

1. THE A-SERIES AND THE B-SERIES

McTaggart's Thesis: Time is unreal

The A-series: that series of positions which runs from the far past through the present, and then from the present through the near future to the far future

The B-series: that series of positions which runs from earlier to later

set S forms an *A-series* =_{df} the members of S have A-properties or relations

set S forms a *B-series* =_{df} the members of S have B-properties or relations

A-properties: present, past, future, distant past, near past, distant future, near future, 5 years hence, 5 years ago

B-relations: earlier than, later than, simultaneous with, 5 years later than

Time is real iff there is either an A-series or a B-series

2. MCTAGGART'S MAIN ARGUMENT FOR THE UNREALITY OF TIME

- i) If time is real, then there must be an A-series (because there cannot be a B-series without an A-series)
- ii) There is no A-series (because the notion of an A-series is self-contradictory)
- iii) Therefore, time is unreal

3. THE ARGUMENT FROM CHANGE

- i) If nothing changes, then time isn't real
- ii) If there is no A-series, then nothing changes
- iii) Therefore, if time is real, there is an A-series

(a) Time without change

It would, I suppose, be universally admitted that time involves change. In ordinary language, indeed, we say that something can remain unchanged through time. But there could be no time if nothing changed. (p. 68)

- “Cambridge” change?
- No possible evidence for changeless time?
- Time just *is* change?

(b) Change without an A-series

i. The argument

Let us suppose that the distinctions of past, present, and future do not apply to reality... What, on this supposition, could it be that changes? 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? ... 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, since the relations of earlier and later are permanent. N will thus always be in a B series. And as, by our present hypothesis, a B series by itself constitutes time, 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. (pp. 68-69)

If the characteristics of an event change, then there is certainly change. But what characteristics of an event can change? ...

Take any event — the death of Queen Anne, for example — and consider what changes can 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 in the far 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. (p. 69)

The argument from eternity

- i) Unless events change (either by going out of or coming into existence, or by changing their characteristics), change is impossible.
- ii) If there's no A series, events neither go out of nor come into existence, nor do they change their characteristics
- iii) Therefore, if there's no A series, change is impossible.

ii. Russell's response

...past, present, and future do not belong to time *per se*, but only in relation to a knowing subject. An assertion that N is present means that it is simultaneous with that assertion, and assertion that it is past or future means that it is earlier or later than that assertion. Thus it is only past, present, or future in relation to some assertion. (p. 70)

Russell's theory of change: an object x changes iff for some property, F, and some times t_1 and t_2 , x is F at t_1 but x is not F at t_2

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. Both of these qualities are true of it at any time — the time when it is hot and the time when it is cold. 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. (pp. 70-71)

- (5) At place S, the Greenwich meridian is within the U.K.
- (6) At place S', the Greenwich meridian is not within the U.K.

4. THE INCOMPATIBILITY ARGUMENT

- i) If there is an (irreducible) A-series, then pastness, presentness, and futurity are incompatible
- ii) If there is an (irreducible) A-series, then pastness, presentness, and futurity are compatible
- iii) Therefore, there is no (irreducible) A-series

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 characteristics belong to each event. (p. 72).

(Good 1) M is present, M was once future, and M will be past

(Bad 1) M *is* past, present and future

(Good 2) M is present at some moment of present time, future at some moment of past time, and past at some moment of future time

(Bad 2) M is present at some moment of present time, future at some moment of present time, and past at some moment of present time

(Bad 3) every moment of time is present, past, and future

(Good 3) For every moment, M, EITHER i) M is present, M *was* future, and M *will be* past, OR ii) M is past, M *was* future, and M *was* present, OR iii) M is future, M *will be* present, and M *will be* past

(Good 4) . . . i) M is present at the present time, future at some moment of past time, and past at some moment of future time . . .

(Bad 4) . . . i) M is present at the present time, future at a moment of the present, and past at a moment of the present

This, of course, is the same difficulty over again. And so on infinitely. (p. 73)

- Every number is both positive, negative, and zero.
- Every number is both positive relative to a smaller number, negative relative to a greater number, and zero relative to itself.
- Every number is both positive relative to zero, negative relative to zero, and zero relative to zero

The real motive of this analysis, and the real cause of the subsequent infinite regress, seems to me to be a certain assumption which McTaggart tacitly makes. He assumes that what is meant by a sentence with a *temporal copula* must be completely (and more accurately) expressible by a sentence or combination of sentences in which there is no temporal copula, but only *temporal predicates* and non-temporal copulas. And the regress arises because there remains at every stage a copula which, if taken as non-temporal, involves the *non-temporal* possession by a term of certain temporal predicates which could belong to it only *successively*. (Broad, "McTaggart's Arguments against the Reality of Time", p. 78)