

Critical Notice

On Mellor and the Future Direction of Time

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1. Introduction

D.H. Mellor's *Mind, Meaning, and Reality* is a collection of previously published papers (with the exception of Chapter 5, 'Successful Semantics') on a wide range of issues from what it is to know what an experience is like to a defence of the causal theory of the direction of time. The book is grouped into three main topics: Mind and Meaning, What There Is, and Time. Overall, the book is worthy of a careful read as an example of an excellent collection of some of Mellor's most interesting work; furthermore, it represents what he has come to be known for: simple and straightforward prose and carefully constructed arguments. The lack of a discussion addressing the selection of the various choices of articles leaves one curious as to why the specific articles were chosen. Due to the sheer number of topics addressed, a broad overview of the main themes of the book would have been a welcome addition. Given the quality of the content of the book, however, this is an insignificant complaint. As usual, Mellor's admirable commitment to a high level of clarity is on display. Ultimately, at the end of the book, Mellor leaves one with a solid foundation of theories on which to build and develop in many different areas of metaphysics clearly justifying his well-earned influence in the field.

Mellor has been particularly influential in the philosophy of time, and some of his previous work on time comprises the third part of the book. Mellor can be considered one of the patron saints of the B-theory view of time due to his revival of the prominence of the view through his work on tenseless language as well as his extended defence of McTaggart's (1908) argument set out in *Real Time* and its second edition *Real Time II*. Briefly, the philosophy of time is dominated by the debate between A-theorists, who endorse the existence of a privileged present moment NOW, and B-theorists, who include Mellor, who reject the existence of a NOW. The aim of this critical notice is to analyse and build upon Mellor's work in the philosophy of time by using his ideas to add to the merits of B-theory.

Much of Mellor's work on time focuses on rejecting the existence of a privileged present moment and therefore rejecting the movement of this NOW which is identified with the passage of time. Mellor, along with most B-theorists, instead attempts to account for our experience of passage in subjective terms. Proponents of A-theory, on the other hand, accept the existence of temporal passage and charge that B-theorists cannot adequately account for the nature of our temporal experience. I argue, contra Mellor, that B-theorists should not and need not reject the passage of time. I show how the rejection of the NOW does not entail the rejection of passage. Specifically, by endorsing an alternative understanding of the passage of time that is nothing more than ordinary temporal change, the B-theory can avoid one of the A-theorist's biggest complaints about the view. Mellor's views on time, in fact, lay the perfect groundwork for this tenseless version of the passage of time. In what follows, I show how this is the case.

2. *On Time and Passage*

Mellor opens Part III, *Time*, by noting that the advances in the philosophy of time serve as excellent evidence against the supposition that there is no progress in philosophy. Mellor himself has contributed much to this advancement, particularly in showing in *Real Time* that although tense cannot be eliminated from our language, the truth conditions of tensed sentences need only tenseless facts, thus blocking need of an appeal to tensed features of reality. By giving B-theory a decisive victory on this particular issue, *Real Time* had the effect of shifting the debate between A-theory and B-theory from temporal language to the ontology of time, where Mellor believes it should be. Mellor's concerns in Part III demonstrate this shift to the focus on the nature of time. He outlines what he believes are the two biggest developments in the philosophy of time: McTaggart's argument for the unreality of time and Einstein's postulation of the Special Theory of Relativity (STR). As Mellor notes, both of these developments challenge basic assumptions about time; the result is the questioning what most take to be the fundamental belief that time passes.

Time fundamentally has, or seems to have, a transitory aspect. This transitory aspect, labelled the passage of time, is traditionally understood as a sort of movement of the NOW through the temporal dimension. The NOW, which is identified as the objectively privileged present moment, is also traditionally understood to be a common NOW. This means that the NOW is shared by all things that are simultaneous with this privileged present moment; those

events that are NOW for me are NOW for you, as well as NOW for everything else. More formally, the common NOW means that the privileged present moment is a universe-wide plane of absolutely simultaneous events.

To see how the existence of the passage of time is challenged by these developments, a brief detour outlining the elements of passage is necessary. First and most crucially, the passage of time must involve temporal change in the form of change over time. The adequate characterization of this change, however, is in dispute. A-theorists demand that temporal change must be genuine change, where genuine change is understood as the difference in the sum total of reality at different times. This is traditionally achieved by endorsing the change in what moment is present, from one time to another. Thus, for example, t_1 is NOW, and then t_2 is NOW as t_1 is past, and then t_3 is NOW as t_1 and t_2 are past. Second, the transitory nature of our temporal experience gives reason to think that time is different from space. I can stand still and halt my travel through space, but time waits for no one. Time passes while space does not; in this way, time's passage plays a role in distinguishing time from space. This needs an ontological basis and the movement of the NOW has traditionally provided this. On the traditional view, therefore, time is different from space because time, rather than space, is the dimension through which the NOW moves. Third, there is agreement that time possesses a direction that space does not. Passage involves change in a certain direction. As Mellor notes, 'The obvious account derives time's direction from its flow, i.e. from everything moving from the future to the past via the present' (207). This is the account of the traditional understanding of time; time's direction is given by the direction of the movement of the NOW. Last, the passage of time must provide for our experience of the transience of time. Events seem to approach from the future, become vivid and fresh in the present and then fade into the past. On the traditional account of time, this experience that what is vivid and fresh changes is due precisely to the fact that this is exactly what happens. In this way, there are four elements involved in articulating a theory of passage: temporal change, the differentiation of space and time, the direction of time, and an explanation of the experience of our phenomenal experience of passage. It is clear that the traditional understanding of passage as the movement of the NOW nicely captures these four necessary elements of the passage of time.

Mellor points out that debates in the philosophy of time have been dominated by ideas set out in McTaggart's (1908) 'The Unreality of Time'. Specifically, McTaggart proposes two different ways to temporally order times, by pastness, presentness, or futurity, labelled the A-series, or by the earlier than relation, labelled the B-series. McTaggart also shows that

because temporal change requires that a time possess all three tensed properties, and a time's possession of all three tensed properties is contradictory, there can be no temporal change. With no temporal change, there can be no passage of time. So much the worse for A-theory. But presentists, usually identified as a subset of A-theorists, claim to avoid McTaggart's argument by denying that they need endorse any temporal properties, and thus avoid this contradiction of temporal change. The present moment, they claim, is not identified by the moment which possesses the property of presentness. Instead, the NOW is identified as the only moment that exists. The change in what exists, therefore, is the basis for the passage of time.

3. The Special Theory of Relativity

Is passage then saved? Mellor does not believe so; he largely focuses on the problems that result from the acceptance of STR. He gives an overview of the well-known consequence that STR removes the possibility of a common present, which poses a problem for those theories that identify what exists with the present (presentism) or with the past and the present (the growing block theory). The constancy of the speed of light, one of the postulations of STR, implies the relativity of simultaneity. Thus, two events that are simultaneous in one frame of reference are not simultaneous in another, and either way of ordering these events is equally legitimate. This poses a problem for A-theorist because the set of simultaneous events identified as the NOW and thus what exists is different from one frame of reference to another. There is not, it seems, a common NOW.

In order to avoid relativizing the concept of existence, the A-theorist must find a way to preserve absolute simultaneity in the form of a privileged foliation of spacetime. Mellor lays out the two main ways to preserve a privileged foliation: alter or augment STR. One way of altering STR is to accept a Lorentzian style interpretation.¹ For example, in Tooley's (1997) Neo-Lorentzian interpretation, there is privileged frame of reference – the one which is at rest relative to absolute space. According to orthodox STR, the speed of light is constant in *all* frames of reference; the strategy in the Neo-Lorentzian interpretation is to produce a modified theory based upon STR by giving up the constancy of the speed of light and replacing it with the principle that the speed of light is the same in all directions relative to

¹ Based on Lorentz 1916.

absolute space. This means that there can be an absolute notion of simultaneity, which is defined as simultaneity relative to the privileged frames of reference that are at rest relative to absolute space.

Mellor rejects this strategy too quickly in one sentence, stating that the alteration of STR needs better grounds. There are, however, grounds for altering STR that warrant consideration. Justification of this alteration include allowing the preservation of passage, which some take to be a basic and ineliminable component of our phenomenal experience, and that wave collapse theories of quantum mechanics seem to require absolute simultaneity. Overriding these justifications are better reasons to reject the strategy over and above the charge of its lacking proper justification. One such reason is that, due to the relativistic effects of time dilation and length contraction, the absolute frame of reference is empirically undetectable – an objectionable result. But a further reason to reject this type of strategy is that a Neo-Lorentzian theory posits more structure to spacetime (in the form of planes of absolute simultaneity) than needed to explain the symmetries of the dynamical laws, i.e. the Lorentzian invariance of dynamical laws. Thus, the symmetry of the dynamical laws in the case of the Neo-Lorentzian is not reflected in the symmetry of the spacetime structure.² Balashov and Janssen (2003: 341) explain this problem in the following way: ‘In the Neo-Lorentzian interpretation it is, in the final analysis, an unexplained coincidence that the laws effectively governing different sorts of matter all share the property of Lorentz invariance.’ For the proponent of the orthodox version of STR, however, the symmetry of the dynamical laws of all matter is traced back to a common source: the symmetry of the spacetime structure. Thus, the Lorentz invariance of the dynamical laws in the Neo-Lorentzian interpretation is a brute fact, and it does not match up with the asymmetric spacetime theory it posits. The orthodox interpretation, on the other hand, can explain the symmetry of the dynamical laws by pointing to the spacetime symmetry posited by its theory, which is an overriding reason to adopt orthodox STR.

The second strategy Mellor considers to save A-theory is to augment STR by accepting the Minkowski spacetime of special relativity in which no frame of reference is privileged by the intrinsic structure, but adding a foliation that is privileged by the contents rather than the intrinsic structure. This way of adding a privileged foliation to Minkowski spacetime does not necessarily violate STR. For example, Zimmerman (2011: 215) holds that A-theory ‘can even add a causally-relevant foliation without violating [STR], so long as the laws that make

² Pointed out by Craig (2000: 119)

use of the foliation appeal not to intrinsic structure but to a foliation privileged by the metrical contents of the manifold'. In this way, the dynamics of the universe could pick out a preferred frame of reference, even though the background spacetime is Minkowskian. The distribution of mass could determine an inertial frame, and correspondingly, foliation of absolute simultaneity. Thus, there are dynamical facts (about the material contents), apart from concerns about the metric of spacetime, that privilege one foliation of the manifold.

This appeal to the dynamics of the universe to pick out the preferred frame of reference is also rightly rejected by Mellor. First, it is not clear that one could adequately justify that the frame that is picked out is in fact the very same frame as the privileged present. Furthermore, Mellor holds that even if one could give a justification for privileging one frame over another as the present, this strategy objectionably reverses the order of dependence between what exists and what is present. More specifically, as Mellor claims, what exists should be dependent on what is present. But identifying what is present based on the contents of spacetime makes the present dependent on what exists. Mellor believes that as a result of this reversal, the strategy should be rejected. There can be no common NOW as required by the traditional understanding of the passage of time; STR then seems to rule out the possibility of passage.

4. Experiencing Passage

But the world seems to be such that time really does pass. Why then do we experience the passage of time if it does not exist? Mellor's theory is that features of our temporal beliefs explain our experience of the passage of time. More specifically, Mellor proposes that we have what he calls 'A-beliefs' which are tensed beliefs such as the belief that it is now noon. These A-beliefs are caused by events in the world, and events that happen at different times cause my having different A-beliefs at different times. This change in my A-beliefs is the process by which I seem to experience what is referred to as the passage of time even without the existence of corresponding tensed facts about the world. Thus, for example, the change in my A-belief from it is now noon to the A-belief that it is now 12:01 as a result in my looking at the clock at noon and again at 12:01 produces the experience that I am indeed moving along in the present. As Mellor states, 'These changes, when conscious, are what we interpret, rightly or wrongly, as the flow or passage of time' (177).

Most B-theorists adopt a strategy in the same spirit as Mellor, and accept that the passage of time is merely an illusion we experience that should be explained away. I argue, however, that the passage of time should not be explained away as an illusion. The overarching reason to defend the existence of passage – and deny that it is an illusion – is that our basic temporal experience is one that is deeply rooted, pervasive, and common. The fact of our experience of passage as deeply rooted – it is difficult and perhaps impossible to imagine being a part of a world that lacks passage – may not be a convincing reason, on its own, to preserve the existence of passage. One might object that other illusions in the world are also deeply rooted, pervasive, and common, such as our experience of water and air as continuous fluids. In these cases, however, our best science reveals illusions in a way that is entirely explicable within science. For example, science explains our illusions of water and air as continuous fluids because it reveals that water and air are made up of particles that are undetectable to the naked eye. There is no comparable situation in the case of passage. Our experience of passage cannot be explained away by our best scientific theories of space and time. If the best theories of space and time cannot explain away the experience of time, then we should preserve it.³

5. *Tenseless Passage*

It seems we must make a choice: reject the relativistic universe or accept passage as an illusion. Both options have significant drawbacks which count against adopting either one. I hold that we do not need to make this choice, and show instead how time *can* pass in this B-theory. There is a way to reconcile both STR and passage, and Mellor's views on time provide the perfect foundation for an account of this tenseless passage.

The starting point is to reject the aspects of passage that face significant metaphysical and scientific objections: the existence of the change in the NOW and the existence of a simultaneous plane of NOW. But the key idea of the tenseless account of passage is that, instead of understanding passage as the change in what moment is the tensed NOW, passage should be understood as ordinary change. That is, there is no special kind of change that produces passage. Mozerky (2013: 181), for example, endorses precisely this strategy. He

³ Norton (2010) specifically makes this type of argument.

states that ‘the key point for the B-theorist is that there is nothing to temporal passage over and above ordinary occurrences of change’.

Mellor defines change as the ‘temporal variation in the properties of things’ (169). For variation in the properties of things to be temporal variation, events must be ordered by the temporal relation, i.e., from earlier to later. Mellor holds that this order from earlier to later is given by the order of causation; that is, according to Mellor, temporal order is to be derived from causal order. To establish this, Mellor appeals to the role that causation plays in perception. Specifically, I perceive event e to precede another event f only when my perception of e affects my perception of f . In other words, to see that e precedes f requires that my perceiving f includes something similar to a memory of my perceiving e . Our perception of the temporal order of two perceptions is therefore set by the causal order of these perceptions.

Mellor supports his account pointing out its explanatory virtues. The causal basis of the temporal ordering can explain why the temporal order of our perceptions of two events matches our perception of the temporal order of the two events. Mellor expands his account of the causal order setting the temporal order to things out in the world by appealing to other explanatory virtues of the account; Mellor states that ‘what stops our senses showing us the future is the very fact that stops us from affecting the past: namely, the fact that causes precede their effects, a fact that identifying time order with causal order immediately explains’ (211).

Thus, events can be temporally ordered by way of the causal order. This temporal ordering then allows a construction of the temporal variation of change. This ordering, however, can only be a partial ordering. One of the consequences of STR is that there is no global ordering of events; there cannot be a single linear series of events. The loss of absolute simultaneity in STR makes this so – but events can always be ordered with respect to a particular frame of reference, which results in a partial ordering of events. This means that the passage of time must be a local rather than a global phenomenon.⁴

Callender (2000: S592), in particular, objects to understanding an objective account of the transience of time in terms of this partial ordering. He declares that with the rejection of the common NOW, the B-theorist can offer no account of passage ‘*remotely similar to that found among advocates of the tensed view of time*’ (emphasis in original). In fact, any theory of

⁴ Dieks (2006), Dorato (2006), and Savitt (2009) all propose similar versions of what they call temporal becoming in which the transience of time is the mere partial ordering of events.

passage that is based on this partial ordering is so far removed from the traditional understanding of the passage of time that it is, in Callender's (2000: S592) words, 'philosophically empty'.

6. *The Defence*

I hold that a theory of passage based on this ordering, in fact, is far from philosophically empty. The causal ordering of temporal events is instead the key to the satisfaction of all of the necessary elements of the passage of time. As such, I argue that this tenseless account can be a suitable replacement to the traditional understanding of time. The plausibility of this view in satisfying the elements of time comes largely from the work of Mellor on time.

First, temporal change is at the heart of any account of the passage of time. The traditional account of temporal change, as proposed by A-theory, is the change in what is present. Mellor and the B-theorists, however, hold that they can give their own account of temporal change without the NOW; temporal change is temporal variation by way of having incompatible properties at different times by some thing. A-theorists object that the standard B-theory account of temporal change is nothing more than mere variation and therefore does not suffice for an adequate account of temporal change. McTaggart's (1908) famous example is of a poker that is hot at one end and cool at the other end. The different spatial parts of the poker have incompatible properties; one end is hot and the other is cool. But intuitively we do not conceive of this mere variation of properties over the spatial extent of the poker to be sufficient to claim that the poker *changes* from hot to cool. In other words, mere variation over space does not suffice for change. Compare mere variation in the spatial dimension to mere variation in the temporal dimension. Consider the poker as having the properties of being hot at t_1 and cool at t_2 . A-theorists hold that this is mere variation over the temporal dimension. An object's possession of different properties at different points in space is insufficient for change; analogously, an object possessing different properties at different point in time also fails to be sufficient for change.

The response to this problem is that spatial variation and temporal variation are not analogous. Mellor agrees with this sentiment. The key to exposing the failed analogy is in the basis of the differentiation of space and time. This is also the second element of the passage of time. For an account of time to be adequate, there must be a way in which the dimension of time is importantly different from the dimension of space. For the A-theorist, time is

different from space because time is the dimension through which the privileged present NOW changes. For Mellor, the obvious answer to this differentiation is causation. He states that, ‘It is after all a striking fact that most causes and effects are separated in time as they need not be in space’ (178).

In this way, temporal and spatial variation is therefore not analogous because time is distinguished from space by way of causation. This, as opposed to the passage of time, differentiates space from time. And due to this differentiation, time qualifies as the dimension of change. Mellor bolsters this account by pointing out that causation can explain why the temporal dimension is the dimension of change because it supplies the necessary condition that there is a persisting thing that changes. Causation is also the way by which this persisting thing changes properties over time, thus lending further support to Mellor’s view. Mellor concludes that

This is why spatial variation in a thing’s properties, for example from the hot to the cold end of a poker, is never change. Because causation cannot link facts across spacelike intervals, no poker can have any property at one end just because it has the same property at the other end at the same time (180).

Through time’s differentiation from space as a result of the existence of causation in the temporal dimension, there can be genuine change in B-theory that can serve as temporal change required for the passage of time.

Next, time is oriented in a way that space is not, and any account of passage must be able to account for the existence of this arrow of time to satisfy the third element of passage. Mellor declares that the directedness of time must be (1) substantive to rule out spatial counterparts, (2) intrinsic to distinguish it from directions in space, and (3) local due to its applying to all spacetime points. The traditional A-theory account gives time its direction by way of the direction of the flow of time from the future to the present to the past. According to Mellor, A-theorists who adopt this account, however, must appeal to B-theory. Mellor states, ‘A-series locations are distinguishable only by how much earlier or later they are than the present: yesterday is one day earlier than today, for example, and tomorrow is one day later than it’ (207). He concludes that A-theorists are forced to appeal to B-theory in order to give time’s direction from earlier to later.

Mellor quickly canvasses the two most popular B-theory proposals for the direction of time: the expansion of the universe and the thermodynamic arrow. He dismisses both of these

options because they both fail to give time a local direction. On Mellor's view, causation is the key to the direction of time in B-theory. Specifically, Mellor endorses a probabilistic theory of causation in which a cause, C, brings about an effect, E, when the chance of E given C is greater than the chance of E given not-C. He stipulates that the probabilities are not frequencies because frequencies do not apply to single events and therefore will not qualify as local. As a result, the probabilities in this account of causation must be single case chances. Mellor does not elaborate in the book about what these single case chances might look like, but he gives an in-depth study of his account of causation in *The Facts of Causation*. Nonetheless, a causal theory of this type will satisfy Mellor's desiderata of an account of the direction of time, and the causal account in turn satisfies the third element of the passage of time.

It is undeniable that we experience the future as yet to be but getting closer, the present as vivid and real, and the past as fading away. This coming and going typifies our temporal experience. Mellor holds that the experience of the changes in my A-beliefs can explain our experience of the passage of time. But my experience of the changes in my A-beliefs requires that memories play a central role. What I mean is this: to recognize that I earlier possessed a different A-belief, I must have a memory of possessing that A-belief. If I have no memory, I cannot experience changes in my A-beliefs. Mellor does not mention the role of memory in this book, but in *Real Time* he declares that our experience of the direction of time is the accumulation of memories (Mellor 1981, 10). If we add to this the causal process of the formation of memories, we can construct an account of our experience of time based on the change in the world. More specifically, I experience a change in the things around me by way of the memory of how things were. In general, the farther away changes are temporally, the less vivid the memories of these changes will be. My memories of the temporally closest changes are the most vivid and continue to be replaced, moment by moment, as a result of being caused to possess new experiences and therefore forming new memories. As old memories get crowded out and new ones form, the old memories fade away. Although this is the briefest and barest overview, I hold that it lends support to the fact that the ordinary changes of the world give rise to our experience of transience, which satisfies the last element of the passage of time.

7. Conclusion

In a B-theory world, all of the elements required for the existence of the passage of time are satisfied: temporal change, the differentiation of space and time, the arrow of time, and an explanation of the transience of our temporal experience. I exploit Mellor's views on time to show how this is the case. This discussion, however, has offered merely an overview of an alternative account of passage in B-theory. There will be seeming inadequacies, including the objection that passage must include some kind of ontological shift in which the sum total of reality changes. I believe many objections can be sidestepped once we break free of the hold of the assumption that the only kind of passage is tensed passage.

Much of Mellor's other work in this collection is worthy of close examination although I have not touched upon it here. Particularly intriguing, especially with the rapidly increasing interest in metametaphysics, is Mellor's Introduction which includes a brief excursion into metaphilosophy in order to deter more work in metaphilosophy. In addition, Part I: Mind and Meaning includes a previously unpublished chapter, 'Successful Semantics' which is a defence of the view that the content of a belief is identified with the circumstances that must obtain for the desires associated with the belief to be successfully satisfied. Last, Part II: What There Is contains a sampling of Mellor's work on some of the more popular issues in current metaphysics outside of time, including work on truthmakers, dispositions, and mereology. The wide collection of topics is evidence of Mellor's impressive range.

Finally, I admittedly have not been very critical of many of Mellor's arguments concerning time. And indeed, a critique is not my aim. Primarily I want to demonstrate that Mellor's classic work continues to lead to new fruitful developments. It cannot be denied that much of Mellor's work, particularly in the philosophy of time, has provided a foundation to continue the advancement of philosophy. This collection is a testament to that fact.

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References

- Balashov, Y. and M. Janssen. 2003. Critical Notice: Presentism and Relativity. *British Journal for the Philosophy of Science* 54: 327–46.

- Callender, C. 2000. Shedding Light on Time. *Proceedings of the 1998 Biennial Meeting of the Philosophy of Science Association* 67: S587–99.
- Craig, W.L. 2000. *The Tensed Theory of Time*. Dordrecht: Kluwer.
- Dieks, D. 2006. Becoming, Relativity and Locality. *The Ontology of Spacetime, Volume 1*, ed. D. Dieks, 157–77. Amsterdam: Elsevier Science.
- Dorato, M. 2006. Absolute Becoming, Relational Becoming and the Arrow of Time: Some Non-conventional Remarks on the Relationship Between Physics and Metaphysics. *Studies in History and Philosophy of Modern Physics* 37: 559–76.
- Lorentz, H. 1916. *The Theory of Electrons*. Leiden: Brill.
- McTaggart, J.M.E. 1908. The Unreality of Time. *Mind* 17: 456–74.
- Mellor, D.H. 1981. *Real Time*. Cambridge: Cambridge University Press.
- Mellor, D.H. 1995. *The Facts of Causation*. London: Routledge.
- Mellor, D.H. 1998. *Real Time II*. London: Routledge.
- Mellor, D.H. 2013. *Mind, Meaning, and Reality: Essays in Philosophy*. Oxford: Oxford University Press.
- Norton, J. 2010. Time Really Passes. *Humana Mente* 13: 23–34.
- Savitt, S. 2009. The Transient NOWS. *Quantum Reality, Relativistic Causality, and Closing the Epistemic Circle*, eds. W. Myrvold and J. Christian, 339–52. Amsterdam: Springer.
- Zimmerman, D. 2011. Presentism and the Space-time Manifold. *The Oxford Handbook of Philosophy of Time*, ed. C. Callender, 163–244. Oxford: Oxford University Press.