

# On metaphysical explanations of psychological asymmetries

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## Abstract:

What is the relation between metaphysical and psychological insights into temporal asymmetries? This chapter examines that question on the basis of a case study concerning the temporal Doppler effect (Caruso, Van Boven, Chin, & Ward, 2013). Caruso et al. propose that future events seem closer than past ones at an equal objective temporal distance because we experience subjective movement through time. I explore ways of interpreting their discussion in the light of the metaphysical debate between A- and B-theorists over whether time really passes and whether the future is genuinely ‘open’ while the past is ‘fixed’. I argue for the following claims: (1) Caruso et al.’s talk of a subjective movement through time seems best interpreted as concerning our longer term cognitive relationship to time; (2) both A- and B-theoretic interpretations of their discussion are viable as interpretations; (3) if combined with Priorian arguments for the A-theory, it takes some work to make sure the A-theoretic interpretation respects Van Boven and Caruso’s constraint that the objective temporal distance cannot directly influence psychological outcomes without influencing psychological intermediaries; and (4) a third, less metaphysically loaded interpretation may be preferable to both the A- and the B-theoretic ones.

## 1 Introduction

This chapter reflects on the relation between psychological and metaphysical insights into differences between the past and the future. The topic of temporal asymmetries particularly lends itself to this kind of cross-disciplinary reflection. After all, differences between the past and the future tend to be of interest to both disciplines, and their respective claims often intersect in interesting ways. At the same time, it is not always clear how to think about the points of contact. In particular, it is not clear how to think about metaphysical explanations of psychological asymmetries.

The strategy is to conduct a case study concerning one representative psychological finding in this area, namely the phenomenon Caruso et al. have dubbed ‘the temporal Doppler effect’ (Caruso et al., 2013). The aim is to explore different ways in which this finding may relate to work on temporal asymmetries in the metaphysics of time. Specifically, my guiding question is how best to interpret their discussion in the light of the metaphysical debate over whether time really passes and over whether the future is genuinely ‘open’ and the past is ‘fixed’. Different interpretations are considered.

Note that it is not my main aim to adjudicate between these by showing that one of the resulting positions is in itself more philosophically tenable than the others. To an extent, the interpretative question is intertwined with the question of which of these positions is overall the most philosophically tenable. But a full consideration of the latter issue would

take me too far afield and away from the topic of how temporal metaphysics and psychology relate to each other.

The chapter proceeds as follows. Section two presents Caruso et al.'s discussion of the temporal Doppler effect. Section three introduces the metaphysical debate between A- and B-theorists and examines its links to the temporal Doppler effect. Sections four and five develop Caruso et al.'s explanation in A- and B-theoretic ways, respectively. Finally, section six explores some alternative ways of thinking about the relation between metaphysics and psychological asymmetries.

## 2 The temporal Doppler effect

Psychological research has uncovered many ways in which the past and the future differentially impact our mental lives. Following Hoerl (see the Introduction to this volume), we can make a broad distinction between psychological process asymmetries and attitude asymmetries.

Psychological process asymmetries would include the affect asymmetry (contemplating future events produces greater affect than contemplating past events), the distance asymmetry (future events seem closer in time than past events), the detail asymmetry (representations of future events contain less detail than representations of past events), and the alternatives asymmetry (people generate fewer counterfactual alternatives when thinking about past events than when thinking about future events). These are all instances in which our thinking about the past and the future involve different psychological processes or else the same psychological processes to different degrees. They are also all descriptive, non-normative asymmetries.

The category of attitude asymmetries would be somewhat broader, including the emotional asymmetry (people tend to prefer past pain and future pleasure to future pain and past pleasure), the deliberative asymmetry (people deliberate about the past but not the future), the atonement asymmetry (people think it is possible to make up for past wrongdoing but not for future wrongdoing), and the value asymmetry (people require and offer more compensation for future events compared with past events).

Now focus on one particular psychological process asymmetry, namely the distance asymmetry. Caruso et al. found that subjects report that future times seem psychologically closer than past times, even when the future and past times in question are at an equal objective temporal distance from the subjects ((Caruso et al., 2013); see also (Van Boven, Kane, McGraw, & Dale, 2010), (Van Boven & Caruso, 2015)). For example, in one of their studies, they found that subjects perceive Valentine's day to be closer to them one week before it happens than one week after it has happened. Participants take a survey either before or after the event, in which they are asked to report how close the event feels by completing the phrase 'It feels like Valentine's day is...', where the blanks are to be filled in based on a scale ranging from -3 (an extremely short time from now) to 3 (an extremely long time from now). In spite of the equal objective temporal distance of Valentine's day on the day of the survey, the event was felt to be closer when it was in the future than when it was in the past.

Caruso et al. propose an explanation of the distance asymmetry that makes use of the following facts. People take themselves to move from the past towards the future or they take events to approach them from the future and to then recede into the past. In this sense,

people's experience of time is analogous to their experience of movement through space. They also point to existing evidence that we tend to represent and reason about abstract domains such as time partly through the lens of conceptual resources from more concrete domains such as space. According to the weak metaphorical structuring view, while spatial schemas are not necessary for thinking about time, people spontaneously make use of spatial schemas when thinking about time (Boroditsky, 2000). This link is asymmetric, in that temporal schemas are not used to think about space. Relatedly, engaging in activities such as standing in a moving lunch line or taking a train journey, alters the way one thinks about time (Boroditsky & Ramscar, 2002).

Caruso et al. connect these findings to their own by proposing the following explanatory link. It is because future events are associated with decreasing distance and past events with increasing distance that the future feels closer than the past. They point out that there are parallel explanatory links in the case of space. Subjects watching an object move across their visual field subsequently remember the object as having moved further than it actually did (Freyd & Finke, 1984). Similarly, people perceive objects as closer than they actually are when they are moving towards the objects (Lewin, 1935). The idea is that a similar explanatory link holds here: the experience of movement through time makes future events feel closer than they actually are and past ones more distant. They dub this 'the temporal Doppler effect'.

Finally, they suggest that the distance asymmetry can in turn help explain some attitude asymmetries, such as the value asymmetry. It is partly because the future feels closer than the past that we tend to place higher value on the future than on the past.

### 3 The metaphysics of temporal passage

Temporal metaphysicians are interested in the nature of time—particularly in the question of whether time passes or flows or has a dynamic aspect. By this they mean something quite specific: is one time metaphysically privileged in some way, and does this metaphysical privilege get transferred from time to time? A-theorists answer in the affirmative, and different A-theories offer different ways of thinking about the metaphysical privilege involved. Some say the privilege consists in being the only time that exists (presentism). On presentism, only the present exists, but which time that is changes as time passes. On the growing block theory, the metaphysical privilege consists in being the latest time that exists. The past and the present exist, but the future does not. As time passes, new times come into existence. Yet another version of the A-theory, the moving spotlight view, says that all times exist (eternalism) but that one time is metaphysically privileged because it is present in an absolute sense. Some A-theories, most notably the growing block theory, emphasize a sharp metaphysical asymmetry between the 'open' future and the 'fixed' past.

The A-theory (also known as the 'tensed' theory) is opposed by the B-theory (or 'tenseless' theory). B-theorists take all times to exist, but unlike moving spotlight theorists, they deny that any one time is metaphysically privileged in any way. Each time is present, but only relative to itself, not in an absolute sense. Compare this with space. A natural view of space is that all spatial locations exist, and that none is 'here' in an absolute sense, even though each one is 'here' relative to itself. The B-theory says the same about time. Thus, according to B-theorists, time is in one respect much like space: what is past, present, or future is just a matter of temporal perspective, just like what is here or over there is a matter

of spatial perspective. There are, fundamentally, no tensed facts that change over time, like the fact that the year 1900 is in the past. At the most fundamental level, there are only tenseless facts about which events happen when and how they are temporally related. A complete description of temporal reality need not specify which time is now.

Why might one see a link between the temporal Doppler effect and the metaphysics of time? Recall Caruso et al.'s explanans, namely our experience of movement through time. This looks like an experience that can also be characterized in metaphysical terms, as an experience with A-theoretic content. Suppose one adopts the philosophical convention that the phrase 'experience as of x' leaves open whether x is real and thus whether the experience is veridical or not. Then the explanans can be re-described as an experience as of movement through time, or an experience as of (A-theoretic) temporal passage.<sup>1</sup>

At this point a further refinement is needed. *Prima facie*, there seem to be two things that could be meant by 'temporal experience'. The distinction is well illustrated by the following quotation from Le Poidevin:

We are indirectly aware of the passage of time when we reflect on our memories, which present the world as it was, and so a contrast with how things are now. But much more immediate than this is seeing the second hand move around the clock, or hearing a succession of notes in a piece of music, or feeling a raindrop run down your neck. There is nothing inferential, it seems, about the perception of change and motion: it is simply given in experience. (Le Poidevin, 2007, p. 87)

(Le Poidevin finds this distinction in (Broad, 1923, p. 351).) The latter phenomenon is a direct, perceptual awareness of time or of temporal features of the world that unfolds on short time scales. Call this 'temporal experience'. This contrasts with a more indirect temporal awareness that unfolds over longer periods. Examples of this would include noticing that the hour hand has moved around the clock, reflecting on how a city has changed over the years, or feeling as if time passes more quickly now that one is older. Call this 'temporal EXPERIENCE'. Admittedly, temporal EXPERIENCE is quite varied, and it may not be easy to say more precisely what distinguishes it from (perceptual) temporal experience, or how the two categories are related. But the distinction is useful nonetheless.

How should Caruso et al.'s explanans be classified with respect to this distinction? Are they concerned with temporal experience or temporal EXPERIENCE? Of course, the two are not causally isolated from one another. In particular, how we directly perceive temporal features on short time scales is likely to influence how we relate to time on longer time scales, and perhaps vice versa. But it is worth noting that for Caruso et al., the explanans has a lot to do with the way we reason about time. As mentioned, they repeatedly point towards evidence that we reason about time partly through the lens of conceptual resources from the spatial domain. This suggests that temporal EXPERIENCE, and in particular our cognitive relationship to time over longer time scales, is at least a large part of what is at issue.

One immediate consequence of this is that Caruso et al. cannot be straightforwardly interpreted as taking sides in the debate over whether we have (perceptual) temporal experiences as of time passing (so that, for example, we *simply see* time passing). Whether or not we do, what seems to matter most for their purposes is that we have temporal EXPERIENCES as of time passing, where this involves thinking of ourselves as undergoing movement through time.

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<sup>1</sup> From here on, 'temporal passage' will refer to A-theoretic temporal passage.

We now encounter some further avenues of exploration. One could embed Caruso et al.'s explanation of the distance asymmetry within either an A-theoretic or a B-theoretic metaphysical view. Within an A-theoretic view, the full explanation would be as follows. Time really passes; we are aware of this in temporal EXPERIENCE (and probably also in temporal experience); and it is this awareness that makes us feel that the future is closer than the past. The passage of time stands at the beginning of this explanatory chain. Within a B-theoretic view, the full explanation would be as follows. Even though time does not pass in reality, there are other, B-theoretic features of time and features of ourselves that conspire to make us think that it does and thereby colour our temporal EXPERIENCE (and perhaps some mechanism also produces experiences as of passage); this in turn makes us feel that the future is closer than the past.

The reader may already worry that either choice would saddle Caruso et al. with commitments orthogonal to their own concerns. I ask them to put such concerns to one side until section six. There I re-visit the question of how best to think of the project of situating a psychological explanation like this with respect to the philosophy of time. In the following two sections, my goal will be to examine the A- and the B-theoretic interpretations of Caruso et al., respectively. The resulting positions have interestingly different flavours.

## 4 The temporal Doppler effect with temporal passage...

In a way, it takes very little to interpret Caruso et al.'s explanation A-theoretically. We experience movement through time, and this makes the future feel closer than the past. We experience this movement because we undergo it.

There are various instances in which the authors speak of the passing of time, where this is taken to involve movement of the future into the present and then the past. The future is psychologically closer than the past because the future typically approaches the present, whereas the past recedes from the present. [...] If the spatially grounded arrow of time were reversed – if people were made to approach the past and recede from the future – the temporal Doppler effect might be diminished, if not reversed. (Caruso et al., 2013, p. 532)

Van Boven and Caruso repeatedly speak of people 'moving through time' or 'approaching events in time' (Van Boven & Caruso, 2015, pp. 596/597). When discussing the distance between the self and psychologically relevant objects, they point to the fact that people's distance to the future is 'continually decreasing' while their distance to the past is 'continually increasing' (Van Boven & Caruso, 2015, p. 597). Similarly, Caruso elsewhere states that 'future events necessarily approach in time and past ones recede in time' (Caruso, 2010, p. 2).

Of course, we all speak that way: this is just the point that these spatial metaphors are ubiquitous in many languages including English. But for present purposes, what matters is that these statements, taken at face value, look like descriptions of an A-theoretic view. They need no re-phrasing to be interpreted that way.

Consider also Van Boven's and Caruso's description of the asymmetries in time that contribute to the prioritization of prospection over retrospection in mental time travel (Van Boven & Caruso, 2015, p. 601). They point to (a) the fact that time moves in a particular direction towards the future, (b) the fact that people typically know more about the past than the future, and (c) the fact that people can affect the future but not the past. Here, (a) is again straightforwardly interpreted A-theoretically, while (b) and (c) could easily be given A-

theoretic foundations.<sup>2</sup> Suppose for example that the future does not exist, and that the movement we experience is a continual increase in the sum total of existence, as on the growing block view. An A-theorist might argue that this helps explain why we typically know more about the past, which after all exists, just like the present. Similarly, an A-theorist might think this view helps explain why we can affect the future but not the past. The past is already in existence and is thereby settled. (Recall that the question of how convincing these explanations are is not my main focus here, though I touch on the matter briefly in section five.)

As discussed in the previous section, on this A-theoretic interpretation of Caruso et al.'s explanation of the distance asymmetry, the explanation would begin with temporal passage. Time really passes; we are aware of this in temporal EXPERIENCE (and probably also temporal experience); and it is this awareness that makes us feel that the future is closer than the past. This in turn helps explain various attitude asymmetries.

It is illuminating to situate this interpretation of the temporal Doppler effect with Prior's 'Thank goodness that's over' argument for the A-theory. Again my main focus is not on whether the argument succeeds (though some of the below is relevant to that question too), but rather on how this style of argument connects up with the A-theoretic interpretation of Caruso et al.'s position. I will argue that while the two are not incompatible, there are potential points of tension that need to be negotiated carefully.

To begin with, consider a very plausible constraint that Caruso et al. formulate: 'objective [temporal] distance cannot directly influence psychological and behavioral outcomes without influencing mediating psychological processes' (Van Boven & Caruso, 2015, p. 597).<sup>3</sup> The idea is that objective temporal distance impacts one's subjective experiences, such as emotional arousal, attention, fluency, and motivation, as well as one's felt psychological distance to that event. These subjective experiences in turn influence psychological outcomes, such as attitudes, decisions and behaviours (and in addition, the experiences also influence each other). (I take this to be a more detailed version of the explanation given in (Caruso et al., 2013).)

In the context of the A-theoretic interpretation, we can understand this as the constraint that a tensed fact, such as the fact that a certain event is past, cannot directly influence attitudes, including emotions such as relief. Instead, the influence will be mediated by psychological processes, such as a tensed belief.

With this in mind, recall Prior's 'Thank goodness' challenge and the associated cluster of questions about how B-theorists can make sense of tensed emotions, which are emotions directed towards the pastness, presentness or futurity of events. Mellor's and MacBeath's combined response to the challenge has been widely adopted by B-theorists, at least in the sense that many take it to be correct as far as it goes.

In brief, that response is as follows. The 'new' B-theory (the kind that is most often defended today) accepts that there are irreducibly tensed beliefs and contents.<sup>4</sup> But these tensed beliefs have tenseless truthmakers. Moreover, a tensed emotion such as relief is directed at what one believes to be the case. One is relieved *about* something. What one is

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<sup>2</sup> Admittedly, what they say here is that time *seems to* move in a particular direction toward the future. But this is mentioned in the context of listing various temporal asymmetries, i.e. ways in which the past and future actually differ.

<sup>3</sup> The constraint is actually formulated more generally so as to apply also outside of the temporal domain, but I focus here on its temporal aspects.

<sup>4</sup> As Pearson also notes, 'content' here is to be understood broadly, such that even on the Kaplanian approach, tensed and tenseless sentences would differ in content.

relieved about is the content of one's tensed belief, for example *that the exam is past*. As MacBeath noted, this is not to say that one is relieved that one has the belief that the exam is past; the emotion is directed at the content of the belief, not at the fact that one has the belief (MacBeath 1983).

This response has recently been criticized by Pearson (Pearson, 2018). As Pearson points out, MacBeath actually offered two different ways of thinking about the matter. Either one can think of the tensed emotion as directed at an intentional fact (that the exam is past), or one can think of it as directed at a purported fact (that the exam is past). The difference is that in the second case, one uses the term 'fact' to refer to something that if it exists is an objective part of the world. Pearson himself prefers the latter usage, but he maintains that either way, the Mellor/MacBeath solution is inadequate.

Pearson's starting point is a distinction between what explains, motivates, and justifies emotions. I take it that this is intended to be parallel to a three-fold distinction between three kinds of reasons for actions (explanatory, motivational, and justificatory). The motivational reason for relief is 'the reason for which [one] feels relieved' and that to which one will refer if asked why one is relieved (Pearson, 2018, p. 1949). Pearson also refers to this as the 'object' of the emotion and of the corresponding tensed belief, 'that aspect of the world—fact—that [one] is responding to' (Pearson, 2018, p. 1948). This object, says Pearson, 'is clearly not an intentional entity' (Pearson, 2018, p. 1949). The section entitled 'Clarification of Mellor/MacBeath and an everyday view of emotions', a preamble to Pearson's arguments against Mellor/MacBeath, ends with the claim that 'the entities that play the role of objects are facts and hence clearly not the contents of the emotions so long as contents are merely intentional entities' (Pearson, 2018, p. 1951/1952).

It is somewhat striking that all this is part of Pearson's starting point, since a defender of Mellor/MacBeath would presumably disagree. After all, Mellor/MacBeath holds that what one is relieved about is that the exams are past, and this is the intentional object of one's relief. As we have seen, MacBeath takes talk of 'intentional facts' to be optional, but the central idea is that the object of the relief 'connects not with what is the case but with what is believed [...] to be the case' (MacBeath, 1983, p. 310). How the tenseless fact is accessed (so to speak) by the believer matters. The reason one feels relieved is that one believes that the exams are past, and what one will say when asked why one is relieved is that the exams are past, thereby expressing one's irreducibly tensed belief.

Pearson argues that if one were told (let us assume by a trusted source) that the exams are not past, one's relief would disappear, even if one were also told that the intentional fact *that the exams are past* still exists. But Mellor/MacBeath seems able to account for this. When one is told that the exams are not past, one's belief that the exams are past disappears, and with it the fact of one's standing in the relation to the belief's content that one stood in when one had the belief. It is standing in this relation that makes the difference, not the mere existence of the intentional fact (even assuming that intentional facts exist in the way envisioned here, contra for example (Crane, 2001)). And once the belief disappears, the relief disappears.

In any case, to return to the main focus of this section, consider now the combination of this style of argument with the A-theoretic interpretation of the temporal Doppler effect. As mentioned, the claim here is that there are potential points of tension to be negotiated. Recall the constraint that tensed facts can influence psychological attitudes including emotions such as relief only via psychological intermediaries such as tensed beliefs. Of course Pearson acknowledges this; insofar as he comments on explanatory reasons for emotions at all, the (implicit) claim is that the causal chain includes beliefs. Explicitly, he

states that while one's 'relief tracks the facts', '[t]his tracking is mediated by belief' (Pearson, 2018, p. 1950).

Nonetheless, it is important to Pearson's argument that there be tight connections between the three kinds of reasons. And the way these connections play out has the effect of de-emphasizing the role of belief, even when it comes to explanation as opposed to justification.

To see this, start with the good case, in which the relief is appropriate/justified. According to Pearson, it is because the tensed fact justifies the relief and one knows this that one is motivated by it, and it is because one is motivated by it that it can explain one's relief. The three roles (justificatory, motivational, explanatory) are here played by one and the same tensed fact, and there are (meta-)explanatory arrows going from its justificatory role to its motivational role to its explanatory role. And although Pearson concedes that the three roles need not always be played by the same item, these connections are important to the argument. According to the 'everyday view of emotions' to which Pearson gives much weight, an item can motivate (and thus be the object of) relief only if it is the kind of item that can justify the relief.<sup>5</sup> Similarly, explanatory considerations are never far away in the discussion of motivational reasons ('The fact that my grandmother has died [...] motivates my grief. It leads me to cry and others to [...] comfort me' (Pearson, 2018, p. 1950)).

Now compare this to the bad case, in which the relief is inappropriate because the exams are not past. Since Pearson denies that the object of the relief can be an intentional entity such as the content of the tensed belief, he concludes that the correct thing to say is that in this case, one is not motivated by anything. The relief has no object, because the belief is false. However, given the close connections between explanatory and motivational reasons noted above, this threatens to make the relief somewhat inexplicable in the bad case. Pearson concedes that 'the belief [...] or its content [...] appears to play a role in the origin of [...] relief' (Pearson, 2018, p. 1951). But more needs to be said at this point to illustrate how, given the close connection between explanatory and motivational considerations, the relief can remain explicable despite the complete absence of motivation. Or alternatively, something needs to be said about why the connections between explanation and motivation are absent in the bad case, and how the question of motivation should in that case be understood.

In short, there are pressures that arise within the Pearson-Prior argumentative context for having the A-theoretic worldly resources do explanatory work *at the expense* of intermediaries such as belief. Assuming that these can be successfully negotiated, however, there is no reason not to combine the A-theoretic interpretation of Caruso et al. with such arguments.

And of course the A-theoretic interpretation need not be combined with 'Thank goodness' style arguments. In its essence, the A-theoretic version of the temporal Doppler effect is perfectly compatible with the constraint formulated by Caruso et al.: time really passes; this makes us experience movement through time, and it makes us think of time in terms of spatial metaphors; this is what explains the distance asymmetry; and this in turn

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<sup>5</sup> I am adding the 'only' here, because the argument suggests that a biconditional is intended: 'According to the everyday account of emotions [...] an emotion is appropriate if it is motivated by a fact that justifies an emotion of that sort: that is, if the object of the emotion is a justificatory reason for that emotion. It follows that an emotion that lacked an object [or whose object was a non-obtaining fact] would not be an appropriate emotion.' (Pearson, 2018, p. 1952)



explains various attitude asymmetries. Temporal passage is not affecting psychological outcomes directly—it merely stands at the worldly end of the explanatory chain.

## 5 ... and without

As mentioned in the introduction, it is not my main aim to show that one of the interpretations results in a position that is overall more philosophically tenable than the others. But here are some reasons one might want to explore a non-A-theoretic version.

First, one may have been persuaded by some of the well-known objections to A-theories arising from implications of our best physical theories. The objection from relativity theory to presentism is particularly well documented (see for example (Saunders, 2002)).

Second, one may be moved by recent arguments to the effect that A-theoretic posits make for poor explanatory resources, whether the explanandum be our attitudes or psychological intermediaries. This problem would affect any explanation of the distance asymmetry that starts with temporal passage: how would the supposed movement of time make itself known to us? Do we have special metaphysical organs that allow us to detect a change in fundamental tensed facts or in what exists? As has recently been pointed out, these two objections are related, because the kinds of modifications that make an A-theory more acceptable in the light of objections from physics tend also to make it less able to explain temporal phenomenology ((Callender, 2017), (Miller, 2013), (Dieks, 2016)).

These recent arguments are partly driven by the sense that psychologists do not need to appeal to A-theoretic metaphysical resources in their explanations of psychological phenomena. And this much is right. Caruso et al.'s explanation is a case in point. Just because an A-theoretic interpretation of their position requires little re-phrasing, that does not mean it is obligatory. A B-theoretic one is also fairly easy to give.

The B-theoretic version would go as follows. Temporal reality is such that time does not pass. Nonetheless, for reasons of the kind B-theorists have outlined, our temporal EXPERIENCE (and perhaps also our temporal experience) is as of movement through time (see for example (Prosser, 2016) and references therein). That is, our temporal EXPERIENCE has A-theoretic content. In particular, we tend to think of time as passing and of ourselves as moving through time. This makes future events feel closer than they actually are, and past ones more distant. And this in turn explains various attitude asymmetries.

Whenever Caruso et al. speak of movement through time or events approaching us from the future, this would be taken either as a loose way of speaking, or as a description of temporal EXPERIENCE. As a description of temporal EXPERIENCE, it would mean that we tend to think of time in A-theoretic ways, because we tend to think of it in terms of spatial metaphors concerning time's passing. But the movement is merely experiential; time does not pass in reality.

This interpretation of Caruso et al. also has some merit, even though there is a bit more re-phrasing involved than for the A-theoretic one. Here are three points in its favour.

First, there are passages in which Caruso et al. comment in passing on ongoing debates in physics and philosophy over whether the distinction between the past and the future is (in Einstein's famous words) merely a stubbornly persistent illusion. They merely

mention these debates to set them aside. Their intention is to contrast them with what they present as the consensus in psychology, which is that ‘we experience the distance between the future and the past as decreasing, and we experience the distance between the past and the present as increasing’ (Caruso et al., 2013, p. 533).<sup>6</sup> This primarily reflects their (unsurprising) focus on the mind and the ‘subjective reality’ of movement through time. And it indicates that they do not feel the need to fight any battles for the A-theory, which is again unsurprising. But it thereby also implies that they are aware of these battles and *do not take them to threaten their position in any way*. In other words, it implies that even if it should turn out to be the case that time is very much unlike it seems, what matters for their explanatory purposes is merely the seeming. What matters is the experience as of movement through time. This suggests that a B-theoretic interpretation is at least no worse off than an A-theoretic one.

Second, recall that Caruso et al. utilise explanantia such as the fact that we tend to know less about the future than the past, and the fact that we can affect the future but not the past ((Van Boven & Caruso, 2015, p. 601), (Caruso, 2010, p. 2)). These are precisely the kinds of explanatory resources that B-theorists utilise when it comes to explaining aspects of temporal EXPERIENCE. In section four we saw that these *can* be given A-theoretic foundations. But the fact that they can also stand alone makes them very useful for B-theorists, and their repeated use by Caruso et al. is suggestive. When discussing worldly explanatory resources relating to time, they focus on resources that are available to the B-theorist too.<sup>7</sup>

The third and final point is simply that Caruso et al. repeatedly describe talk of the movement of time and of events past us as metaphorical, which is some evidence that they would also be happy to describe it as *merely* metaphorical. Since both A- and B-theorists take themselves to be offering literal accounts of the nature of time, and since therefore talk of the process of temporal passage posited by A-theorists is (purported to be) more than a mere metaphor, this too bolsters the B-theoretic interpretation of their view. Thus, a B-theoretic interpretation of Caruso et al. is just as viable as an A-theoretic one.

One might be tempted to add here that if their explanation was an A-theoretical one, it is not clear why they would have to appeal to the idea of space-time mapping, that is to the idea that people use spatial schemas to think about time. (I am grateful to one of the editors for raising this point.) But I think this point is not straightforward. It is true that B-theorists liken time to space in the sense that they hold that what is past, present, or future is just a matter of temporal perspective; and one might think this goes well with the idea of using spatial schemas to think about time. However, of the spatial terms and schemas we use to think about time, many seem to be in themselves more akin to A-theoretic ideas, because they incorporate the idea of a temporal viewpoint or that of temporal movement, for example ‘ahead/behind’, ‘up/down’, ego-moving and time-moving metaphors. (Perhaps ‘distance’ and ‘arrow’ are exceptions; others favour neither the A- nor B-theory, for instance ‘time is money’, ‘time is a healer’.) Nonetheless, as stated, Caruso et al.’s repeated emphasis on these being metaphorical is suggestive.

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<sup>6</sup> Caruso et al. themselves describe the issue here as whether or not time has a unique direction, but it is reasonable to take their remarks to apply more broadly to the A versus B debate over whether time passes.

<sup>7</sup> One might object that they also point to time’s *moving in a particular direction*. But it is not clear that this explanans cannot be re-described in B-theory-friendly terms—perhaps as the fact that time *has* a particular direction, and/or that particular kinds of phenomena exhibit a temporal direction. See also the next point in the main text.

## 6 But does one have to choose?

Return now to the prior question of how best to think of the project of situating Caruso et al.'s explanation with respect to the philosophy of time, and in particular with respect to temporal metaphysics. It is quite reasonable to enter this discussion with the expectation that Caruso et al. deliberately stay neutral on a metaphysical question such as whether time passes or not. And it is also reasonable to assume that this neutrality amounts to more than a suspension of judgement on how best to answer the question. In a straightforward sense, the question of whether time passes does not even arise for Caruso et al., since it is distinctly metaphysical. Each discipline employs its own methods and addresses distinctive issues.

Or rather, the question does not arise explicitly for Caruso et al.. Their claims and arguments can be read either A- or B-theoretically without any harm done, as it were. At the same time, there is a sense in which, by the lights of the A versus B debate at least, the question must eventually arise when one is enquiring into temporal aspects of our lives and minds. That debate presupposes that there are two fundamentally opposed ways for temporal reality to be, and that time is better described in one of these two ways. Either the explanation begins with temporal passage, or it begins with a temporal reality devoid of passage. To put it somewhat provocatively, by the lights of the A versus B debate, any explanation of a temporal aspect of our mental lives is in a sense incomplete until it is interpreted in one of these two ways.<sup>8</sup>

One could react to this state of affairs in many ways. One reaction would be to shrug and let the metaphysicians get on with the choosing and defending. Another reaction, which is the one I am most tempted by, would be to consider ways of jettisoning these presuppositions of the A versus B debate. Although I cannot explore that route here, it is worth noting that it would likely lead to substantial, and perhaps quite radical (meta)metaphysical claims of its own. After all, there really is something very seductive about the impulse to philosophize about time in A versus B terms. We tend to think about time using spatial schemas, many of which are related to movement; how then can one not proceed to wonder, when thinking about what time is like, whether these metaphors correspond to a real process or not?

The motivation for attempting to find an answer to this question would be to open up a third way to interpret a psychological explanation like Caruso et al.'s that is neither A- nor B-theoretic. The intended upshot would be that Caruso et al.'s talk of the movement of time would then neither have to be taken literally, nor understood with the important proviso that really there is just a succession of times all of which are understood to be metaphysically on a par. It would not stand in need of completion at all, even by metaphysical lights.

Here is another suggestion that goes in a somewhat similar direction (though it does not rely on the kind of view gestured at above). Consider again Caruso et al.'s talk of a subjective experience of a movement of time, which is so central to their explanation. Recall that on both the A- and the B-theoretic interpretations, this is most naturally interpreted as a

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<sup>8</sup> Note also that the A versus B choice is a choice between two substantial metaphysical views, each of which is equally invested in the significance of the issue that divides them. This is worth emphasizing because the B-theory is sometimes treated like a metaphysically innocent default position. But at least in its most widely accepted version, it is in fact substantial.

tendency to think of time in A-theoretic ways.<sup>9</sup> For A-theorists, we have this tendency because time really passes and we pick up on this fact, most likely via perception. For B-theorists, we have it for other reasons. Either way, temporal EXPERIENCE has A-theoretic content. We tend to think of time as passing, where this involves a transfer of metaphysical privilege in the way outlined in section three.

But why think that this must be what Caruso et al. have in mind? It is at least worth considering a less metaphysically loaded interpretation of their talk of our experience of movement through time. For instance, one could take such talk to refer to no more and no less than the facts Caruso et al. themselves point to. We tend to think of time as passing, where that means no more and no less than that we tend to represent and reason about time partly with the help of spatial metaphors. There is no further fact that our thinking about time is colored by an A-theoretic metaphysic. It is just that our thinking about time is structured through metaphorical mappings from the domain of space.

One might object that the emerging empirical literature on this topic supports the more metaphysically loaded view of people's views about time. In particular, Latham, Miller and Norton report that in their target population of U.S. residents, around 70% of people were found to have an extant theory of time that more closely resembled a dynamical (A-theoretic) view than a non-dynamical (B-theoretic) one (Latham, Miller, & Norton). By 'extant theory of time', they mean the theory of time that people use in moments of reflection, such as when asked about time in a survey. They also conclude that among those participants who deploy a naïve theory of time, around 70% have a theory that more closely resembles the dynamical (A-theoretic) view. By 'naïve theory' they mean the theory that one would expect children to develop and adults to retain if they have not been exposed to relevant scientific findings.

This issue deserves more discussion than is possible here. But *prima facie*, it is not clear that the results in question cannot also be read in a way that is compatible with the above suggestion (namely that temporal EXPERIENCE is not metaphysically deep to begin with). Both of Latham et al.'s claims (about people's extant theories and their naïve theories) concern the issue of which theory people deploy, where to 'deploy' a theory is to use that theory in moments of reflection. Moreover, the particular kinds reflection brought about by these surveys are ones where people are made to reflect on temporal metaphysics: the vignettes specifically describe metaphysical theories of time. This suggests that similar results might be obtained even if human beings in general did not have metaphysical theories about time (not even incomplete, inconsistent and/or tacit ones, as Latham et al. allow).

## 7 Conclusion

This chapter has reflected on the relation between metaphysical and psychological insights into temporal asymmetries by means of a case study concerning one representative such psychological finding, namely the temporal Doppler effect. Caruso et al. propose that future events seem closer and past ones more distant than they really are because we experience movement through time. I suggested that their explanans is best understood as concerning

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<sup>9</sup> This really is merely a natural accompaniment. On either the A- or the B-theoretic interpretation, one *could* still take Caruso et al.'s talk of a subjective experience of movement through time to be metaphysically neutral (along the lines of the following paragraph in the main text).

cognitive aspects of temporal EXPERIENCE (our cognitive relationship to time over longer time scales than are relevant to direct temporal perception). I then argued that there are both viable A- and B-theoretic interpretations of their explanation. Within an A-theoretic view, the full explanation is that time really passes, that we are aware of this in temporal EXPERIENCE, and that it is this awareness that makes us feel that the future is closer than the past. Within a B-theoretic view, the full explanation is that even though time does not pass in reality, there are other features of time and of ourselves that conspire to make us think that it does and colour our temporal EXPERIENCE, and that this in turn makes us feel that the future is closer than the past. Moreover, I argued that if the A-theoretic position is combined with Priorean ‘thank goodness’ style arguments, some work needs to be done to show that the resulting position still respects Van Boven and Caruso’s constraint that the objective temporal distance to events cannot directly influence psychological outcomes without influencing mediating psychological processes. Finally, I suggested that ultimately, a third interpretation that is neither A- nor B-theoretic may be preferable to both of these, though it would likely rely on substantial (meta)metaphysical commitments of its own. Further, it may ultimately be best to interpret Caruso et al.’s explanans in a way that is not metaphysically loaded. We experience movement through time not in the sense that our cognitive relationship is shaped by a commitment to an A-theoretic metaphysic, but just in the sense that we tend to reason about time using certain conceptual resources from the spatial domain.<sup>10</sup>

## References

- Boroditsky, L. (2000). Metaphoric Structuring: Understanding Time through Spatial Metaphors. *Cognition*, 75, 1-28. doi:10.1016/S0010-0277(99)00073-6
- Boroditsky, L., & Ramscar, M. (2002). The roles of body and mind in abstract thought. *Psychol Sci*, 13(2), 185-189. doi:10.1111/1467-9280.00434
- Broad, C. D. (1923). *Scientific Thought*. Routledge and Kegan Paul.
- Callender, C. (2017). *What Makes Time Special?* Oxford: Oxford University Press.
- Caruso, E. M. (2010). When the future feels worse than the past: A temporal inconsistency in moral judgment. *Journal of Experimental Psychology: General*, 139(4), 610-624.
- Caruso, E. M., Van Boven, L., Chin, M., & Ward, A. (2013). The Temporal Doppler Effect: When the Future Feels Closer Than the Past. *Psychological Science*, 24(4), 530-536. doi:10.1177/0956797612458804
- Crane, T. (2001). Intentional Objects. *Ratio*, 14(4), 298-317.
- Dieks, D. (2016). Physical Time and Experienced Time. In Y. Dolev & M. Roubach (Eds.), *Cosmological and Psychological Time* (pp. 3-20). Cham: Springer International Publishing.
- Freyd, J. J., & Finke, R. A. (1984). Representational momentum. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 10(1), 126-132. doi:10.1037/0278-7393.10.1.126
- Latham, A. J., Miller, K., & Norton, J. Is Our Naïve Theory of Time Dynamical? *Synthese*.

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- Le Poidevin, R. (2007). *The Images of Time: An Essay on Temporal Representation*. Oxford University Press Uk.
- Lewin, K. (1935). *A dynamic theory of personality*. New York, NY, US: McGraw-Hill.
- Miller, K. (2013). Presentism, Eternalism, and the Growing Block. In A. Bardon & H. Dyke (Eds.), *A Companion to the Philosophy of Time* (pp. 345-364). Oxford, UK: Wiley-Blackwell.
- Pearson, O. (2018). Appropriate emotions and the metaphysics of time. *Philosophical Studies*, 175(8), 1945-1961.
- Prosser, S. (2016). *Experiencing Time*. Oxford: Oxford University Press.
- Saunders, S. (2002). How Relativity Contradicts Presentism. *Royal Institute of Philosophy Supplement*, 50, 277-292. doi:10.1017/S1358246100010602
- Van Boven, L., & Caruso, E. M. (2015). The Tripartite Foundations of Temporal Psychological Distance: Metaphors, Ecology, and Teleology. *Social and Personality Psychology Compass*, 9(11), 593-605. doi:10.1111/spc3.12207
- Van Boven, L., Kane, J., McGraw, A. P., & Dale, J. (2010). Feeling close: emotional intensity reduces perceived psychological distance. *J Pers Soc Psychol*, 98(6), 872-885. doi:10.1037/a0019262