

# Review

*Time* by Heather Dyke (Cambridge University Press, 2021).

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The topic of this book is vast. The author Heather Dyke has less than 80 pages to expound on the nature of time. Her starting point is the distinction between the common-sense conception and the scientific conception of time. The former includes two points: a special present moment and the understanding that time is dynamic. The latter eschews both points.

*Time* begins with a brief historical exposition on the competing stances in the metaphysics of time. Dyke contrasts the Eleatic anti-change view with Heraclitean realism about change. McTaggart's challenge to the reality of time is mentioned and his standard distinction between the A-series and the B-series is discussed throughout the work. Dyke introduces two philosophical tendencies that are in tension. On the one hand, there is the third-person conception of the world, which aims at a subject-neutral characterization of reality. On the other hand, there is the first-person conception of the world, which is about a subjective-relative understanding. In virtue of this distinction, Dyke pursues a top-down analysis of time: 'Our aim should be to resolve this tension by achieving an understanding of time as it is independently of us, which also accommodates and explains our experience of, and perspective on, time' (p. 3). Her preferred metaphysics centres on the B-theory.

The folk theory of time privileges the present. Whereas one might think that the place 'here' is dependent upon a specific location, and hence that it is essentially perspectival, the time 'now' is thought to exist independently of location. The absolute 'now' is not all that exists, as in that case we could not experience a changing world. There must be change as to what time is 'now'. There is a continuous transformation between future, present, and past. This aspect is captured by notions like 'Time marches on' and 'Time flows'. Dyke acknowledges that there are other features in the folk conception of time, but takes temporal passage as its central feature.

When considering scientific approaches to time, Dyke starts with physics. It is evident that this science, and what it tells about time, has changed in the course of history. Yet she notes, in reference to Callender (2017), that whether we deal with Aristotelian, Newtonian, relativistic, or quantum physics, the 'now' has no

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special place in any of these. Then, Dyke refers to the well-known result of special relativity, the relativity of simultaneity. This indicates that there is no objective, frame-independent way to distinguish events in the past, present, or future. Dyke does not mention the conventionality of simultaneity, as this is a slightly different notion of simultaneity. Still and all, special relativity does not allow positing a global present moment. And it does not allow positing a dynamic flow, either.

The linguistic viewpoint emphasizes how ‘tensedness’ is built into languages. Dyke refers to a comparative view of languages (Sinha & Gärdenfors, 2014) and claims that although languages vary syntactically and semantically, they are still all tensed. However, the article which she refers to notes that not all languages are tensed, for example Chinese. Sinha and Gärdenfors (2014, p. 175) argue more modestly that ‘all languages seem to have at the very least a repertoire of deictic adverbials indicating gradations of pastness and futurity of events with respect to the time of utterance’. I think this should weaken the idea of universal ‘tensedness’ and the assumption that a contingently tensed language should convey information about temporal reality. This is of course good news for the B-theory. Many have argued that although tensed language does express some irreducible information about the world, it is possible to formulate tensed sentences in terms of tenseless truth conditions and truthmakers. Dyke points out that when it comes to metaphysics, language is not necessarily a good indicator of whether fundamental reality is tensed or not. Focusing too much on linguistic issues does not help us settling a metaphysical debate over the nature of time.

Dyke subscribes to a broadly naturalist and collaborative methodology. Exploring the nature of time requires multiple special sciences. Such collaborative effort could demonstrate what the relation between physical and manifest time is. Understanding human cognition is important as we need to know how intuitions, common-sense beliefs, and temporal experience come about. But the fundamental nature of time cannot be derived from linguistics or human subjective experience.

Loyal to McTaggart’s original distinction, Dyke construes the A-series / B-series divide in terms of competing metaphysical accounts: it is one or the other that provides a correct account of the nature of time. McTaggart thought that the A-series was contradictory, but as there are no contradictions in the world, the A-series does not exist. If there is no A-series, there is no change which is required for time. ‘For him’, Dyke clarifies, ‘time *itself* exhibits change. Times, and the events that occur at them, change from being future to

being present to being past' (p. 14). The B-series incorporates an ordering of events with asymmetric relations. This is not, however, sufficient for change. In the B-series there is nothing that changes, ever. If all events exist *tenselessly*, nothing ever comes to be or passes away. So we are back to Parmenidean monist temporal anti-realism: the world is ultimately an unchanging unity which lacks time.

As a defender of the B-theory, Dyke does not eschew time. She agrees with McTaggart (and Parmenides, I think) in a novel way. According to her argument, published previously (Dyke, 2001), it is impossible that within the A-series the passage of time exists. Let's consider

the supposition that there is an objective distinction between past, present and future, but no passage of time. According to this static, frozen picture of time, every event is fixed in one A-series location. But his picture is false, or at least, is only accurate for a moment. In order to rectify that we have to introduce the other component claim of the reality of tense: temporal passage. Different distributions of pastness, presentness and futurity obtain at different times. But as soon as we acknowledge that, we must recognise that every event occupies every A-series position, so the distinction between past, present and future collapses. (p. 18)

Dyke's criticism of A-theoretic passage applies to a moving spotlight theory as well. Even if A-locations exist *simpliciter*, and there is a constantly moving spotlight of 'now', that 'now' should occupy a specific time at one time and some other time at a different time (p. 30). The problem is that different times should be both inclusive and exclusive.

In addition to presentism – roughly the view that only the present time and presently existing entities are real – Dyke discusses the 'growing block view'. This position, suggested by Broad in 1923 (pp. 66–67),

accepts the reality of the present and the past, but holds that the future is simply nothing at all. Nothings has happened to the present by becoming past except that fresh slices of existence have been added to the total history of the world.

Already in 1949 Gödel criticized a position like this. It posits a unique foliation of spacetime which is responsible for a constant new creation of the 'now'. This putative global hyperplane of simultaneity is at odds with the relativity and conventionality of simultaneity.

In accounting for our experience of time, Dyke is sympathetic to Paul's (2010) illusionist thesis. Paul refers to the 'colour phi phenomenon'. In this scenario we experience a coloured blob moving,

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although what we are presented with are in reality two coloured blobs twinkling. Dyke sides with Callender in that such scenarios do not entirely repudiate the reality of motion. Sometimes, as in the case of apparent motion, we falsely experience what we take to be true motion from motion *qualia*. Yet, the block universe can be thought to include motion. An apple falling from a tree is not an illusion. Perhaps, Dyke presumes,

the B-theorist can argue that we have experiences of motion, change and succession, all of which can be explained using B-theoretic resources, but there is nothing more to our alleged experiences as of passage than these experiences of motion, change and succession. (p. 43)

*Time* impressively surveys key points in systematic metaphysics of time. I am sympathetic to the main message of this book. There are a few points I slightly disagree with.

### *The rate of passage objection*

A recent relevant publication which Dyke does not consider in this context is Newman (2021). The rate of passage can be defined in terms of observers moving along different paths in spacetime. This can be clarified with the following relativistic equation which tells the relation between proper time,  $\tau$ , and the coordinate time,  $t$ :  $c^2 d\tau^2 = c^2 dt^2 - dx^2$ . For a stationary observer  $\tau = t$ . For any other observer, their path through spacetime is curved and shorter in time. We can understand the passage of time in relational terms without invoking problematic units like  $1s/s$  in which the seconds cancel out. A longer or shorter period of time passes for observers in comparison to each other. One does not need units or the assumption that the present moves in any way (see Slavov 2022, pp. 61–62).

### *The fundamentality of the B-series*

I agree, broadly speaking, that the B-theory fits better with science, such as the theory of special relativity. At times Dyke seems to think that the Archimedean view, or God's viewpoint, is that of the B-series. This is questionable as time as a part of spacetime is far from the ultimate description of reality. Special relativity is an approximation of general relativity which in turn is likely an approximation of an even more fundamental theory. Taking the ramifications of

quantum gravity (for example, Rovelli, 1991) on board, Baron, Miller, and Tallant (2021) argue that bottom-down there is not even the C-series (in brief, the temporal in-betweenness relation). This is evidently a challenge to B-theoretic metaphysics that should be addressed.

### *References to tenseless time*

I agree with Dyke that events are not tensed: ‘If events are laid out in a B-series, standing in relations of *earlier than* and *later than* to each other, then there is a sense in which they all exist. They do not all exist *now*, of course, but they nevertheless exist – they exist *tenselessly*’ (p. 15). I think that this, as well as the thesis of tenseless passage (p. 42), is well founded. Take an event like snowfall. Is it intrinsically past, present, or future? Tenses are not properties of events – the snowfall is past, present, or future depending on the contingent spacetime location of an observer and the specification of the perspective, i.e. the observer who utters the tensed statement. The following formulation sounds slightly odd: ‘[...] the correct B-theoretic ontology: every time exists *tenselessly* [...]’ (p. 49). I would think mundane perspectival tensed statements are cognitive and meaningful. So, of course there are times which are tensed; how could we otherwise apply ‘was’, ‘is’, or ‘will be’? That events are tenseless does not imply the unreality or fictitiousness of tenses.

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