) So the ripe banana is green and yellow. | [3,4]    |

<sup>3</sup> One might add occasionalists like Malebranche and Al-Ghazali to the list. Such theorists recognize only one lasting substance (God), which they take to be unchanging. One might also add contemporary "stage-theorists" like Sider (2001: 188-208) and Hawley (2001: 41-8) to the list. Such theorists claim that the ordinary objects of our world are momentary entities.

that DC mischaracterizes our story of the changing banana in some way, though there is some disagreement over what the mistake is and how it should be avoided. This disagreement is grounded in more basic debates about time, tense and predication, to which we now turn.

One natural thought is that the problem with DC has something to do with *tense*. It might be the case that the banana *is* green and *will be* yellow (when it has ripened) or it might be the case that the banana *is* yellow and *was* green (when it was unripe), but it is never true that the single banana in our story *is* green and *is* yellow. Attention to tense dissolves the puzzle.

Whether or not this response is sufficient depends on how serious one is about tense. Tensed concepts – like *was*, *is now*, and *will be* – presuppose a privileged vantage point in time, while tenseless concepts – like *earlier than* and *later than* – do not. We refer to these, respectively, as “A-concepts” and “B-concepts” (following McTaggart 1908). One central question in the philosophy of time is: can A-concepts be reduced to B-concepts? At a minimum, this would require providing tenseless truth-conditions for tensed sentence tokens. (Mellor 1998, chapter 6) According to the *A-theorist*, such a project cannot be successfully carried out, since a language devoid of A-concepts could never capture the obvious truth that time “flows”. (Smith 1993, chapter 2) This thesis about the language of time is often tied to a view about the ontology of time called *presentism*, according to which only the present is real.<sup>4</sup> (Prior 1968) Those who take their tense seriously have a clear response to the problem of change. (Zimmerman 1998) DC is straightforwardly false and must be replaced by an appropriately tensed counterpart, DC<sub>A</sub>: The banana *was* green (when it was unripe) and *is* yellow (now that it is ripe). Unlike the original Difference Condition, DC<sub>A</sub> generates no contradiction. *Being green* and *being yellow* are incompatible in the sense that, if something is yellow, it isn’t *now* green. But that is consistent with the claim that the banana is yellow and *was* green. Moreover, there is no further explanation of what it means to say that something “is” yellow or “was” green, since tensed predication is ultimate and unanalyzable. End of story.

Presentists and A-theorists are opposed by *eternalists* (who accept the reality of past and future, embracing the physicist’s picture of a “four-dimensional” spacetime manifold) and *B-theorists* (who claim that A-concepts are reducible, in some sense, to B-concepts). (Quine 1960, Russell 1915, Smart 1963) Various objections have been put forward in this debate. (Markosian 2002 provides a good summary.) We will focus on the connection between tensed locutions like ‘now’ and indexical terms like ‘that’, ‘I’ and

---

<sup>4</sup> Terminological warning: Smith (1993) counts as a non-presentist A-theorist according to my terminology, but not his. The semantic and ontological theories are often linked since, as we will see, the reduction of tense involves quantification over non-present times. If one embraces presentism and denies the existence of such times, the reduction is unavailable.

'here'. A token of the sentence 'Aristotle is here', uttered at place  $p$ , is (typically) true just in case Aristotle is at  $p$ . In this way we are able to give non-indexical truth-conditions for sentence tokens including indexicals. (Kaplan 1989) The B-theorist urges a parallel reduction in the case of tense: a token of the sentence 'Aristotle was a philosopher', uttered at time  $t$ , is true just in case there is (tenselessly) some time  $t'$  such that Aristotle is (tenselessly) a philosopher at  $t'$  and  $t'$  is before  $t$ . Similarly, 'Aristotle is a philosopher' is true at  $t$  if and only if Aristotle is a philosopher at  $t$  and 'Aristotle will be a philosopher' is true at  $t$  if and only if there is some time  $t'$  such that Aristotle is a philosopher at  $t'$  and  $t'$  is later than  $t$ . No one believes that there are irreducibly indexical facts about space, over and above facts about what things are like at different places. Appealing to the analogy between space and time, the B-theorist claims that it is no more plausible to believe in irreducibly tensed facts, in addition to the various facts about what things are like at different times.

The B-theorist agrees with the A-theorist that DC is false when understood as a present-tensed sentence and should be replaced with something like  $DC_A$ . The B-theorist, however, argues that the tensed predication in  $DC_A$  can be eliminated along the lines just suggested, giving us a tenseless version of the Difference Condition ( $DC_B$ ): The banana is (tenselessly) green at  $t_1$  and the banana is (tenselessly) yellow at  $t_2$  (where  $t_1$  is an earlier time at which the banana is unripe and  $t_2$  is the current time at which the banana is ripe.)  $DC_B$  still blocks the original anti-change argument. The B-theorist can grant that *being green* and *being yellow* are incompatible properties in the sense that nothing can be green and yellow at the same time. He can also say these properties are incompatible in the sense that nothing can be (tenselessly) green and (tenselessly) yellow. But all of this is perfectly compatible with the banana in our story being green *at one time* and yellow *at another*. (In other words, the B-theorist will say that IC is ambiguous with both a tensed and a tenseless reading. Both readings are true. Both are consistent with  $DC_B$ .)

The B-theorist reduces tensed predication ("the banana was green") to temporally-relativized predication ("the banana is green at  $t_1$ "). We might now wonder: Is temporally-relativized predication itself ultimate and irreducible or can it be understood in more basic terms? The question is sometimes posed as a challenge: We know what it is for something to be green, but what is it for some to be green *at a time*? In order to answer these questions we must first address some more basic questions about predication, properties and persistence.

The standard model for the metaphysics of predication is inherited from Plato. There are objects and there are properties (where these properties may be thought of as Platonic Forms or Aristotelian universals or even set-theoretic constructions). Objects have properties, thereby providing an ontological basis for true predicative utterances: ' $a$  is  $F$ ' is true just in case object  $a$  has the property of *being  $F$* . The phenomenon of change threatens to undermine this simple picture, since most persisting objects are not eternally tied to their properties. The ripening banana, for example, does not (timelessly) have the

property of *being green*, for it is only green *at certain times*. And the challenge for the B-theorist is to say how this temporal element fits into the classic object-having-property construction. Many views on change can be classified according to whether they attach a temporal element to (1) the object, (2) the property, or (3) the having.

(1) A road may be curvy in the mountains and straight in the plains, but these “spatially-relativized” facts are not basic. To say that the road is curvy in the mountains and straight in the plains is just to say that the part of the road in the mountains is curvy and the part in the plains is straight. The *perdurantist* (also called a “four-dimensionalist”) urges a similar approach to temporally-relativized predication.<sup>5</sup> Ordinary objects are spread out in time in much the same way that they are spread out in space, so that the banana is present at different times by having different “temporal parts” at those times. (Perduring objects are sometime described as spacetime “worms”, as they are divisible along the temporal dimension into shorter and shorter segments, being ultimately composed of instantaneous three-dimensional slices.) For the banana to change from green to yellow is for it to have one temporal part that is green and a later temporal part that is yellow. Paradox is avoided since the incompatible properties are attributed to distinct parts of a single persisting object. More generally, the perdurantist claims that an object has a property at a time just in case its temporal part at that time has the property *simpliciter* (i.e., without qualification). In this way the perdurantist reduces temporally-relativized predication to simple predication and preserves the basic Platonic picture. (Lewis 1986: 204)

The most familiar objection to the temporal parts approach is that having different parts with different properties does not generally suffice for change. (McTaggart 1927, chapter 33) Consider the poker that is hot at one end and cold at the other. The poker has a hot part and a cold part, but that does not give us a change in the poker. By analogy, the mere fact that the banana has a green temporal part and a yellow temporal part does not suffice for a changing banana. The perdurantist may respond that variation across space is *sometimes* sufficient for change: when one drives down the curvy mountain road and out onto the plains, one can truthfully say that the road has changed. The key difference between these two cases is that one’s direction of travel along the road provides *order*, so that one part of the road is naturally conceived as coming *before* the other. That level of structure is absent when one simply observes the poker in its entirety. The perdurantist may then point out that the banana case is more like the road case in this respect: time has an order, with one temporal part of the banana coming before the other. And it is in virtue of this that we can (in at least some contexts) truthfully say that banana changes. (For alternative responses to the “no-change” objection, see Sider 2001: 212-6.) Whatever one makes of this objection in the end, it

---

<sup>5</sup> The term ‘perdurantism’ comes from Mark Johnston, by way of David Lewis (1986: 202). The term ‘endurantism’ is somewhat older, going back at least to Smart (1963). The term ‘four-dimensionalism’ is sometimes used for the doctrine of eternalism (or the combination of eternalism and perdurantism).

brings out an important methodological point: in providing an account of temporally-relativized predication we should be guided, in part, by our prior beliefs about *what change is*.

Others simply reject the perdurantist account of change because they deny the existence of temporal parts. *Events* may have shorter-lived events as parts, as when a play is composed of three acts, but *objects* are more substantial than that – it is not a mere *part* of the banana that is present in the fruit bowl before us, but the whole. This is the *endurantist* (or “three-dimensional”) view of persistence. What might an endurantist account of change look like?

(2) One natural idea is to introduce a temporal element to the property side of the object-property divide: to say that the banana is green at  $t_1$  is to say that it has the “time-indexed” property of *being-green-at- $t_1$* , where the banana does not have this property in virtue of having a green temporal part at the time in question. (Mellor 1981: 111-4; Cf. Mellor 1998, chapter 8) On this picture, temporally-qualified objects (banana-stages) with familiar properties (*being green*) are replaced by familiar objects (bananas) with temporally qualified-properties (*being-green-at- $t_1$* ). A closely related view would say that the banana is green at  $t_1$  in virtue of standing in the relation of *being-green-at* to the time  $t_1$ , so that change amounts to standing in different relations to different times. Contradiction is then avoided, since standing in the *being-green-at* relation to one time and not another is no more problematic than standing in the *being-taller-than* relation to one person and not another.

David Lewis (1986: 202-4, 1988, 2002) complains that this “relationalist” picture of change eliminates temporary intrinsic properties (for this reason, the problem of change is sometimes recast as “the problem of temporary intrinsics”). This objection has been extremely influential, though there is little agreement over what the problem is supposed to be. (Wasserman 2002)

Lewis sometimes writes as if the relationist forsakes *properties* altogether, so that the enduring object becomes a bare particular without colour, shape or mass. But this characterization is unfair. (Hawley 2001: 18) Time-indexed properties are genuine properties, after all, and the relationist will say that the banana has some colour or other at every time that it exists in virtue of having different time-indexed properties. Contrast this with the case of an abstract object like the number 4 which is *never* coloured and the charge of emptiness begins to look empty itself.

Perhaps the problem is supposed to be that the relationist does away with *intrinsic* properties, where an intrinsic property is one that something has in and of itself. *Being bent* is intrinsic since the shape of something is independent of what else exists. *Being an uncle*, in contrast, is *extrinsic*, since uncles require nieces or nephews. Temporally-indexed properties like *being-bent-at- $t$*  are also extrinsic, goes the objection, since whether or not something has such a property will depend upon the existence of the relevant time. But then all properties are wrongly lumped together with *being an uncle* as extrinsic. The relationist may protest that Lewis’s characterization of intrinsic properties begs the question. We should instead say that a property is intrinsic just in case whether

or not something has that property *at a time* depends solely on what the object is like *at that time*, independent of anything else. (Haslanger 1989) This definition fits well with the relationist picture and properly classifies shape properties as intrinsic. (For a very different response on this point, see Parsons 2000.)

Perhaps the problem is that the relationist forsakes *temporary* intrinsic properties? After all, the banana *always* has the property of *being-green-at- $t_1$* . But change requires something to have a property and then lack it. What is the force of this requirement? If we simply mean that the banana must have a colour at one time and lack it at another, then we have no objection to the relationist, since she allows that the banana is green at one time and not at another (in virtue of its time-indexed properties).

In the end, I think we should read Lewis as simply insisting that some things have the property of *being bent*. In this world of change, the relationist will presumably not recognize anything that is bent *simpliciter* – things are only bent at times. Lewis takes this to be incredible - isn't it obvious that some things are bent? That depends. Of course it is obvious that some things are *now* bent, but that is no obstacle to the relationist. What Lewis requires is the claim that some things are *tenselessly* bent (i.e., some things *be* bent), and this is far from obvious.

(3) Some endurantists cannot bring themselves to leave simple, unqualified properties like *being green* and *being bent* out of the picture altogether. One way to bring them back in is to qualify the *having* of properties, rather than the properties themselves.<sup>6</sup> (Johnston 1987) There are different ways of having a property, one might say. For the banana to be green at  $t_1$  is for it to be green in one way (a  $t_1$ ly way); for it to be yellow at  $t_2$  is to be yellow in a different way (a  $t_2$ ly way). There is no contradiction, since that would require being green and yellow in the *same* way. An analogy is sometimes drawn to modals: one can be *possibly* green without being *actually* green. In the same way, one can be  $t_1$ ly green without being  $t_2$ ly green. These are all different ways of having the same property. (Is being possibly green really *a way* of being green? Is being apparently mistaken a way of being mistaken?)<sup>7</sup>

There are various interpretations of this “adverbialist” proposal, since there are different ways of thinking about “ways”. One could, for example, take different ways of having a property to be different relations that hold between objects and properties: there is the *having-at- $t_1$*  relation that holds between the banana and the property of *being green*, there is the *having-at- $t_2$*  relation that ties the banana to *being yellow* and so on.

---

<sup>6</sup> Here is yet another way: take objects and properties together as “states-of-affairs” and say that these states of affairs “obtain” at some times and not others (e.g., the banana and *being green* make up the state-of-affairs of *the banana's being green*, which obtains at  $t_1$  but not  $t_2$ ). Change can then be understood in terms of different states-of-affairs obtaining at different times. (Forbes 1987, Haslanger 2003)

<sup>7</sup> A closely related view (which may avoid these parenthetical worries) is defended by van Inwagen (1990: 249-50), who takes *having* to be a three-place relation that holds between an object, a property and a time (where whether or not an object stands in this relation is not determined by the properties of its proper temporal parts).

Unfortunately, as Lewis (2002) reminds us, the attempt to explain *all* having in terms of a reified instantiation relation (be it temporally-relativized or not) lands us in Bradley's regress.

The property-theorist may forsake this project and take *instantiation* as a conceptual primitive, but things appear much worse for the adverbialist, who must countenance an infinite number of conceptual primitives – one for each time or “way” of having a property. Worse, it is unclear what this bloated ideology buys one at the level of ontology, for Lewis's central complaint against the relativizer remains: there is nothing in the endurantist framework that has *bentness*. The adverbialist allows that temporarily bent objects have that property *in a way*, but that is not the same as having the property *simpliciter*. The adverbialist may give us another way to understand qualified having, but they do not give us *unqualified* having, which is what Lewis demands. (Lewis 2002: 5)

Let us take stock. I have suggested that there are, in effect, two problems of change. The first problem, inherited from the ancients, is pure sophistry that only arises when we ignore the importance of tense. The original Difference Condition (DC) should be rejected in favour of a tensed counterpart (DC<sub>A</sub>), at which point the apparent contradiction evaporates. The second problem of change is more substantial: it is the problem of giving some account of tensed predication. Here we have a choice to make: should we follow the A-theorist and say that tensed predication is fundamental or should we follow the B-theorist and say that tensed predication can be reduced to temporally-relativized predication (as in DC<sub>B</sub>)? Suppose we follow the lead of the B-theorist. We then have a second choice to make: what account should we give of temporally-relativized predication? If we accept the traditional view on predication, the second question becomes: How does time figure into the object-having-property construction? We have explored various answers to this question but, in closing, it is important to point out that the Platonic picture is not forced upon us – there are various attitudes and approaches to predication generally, and each of these may take us in a different direction when it comes to temporally-relativized predication.

First example: suppose one is attracted to a radical nominalism, according to which there are no properties whatsoever, be they Forms or universals or sets of some sort. In that case one will feel little pressure to say how a temporal element fits into the Platonic scheme. Such a theorist should simply decline the invitation to provide an account of temporally-relativized predication altogether: the banana is green at one time and yellow at another... and that's all there is to say about that. (Hofweber, ms)

Second example: suppose one follows D.C. Williams (1953) in replacing general properties with *tropes*. Tropes are taken to be *particularized properties*, so that where Socrates might say that two ripe bananas both participate in a single Form of Yellowness, the trope-theorist would say that each banana has its own yellow trope. This suggests yet another way to understand temporally-relativized predication: for the banana to be green at  $t_1$  is for there to be a green trope that (i) uniquely characterizes the banana and (ii)

exists at  $t_1$ . When the banana alters its colour, this green trope is replaced by a yellow trope, so that change amounts to a single persisting object underlying the generation and corruption of various shorter-lived states. (Ehring 1997, MacBride 2001, Simons 1991) This picture fits naturally with recent developments in the neo-Davidsonian approach to logical form (Wasserman, ms), which raises interesting methodological questions for the student of change: if the linguist concludes that temporal modifiers are predicates of underlying states or events (Parsons 1990, chapter 11), what remains of the problem of change? More generally, how should we conceive of the relationship between syntax, semantics and metaphysics? These are important questions that deserve more attention than I can give them here.

What this short survey brings out is that one's approach to the problem of change is often determined by one's prior views on time, tense, persistence, predication and properties. Of course, one might also reject a certain view on change as being intrinsically implausible, only to find that this forces revision elsewhere in the web of belief. In this way the problem of change both shapes and is shaped by one's larger philosophical commitments.<sup>8</sup>

## References

- Ehring, Douglas. 1997. Lewis, Temporary Intrinsic and Momentary Tropes. *Analysis* 57: 254-8.
- Forbes, Graham. 1987. Is there a Problem about Persistence? *Proceedings of the Aristotelian Society*, suppl. vol. 61: 137-55.
- Haslanger, Sally. 1989. Endurance and Temporary Intrinsic. *Analysis* 49: 119-25.
- Haslanger, Sally. 2003. Persistence through Time. In M. Loux and D. Zimmerman, eds., *The Oxford Handbook of Metaphysics*. Oxford: Oxford University Press.
- Hawley, Katherine. 2001. *How Things Persist*. Oxford: Clarendon.
- Hegel, G. 1969. *Hegel's Science of Logic*. A. Miller, tr., London: Allen and Unwin.
- Heller, Mark. 1992. Things Change. *Philosophy and Phenomenological Research* 52: 695-704.
- Hinchliff, Mark. 1996. The Puzzle of Change. In J. Tomberlin, ed., *Philosophical Perspectives*, 10, *Metaphysics*.
- Hofweber, Thomas. Manuscript. The Meta-Problem of Change.

---

<sup>8</sup> Thanks to John Hawthorne, Ted Sider and Dean Zimmerman for many helpful discussions on the topic of change. Thanks to Hud Hudson, Ned Markosian, Gabriel Uzquiano, Brian Weatherson and an anonymous referee for commenting on earlier drafts of this paper. Special thanks to David Manley for astute editorial advice.

- Johnston, Mark. 1987. Is there a Problem about Persistence? *Proceedings of the Aristotelian Society*, suppl. vol. 61: 107-35.
- Kaplan, David. 1989. Demonstratives. In J. Almog, J. Perry, and H. Wettstein, eds. *Themes from Kaplan*. New York: Oxford University Press.
- Lewis, David. 1986. *On the Plurality of Worlds*. Oxford: Blackwell.
- Lewis, David. 1988. Rearrangement of Particles: Reply to Lowe. *Analysis* 48: 65-72.
- Lewis, David. 2002. Tensing the Copula. *Mind* 111: 1-13.
- MacBride, Fraser. 2001. Four New Ways to Change Your Shape. *Australasian Journal of Philosophy*, 79: 81-89.
- Markosian, Ned. 2002. Time. In E. Zalta, ed., *The Stanford Encyclopedia of Philosophy*, URL = <<http://plato.stanford.edu/archives/win2002/entries/time/>>.
- McTaggart, J.E. 1908. The Unreality of Time. *Mind*, 17: 457-74.
- McTaggart, J.E. 1927. *The Nature of Existence, Volume II*. Cambridge: Cambridge University Press.
- Mellor, D.H. 1981. *Real Time*. Cambridge: Cambridge University Press.
- Mellor, D.H. 1998. *Real Time II*. Cambridge: Cambridge University Press.
- Merricks, Trenton. 1994. Endurance and Indiscernibility. *Journal of Philosophy* 91: 165-84.
- Parsons, Josh. 2000. Must a Four-Dimensionalist Believe in Temporal Parts? *The Monist* 83: 399-418.
- Parsons, Terence. 1990. *Events in the Semantics of English*. Cambridge, MA: MIT Press.
- Priest, Graham. 1987. *In Contradiction*. Dordrecht: Nijhoff.
- Prior, A.N. 1968. The Notion of the Present. *Studium Generale* 23: 245-8.
- Quine, W.V.O. 1960. *Word and Object*. Cambridge, MA: MIT Press.
- Rea, Michael. 1994. *Material Constitution*. Lanham, MA: Rowman & Littlefield.
- Russell, Bertrand. 1915. *Our Knowledge of the External World*. London: Allen & Unwin.
- Salmon, Wesley. 1970. *Zeno's Paradoxes*. Indianapolis: The Bobbs-Merrill Company.
- Sider, Theodore. 2001. *Four-Dimensionalism*. Oxford: Oxford University Press.
- Simons, Peter. 1991. On Being Spread out in Time: Temporal Parts and the Problem of Change. In W. Spohn, B.C. van Fraassen, and B. Skyrms, eds., *Existence and Explanation*. Dordrecht: Kluwer.
- Smart, J.J.C. 1963. *Philosophy and Scientific Realism*. London: Routledge.
- Smith, Quentin. 1993. *Language and Time*. Oxford: Oxford University Press.
- van Inwagen, Peter. 1990. Four-Dimensional Objects. *Noûs* 24: 245-55.
- Von Wright, G.H. 1984. Time, Change, and Contradiction. In *Philosophical Logic: Philosophical Papers, Volume II*. Ithaca: Cornell University Press.
- Wasserman, Ryan. 2003. The Argument from Temporary Intrinsics. *Australasian Journal of Philosophy* 81: 413-9.
- Wasserman, Ryan. Manuscript. Objects, States and Change.
- Williams, D.C. 1953. On the Elements of Being. *Review of Metaphysics* 7: 3-18.
- Zimmerman, Dean. 1998. Temporary Intrinsics and Presentism. In D. Zimmerman and P. van Inwagen, eds., *Metaphysics: The Big Questions*. Cambridge, MA: Blackwell.