Chapter 2: McTaggart’s Paradox and the A- and B-Theories of Time

McTaggart’s Argument

Based on what he perceived to be a contradiction inherent in any satisfactory account of time (now known as “McTaggart’s paradox”), McTaggart (1908) argued for the conclusion that time is unreal. McTaggart begins his argument by uncovering two distinct concepts of time, which he refers to as “the A-series” and “the B-series”:

A-series: "the series of positions running from the far past through the near past to the present, and then from the present to the near future and the far future."

B-series: "the series of positions which runs from earlier to later." (ibid.)

The A-series, in other words, is a temporal series in which every moment is either past, present, or future, while the B-series is one in which each moment is either earlier or later than each other moment. McTaggart notes that while we use both concepts on a practical basis, an interesting metaphysical question can be raised: is time more fundamentally an A-series or a B-series? Are the A-properties past, present and future ontologically dependent on the B-properties earlier and later, or vice versa?

Before McTaggart begins his argument, he makes it clear that he considers change to be an essential component of time. Since facts about the B-series are eternal ("if M is ever earlier than N, it is always earlier"), argues McTaggart, it involves no change, and thus cannot be an account of time. Facts about the A-series, on the other hand, are always changing ("from future to present, and from present to past"). For this reason, he argues, a proper account of time must be an account of time as an A-series.

But he then identifies an apparent contradiction in the A-series from which he sees no escape:

Past, present, and future are incompatible determinations. Every event must be one or the other, but no event can be more than one. This is essential to the meaning of the terms . . . The characteristics, therefore, are incompatible. But every event has them all. If M is past, it has been present and future. If it is future, it will be present and past. If it is present, it has been future and will be past. Thus all the three incompatible terms are predicatable of each event which is obviously inconsistent with their being incompatible. . . . It may seem that this can
easily be explained. Indeed it has been impossible to state the difficulty without almost giving the explanation, since our language has verb-forms for the past, present, and future, but no form that is common to all three. It is never true, the answer will run, that M is present, past and future. It is present, will be past, and has been future. Or it is past, and has been future and present, or again is future and will be present and past. The characteristics are only incompatible when they are simultaneous, and there is no contradiction to this in the fact that each term has all of them successively. But this explanation involves a vicious circle. For it assumes the existence of time in order to account for the way in which moments are past, present and future. Time then must be pre-supposed to account for the A-series. But we have already seen that the A-series has to be assumed in order to account for time. Accordingly the A-series has to be pre-supposed in order to account for the A-series. And this is clearly a vicious circle.

Faced with a contradiction in one direction and an infinite explanatory regress in the other, McTaggart concludes that there simply can be no consistent account of time.¹

The A-Theory and the B-Theory

McTaggart’s work on time has been influential in metaphysics. Indeed, his terminology is now standard among philosophers of time, who regularly identify themselves as "A-theorists" or "B-theorists." But as these labels suggest, it is not McTaggart’s conclusion but rather his distinction between the A-series and B-series that persists.

Like McTaggart, contemporary A-theorists typically hold that certain aspects of reality or of our experience cannot be accounted for without the postulation of an A-series. But unlike him, they maintain that the notion of an A-series is not inconsistent. Contemporary B-theorists, on the other hand, typically hold that all aspects of reality and of our experience can be accounted for by the existence of a B-series alone. Unlike McTaggart, they maintain that the B-series is genuinely temporal yet not ontologically dependent on the A-series and that an account of time as a B-series can provide a satisfactory account of change.

¹So much for an account of time as an A-series. But what about an account of time as a B-series? McTaggart notes that since the B-series is constructed based on relations fundamentally temporal in nature ('earlier' and 'later' are relations which can only hold between events or positions in time), and time is dependent on the A-series, an inconsistent notion, then the B-series too must be inconsistent. What then, if not the existence of an A-series or a B-series, is responsible for our perception of time? "It is possible," says McTaggart, "... that the realities which we perceive as events in a time-series do really form a non-temporal series. It is also possible, so far as we have yet gone, that they do not form such a series, and that they are in reality no more a series than they are temporal. But I think—though I have no room to go into the question here—that the former view... is the more probable" (ibid.).
For instance, B-theorists generally hold that all facts which appear to involve A-series properties can be reduced to facts involving only B-series properties: *the meeting ended five hours ago* is reducible to *the end of the meeting is [tenseless] five hours earlier than the time of this utterance*. And according to the typical B-theorist (for example Russell 1903), for something to change is simply "for it to be in a certain state at one time and not in that state at a later time" (LePoidevin 1998). The B-theory position is well-supported by the existence of McTaggart’s paradox, the burden of resolving which is generally considered to fall on the A-theorist.

A common response from the A-theorists, due to A.N. Prior and sometimes called “taking tense seriously,” is to claim that the tensed expressions which McTaggart claims begin an infinite regress (e.g., “If it *is* present, it *has been* future and *will be* past”) don’t actually involve reference to past and future times, but are rather “primitive” and “unanalyzable,” true or false simply, as opposed to in virtue of facts about any series, temporal or otherwise.

But B-theorists are rarely satisfied with this response. Moreover, there are alleged incompatibilities of the A-theory of time with physics. Some B-theorists have pointed out that if special relativity is true, then all facts about A-properties are relative, and there can thus be no single A-series.\(^2\) Since special relativity is widely regarded as well-confirmed, the A-theorist must reject or reinterpret it. With neither option being particularly attractive (though both have been pursued), any A-theorist faces a serious challenge in the apparent absence of objective A-series facts. But A-theorists who deny reality to past or future events (or both) face an even more serious challenge. For example, “growing universe theorists,” who deny reality to the future while maintaining the reality of the past and present, must accept “the relativization of existence”—the set of objects which exists at a given time is relative to the inertial reference frame with respect to which existence is being determined. Presentists, who deny reality to both past and future events, face a more extreme version of this.

These difficulties aside, defenses of the A-theory, often formulated as charges of inadequacy against the B-theory, have frequently involved appeals to semantic phenomena. Consider a standard objection to the B-theory due to Prior (1959). Prior argues that the content of a statement like "Thank goodness that’s over," uttered upon the conclusion of something unpleasant, is impossible to convey using only B-series facts. To

\(^2\)According to special relativity, whether two events are observed to be simultaneous or not depends on the inertial (non-accelerated) reference frame in which the observation is made. Two spatially separated events e1 and e2 observed to be simultaneous by an observer O will be observed as non-simultaneous by another observer O’ moving at a high speed relative to O. If O’ is moving from e1 toward e2, he will observe e1 to happen after e2; if he is moving from e2 toward e1, he will observe the opposite. If special relativity is true, then there is no absolute simultaneity, and thus there can be no objective facts about the A-properties of events (e1 may be present for O and future for O’, or present for O’ and past for O), and thus no objective facts about the A-series.
do so would be to give it a meaning like *Thank goodness the date of the culmination of that thing is Friday, June 15, 1954*, a fact about which the utterer could be totally impartial—if it was ever true, it was always true—yet we “thank goodness” only when such culminations become present. According to the A-theorist, the postulation of an A-series is necessary to characterize the content of these and other tensed utterances.

B-theorists have offered two responses to this objection. The first is to adopt a so-called “token-reflexive” theory of meaning in which the meaning of any temporal indexical expression, including “now,” “soon,” and tensed verbs, makes reference to the utterance event itself:

An utterance \( u \) of “That’s over” is true iff that culminates \([\text{tenseless}]\) at time \( t \) earlier than the time of \( u \).

The presence of \( u \) in the truth conditions for indexical sentences, such as that above, is supposed to distinguish their meanings from those of non-indexical sentences, the truth conditions of which do not include reference to the utterance event:

An utterance \( u \) of “The date of the culmination of that thing is Friday, June 15, 1954” is true iff the date of the culmination of that thing is \([\text{tenseless}]\) Friday, June 15, 1954.

So while an utterer might be completely indifferent to the fact that the unpleasant event culminated at a time prior to June 15, 1954, he may not be indifferent to the corresponding token-reflexive fact that it culminated prior to his utterance.

The B-theorists’ second response, sometimes called “the new B-theory” and prompted by, among other things, charges of inadequacy of the token-reflexive account in its ascription of meaning to certain modal expressions\(^3\), is to admit “that tense is indispensable, and that indeed we rely on it to explain our actions”

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\(^3\)A token-reflexive semantics will never allow utterances like “There are no utterances” to be true:

An utterance \( u \) at time \( t \) of “There are no utterances” is true iff there are no utterances at time \( t \), the time of \( u \)

Since the truth conditions here can never obtain, then the sentence is necessarily false. But it is certainly possible that there were never any utterances (if no organisms capable of verbal expression ever evolved, for example). Thus, the objection goes, the B-theorist’s attempt to account for indexicality via token-reflexivity is inadequate.

Another objection, adopted by Ludlow (1999), is due to Yourgrau (1987), note 21:

The Kaplan-Perry rule for ‘now’, if put precisely, would be: *For all times \( t \) and speakers \( s \), if \( s \) employs ‘now’ correctly at \( t \), he refers to \( t \).* Now a rule is no good unless you can use it, but, if you try to employ this rule, it becomes obvious that, in grasping it, you get a handle not on any particular time, but only on a universal conditional on times (and speakers). The problem is that to use the rule to get to a time you must instantiate the universal quantifier, but, to accomplish this instantiation, you must already have a particular time \( t \) in mind. But how do you get to have it in mind? By describing it (e.g., as Saturday, 10:00 A.M.)? (This is vigorously denied by Kaplan and Perry.) By taking \( t \) to be the present moment—i.e., now? (This is circular; it is the rule itself that was supposed to show how we use ‘now’ to get to a particular time.) It seems, rather, that Kaplan and Perry...
(Ludlow, p. 95, characterizing the views in Mellor 1981), but to maintain that tense is an “extra-semantic”
phenomenon—in other words, the response goes, “The date of the culmination of that thing is Friday, June
15, 1954” and “That’s over” ought to have identical meanings, but knowing or believing one may still have
very different effects on our behavior from knowing or believing the other. The differences, argue the “new”
B-theorists, ought to be explained in a theory of, e.g., belief and knowledge, in psychology perhaps, and
ignored by semanticists and metaphysicians both.

The new B-theory position characterizes most of contemporary truth-conditional semantics. There it is
often simply taken for granted that the ideal semantic theory will, like other scientific theories, be stated
tenselessly. Lepore & Ludwig, for example, before providing their “Outline for a Truth-Conditional Semantics
for Tense” (2003), briefly motivate this approach:

(1) ‘I am tired’ in L means that I am tired.

(2) ‘I am tired’ in L is true iff I am tired.

But (1) and (2) express nothing unless relativized to a context of utterance, and what they express
in a context depends on who utters them and the time of utterance. This creates two related
difficulties. First, theorists employing identical adequacy criteria will arrive at nonequivalent
theories, since they will express different propositions by the sentences they use. Second, no
one will give the correct account of the meanings or truth conditions of sentences with context-
sensitive elements. Were we each to assert (1), one of us would assert that ‘I am tired’ means
that Ludwig is tired at such and such a time, while the other would assert that it means that
Lepore is tired at such and such a time. But ‘I am tired’ means neither.

A semantics for a language should be couched in a context-insensitive metalanguage. We want
theories that any inquirer can reach by meeting generally agreed upon theoretical constraints
and that can be used to express the same thing in every context. This requires metalanguage
expressions, including semantic predicates, to be untensed.

Is a semantic theory meant to be a scientific theory, to be used by semanticists in the way physicists use special
relativity, or is it meant to represent the semantic knowledge of an individual speaker? Can philosophers
have mistaken a necessary constraint on a mode of designation for a particular use of ‘now’ (that if ‘now’ is used
at t, the mode of designation should determine t) for the mode of designation itself.
One way around this could be to incorporate a more forcefully “demonstrative” expression into the truth conditions:

“That’s over” is true iff that culminated at time t earlier than this very utterance

“The meeting starts now” is true iff the meeting starts at the time of this very utterance

But, Ludlow objects, if “this utterance” is a genuine demonstrative, then it should technically refer to the statement of the
axiom itself, and if it’s not, “then it is not clear how the token-reflexive theorem can be generated” in the first place (p. 90).
debating the metaphysics of time gain any insight from either sort of theory in their disputes about the meanings of tensed and tenseless expressions? As we shall see, carefully delineating both the nature and function of a semantic theory, as well as the nature and function of the language or set of linguistic phenomena for which the theory is being constructed, will be a deciding factor in such philosophical disputes.