



Temporalism and eternalism reconsidered: perceptual experience, memory, and knowledge

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Abstract

Traditional debates between semantic temporalists and eternalists appeal to the efficacy of temporal operators and the intuitive (in)validity of instances of temporal reasoning. In this paper, I argue that such debates are inconclusive at best and that under-explored arguments concerning perceptual experience, memory, and knowledge offer more productive means of advancing debates between temporalists and eternalists and rendering salient several significant potential costs and benefits of these views.

Keywords Propositions · Time and tense · Belief attributions · Perception · Episodic memory · Truth

1 Introduction

Propositions are typically thought to be the semantic values of declarative sentences, the objects of attitudes such as belief and illocutionary acts such as assertion, and the principal bearers of truth and falsity. Philosophical debates have waxed and waned between those who take propositions to be eternal and those who think they need not be. Here we may characterise the relevant views as follows:

- Eternalism, which maintains that all propositions are temporally determinate (i.e. contain as constituents all times required for truth evaluation, etc.) and hence cannot change truth value over time; and

¹ Semantic eternalism is often characterised simply as the view that propositions cannot change truth value over time and temporalism as the view that at least some propositions can change truth value over time (e.g. Richard 1981; Aronszajn 1996; Fitch 1998; Brogaard 2012, p. 14). However, this saddles eternalism with unnecessary commitments and allows one to argue for temporalism ‘on the cheap’, e.g. by appealing to future contingents changing truth value in an open future. Infelicitously, it would also class Łukasiewicz—who developed a three-valued logic to accommodate such cases and yet claimed ‘all truth is eternal’ (Łukasiewicz 1968, pp. 49–50)—as a temporalist.

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- Temporalism, which maintains that at least some propositions are temporally indeterminate (i.e. do not contain as constituents all times required for truth evaluation, etc.) and may change truth value over time.¹

An eternalist would take the utterance at t_1 of some simple declarative sentence lacking temporal adverbials, such as ‘Socrates is sitting’, to express a temporally determinate (i.e. ‘eternal’) proposition which involves reference to a particular time, e.g. $\langle \text{Socrates, SITTING, } t_1 \rangle$. An utterance at a later time t_2 of ‘Socrates is sitting’ would ordinarily express a different proposition, e.g. $\langle \text{Socrates, SITTING, } t_2 \rangle$. In contrast, temporalists may take the same utterance at t_1 of ‘Socrates is sitting’ to express a temporally indeterminate (i.e. ‘temporal’) proposition which involves no reference to a particular time, e.g. $\langle \text{Socrates, SITTING} \rangle$ (which eternalists would take to be, at most, a propositional ‘fragment’, ‘proposition radical’, etc.). An utterance at a later time t_2 of ‘Socrates is sitting’ could be taken by temporalists to express the very same proposition. Whereas the temporally determinate proposition $\langle \text{Socrates, SITTING, } t_1 \rangle$ is simply true or false simpliciter and is not relativised to times, the temporally indeterminate proposition $\langle \text{Socrates, SITTING} \rangle$ is true or false only relative to some time of evaluation and may go from being true at t_1 to being false at t_2 to being true again at t_3 and so on.

One traditional motivation for substantive forms of temporalism (according to which temporal propositions should regularly feature in our theories) is the thought that only temporalism can adequately capture the meaning of tensed language and that despite seemingly lacking internal clocks, we may nonetheless effectively communicate what we think (Prior, 1959, p. 17; Tichý, 1980, pp. 168–9) whereas if eternalism were correct, then we would often not know what we are saying as we often do not know what time it is. Some strong form of temporalism was seemingly widespread among ancient and medieval philosophers (see, e.g., Prior, 1967) and it has had influential proponents in the twentieth century, such as Arthur Prior, while also receiving some spirited modern defences (notably Brogaard, 2012).

Eternalism has significantly more to prove but, following in Frege’s footsteps, it has often constituted the philosophical orthodoxy. It has frequently been thought that a proposition is ‘semantically complete’ and thereby directly truth evaluable whereas temporally neutral content is ‘incomplete’ and not truth evaluable unless a time of evaluation is provided as a constituent. Accordingly, just as one might think that the content $\langle \varphi \rangle$ expressed by ‘it is raining’ is incomplete if taken to be location-neutral and cannot be evaluated for truth unless some location is supplied as an ‘unarticulated constituent’ (e.g. Perry, 1986, 1998), so too it is often thought that temporally indeterminate contents are not propositions and that it is consequently hard to see how propositions might change truth value across times (e.g. Evans, 1985, pp. 348–9; King, 2003, p. 196). As a result, it is not uncommon for philosophers to claim, for instance, that ‘the eternalness of a proposition is central and fundamental to the very idea of a proposition’ (Salmón, 2006, p. 370).

It seems reasonable to think that one cannot evaluate what is expressed by ‘this tree is covered with green leaves’ for truth unless some time of evaluation is provided (Frege, 1956, pp. 309–10). However, it is less clear why such times must figure as constituents of the proposition rather than simply as parameters of the circumstance

of evaluation or why the items evaluated for truth should have absolute truth-conditions rather than relative truth-conditions. Definitional arguments recurring to the eternity of the ‘very idea of a proposition’ are arguably especially unconvincing owing to the *recherché* nature of propositions and longstanding worries concerning the coherence of our ideas about them and whether any single entity can fulfil all the ‘proposition-roles’ (e.g. Lewis, 1986, pp. 54–9). Similar worries apply to some traditional temporalist arguments appealing to the apparent felicity of locutions such as ‘it was true a minute ago, but is no longer true’ (Tichý, 1980, p. 168), which are exacerbated by the oft emphasised ease of slipping from speaking of the words uttered to the propositional content expressed thereby and many things in between (e.g. Lewis, 1980, pp. 96–7).

In order to decide between temporalism and eternalism it seems that something else is required. This is, perhaps, especially pressing in the face of occasional worries that there is in fact nothing substantive at stake in such debates (e.g. Dever, 2015). In particular, one might hope for an argument that there are significant costs or benefits to taking the objects of belief (assertion, etc.) to be temporally determinate (or not). In what follows, I shall argue that prominent modern debates between temporalists and eternalists—which have focused on the semantic efficacy of temporal operators and the intuitive (in)validity of instances of temporal reasoning—have not been effective in this regard and offer a diagnosis of why this should be so (Sect. 2). I then (Sect. 3) consider whether other considerations might help advance debates between temporalists and eternalists and develop some arguments for temporalism which appeal to perceptual experience and memory while also offering some considerations against temporalism which appeal to knowledge. I contend that such arguments are more effective in rendering salient the costs and benefits of temporalism and eternalism, for instance by showing the degree to which temporalist or eternalist contents are consistent with common theoretical views in other areas (such as representationalism in the philosophy of mind), and thereby advancing debates between temporalists and eternalists.

2 Tense operators, temporal reasoning and diachronic belief

One significant modern argument for temporalism takes its lead from David Kaplan and the fact that temporal operators seem to have semantic efficacy:

Intensional operators must, if they are not to be vacuous, operate on contents which are neutral with respect to the feature of circumstance the operator is interested in. Thus, for example, if we take the content of *S* [‘I am writing’] to be (i) [the proposition that David Kaplan is writing at 10 A.M. on 3/26/77], the application of a temporal operator to such a content would have no effect; the operator would be vacuous [...] A content must be the *kind* of entity that is subject to modification in the feature relevant to the operator. (Kaplan, 1989, pp. 503–4)

Just as there are non-vacuous modal operators which alter the worldly parameter of the circumstance of evaluation, so too there are non-vacuous tense operators which alter the temporal parameters of the circumstance of evaluation. Thus, for instance, ‘it

has been the case' shifts the time of evaluation from the time of utterance to some earlier time. A tense operator is usually construed as a sentential operator which operates on the content of the relevant sentence. However, if an operator is not to be vacuous, then the operand (i.e. what the operator operates upon) must—the thought goes—be 'neutral' with respect to what the operator is altering. After all, there is no point in changing the time of evaluation of the operand if the operand cannot vary in truth value from one time to another. Accordingly, Kaplan's remarks suggest something like the following argument for temporalism:

- (1) There are non-vacuous temporal operators;
- (2) For any non-vacuous temporal operator, there is some temporally neutral content which it operates upon;
- ∴ (3) there are temporally neutral contents;
- (4) If there are temporally neutral contents, then there are temporal propositions (i.e. the objects of belief and the contents of illocutionary acts such as assertion);
- ∴ (5) There are temporal propositions

A thorough analysis of this argument would require detailed examination of many disputed issues, such as whether Kaplan's argument might be best formulated in some different way (cf. Fritz et al., 2019; Richard, 1982; Weber, 2012) and whether tenses are to be represented as intensional temporal operators (or quantification over times, referentially, etc.).² Here it suffices to note that so long as Kaplan's argument is taken to include something analogous to (2) and (4)—according to which the operands of temporal sentential operators are taken to be the contents of sentences within some context and these are identified as propositions—then such an argument will seemingly not help to settle debates between eternalists and temporalists. This is because eternalists may allow that temporal operators do indeed require non-eternal operands, but nonetheless argue that temporal operators do *not* operate on non-eternal propositions or semantic values of sentences (as temporalists think) but instead upon propositional 'fragments', i.e. functions from contexts and times to eternal propositions (e.g. Richard, 1982; Salmón, 2006, pp. 374–6, 384–7).

That being so, eternalists will always have the option of rejecting premises such as (2) and (4) and instead maintaining an account of temporal operators which is slightly different from Kaplan's and it is thus far unclear what salient costs are imposed by their doing so. Accordingly, Kaplan's argument doesn't help settle whether propositions are temporally determinate or not, but instead leaves undecided what is at issue between temporalists and eternalists while also raising further questions concerning compositionality, embedding, and other issues (cf. Rabern, 2012; Richard, 1982; Salmón, 1989, 2006; Weber, 2012).

² Formal semanticists do not generally take tenses to be intensional temporal operators and instead offer quantificational and referential analyses (Enc 1986; 1987; King 2003).

Another line of thought—which has occupied much of the relevant discussion between eternalists and temporalists over the last forty or so years (e.g. Aronszajn, 1996; Brogaard, 2012; Fitch, 1998; Richard, 1981, 2015; Salmón, 2006)—has focused on the extent to which temporalism and eternalism best account for diachronic belief attributions and judgements about the intuitive validity of instances of temporal reasoning. In this vein, Richard (1981, p.4) argues against temporalism by asking us to consider arguments such as the following:

(NIXON)

- (1) Mary believed that Nixon was president
- (2) Mary still believes everything she once believed
- ∴ (3) Mary believes that Nixon is president

This, Richard claims, ‘is not a valid argument in English’ (Richard, 1981, p. 4) but temporalists—who interpret the belief reports in **(NIXON)** as ascribing belief in temporal contents to Mary—would regard **(NIXON)** as a valid argument. More concretely, they would construe **(NIXON)** as follows³:

- (T1) $\exists p \exists t_0 (t_0 < t_1 \wedge p = \langle \text{Nixon, PRESIDENT} \rangle \wedge Bmpt_0)$
- (T2) $\forall p (\exists t_0 (t_0 < t_1 \wedge Bmpt_0) \rightarrow Bmpt_1)$
- ∴ (T3) $\exists p (p = \langle \text{Nixon, PRESIDENT} \rangle \wedge Bmpt_1)$

Temporalists would thus take (1) in **(NIXON)** to state that, at some earlier time t_0 (e.g. some time in 1972), Mary believes $\langle \text{Nixon, PRESIDENT} \rangle$ and (2) to state that Mary retains all her earlier beliefs. From this it follows that (3), namely that at t_1 (e.g. some time in 2023), Mary *still* believes $\langle \text{Nixon, PRESIDENT} \rangle$. This, the thought goes, is absurd and insofar as temporalists construe **(NIXON)** as a valid argument, then temporalist theories incur a significant cost.

In contrast, eternalism is thought to do significantly better. Eternalists take (1) to state that, at some earlier time, Mary believes $\langle \text{Nixon, PRESIDENT, 1972} \rangle$ and (2) to state that Mary retains all her prior beliefs. However, from this it merely follows that at t_1 (e.g. some time in 2023) Mary still believes $\langle \text{Nixon, PRESIDENT, 1972} \rangle$. That is to say, in contrast to temporalists, eternalists would render (1) and (2) of **(NIXON)** as follows:

³ There are some minor differences in presentation between this and what is offered by Richard (1981). Here ‘ p ’ ranges over propositions, ‘ t_1 ’ denotes some point in time long after Nixon’s presidency, ‘ B_{apt} ’ denotes the belief-relation a believer a stands in with regards to a proposition p and the time at which they are doing the believing t , ‘ m ’ refers to Mary, ‘ $<$ ’ has the same meaning as ‘is earlier than’, and ‘ $\langle \text{Nixon, PRESIDENT} \rangle$ ’ is the temporal proposition that Nixon is president while ‘ $\langle \text{Nixon, PRESIDENT, } t_1 \rangle$ ’ is the eternal proposition that Nixon is president at t_1 .

(E1) $\exists p \exists t_0 (t_0 < t_1 \wedge p = \langle \text{Nixon, PRESIDENT}, t_0 \rangle \wedge Bmpt_0)$

(E2) $\forall p (\exists t_0 (t_0 < t_1 \wedge Bmpt_0) \rightarrow Bmpt_1)$

However, what follows from (E1) and (E2) is not that Mary still, at time t_1 , believes that Nixon *is* president (as per temporalist construals of **(NIXON)**)—i.e. that (E3) $\exists p (p = \langle \text{Nixon, PRESIDENT} \rangle \wedge Bmpt_1)$, which is the eternalist rendering of (3). Instead, what follows from (E1) and (E2) is merely that Mary, at time t_1 , believes that Nixon is or was president at the prior time t_0 , i.e. (E3*) $\exists p (p = \langle \text{Nixon, PRESIDENT}, t_0 \rangle \wedge Bmpt_1)$. Eternalists thus rightly construe **(NIXON)** as invalid and infer the correct conclusion on the basis of the premises (1) and (2) whereas temporalists wrongly construe **(NIXON)** as valid. Something similar, Richard argues, applies in other cases.

Several philosophers have taken Richard's argument(s) against temporalism to be decisive (e.g. Salmón, 1986, pp. 26–7; Soames, 1999, pp. 43–4; cf. King, 2003, pp. 196–7). However, even if we put aside whether temporalists might offer a successful alternative account of belief retention and what it is for someone to 'still believe everything they once believed'—so that (T2), i.e. $\forall p (\exists t_0 (t_0 < t_1 \wedge Bmpt_0) \rightarrow Bmpt_1)$, does *not* offer an adequate temporalist rendering of the English sentence (2) in **(NIXON)** and temporalists would thereby reject that (T1)–(T3) offers a satisfactory construal of **(NIXON)**⁴—there are several reasons to think that this argument has relatively little force and that its prospects for advancing the debate between temporalists and eternalists are dim.

First, temporalists may undercut arguments like Richard's in several ways. For instance, one might think that temporalists are entitled to think that (T1)–(T3) is an accurate translation of **(NIXON)**, that (T1)–(T3) is a valid argument, that **(NIXON)** should thereby be regarded as a valid argument, and that there is little temporalists need to do in response to Richard's argument other than offer some explanation as to why **(NIXON)** might *seem* invalid. Along such lines, Aronszajn (1996) plausibly suggests that on account of charitably wishing to treat the relevant sentences as true, one may be inclined to select from the most plausible possible interpretation of the relevant ambiguous premises—for instance, by interpreting (2) in such a way so as to restrict the domain of discourse of the universal quantifier—even if this comes at the expense of rendering the inference to (3) invalid.⁵ Aronszajn invokes a familiar and

⁴ Temporalists might contend that retaining a belief that p from t_1 to t_2 does not require that one believe the *same proposition* p at both t_1 and t_2 but instead merely requires that at t_2 one believe some appropriately related proposition (e.g. the original proposition, p , prefaced by a suitable temporal operator). Along such lines, one might attempt to adopt or adapt Prior's own metric tense logic (wherein, e.g., ' P_n ' has the same meaning as 'it has been the case n time-units ago that...'), cf. Prior 1967, pp. 95–112; one would retain one's earlier belief that p by later believing P_np or, as Brogaard (2012) argues, one might introduce further operators to represent both indexical and non-indexical adverbials (e.g. 'tomorrow', 'when we were young', 'in the year 2000', 'tomorrow') and composite tense operators (for a sketch, see Brogaard 2012, pp. 91–7) and render (2) accordingly. However, the introduction of further operators comes at the price of potential significant complexity and inelegance. This — and not so much questions of expressive adequacy or power—is one reason why many have preferred quantificational analyses (cf. King 2003, p. 221).

widespread phenomenon (frequently exploited in fallacies) and it seems that for an argument like Richard's to be effective in advancing the debate between temporalists and eternalists, one would need to argue that the relevant phenomenon is not a factor, for instance by offering examples where this kind of explanation may not be invoked or by arguing that there is a significant cost to invoking it. To date, this has not been done or, to my knowledge, seriously attempted.

Secondly, it seems that temporalists can draw upon similar examples to Richard to rebut Richard's argument and bolster their own case, wherein interpreting the relevant attitude reports as involving eternalist contents raises apparent difficulties. Thus, for instance, Aronszajn (1996) and Brogard (2012) argue that examples such as the following are 'intuitively valid', but require temporalism:

(BUSH) (Aronszajn, 1996, p. 91)

- (1) In 1990, Mary believed that Bush was up to no good in the White House
- (2) In 1992, Mary still believed everything she believed in 1990
- ∴ (3) In 1992, Mary believed that Bush was up to no good in the White House

Of course, just as temporalists may respond to Richard's (NIXON) example in various ways, so too eternalists may respond to such temporalist counter-arguments by arguing that there is some crucial disanalogy with (NIXON) (this strategy is offered by Richard in response to certain examples, but it doesn't seem to work for (BUSH)),⁶ or in some other way, e.g. by appealing to eternalist content concerning an extended temporal interval (e.g. Fitch, 1998, pp. 155–6; Salmón, 2006, pp. 372–4) which spans the relevant diachronic belief attributions (e.g. the temporally determinate proposition that Bush was up to no good in the White House during his presidency). Again, unless

⁵ This effect may be observed in examples such as the following (Aronszajn 1996, p. 85):

- (I) Mary once wore a wedding ring.
- (II) Everything that Mary has ever worn, she sewed herself.
- ∴ (III) Mary sewed a wedding ring.

Aronszajn also argues that when a simple past tense is embedded under a past tense attitude verb as in (1) (i.e. 'Mary believed that Nixon was president'), then (1) is ambiguous between a simultaneous reading (T1) and a shifted backward reading (T1*):

- (T1) $\exists p \exists t_0 (t_0 < t_1 \wedge p = \langle \text{Nixon, PRESIDENT}, t_0 \rangle \wedge Bmpt_0)$
- (T1*) $\exists p \exists t_0 (t_0 < t_1 \wedge p = P\langle \text{Nixon, PRESIDENT}, t_0 \rangle \wedge Bmpt_0)$

Accordingly, (NIXON) might also seem invalid because it is (T1*) rather than (T1) which is the more natural rendering of (1) and that is why one assumes that the conclusion of (NIXON) should not be that Mary believes that Nixon is president, but that Mary believes that Nixon *was* president.

⁶ Richard (2015) considers 'temporalist-friendly' examples such as: 'it was safe to hitchhike in the sixties, but that's no longer true' (Richard 2015, p. 50) and suggests that 'that' is here functioning not as an anaphoric pronoun referring to the (temporalist) content asserted, but elliptically for a non-propositional abstract (Richard 2015, p. 52). Whatever one makes of this, it won't help with the (BUSH) sort of example provided above or many others.

this kind of explanation can be ruled out by temporalists (I don't think it can),⁷ the prospects for thereby advancing debates between temporalists and eternalists is dim.

Richard-style arguments thus do not seem conclusive and any attempt to advance the debate in a similar manner would presumably require sustained systematic study rather than consideration of cherry-picked reports. However, even then it would remain unclear what weight should be attributed to particular judgements concerning 'intuitive validity' in such cases because grammatically identical or very similar examples may produce different results and can be easily 'gamed'. Consider, for instance, the following:

(NIXON) (Richard, 1981, p. 4)	(BIDEN)
(1) Mary believed that Nixon was president	(I) Mary believed that Biden was human
(2) Mary still believes everything she once believed	(II) Mary still believes everything she believed
∴ (3) Mary believes that Nixon is president	∴ (III) Mary believes that Biden is human

Whereas **(NIXON)** seems 'intuitively invalid' to most respondents, **(BIDEN)** seems 'intuitively valid' and other similar arguments may easily be constructed (e.g. five minutes ago, Mary believed that Biden was president, etc.). My point is not that appeals to intuitions are of little worth in the philosophy of language, but rather that in light of these cases being grammatically identical (and other cases being grammatically identical or very similar) and yet yielding different judgements of intuitive validity, consideration of such cases and inclinations towards the relevant judgements doesn't seem to indicate anything deep about temporalist or eternalist content. Instead, it merely indicates that Aronszajn (1996) was right in thinking that judgements of intuitive validity are often driven by charitable and pragmatic considerations. This applies not just to Richard's arguments against temporalism (as per Aronszajn), but also to similar arguments for temporalism (such as some of Brogaard's).

More generally, it is common for people to judge enthymemes with plausible 'implicit' premises to be valid arguments even if such arguments are not formally valid and judgements concerning 'intuitive validity' are most likely significantly determined by whether some plausible suppressed premise(s) may be supplied so as to yield a deductively valid argument. For instance, in simple cases concerning possible belief retention from t_1 to t_2 , wherein at t_1 α believes $\langle \varphi \rangle$ and where φ is any simple sentence of the form ' a is F ' lacking temporal adverbials, it seems that:

- If ' F ' expresses some property widely thought to be unstable or of significantly shorter duration than the period of time between t_1 and t_2 , then cases positing belief

⁷ Brogaard (2012, p. 69–70) argues eternalism thus gives the wrong truth-conditions for sentences involving negation and licenses sentences such as 'It is 3 p.m. June 14, 2006 (CST), and John is a firefighter at 3 p.m. June 14, 2006 (CST) but he is not a firefighter' (Brogaard 2012, pp. 69–70). However, I take it that various responses are open to eternalists, including taking negation to be narrow scope or taking it that ' a is not a firefighter' should not be read as saying: (i) It is not the case that for some given interval of time I , a is a firefighter at every time within I (which gives rise to the above issue); but merely: (ii) For some given interval of time I , a is not a firefighter at every time within I (or something comparable).

retention between t_1 and t_2 will often seem unnatural and arguments built around such cases are likely to seem ‘intuitively invalid’; and

- If ‘ F ’ expresses some property which is widely thought to be stable or of significantly longer duration than the period of time between t_1 and t_2 , then cases positing belief retention between t_1 and t_2 will often seem natural and arguments built around such cases are likely to seem ‘intuitively valid’.⁸

Thus, if in 1970 Alexander believes that Barbara is the youngest person alive, it will seem ‘intuitively’ infelicitous that in 2022 Alexander should still believe that Barbara is the youngest person alive (even if we posit that Alexander retains all his beliefs). Such cases create apparent difficulties for temporalism. Equally, if in 1970 Alexander believes that exercise is healthy, it will seem ‘intuitively’ acceptable that in 2022 Alexander should still believe that exercise is healthy (supposing that Alexander retains all his beliefs). Such cases create apparent difficulties for eternalism. Of course, further temporalist and eternalist responses are available. For instance, if the temporalist argues that there is something strange in supposing that Alexander believes $\langle$ exercise, HEALTHY, 1970 $\rangle$ as opposed to simply $\langle$ exercise, HEALTHY $\rangle$, then the eternalist can respond by suitably lengthening the temporal period. However, since both temporalists and eternalists can devise examples to support their case in the relevant way, all this shows is that it is difficult to gauge the costs and benefits of temporalism or eternalism by means of such examples and arguments.

3 Perceptual experience, memory, and knowledge

Brogaard (2012) and Recanati (2007) have suggested that the nature of perceptual experience and memory provides strong evidence for temporalism. The arguments they offer are very brief and underdeveloped and have not received further discussion, but I think that these suggestions hold promise and that appropriate consideration of these issues, alongside some others, may help to advance debates between temporalists and eternalists in a way that some of the arguments thus far considered do not.

3.1 Perceptual experience

Brogaard (2012) indicates that she regards arguments from the philosophy of mind concerning perceptual experience and desire as the strongest arguments for temporalism (2012, p. 10). Unfortunately, she doesn’t set out these arguments or discuss them in detail (neither in Brogaard, 2012 nor elsewhere, e.g. Brogaard, 2018) and as far as I am aware, they have not been discussed by others either. However, at one point Brogaard suggests that if one accepts some form of representationalism about desire and that desires occurring at different times may be phenomenologically indiscernible, then one should accept that the content of desire is temporally neutral (Brogaard, 2012,

⁸ In a recent paper, brought to my attention by an anonymous reader, Skibra (2021, pp. 288–90) draws attention to how the stability of properties affects our judgements concerning intuitive validity but does so to defend eternalism and Richard’s arguments by arguing that examples which support temporalist intuitions are undermined by the relevant charitable considerations. In contrast, I take it that such charitable considerations undermine both eternalist and temporalist arguments on this score.

p. 177–8).⁹ I think that the contested nature of desire and other pro attitudes (which includes difficulties concerning whether they should be construed as propositional attitudes and issues such as their satisfaction and ascription conditions, e.g. Lycan, 2012; Graff Fara, 2013; cf. Thagard 2006) presents complications for this line of thought. However, when applied to perceptual experience (which is more straightforwardly taken to be a propositional attitude, although here too there is resistance, e.g. Crane, 2009; Nanay, 2013) the result is more promising and one can develop the kernel of that thought to devise a fairly strong argument for temporalism along the following lines:

- (1) For any perceptual experiences x , y , if x occurs at t_1 and y occurs at t_2 , and x and y do not differ in content, then the content of x and y is temporally neutral;
- (2) For any perceptual experiences x , y , if x and y differ in content, then x and y differ in phenomenal character;
- (3) Frequently, there are perceptual experiences x , y , such that x occurs at t_1 and y occurs at t_2 and x and y do not differ in phenomenal character;
- ∴ (4) Frequently, there are perceptual experiences x , y , such that x occurs at t_1 and y occurs at t_2 and x and y do not differ in content; [from 2, 3]
- ∴ (5) Frequently, there are perceptual experiences x , y , such that the content of x and y is temporally neutral; [from 1, 4]
- (6) If there are perceptual experiences with temporally neutral contents, then there are propositional attitudes with temporally neutral contents;
- ∴ (7) There are propositional attitudes with temporally neutral contents [from 5, 6]

If the argument is successful, then it shows that there are propositional attitudes whose content is temporally neutral and thus that some substantive form of temporalism is correct. Since the argument is valid, it only remains to examine the plausibility of the premises.

⁹ Brogaard briefly discusses another argument against eternalism appealing to perceptual experience:

- (1) Perceptual experience is a propositional attitude;
- (2) The objects of perceptual experience do not instantiate the fundamental monadic properties of truth simpliciter and falsity simpliciter;
- (3) By T3 [i.e. Propositions are the objects of propositional attitudes, such as belief, hope, wish, doubt, etc. (Brogaard 2012, p. 164)], the objects of perceptual experience are propositions.
- (4) Hence, propositions do not instantiate the fundamental monadic properties of truth simpliciter and falsity simpliciter. (Brogaard 2012, pp. 170–1).

This argument is distinct from that which I go on to discuss (see below) and in my view has significantly less dialectical efficacy.

As regards (1), it is fairly uncontroversial that perceptual experiences are directed toward the present. Accordingly, if a perceptual experience occurring at some earlier time t_1 and a perceptual experience occurring at a later time t_2 have exactly the same content then—insofar as both perceptual experiences are directed towards their respective *nows*—it seems their content must be temporally neutral rather than temporally determinate.

The plausibility of (2) is a difficult issue, which turns upon accepting a certain weak form of representationalism within the philosophy of perception. However, here it suffices to note that although representationalism is not uncontroversial it is popular among philosophers.¹⁰ Accordingly, if the argument shows that temporalism is a consequence of representationalism (and some other plausible or widely accepted theses) then it yields a fairly significant result, especially because temporalism seems significantly less popular than representationalism.

I will simply take (6) for granted because many philosophers take perceptual experience to be a propositional attitude,¹¹ but what then about (3)? At least *prima facie*, it seems innocent enough to suppose (e.g.) that a visual experience of a particular chair on Monday (e.g. as of being a certain shape, having a certain colour, and so on) may have the same phenomenal character as a visual experience of that same chair on Tuesday. The same holds, the thought might go, of more ‘dynamic’ perceptual experiences, such as the auditory experience of hearing the same music recording twice on the (same) radio and so on. Even if such experiences essentially require (e.g.) hearing certain pitches and timbres *before* others and temporally ordering the relevant elements of the perceptual experience(s) my hearing Bowie’s *Life on Mars*? at t_1 may be phenomenally indiscernible from hearing it at t_2 . If that is right, and sameness of phenomenal character indeed requires sameness of content, then the content of the relevant perceptual experiences is indeed temporally neutral (at least sometimes).

Is there any way to resist this? Certainly. For instance, one might be inclined to reject (3) by arguing that perceptual experience is temporally extended in a manner which undermines the case for phenomenal indiscernibility (which arguably works better with ‘snapshot’-like perceptual experiences) or that there is in fact a phenomenal difference in the relevant cases even if it is typically not detectable by the person having the relevant experience. (One would here need to offer independent grounds and not just insist that temporal differences are reflected in the content of the experience and thereby also in phenomenal character). Equally, as indicated, there is room for disagreement over (2) and (6). However, my aim is not to try and settle such debates, but merely to make salient some costs and benefits of temporalism and eternalism. While this argument from perceptual experience is not decisive, it does show that eternalism is inconsistent with representationalism and some common views in the philosophy of mind. That is often about as much as one can reasonably ask and I take the argument to thereby render salient some costs of eternalism in a manner in

¹⁰ A PhilPapers survey from 2020 showed that just over 36% of the relevant philosophers accepted or leaned towards representationalism, making it the most popular position within the philosophy of perception (<https://survey2020.philpeople.org/survey/results/all>).

¹¹ Traditional arguments in favour of this view appeal to the apparent accuracy conditions of perceptual experiences and the manner in which they are thought to justify beliefs. For critical discussion, see Crane (2009); Siegel (2010, pp. 27–43).

which some of the arguments previously considered (see Sect. 2) do not and to thereby potentially be of service in advancing the relevant debates.

3.2 Memory

Brogaard (2012) and Recanati (2007) have also suggested that considering the nature of memory also provides strong grounds for temporalism. Thus, for instance, Brogaard argues as follows:

They [eternalists] can say that the information I store has the form *there is a time t such that t is prior to or identical to t^* , and Brit observes a terrible crime just before t and a red car is leaving the crime scene at t* , where t^* is the time at which the belief information is stored, for example, 3 p.m. on December 14, 2008. But surely this is not the kind of information that is likely to get stored. To store this kind of information the brain would have to be able to track the time precisely at the time of storage. It is just plainly implausible that the brain would have tracking powers like that. (Brogaard, 2012, p. 58)

It is not immediately clear whether what is at issue here is best conceived as an instance of semantic memory, episodic memory, or a hybrid,¹² but I think that the kernel of this argument against temporal tracking can be articulated as follows:¹³

- (1) $\forall p \forall t$ (if, at t , one has the relevant kind of experience that p and stores eternalist content of the form $\langle p, t \rangle$ in one's memory, then one has an internal clock which precisely tracks t);
- (2) Humans do not have internal clocks which precisely track t ;
- $\therefore$ (3) It is not the case that $\forall p \forall t$ (one has the relevant kind of experience that p and stores eternalist content of the form $\langle p, t \rangle$ in one's memory)

If effective, then the argument would indicate that the relevant kind of memory does not have eternalist content.

Another argument, briefly suggested by Recanati (2007, pp. 140–2), considers the nature of episodic memory in particular (which is usually taken to encode information about one's experiences of events and whose activation is ordinarily taken to involve some degree of 're-experience'). Recanati proposes that temporalism offers a superior account of the content shared by episodic memories and the perceptual experiences

¹² When Tulving originally introduced the concept of episodic memory into experimental psychology and cognitive neuroscience, he claimed: 'Episodic memory receives and stores information about temporally dated episodes or events, and temporal-spatial relations among these events' (Tulving 1972, p. 385) and that 'To ask a person about some item in episodic memory means to ask him when did event E happen, or what events happened at time T ' (Tulving 1972, p. 388). For discussion of how the now pervasive distinctions between semantic memory and episodic memory drawn by Tulving (1972; 1983; 2002) have shifted over time, see Renoult and Rugg (2020).

¹³ Here ' p ' designates temporal content of the relevant experiential or perceptual state (e.g. $\langle$ Socrates, SITTING $\rangle$), ' t ' designates the time of the relevant experience, and $\langle p, t \rangle$ is the eternalist content of the relevant experience.

they originate from because temporalism allows one to say that both perceptual experience and episodic memory share the same temporally indeterminate content, but that the relevant mental states differ in the way in which this identical temporalist content is presented, i.e. whether as *past* (as in episodic memory) or as *present* (as in perceptual experience). The relevant mental states are thus modes or manners of representation and perceptual experience and episodic memory thus seem akin to tinted spectacles of different colours through which the same content is ‘viewed’.

These arguments deserve attention. In my view, they do not seem to make an effective case against eternalism but consideration of the relevant aspects of memory may allow us to better appreciate certain potential costs and benefits of positing temporally indeterminate or determinate content. In particular, I think that there are at least four points which deserve attention.

First, it seems that the premises of Brogaard’s argument against temporal tracking are disputable. After all, as regards (1), perhaps our temporal tracking is not especially precise (e.g. as expressed by ‘at 15:03, 10/12/2008’) but is nonetheless temporally determinate and concerns an interval or non-specific time (as expressed by, e.g., ‘on a winter’s day when I was working in the city’¹⁴ or, ‘at some time prior to 10/12/2008’) or else simply quantifies over times in some other way, and may also be fairly reliable without being especially precise (in the manner of ancient sun-dials). Equally, as far as (2) is concerned, one might think that the argument underestimates our time-tracking capacities (or else is too demanding in its construal of ‘precise’). After all, there is strong evidence that the hippocampus, parahippocampal cortex, and the striatum play important roles in our tracking of time and temporal elements (such as the sequence in which events occur) in forming semantic and episodic memories and temporally ordering them, and that—as Brogaard seemingly recognises elsewhere (Brogaard & Gatzia, 2015)—we do in fact have *fairly* precise internal clocks (e.g. Eichenbaum, 2014; Moscovitch, Cabeza, Wincour, and Nadel 2016), as is evidenced (e.g.) by prospective memory (wherein, for instance, we form an intention in the morning to call someone between 18:00 and 18:30 and later remember to do so). That being so, it is unclear why it should be deemed apparent that humans lack internal clocks which encode information in a manner which would be congenial to eternalism.

Secondly, if we consider the kind of argument put forward by Recanati, it seems several difficulties arise from making mental states (or something other than content) do some of the work usually ascribed to eternalist content. Even if we put aside questions concerning embedding (for discussion of Frege-Geach style problems with regard to Recanati’s account of modes more generally, see Marques, 2010), this kind of approach—which ascribes the role of determining what time figures as a parameter in the circumstance of evaluation to the nature of the mental state ‘containing’ such content—needs significant development or alteration to accommodate the manner in which episodic memory may contain information concerning temporal details of the relevant event or one’s relation to it or ‘feelings of pastness’.

¹⁴ Brogaard briefly considers this possibility but dismisses it because ‘it implies that when I recall the event, my memory can be true even if I never observed a crime in my life. It could be true if I were to observe a red car escape a crime scene 10 years from now’ (Brogaard 2012, p. 58). However, this has little force as eternalists would presumably wish to restrict the domain of discourse of the relevant quantifiers of the content of episodic memory to the past.

For instance, Recanati's approach does not seem to adequately distinguish between an instance of episodic memory of an event at some point in the distant past t_1 and of an event at a later time t_2 if those memories share the same temporalist content p unless we introduce further kinds of mental states (for, on the view being considered here, it is the mental state as 'mode' which supplies the time of evaluation and thus different mental states will be needed to distinguish $\langle p, t_1 \rangle$ and $\langle p, t_2 \rangle$).¹⁵ Unless significantly developed or modified (e.g., by shifting some of the work performed by 'modes' to other mechanisms), the resulting theory would be Byzantine in the multiplicity of 'modes' it would posit. Moreover, the relevant difficulties for temporalism will be compounded if one is inclined towards representationalism about episodic memory as temporalists would then face difficulties mirroring those faced by eternalist accounts of perceptual experience (see above) as one will not be able to say that an episodic memory of an event at t_1 (e.g. the distant past) is phenomenally discernible from an episodic memory of an event at t_2 (e.g. the recent past), which is inconsistent with empirical findings and the common view that 'feelings of pastness' may come in degrees (e.g. Perrin, Michaelian, and Sant'Anna 2020).

Thirdly, recent research on episodic memory presents several potential complications for both kinds of argument. Notably, discussions such as Recanati's take episodic memory to be a somewhat static repository or storehouse akin to a film in which the content of perceptual experience is recorded and may later be reproduced or otherwise examined.¹⁶ (I don't mean to single out Recanati here; the relevant picture has long been common in philosophy). However, a fairly different picture of episodic memory has long been dominant in psychology, neuroscience, and various other fields. On this account, episodic memory is not a static system involving storage, preservation, and retrieval of information, but a dynamic, constructive or simulative system of mental time travel (e.g. Schacter, 2012). What Recanati took to be an advantage of temporalism—namely, that it offers a straightforward account of what episodic memories share with the perceptual experiences they originate from because they share the same temporally indeterminate content—does not sit easily with the 'constructive' aspects of episodic memory indicated by empirical research (e.g. Addis, 2018).

Fourthly, episodic memory seemingly reconstructs the past by employing many of the same cognitive faculties and neural mechanisms as episodic imagination directed towards the future and is a manifestation of a more general capacity of constructing simulated experiences (e.g. Addis, 2018, 2020; Schacter & Addis, 2007). On 'continuist' views of episodic memory and imagination, which are currently dominant, one cannot draw a neat distinction between remembering the past and imagining the future (unlike traditional philosophical accounts, continuists typically do *not* think that episodic memory requires a causal connection between the relevant memory and

¹⁵ On Recanati's account, phenomenology is determined by temporalist content *and* the mode (2007, p. 141–2). This helps mark a difference between the phenomenology of a perceptual experience that p and an episodic memory that p , but does not help mark a difference between episodic memories which share the same temporalist content (for they also share the same mode).

¹⁶ E.g. 'the function of memory is to replicate the perceptual experience and, in particular, to carry the same content as that of the perceptual experience' (Recanati 2007, p. 137).

some perceptual experience(s), e.g. Michaelian, 2016a)¹⁷ and both episodic imagination and episodic memory should be seen as instances of the same more general mental state (e.g. ‘mental time travel’).

If continuist pictures of episodic memory are correct, then temporalist accounts of episodic memory will potentially struggle to distinguish one episodic memory of a singular event from another as argued above (e.g. remembering hearing a musical piece last Monday and remembering hearing the same piece last Wednesday) and also to distinguish an episodic memory directed towards the past from instances of imagination directed towards the future (e.g. remembering hearing a musical piece last Monday and imagining hearing the same piece next Monday). These difficulties are exacerbated when one considers anything related to the accuracy conditions of the relevant mental states (which arguably presents a special difficulty for Recanati, who rejects that the content of memory is self-referential).¹⁸

Accordingly, just as semantic eternalism seemed inconsistent with representationism and some common views in the philosophy of mind (see above), so too it seems that in order to accommodate common views concerning the phenomenology of episodic memory temporalists should either reject representationalism or any substantive form of ‘continuism’ about episodic memory and future-directed imagination, or else embrace some account of episodic memory—for instance, a self-referential account (according to which, e.g., episodic memory represents itself as having a certain causal history)—which does not commit them to positing that two instances of mental time travel which share the same temporalist content are phenomenologically indistinguishable (even if they are directed at very different times). There is clearly much more to say on these issues and I should signal that whether episodic memory is best regarded as a propositional attitude at all is probably open to question (consider, e.g., the absence of that-clauses in reporting it). Nonetheless, I hope to have given some indication of how debates between temporalists and eternalists with attention to these issues might be productive in rendering salient the benefits and costs of the relevant positions.

3.3 Knowledge

Finally, I want to briefly consider some epistemic implications of temporalism. These may be made salient by considering an example. Thus, suppose that on some Thursday, Nadiya wakes up knowing that Truss is Prime Minister. As Nadiya goes about her day, Truss ceases to be Prime Minister. However, this occurs unbeknownst to Nadiya,

¹⁷ ‘Discontinuist’ theories (which have long been dominant among philosophers, e.g. Martin and Deutscher 1966) typically take remembering that *p* to require an appropriate causal connection with the prior experience that *p* and thereby distinguish remembering from imagining. For the current status of such theories, see Michaelian and Robins (2018). For discussions of ‘continuism’ see, e.g., Michaelian (2016b) and Michaelian, Klein, and Szpunar (2016).

¹⁸ Recanati (2007) criticises self-referential accounts of memory such as Searle’s (according to which episodic memory represents a past event or state of affairs and that the past perceptual experience was caused by the event, e.g. Searle 1983), but incorporating such self-referential features could go some way towards quelling this sort of worry. For a self-referential account of memory which responds to Recanati’s criticisms of Searle, see Fernandez (2019).

who—temporarily having no access to the news—continues to think that Truss is prime minister for some time thereafter. If some substantive form of temporalism is correct, then Nadiya goes from *knowing* and thereby standing in the relevant relation to the temporally indeterminate proposition $\langle \text{Truss, PRIME MINISTER} \rangle$ at some prior point t_1 , to *falsely believing* and thereby standing in the relevant relation to the same temporally indeterminate proposition $\langle \text{Truss, PRIME MINISTER} \rangle$ at some later point t_2 . Such an example raises some of the same issues considered in Richard-style arguments (see above), but also makes salient at least two things which merit brief discussion.

First, it suggests that temporalists should be inclined to reject ‘knowledge first’ accounts of the kind influentially maintained by Williamson (2000) (and vice versa). According to such accounts, knowledge is *not* (as has often been thought) an impure mental state which incorporates the pure mental state of *belief* and has certain further non-mental features. Instead, it is a pure and fundamental state in its own right which does not have belief as a constituent or a common factor with it.¹⁹ However, this seems to sit ill with the changes between knowing that p and falsely believing that p (and vice versa) just described. After all, Nadiya has gone from *knowing* that p at t_1 to *falsely believing* that p at t_2 and although the relevant proposition has gone from being true to being false, it seems that Nadiya’s mental state has gone from being knowledge to ceasing to be knowledge (and being replaced with mere belief) with no relevant intrinsic changes in Nadiya herself (or, arguably, the relevant proposition despite its change in truth value), which seemingly indicates that it constitutively depends on features beyond Nadiya herself and is *not* a pure mental state in the manner posited by ‘knowledge first’ accounts. Accordingly, temporalism and ‘knowledge-first’ accounts seem to be poor partners.²⁰

Secondly, temporalism seemingly either entails that we have a lot less knowledge than we think *or* that we are profoundly mistaken about the nature of knowledge because a cluster of features—such as safety and not being liable to be rationally undermined by new evidence—often attributed to knowledge (not only by present-day epistemologists with otherwise widely diverging views, e.g. Lehrer, 1990; Sosa, 1999; Williamson, 2000, but also by numerous philosophers ranging from Plato to Descartes) do not in fact belong to knowledge at all.

Consider, for instance, temporalism’s implications for safety (according to which if one knows, one could not have easily been wrong in a similar case). On temporalist accounts, many of the true propositions which we might count ourselves as knowing at some time t —e.g. that my house has a white door, that so-and-so is Prime Minister, etc.—are such that, unbeknownst to us, they can very easily change from being true at

¹⁹ On Williamson’s view, knowledge is not ‘a metaphysical hybrid, a mixture of mental states with mind-independent conditions on the external world’ (Williamson 2000, p. 50). Instead, ‘to know is not merely to believe while various other conditions are met; it is to be in a new kind of state’ (Williamson 2000, p. 47). It has been argued that this view enjoys empirical support from cognitive and comparative psychology (e.g. Nagel 2013) and how neurocognitive systems make knowledge attributions (Bricker 2021), but this is open to contention.

²⁰ Temporalists could potentially avoid these consequences by embracing stronger forms of externalism. However, doing so would seemingly undermine support which prominent temporalists such as Brogaard provide for their position, which depends upon diachronic belief retention and the preservation of the *same content* over time and change (e.g. 2012, pp. 30–77).

t to being false at some later time t^* . Absent some very ‘cautious’ epistemic principles (e.g. suspend judgement on who is Prime Minister unless you have confirmed it in the last few minutes; of course, temporalists would presumably have to give attention to temporalism’s implications for belief revision, evidence, and several associated issues), this means that, for temporalists, even if one originally, at t , forms one’s judgement over whether p in an epistemically impeccable manner, the safety of the relevant judgement will often degrade with the passage of time. That is to say, even if one could not, in forming one’s judgement at t , easily be mistaken over whether p (and so one’s judgement is safe at t), the ease with which many temporalist propositions may change truth value entails that for many propositions, one *could* easily be wrong over whether p at times after t and this frequently renders the relevant judgement unsafe after t .

On temporalist conceptions of content, much knowledge will prove ephemeral and the mere passage of time undermines much purported knowledge even in the absence of what would ordinarily be regarded as new evidence and one may thus very easily *come to have* false beliefs (even if one began with purported knowledge) merely by not updating one’s beliefs. This has significant potential consequences. For instance, it may indicate that we have a lot less knowledge than we think at any given moment in time (as safety often has a short shelf-life), with ‘resilient’ knowledge being largely restricted to ‘timeless’ or ‘highly stable’ truths which cannot easily change truth value (this is, indeed, what many ancients and medieval philosophers took to be the extent of knowledge, probably owing in significant part to temporalist conceptions of content; cf. Nawar, 2018, 2019, 2022).

Equally, it may be that knowledge does *not* have many of the features traditionally attributed to it and that temporalists owe novel accounts of knowledge and related epistemic matters, such as evidence and rational belief revision, and perhaps also why ordinary knowledge attributions are overgenerous.

Such considerations are clearly not anywhere near decisive (for instance, those who are comfortable with certain kinds of pragmatic encroachment—for instance on belief, see e.g. Ganson, 2008—may see some of the potential ‘costs’ just described as negligible) and there is obviously much more to say on these issues. However, my aim here is not to decisively settle debates between temporalists and eternalists but, more modestly, to give some indication of some potential costs and benefits of temporalism and eternalism and to suggest that it is by focusing on these that we may be able to better discern the strengths and weaknesses of temporalism and eternalism as well as what might be at stake in debates between them.

4 Conclusion

In this paper, I argued that traditional debates between eternalists and temporalists focusing on the semantic efficacy of temporal operators and the intuitive (in)validity of instances of temporal reasoning have not been especially fruitful and have made it difficult to assess the strengths and weaknesses of temporalism or eternalism. I instead suggested that focusing on perceptual experience, memory, and knowledge

and the degree to which temporalist or eternalist contents are consistent with common theoretical views in these areas might be more productive. Inspired by some brief remarks by Brogaard (2012), I developed and examined an argument against eternalism based upon the phenomenology of perceptual experience. This argument, I suggested, indicated that eternalism is inconsistent with representationalism and some common views in the philosophy of mind. I then considered two arguments concerning memory (offered by Brogaard, 2012 and Recanati, 2007) that aimed to show that temporalism offers a better account of memory contents. I argued that these arguments were less efficacious and that temporalists may themselves face difficulties in accommodating representationalism concerning episodic memory or continuism about episodic memory and future-directed imagination. Finally, I argued that temporalism seems inconsistent with ‘knowledge-first’ approaches in epistemology and that temporalism has significant epistemic implications, including that either our ordinary practices of knowledge attribution are highly overgenerous or else that knowledge does not possess several features usually attributed to it, such as safety. Such implications and considerations, I suggest, make salient some potential costs and benefits of temporalism and eternalism in a manner which several more longstanding discussions have not and are more likely to advance debates between these views and our understanding of the nature of propositional content.

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