

Bigelow, Possible Worlds and The Passage of Time

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In his celebrated argument, McTaggart claimed that time is unreal because it involves temporal passage – the movement of the NOW along a series of moments and events – and temporal passage is contradictory ([4], [5]). Detensers such as Robin Le Poidevin [2], D. H. Mellor [6], and myself ([7], [8]) find McTaggart's argument against temporal passage convincing, but they reject his conclusion that time is unreal. According to these philosophers, an ontology that recognizes temporal or B-relations (i.e. *earlier than*, *later than* and *simultaneity*) is sufficient to account for the reality that underlies our vague talk of the passage of time. Tensers such as J. R. Lucas [3], George Schlesinger [10], and Quentin Smith [11], believe that the tenseless view leaves out what is essential to our experience and the reality of time.

In a recent essay, John Bigelow [1] attempts to defend the tensed theory of time by arguing that McTaggart's paradox can be avoided without resorting to what he considers the barren solution of eliminating A-characteristics (i.e. *pastness*, *presentness* and *futurity*) in favour of B-relations. McTaggart's problem is that there is an apparent inconsistency in attributing to an event the incompatible properties of past, present and future. The inconsistency is removed by relativising the tensed properties to times: *e* is present at *t*, past at *t'*, etc., but only at the cost of making the truth conditions of tensed utterances tenseless, and hence denying the passage of time. Bigelow proposes to deal with McTaggart's contradiction by relativizing tensed properties, not to times, but to possible worlds. By appealing to possible worlds he also hopes to demonstrate that B-relations can be derived from A-properties and temporal passage rather than the other way around. This latter point is repeatedly emphasized as a few passages make plain:

[W]hat, we may ask, makes the earlier/later relation a distinctively temporal ordering? It is precisely the passage of time which is required to make the earlier/later relation a temporal one. In other words, in order for the earlier/later relation to be a temporal relation it must be defined in such a way as to ensure that *when* what is earlier is present then what is later is still future, and *when* what is later is present then what is earlier will be past – that is, the earlier/later relation is a temporal one only if it concerns something which *passes*. ... this entails that earlier and later must be analyzed in terms of the passage of time, not the other way around. And therefore, the passage of time, in turn must be analyzed and shown to be consistent, without presup-

posing the ordering of events under the relation of earlier to later. ([1], pp. 3, 4–5; some emphasis added.)

I shall argue that Bigelow's attempt to define the earlier/later relation in terms of the notions of past, present and future is unsuccessful. We can begin to see that this is so by noting that in Bigelow's analysis the italicized word 'when' indicates the *time* at which what is earlier is present and what is later is *still* future. Of course, more needs to be said and in what follows I shall demonstrate that Bigelow's appeal to possible worlds to explicate the passage of time either presupposes primitive temporal relations or falls prey to McTaggart's paradox.

Bigelow claims that in order to consistently explain temporal passage, There will be a series of worlds, each containing the same things, and differing only in which of those things are past, which are present, and which are future. ... These worlds may be represented by sequences like the following:

abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopklmnopqrstuvwxyz
abcdefghijklmnopklmnopqrstuvwxyz ([1], pp. 11, 14)

where the boldface type represents those events with the property of pastness, the capital letters represents those events with the property of presentness and those with italics represent those events which possess the property of futurity.

Given these worlds, Bigelow maintains that we can define the earlier/later relation by using the properties of pastness, presentness and futurity. The first step in his analysis is to define 'currently' earlier than: '... a thing *a* in a world *w* is "currently" earlier than another thing, *b*, just when either *a* is past and *b* is present or future in *w*, or else *a* is present and *b* is future in *w*' (p. 12). He then goes on to define a general earlier/later relation: 'In any world *w*, a thing *a* is earlier than a thing *b* just when *a* is currently earlier than *b*, either in *w* itself, or else in some world in *w*'s past or future' (p. 12).

Why does Bigelow first define 'currently earlier/than'? Perhaps he realized that he needs to specify one world as actual or current, and then define the earlier/later relation in that world. For if all worlds are actual then paradox is unavoidable. To see why let us turn to Bigelow's account of the passage of time.

Bigelow attempts to explain the passage of time, that is, the idea that *What is present, will be past and was future*. On his analysis, what is present, say, event *a*, has the property of presentness in world *w*, has the property of pastness in a world *x* in *w*'s future, and has the property of futurity in a world *v*, in *w*'s past. If, however, all worlds are current or actual, then his analysis of temporal becoming is contradictory: what is

present, event a , is also future and past, what is past is also present and future, what is future is also present and past.

Thus, only one world can be actual (current). However, if only one world is actual then, given Bigelow's possible worlds interpretation of tenses, there is no tensed time and change. To clarify these points consider the following passage:

if there is to be time of any sort at all in a world w , then certain conditions must be met. I will assume, for instance that if a thing a is present in world w , then *there is* a world in w 's past for which a is future, and *there is* a world in w 's future for which a is past. (p. 13)

There are two crucial questions that must be asked concerning Bigelow's account of the tenses: (1) Is 'there is' in the above passage tensed or tenseless? and (2) Are the worlds in w 's past and future possible or actual?

Taking the second question first, it seems that each of the worlds in w 's past and future must be actual. For if they are just possible, then there is no passage because the self-same event does not actually change its temporal properties. Compare an apple that is green at t_1 in the actual world and red at t_2 in a possible world. The existence of these worlds does not constitute change in the apple unless the possible world becomes actual later than the 'currently' actual world. Yet, as shall be argued shortly, the view that possible worlds become actual can hardly suffice to render change intelligible or avoid McTaggart's paradox. Thus, the existence of a series of possible worlds can account for change only if each possible world is actual. However, as we have seen, if each world is actual (current), we arrive at McTaggart's contradiction that every event is (currently) past, present and future.

It is not open to Bigelow to avoid the contradiction by maintaining that different worlds are actual at different B-series times, or in succession, since he insists that temporal passage must explicate temporal relations and not the other way around.

Thus, Bigelow is faced, in terms of possible worlds, with precisely that dilemma McTaggart posed for the defender of tense: if all worlds are actual, then a contradiction results, and if only one world is actual, then there is no tensed time and change.

Turning to the first question: When Bigelow says 'there is a world in w 's past for which a is future' is the 'is' tenseless or tensed? If actual worlds exist tenselessly, then there is a world u , for which a is present and e is future, and a world v in u 's future where a is past and e is present. If both worlds simply are (tenselessly) actual, then there is no world picked out as NOW. No world or moment is privileged, alive, or exists with a capital E, and this implies a contradiction since a and e (and all other events) have incompatible A-characteristics tenselessly. The situation is not improved if

'there is' (tenselessly) only one actual world, for then there is no tensed change since events always (tenselessly) have the A-characteristics they ever have.

Suppose, then, that 'there is' is construed as tensed. In that case, either all possible worlds are actual NOW or only one world is actual NOW. Clearly, if all worlds are now actual, then all events are simultaneously past, present and future and that is absurd. If there is (NOW) one actual world, then in order to account for the passage of time, each possible world would have to become NOW or actual at some B-series time or at some A-series time. In the first instance, Bigelow's attempt to define the earlier/later relation in terms of temporal passage rather than the other way around would fail. On the other hand, if in order to account for temporal passage, possible worlds themselves must undergo temporal becoming, then a meta-series of possible worlds (a series of possible worlds each term containing a series of possible worlds) must exist. In this series, possible worlds such as *v*, *w*, and *x* can change from being possible (future) to actual (NOW) to possible (past). Unfortunately, even if this larger A-series is intelligible (and I doubt it), McTaggart's difficulties would recur, i.e. either all terms in this new series are actual or current and contradiction ensues, or only one world is actual and there is no A-change.

I conclude, therefore, that Bigelow's possible worlds gambit does not elude the paradox that McTaggart claimed to uncover in temporal passage.¹

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References

- [1] John Bigelow, 'Worlds Enough for Time', *Noûs* 45 (1991) 1-20.
- [2] Robin Le Poidevin, *Change, Cause and Contradiction: A Defence of the Tenseless Theory of Time* (Basingstoke: Macmillan, 1991).
- [3] J. R. Lucas, *The Future: An Essay in God, Temporality, and Truth* (New York: Blackwell, 1989).
- [4] J. E. M. McTaggart, 'The Unreality of Time', *Mind* 18 (1908) 457-74.
- [5] J. E. M. McTaggart, 'Time', in *The Nature of Existence*, vol.II., edited by C. D. Broad (Cambridge: Cambridge University Press, 1927), 9-31.
- [6] D. H. Mellor, *Real Time* (Cambridge: Cambridge University Press, 1981).

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- [7] L. Nathan Oaklander, *Temporal Relations and Temporal Becoming: A Defense of a Russellian Theory of Time* (Lanham, Md.: Univ. Press of America, 1984).
- [8] L. Nathan Oaklander, 'McTaggart's Paradox and the Infinite Regress of Temporal Attributions: A Reply to Smith', *Southern Journal of Philosophy* 25 (1987) 425–31.
- [9] L. Nathan Oaklander and Quentin Smith eds., *The New Theory of Time* (London: Yale University Press, 1994).
- [10] George Schlesinger, 'The Stream of Time', in his *Timely Topics*, (Basingstoke: MacMillan, forthcoming) and reprinted in [9].
- [11] Quentin Smith, *Language and Time* (Oxford: Oxford University Press, 1993).