Lecture 1: Debates about time

1.1 Some questions about time

Does time really flow? What is the flow of time meant to be? Prior says "whatever is happening, has happened, or will happen is all the time 'becoming more past'. . . and just this is what we mean by the flow or passage of time" (Prior 1993, 35). **Dynamic views of time** hold that this *temporal passage*, or *temporal becoming* is an objective and fundamental feature of reality, and not merely associated with a particular perspective on it. (Unfortunately named) **static views of time** deny this, typically viewing the passage of time as associated with the perspective on reality associated with sequences of different experiences of a single subject (each experience located at a different time) and not as existing independently of such experiences (*cf.* Mellor 1998, 66–9).

What is the extent of reality? Putnam (1967) suggests that the 'man on the street's' view of the nature of time involves a commitment to the claim that "All (and only) things that exist *now* are real". This is **presentism**: all that exists is what exists *now*. An alternative view is **eternalism**: all events, whether past, present or future, are on the same ontological footing; they are all equally real. A third possibility is that the past and present are real, while the future is not. This third option is a component in a dynamic view of time championed by Broad (1923) and Tooley (1997), often called the 'growing block universe view'.

Is tense ineliminable? Following McTaggart (1908), two complementary ways of describing positions in time are distinguished: one can give an event's position in the **A-series**, a series of temporal positions running from the far past, through the near past to the present and then through the near future to the far future; alternatively one can give an event's position in the **B-series**, a series of temporal positions ordered by, say, the relation "is earlier than". **Tensed views of time** hold that the concepts involved in the A-series are ineliminable in any metaphysically adequate account of time (and may further seek to give a reductive account of B-concepts in terms of A-concepts). **Tenseless views of time** hold that only B-concepts are needed in any metaphysically adequate account of time.

What is necessary for genuine change? Change involves an object possessing incompatible properties at different times (e.g. a banana's being at one time green and at a later time yellow). But when this is cashed out by the static view, is this phenomenon really change, rather than mere variation? Or is the sort of change involved in an alleged objective flow of time—that of events changing from being in the future, to being present to being in the past—needed for genuine change? Another question is: does genuine change require that that which has a property at one time to be strictly numerically identical to that which has an incompatible property at a later time? This leads to another question:

How do things persist? Do objects persist by **enduring**: are they fundamentally 3-dimensional, being wholly present at each time at which they exist? Or do they

persist by **perduring**: are they fundamentally 4-dimensional, existing at different times by having numerically distinct temporal parts located at those times?

Is the future open? Is the view that the future is on the same ontological footing as the present compatible with the view that the future is open; i.e., the view that, as of now, what is going to happen is not already determined?

It has been argued that special relativity forces us to accept a static version of eternalism (sometimes called the **block universe view**). This is a tenseless view of time. What follows if this is correct? Although eternalism naturally goes together with a perdurance theory of persistence (as presentism naturally goes together with an endurance theory of persistence) it is not universally accepted that they entail each other. Mellor argues that one has genuine change in the block universe only if things persist by enduring (see Mellor 1998, Ch. 8). Others disagree, and argue that, independently of its forcing eternalism, STR strongly favours perdurance over endurance (see Balashov 2000).

1.2 McTaggart's Paradox

McTaggart argued that "nothing that exists can be temporal, and that therefore time is unreal" (McTaggart 1993, 23). The argument has three key components.

1. "time involves change... there could be no time if nothing changed" (McTaggart 1993, 25)
2. Change requires the A-series
3. The A-series is inherently contradictory

- Many eternalists endorse (3) but reject (2). Many presentists reject (3) but endorse (2).
- (1) might seem to need minor modification: it is enough for the argument if there could be no time if change was in principle impossible.

1.2.1 The A-series and change

> Take any event—the death of Queen Anne, for example—and consider what changes take place in its characteristics. That it is a death, that it is the death of Anne Stuart, that it has such causes, that it has such effects—every characteristic of this sort never changes... But in one respect it does change. It was once an event far in the future. It became every moment an event in the nearer future. At last it was present. Then it became past, and will always remain past, though every moment it becomes further and further past.
>
> Such characteristics as these are the only characteristics which can change. And, therefore, if there is any change, it must be looked for in the A series and in the A series alone." (McTaggart 1993, 26)

> "there is change, on Mr Russell's view, if the proposition 'At the time T my poker is hot' is true, and the proposition 'At the time T' my poker is hot' is false...
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> But this makes no change in the qualities of the poker. It is always a quality of that poker that it is one which is hot on that particular Monday. And it is always a quality of that poker that it is one which is not hot at any other time... The fact that it is hot at one point in a series and cold at other points cannot give change, if neither of these facts change—and neither of them does." (McTaggart 1993, 27–8)

1.2.2 The A-series and contradiction

> Past, present, and future are incompatible determinations. Every event must be one or the other, but no event can be more that one...
>
> 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 three characteristics belong to each event. How is this consistent with their being incompatible? (McTaggart 1993, 32)

> that [M] 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 every moment, like every event, is both past, present, and future. And so a similar difficulty arises. 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, are equally moments of past time, in which it cannot be past. (McTaggart 1993, 33)

1.2.3 McTaggart on Presentism

> Can we say that, in a time which formed a B series but not an A series, the change consisted in the fact that the event ceased to be an event, while another event began to be an event? If this were the case, we should certainly have got a change.
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> But this is impossible. If N is ever earlier than O and later than M, it will always be, and has always been, earlier than O and later than M... N will always have a position in a time-series, and always has had one. That is, it always has been an event, and always will be one, and cannot begin or cease to be an event. (McTaggart 1993, 25)

1.3 Relativity and Presentism

1.3.1 Relativity

Minimally, STR $\equiv$ all fundamental physical laws are Lorentz covariant = the laws take the same form when written with respect to a class of frames (spacetime coordinate systems) related by Lorentz transformations.

In 1905, Einstein effectively derived the Lorentz covariance of all fundamental interactions from empirical postulates (a *principle theory* approach).

NB, in general, different classes of events count as simultaneous in frames related by Lorentz transformations; this is **the relativity of simultaneity**.

1.3.2 Putnam's argument

Some assumptions about the concept *real* (see Putnam 1967, 198):

1. I-now am real.
2. At least one other observer is real, and it is possible for this other observer to be in motion relative to me.
3. If it is the case that all and only the things that stand in a certain relation R to me-now are real, and you now are also real, then it is also the case that all and only the things that stand in the relation R to you-now are real.

Also: "R must be restricted to physical relations that are supposed to be independent of the choice of a coordinate system (as simultaneity was in *classical* physics) and to be definable in a 'tenseless' way in terms of the fundamental notions of physics. And... it must not depend on anything *accidental* (physically speaking) that all and only the things that stand in the relation R to me-now are real."

All things that exist now are real $\Rightarrow$ everything, past, present and future is real.

> I conclude that the problem of the reality and the determinateness of future events is now solved. Moreover, it is solved by physics and not by philosophy. We have learned that we live in a four-dimensional and not a three-dimensional world, and that space and time—or, better, space-like separations and time-like separations—are just two aspects of a single four-dimensional continuum with a peculiar metric which sometimes permits distance $(y, x) = 0$ even when $x \neq y$. Indeed, I do not believe that there are any longer any *philosophical* problems about Time; there is only the physical problem of determining the exact physical geometry of the four-dimensional continuum that we inhabit.

References

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