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McTAGGART ON TIME

Abstract. Contemporary discussions on the nature of time begin with McTaggart, who introduces the distinction between what he takes to be the only two possible realist theories of time: the A-theory, maintaining that past, present, and future are absolute; and the B-theory, maintaining that they are relative. McTaggart argues against both theories to conclude that time is not real. In this paper, I reconstruct his argument against the A-theory. Then, I show that this argument is flawed. Finally, I draw a lesson for those engaged in contemporary discussions on the nature of time.

Contemporary discussions on the nature of time begin with McTaggart [1], and it is McTaggart's argument against the relativity of time that I wish to examine today. McTaggart distinguishes between what he takes to be the only two possible realist theories of time. The A-theory claims that past, present, and future are absolute; that there is a moving moment, a "now," that traverses time as future moments becomes present and present moments become past; and that only the present moment exists. The B-theory claims that past, present, and future are relative; that 'past', 'present', and 'future' can be reformulated in terms of 'earlier than', 'the same time as', and 'later than'; and that all moments exist. Historically, Newton is the paradigmatic A-theorist, Leibniz the paradigmatic B-theorist.

McTaggart's argues against both the A- and B-theories to conclude that time is not real. The argument has two steps. First, McTaggart contends that the essence of time is change, that only the A-theory captures change, and so that the A-theory is the only viable realist theory of time. Second, McTaggart argues that the A-theory leads to contradiction. Though both parts of his argument are controversial, in this paper I challenge only the second. I start by reconstructing McTaggart's argument that the A-theory leads to contradiction. I then show that the argument is

flawed. Finally, I draw a lesson for those engaged in contemporary discussions on the nature of time.

McTaggart argument against the A-theory of time is a *reductio ad absurdum*. He starts by assuming the A-theory:

1. The A-theory is true.

According to that theory, McTaggart notes: "Past, present, and future are incompatible determinations. Every event must be one or the other, but no event can be more than one" [1, p 20]. Thus letting ⌜*M*⌝ stand for a particular moment of time:

2. Only one of ⌜*M* is future⌝, ⌜*M* is present⌝, and ⌜*M* is past⌝ can be true.

Then McTaggart also explains that, according to the A-theory:

3a. ⌜*M* is present⌝ entails ⌜*M* has been future⌝.

3b. ⌜*M* is present⌝ entails ⌜*M* will be past⌝.

"But," he asks, "what is meant by 'has been' and 'will be'?" [1, p 21]. McTaggart answers by assuming the following about the logic of tensed statements:

4a. ⌜*M* has been future⌝ entails ⌜*M* is future at some past moment⌝.

4b. ⌜*M* will be past⌝ entails ⌜*M* is past at some future moment⌝.

where 'at' names the relation of being relative to or from the perspective of. So if *M has* been future, then relative to some *past* moment it *is* future. Likewise if *M will* be past, then relative to some *future* moment it *is* past. Steps 3 and 4 together entail:

5a. ⌜*M* is present⌝ entails ⌜*M* is future at some past moment⌝.

5b. ⌜*M* is present⌝ entails ⌜*M* is past at some future moment⌝.

Up until this point everything seems sensible. Let me proceed.

Continuing with the *reductio*, McTaggart writes:

> Thus our first statement about *M*—that it is present, will be past, and has been future—means that *M* is present at a moment of present time, past at some moment of future time, and future at some moment of past time. But [then] every moment, like every event, is both past, present, and future
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> [1, p. 21]

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McTaggart here is not at his clearest. Nonetheless his point seems to be that ⌜*M* is present⌝ entails ⌜*M* is future at some past moment⌝, which entails ⌜*M* is future⌝.

Likewise ⌜M is present⌝ also entails ⌜M is past at some future moment⌝, which entails ⌜M is past⌝. So McTaggart assumes this too about the logic of tensed sentences:

6a. ⌜M is future at some past moment⌝ entails ⌜M is future⌝.

6b. ⌜M is past at some future moment⌝ entails ⌜M is past⌝.

Though I will revisit step 6 below, for the sake of McTaggart's argument let me assume 6a and 6b, and see what follows. Steps 5 and 6 together entail:

7a. ⌜M is present⌝ entails ⌜M is future⌝.

7b. ⌜M is present⌝ entails ⌜M is past⌝.

But steps 2 and 7 together entail:

8. Contradiction.

McTaggart, explicating what is wrong with the conjunction of steps 2 and 7b, puts it thus: "If M is present, there is no moment of past time at which it is past. But the moments of future time, in which it is past," as explained in step 6b, "are equally moments of past time, in which it cannot be past" [1, p 21].

Since assuming the A-theory allegedly leads to contradiction, McTaggart rejects that assumption, step 1. But doing so is justified only if no other step ought to be rejected instead. Ought any other step to be rejected? Steps 2 and 3 follow directly from 1, so assuming the A-theory permits McTaggart to draw them. Step 4, however, seems dubious. Taking ⌜M has been future⌝ to entail ⌜M is future at some past moment⌝ seems to claim that M is future only relative to some past moment. And claiming that past, present, and future are relative is the hallmark of the B-theory. In other words, though McTaggart explicitly assumes the A-theory, he seems implicitly to assume the B-theory as well. Yet McTaggart knows that by their very nature the two theories cannot both be correct.

Now it is possible that ⌜M is future at some past moment⌝, though entailing that M is future relative to another moment, is absolute in calling this other moment 'past'. Just as the B-theory can claim that a moment is "past" as long as such a claim ultimately reduces to the moment's being "earlier than" some other moment, so the A-theory ought to be able to claim that some moment is "future at some past moment," as long as such a claim ultimately reduces to some moment's being "past" absolutely. Further ⌜M is future at some past moment⌝ is supposed to follow from ⌜M is present⌝, which is itself not relative to any moment but absolute, and

which McTaggart *does* take as irreducible. So on a charitable construal step 4 is legitimate. Let me be charitable to McTaggart and proceed.

Steps 3 and 4 entail 5, just as McTaggart claims. Allow him step 5 then. Step 6, however, is false. ⌜*M* is future at some past moment⌝ does not entail ⌜*M* is future⌝, nor does ⌜*M* is past at some future moment⌝ entail ⌜*M* is past⌝. To see this, consider the following two sentences based on 6a and 6b, respectively:

i. 'My writing this article is future at the fall of the Berlin Wall' entails 'My writing this article is future'.

ii. '2010 is past at the centenary of the fall of the Berlin Wall' entails '2010 is past'.

Though my writing this article is future at the fall of the Berlin Wall (which occurred in 1989), my writing this article is not future *simpliciter*. It is either present, because I am writing the article *now*, or indeterminate, because from *which* moment it is to be evaluated is unspecified. Similarly, though 2010 is past at the centenary of the fall of the Berlin Wall (which occurs in 2089), it is not past *simpliciter*. It is either future, because the centenary is years *from* now, or indeterminate, because from *which* moment it is to be evaluated is unspecified.

Hence as evidenced by (i) and (ii), McTaggart incorrectly analyzes the logical structure of sentences of the form ⌜*M* is future at some past time⌝ and ⌜*M* is past at some future time⌝. I suggest reformulating (i) and (ii):

i′. 'My writing this article is future at the fall of the Berlin Wall' entails 'My writing this article is future, *if* the Berlin Wall is falling and this is the reference point'.

ii′. '2010 is past at the centenary of the fall of the Berlin Wall' entails '2010 is past, *if* it is the centenary of the fall of the Berlin Wall and this is the reference point'.

where 'the reference point' names that moment in time relative to which or from whose perspective tenses are to be evaluated. Now, recall, the A-theory can use relative measures just as long as these measures bottom out in absolute ones. In both (i') and (ii') they so bottom out, since they reference the fall of the Berlin Wall and its centenary, which happened in 1989 and will happen in 2089, respectively. And 1989 and 2089 are absolute times.

Given my analysis in (i') and (ii'), 6a and 6b ought similarly to be reformulated:

6a′. ⌜*M* is future at some past moment⌝ entails ⌜*M* is future, *if* some moment is past and this is the reference point⌝.

6b′. ⌜M is past at some future moment⌝ entails ⌜M is past, *if* some moment is future and this is the reference point⌝.

Now the consequent of a conditional does not by itself detach. ⌜M is future, *if* some moment is past and this is the reference point' does not entail ⌜M is future⌝. Nor does ⌜M is past, *if* some moment is future and this is the reference point' entail ⌜M is past⌝. The nondetachability becomes more evident by formalizing ⌜M is future, *if* some moment is past and this is the reference point⌝ and ⌜M is past, *if* some moment is future and this is the reference point⌝, respectively:

A. $\exists x \exists y ((Py \land Ry) \to Fx))$

B. $\exists x \exists y ((Fy \land Ry) \to Px))$

Let ⌜Fx⌝ mean that x is future and ⌜Px⌝ that x is past. Let ⌜Rx⌝ mean that x is the reference point. Hence according to (A), x is future if y is past and this is the reference point. Assuming the A-theory, x and y must be different moments, since according to the A-theory no moment *is* both past and future. Substituting ⌜M⌝ in for ⌜x⌝ and leaving ⌜y⌝ variable, it follows that M is future, if some moment is past and this is the reference point. According to (B), x is past if y is future and this is the reference point. Substituting ⌜M⌝ in for ⌜x⌝ and leaving ⌜y⌝ variable, it follows that M is past, if some moment is future and this is the reference point.

Following this schema, one can make explicit the logical structure of 'My writing this article is future at the fall of the Berlin Wall' as follows: 'My writing this article is future, if the Berlin Wall is falling and this is the reference point'. One may not detach within the conditional. Hence one may not conclude that my writing this article is future. Likewise one can make explicit the logical structure of '2010 is past at the centenary of the fall of the Berlin Wall': '2010 is past, if the centenary is future and this is the reference point'. Here too one may not detach within the conditional—and so one may not conclude that 2020 is past. Thus my analysis, and not McTaggart's, squares with our pretheoretical intuition that my writing this article is not future, nor is 2020 past.

Note that it is important to embed ⌜Ry⌝, and so ⌜y is the reference point⌝, within the conditional. Otherwise substituting as above (A) would entail ⌜M is future, if some moment is past⌝. Since on the A-theory, at least at any time past $t = 0$ and certainly *now*, some moment *is* past, then ⌜M is future⌝ detaches. And so McTaggart would be able to *claim* that M is future, even though my writing this paper is *not* future. Likewise he would be able to claim that 2010 is past, even though 2010 is *not* past. Thus ⌜Ry⌝ needs embedding, lest that simple detachment, which caused problems for McTaggart's own analysis, return.

But McTaggart's problem is not forgetting to embed $\ulcorner Ry \urcorner$. Rather, it is much more basic. McTaggart treats the logical structure of tensed sentences as involving only conjunctions. No other connective permits simple detachment. Hence Mc-Taggart might take 'My writing this article is future at some past moment' to entail 'My writing this article is future *and* there is some past moment', and '2010 is past at some future moment' to entail '2010 is past *and* there is some past moment'. Then he could detach 'My writing this article is future' and '2010 is past'. But this would be to infer false conclusions. Again my writing this article is not future, nor is 2010 past. So McTaggart is wrong to think conjunctions are the only connectives in such sentences. But then he is just as wrong to think this of the sentences in step 6a and b.

Hence in McTaggart's attempted *reductio* against the A-theory of time step 6a and 6b are false. But then McTaggart has no grounds on which to reject step 1; the *reductio* fails. Some other argument, besides McTaggart's, is needed against the A-theory of time. But then some other argument, besides McTaggart's, is needed against the reality of time. What lesson should those engaged in contemporary discussions on the nature of time take away from this? Not only McTaggart but anyone careless when analyzing the logic of tensed sentences does so at one's peril.

References

[1] McTaggart, John Ellis, "Time", pp. 8–31 in: *The Nature of Existence*, vol. 2, C. D. Broad (ed.), New York: Cambridge University Press, 1927.

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