

Explaining Tensed Belief

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0. Introduction

A normally functioning human being can be attributed a wide variety of beliefs at each moment of her waking life. As I write this text, for example, I could be described as having the belief that I am currently writing, that it is now warm in my office, that I shaved in the morning before coming to the office, and that finishing this paper on time will be extremely difficult. But these are not the only kinds of beliefs I could have. As would be evidenced by positive answers to an inquisitive interlocutor, I also believe that $2+2$ equals 4, that water is H_2O , that the date of Napoleon's birth is before the year 2045, that my Monday class starts at 10:30am, or that it is not polite to shout at one's own mother.

There seems to be something fundamentally different between beliefs of the first kind and beliefs of the second kind. Let us look at one paradigm case:

[CLASS]:

I am an absent-minded graduate student who wakes up one Monday morning at exactly the time of my class, say at 10:30am. I think the thought that I would express by saying: 'The class starts now'. Consequently, I decide to run faster to catch the bus and the last part of the class. If this thought is a belief then it is belief:

(1) that the class starts now¹

All the while, though, I might have had the following belief:

(2) that the class starts at 10:30am

The two beliefs differ in their psychological profile: If I am the agent above, and I desire to be on time for my class, only the first belief (1) will make me run faster every time I have it. In contrast, belief (2) will not make me run faster at least in one case: when I do not know what time it is. In what follows I call the first belief 'tensed', and the second 'tenseless'—or sometimes non-tensed. I think that their differences extend

¹ I adopt here the convention of individuating beliefs through 'that' sentences that an English speaker would use to express them. The numbering, however, intends to indicate the belief itself, and not the English sentence, or what some theories would call the 'proposition' that the belief expresses. Natural language statements are instead indicated by single quotation marks, and propositions, whenever they come up, by carets. Other conventions adopted in this paper include putting single concepts inside quotation marks, italicizing properties, and capitalizing the names of the philosophical positions that will be examined.

to the beliefs contrasted in the first paragraph, and they are psychologically real. If illuminated properly, they should yield useful results regarding the way people think about time and how they behave as a result of these thoughts.

Traditionally, the existence and precise role of a tensed belief in one's cognitive architecture has been implicated in the metaphysics debate between the 'tensed' A-theory of time and its 'tenseless' B-theory competitor. We could ask ourselves: why am I relieved when I think the tensed thought that my root canal is over? Why not when I think the thought that my root canal is over at 10:30, which I would call here tenseless, hours before the operation? Followers of Arthur Prior reply that this is so because my relief is not about the world-event of my root canal having the tenseless property *being over at 10:30am*; it is rather about the root canal having the tensed property *being past*. But, as the B-theory denies that events can have properties like *being past*, we seem to have a clear argument in favor of A-theorists or 'tensers'.² In response, B-theory 'detensers' traditionally claim that the role of tensed belief can be explained away without positing tensed facts or properties in the world. A number of B-theorists point to Mellor's (1981/1998) treatment, which does this by using the tenseless properties of our tensed-belief tokens.³

I argue here against both traditional explanations. My view is that neither Mellor's treatment (sections 4-5 of this chapter), nor the A-theory one (sections 2-3), can form an adequate explanation of the nature of tensed beliefs and their role in our network of attitudes, so we have an explanatory gap that still needs to be filled. Before arguing against the traditional interpretations I outline the range of phenomena that need to be explained (section 1). The final two sections outline specific requirements for the ideal account (section 6), and first steps towards fulfilling them (section 7), suggesting clear avenues for future work.

My claim against the A-theory's power to explain the phenomena implicating tensed belief is not a trivial position. If this paper is read in the context of the tensor/detensor debate, it can form an argument against theorists expanding on Prior (1959) and charging the B-theory as being explanatory inferior to, or "less intuitive" than the A-theory. One finds statements like the following in the literature:

"The A-theory is more in tune with our human experience" (Callender 2008)

² Cf. Prior (1959), Zimmerman (2007), Cockburn (1998).

³ For some recent papers, cf. Dyke & Maclaurin (2002: 280), Le Poidevin (2007: 78), Callender (2008), Power (2012).

“Realism about tense is uniquely capable of making sense of the phenomenology of temporal experience; it represents the world as we perceive it to be” (Hare 2010:762)

“[Experience is] a defeater-defeater that overwhelms any B-theoretic arguments against the reality of tense” (Craig 2000:138)

If my arguments here are correct, in the case of tensed thought the A-theory and the B-theory are at least explanatorily on a par. Hence the A-theorist cannot use cases such as Prior’s to support the claims above, and the metaphysics debate can be cleared from an argument that has survived for more than five decades. My hope, however, is that this paper additionally moves the debate a little further, making substantial progress towards explaining the important aspect of the human experience of time that is tensed thought.

1. Data to be explained

There is a range of phenomena that an account of tensed belief needs to be able to explain. I will here attempt to describe them as neutrally-theoretically as possible, so as not to prejudge the usual explanations.

1.1. Timely thoughts and actions

The first explanandum is the thought process that implicates my tensed belief (1) in [CLASS] and leads to my timely action of running: Why and how do I form the decision to run after thinking (1), but not after merely thinking (2)? This thought process seems to be related to Perry’s (1979) comments that the use of an indexical term (in case [CLASS] the term ‘now’) is essential, and an indexical thought cannot be explained without it. But how exactly is the essential indexicality of ‘I’-thoughts and ‘here’-thoughts, that Perry (1979) illuminates, related to tensed ‘now’-thoughts like (1)?

1.2. Relief

Next we have the case described by Prior (1959):

[ROOT CANAL]:

At 10:30am I get off the dentist’s chair after a particularly painful root canal. Being averse to pain, I am relieved that my root canal is over. This relief is brought upon by, or is always coupled with, the belief

(3) that my root canal is over⁴

⁴ I assume here that there is such a thing as a belief, and that it does have a role to play in episodes such as [CLASS] and [ROOT CANAL]. A belief eliminativist or a non-cognitivist would not think there are special puzzles to be solved for the case

All the while, however, I might have had the following belief:

(4) that my root canal ends at 10:30am

The tension here is similar to [CLASS], in that belief (3) produces relief more often than belief (4). For instance, belief (4) does not bring about relief when it is believed before 10:30am, or when the subject does not know exactly what time it is. As with [CLASS], we need an explanation of my mental process involved in [ROOT CANAL] that produces relief.

1.3. Rationality

Besides the thought process leading to timely action and relief, we also need to be able to explain why this process is, or at least seems to be, rational. My running to be on time in [CLASS] results from a conscious deliberation on a world event, and brings about a successful result: my being on time for the last part of the class. Moreover, even though my belief (3) that the root canal is over might bring about an immediate emotion of relief, without a fully conscious deliberation, one would be hard-pressed to assert that the relief is *irrational*. After all, it alleviates my fear of upcoming pain, which (correctly) leaves me free to pursue other activities without emotional burden. Note here also that it does seem irrational to still fear upcoming root canal pain when that event has passed. An explanandum, then, for accounts of tensed belief is to illuminate the reason for my timely action or my relief; and if there is no single reason, one needs to show how the tensed belief I formed worked rationally inside my network of attitudes to bring about the results that it did.

1.4. Reference and Truth Conditions

There are still more issues related to the thought processes involved in our two examples. How does a tensed belief manage to refer to the events that it does? How does it get its truth conditions? More precisely, why and how are (1) and (3) true in our two cases? At least one theorist has attempted to circumvent these explananda by suggesting that tensed beliefs are always *false*. I cannot accept such a statement at this point without an explanation of why tensed beliefs look and feel true, as they do in [CLASS] and [ROOT CANAL].⁵

of tense, which is another way of arguing that the metaphysics debate cannot be settled by looking at tensed beliefs.

⁵ This is claimed by a B-theorist in Oaklander (1994). His mistake is that he is restricting the nature of a belief to its *subject matter content*: what world facts the belief is claiming to be about. Then, if my belief is that Obama’s presidency is present, it has to be false under a B-theory of time, as in that theory Obama’s presidency cannot have an objective real-world A-property such as *being present*. But notice that my belief that this goulash is yummy is not *false* if it turns out that

1.5. Belief updating

A separate question is how my whole network of tensed beliefs is updated when I notice time passing. In [CLASS] for example, when I perceive some time having passed, I move from thinking (1) that my class starts now to thinking something like (5) below:

- (5) that my class has (already) started

This updating of my tensed beliefs is constant in a subject's lifetime and, again, seems entirely rational. Our account needs to have the tools to explain it.⁶

1.6. Sharing

We also have the issue of the seemingly unproblematic sharing of tensed beliefs, as well as apparently sharing the thought processes involved when two rational interlocutors communicate. Let's go back to [CLASS] and imagine that I communicated my thought (1) to my reasonable roommate by shouting 'my class starts now!' while running towards the house door. In a normal case, she should understand the meaning of my statement, believe that what I say is true, and justify my running. On the other hand, she should be able to healthily question the rationality of my panic if I just utter 'My class starts at 10:30!' and start running without knowing what time it is.

1.7. Past and Future-Tensed Beliefs

Finally, we should make note that tensed belief extends beyond present-tensed or 'now'-beliefs, to past- and future-tensed beliefs. The ready example here is the belief in [ROOT CANAL], which I could express with the statement 'my root canal has finished'. (I leave it open for now whether or not this is the exact same belief as belief (3) that my root canal is over). These beliefs' nature and their connection to present-tensed beliefs have to be explained in the same depth to have an account of at least the two puzzle cases mentioned.

the goulash does not have any objective real-world *being yummy* property. We just have to explain the belief's content in a different way, probably involving me, my taste buds, and our relationship to the goulash's real-world objective properties. There are many theories that succeed in doing this, and some of them might be applicable to tensed belief as well (more on this in section 7).

⁶ Tensed belief updating is related to the issue of the passage (or apparent passage) of time (*cf.* Le Poidevin 2007, Callender 2011). I do not wish to discuss this controversial issue here, so I only mention as an explanandum the uncontroversial fact that during an agent's lifetime, and even after seconds, her tensed beliefs change character.

To sum up: we have here a wide range of data that goes far beyond the relief induced in Prior cases, which has been usually assumed to constitute the only phenomenon in need of explanation. To be able to explain all this data, we need to give an account of the *nature* of tensed belief. This involves not only defining what a tensed belief is, but also what differentiates it in thought from a non-tensed belief, when it appears, and how it works inside a network of beliefs to bring about the actions it brings about in a normally behaving rational person. One might also need to shed some light on a tensed belief's connection to the thinker's conceptual scheme, as well as the belief's truth-conditions. As we shall see, this is a hard task indeed.

2. An A-theoretic explanation

Episodes involving tensed attitudes such as [CLASS] and [ROOT CANAL] have been implicated in the metaphysics debate between the tensed, or A-theories of time⁷, and their tenseless B-theoretic competitors. The pertinent difference between the two groups is that A-theories will accept all of the following positions, while B-theories will not:

A-PROPERTY REALISM: There are genuine A-properties, such as *being past*, *being present*, and *being future*, possessed by events, times, or things

TENSE REALISM: Tensed language describes genuine A-properties or facts about them

TAKING TENSE SERIOUSLY: The verbal tenses of ordinary language cannot be reduced to any tenseless terms

FLUX: Facts about A-properties are constantly changing, *i.e.* events, times or things that were future will be present and then will be past

What interests me here is the frequent claim that the A-theory is more "in tune" with human experience, that experience seems to "favor" the A-theory in some strong sense. The claim is often supported by pointing at the existence and role of some tensed attitudes in experience, like our reliefs about the past and our beliefs about the present. Building on Prior (1959), one finds views such as the following:

⁷There is a wide range of A-theories of time, from Presentism to Growing Block and Moving Spotlight. Some representative accounts can be found in Craig (2000), Prior (1968/2003), Smith (1987), Zimmerman (2005).

“When I notice that a headache [...] has become part of the past, I am relieved that this is so. [...] If a theory of time makes such changes in attitudes utterly mysterious, we should have grave doubts about its adequacy.” (Zimmerman 2007:214)

“When we learn that [...] the movie starts now we seem to learn a new fact. Accordingly, tenseless relations cannot be all there is to time, and the best explanation of the presence of experience is that the present is ontologically privileged, more real than other times.” (Mozersky 2006:441)

“We describe things as happening *now* when we perceive them happening. [...] And we naturally suppose that [...] it is because events *are* present that we see them as such.” (Le Poidevin 2007:77)

There is at least a feeling of intuitiveness to these comments. At least the linguistic structure of some tensed belief expressions (‘that the root canal *is over*’, ‘that my class *is present*’) seem to press us towards A-PROPERTY REALISM. In this section I will attempt to infuse these remarks with some sophistication from current philosophy of mind and language, keeping in mind that the primary characteristic the A-theorist would want to retain is the intuitiveness, or simplicity, of her theory as an explanation of our tensed beliefs.

Let us start with TENSE REALISM, the claim that tense relates directly to an A-property. The principle can be used to state that each tensed belief’s content can be captured by looking at the corresponding A-properties that the verbal tense is assigning to an event, time, or thing (henceforth ETT). Let us apply this to my following four current beliefs:

- (1) that the class starts now
- (6) that Obama is President
- (7) that Bush was president
- (8) that Clinton will be president

As my belief (6) uses a present tense, for A-theorists it is a belief about the event of Obama’s presidency *being present*. Similarly, my belief (7) is about the event of Bush’s presidency *being past*, my [CLASS] belief (1) is about the event of the class *being present*, and my belief (8) is about the event of Hillary Clinton’s presidency *being future*.

Now, if A-PROPERTY REALISM is true, an event like Obama’s presidency does possess the property *being present*. Hence, the belief’s truth conditions (my explanandum 1.4) are quite straightforward: my beliefs will be true if they correspond to the real world facts at the time of my having said beliefs. So my belief (6) is true if, at the time of the belief, Obama’s presidency *is present*. Luckily for me the world right now contains this fact, so my tensed belief (6) is true. Even more luckily, the

world contains the fact that George Bush’s presidency *is past*, so my tensed belief (7) is true. In contrast, my class’s start-time at this instance *is not present*; hence my luck continues and the [CLASS] belief (1) that the class starts now is actually false. Regarding my future-tensed belief (8), the situation gets more complicated. However, if we assume that belief (8) can be true now, then it can only be true due to the real fact that the event of Clinton’s presidency *is future*. If there is no such fact of course, my belief (8) is not true.⁸

Using these claims, an A-theoretic explanation might also be able to explain the rationality involved in the production of timely action (cf 1.3 above) and, especially, relief (cf. 1.2). The A-theorist usually does this by pointing to the tensed facts above as being the reasons for action or relief. For our [ROOT CANAL] case, the details of why a tensed fact might form a good reason for relief diverge in depth and quality for different A-theories. For Growing Block theorists, I am relieved because my root canal pain “is no more” by the time in question; for others, because it is an ontologically less real *past* pain. In any case, we can accept here that it is simple and intuitive to say that, when one thinks of why she acted, or why she was relieved, one normally forms reasons involving A-facts or A-properties.

An A-theoretic account of tensed belief, then, will make good progress towards analyzing some data from section 1. It is not coincidental that sometimes it is thought to constitute an inference to the simplest explanation, as it takes the linguistic expressions of a tensed belief and ties them to world properties in a straightforward manner. The simplicity lies in that this straightforward correspondence between beliefs, statements, and world facts is also utilized in the explanation of all our other beliefs. For example, my belief that copper is ductile corresponds to my statement ‘copper is ductile’ and the real world fact that copper has the property *being ductile*. If my concept “ductile-ness” corresponds somehow to the real object property that copper has, it is at least elegant to posit that the A-concepts in the mind (“past,” “present,” “future”) similarly correspond to A-properties in the world (*past-ness, present-ness, future-ness*).

But is that all a tensor could say about the thought process involved in [CLASS] and [ROOT CANAL]? Probably not. She could also say that the object of a tensed belief is a *tensed proposition*, which would give her a first step towards integrating tensed belief with our other beliefs, and towards explaining how we might grasp its content. In this view believing the proposition \wedge Obama is president \wedge is exactly analogous to believing the

⁸ This is the well-noted problem of Future Contingents, first noted in Aristotle’s *De Interpretatione* (cf. also Anscombe 1957, Tooley 2000, Bourne 2011). I will refrain from talking about it here to keep the discussion as simple as possible.

proposition \wedge copper is ductile \wedge or \wedge Athens is a Greek city \wedge . In all cases the *object* of the belief is uniform (a proposition) and presumably the way we grasp the content of a tensed belief does not need specific explanation, because it is the same way we grasp the content of all beliefs. We look at the proposition believed. Going deeper, the A-theorist could add that one grasps a tensed proposition by grasping the senses of (i) the object or event involved (such as the *class* event in belief (1) from [CLASS]); and (ii) its claimed property, say *present-ness*. Again, the argument could constitute an inference to the simplest explanation: we do not need to posit different belief objects for tensed and tenseless beliefs, or different mechanisms of understanding, to connect tensed belief to our, now uniform, network of beliefs.

This resemblance of course does not mean that an A-account does not have any means to differentiate between tensed and tenseless beliefs if pressed to do so. The belief object type (a proposition) and the acquisition mechanism of both kinds of belief are the same, but the beliefs might differ in nature *exactly because* the propositions are about different things: in a tensed belief case the proposition involves A-properties of the ETT described, while in a tenseless belief case the proposition is not about A-properties at all. This arms the A-theorist with a tool to describe an additional difference we encounter between tensed and tenseless beliefs' truth-conditions. The mechanisms involved are the same: the beliefs are true just in case the propositions they are about are true. However, since FLUX—the view that facts about A-properties constantly change—is correct, a tensed belief's truth-conditions are inherently more unstable than a tenseless belief's truth-conditions.

The A-theorist seems to have an intuitive way to differentiate between tensed and non-tensed beliefs in the level of propositions and truth, and an explanation of some of our explananda, though an explanation of the beliefs' different roles in our cognitive architecture and thought processes has only been hinted at.

3. Against the A-theoretic account

3.1. Problems with reference, updating, past and future-tensed beliefs

I believe that an A-theoretic account of tensed belief would not be a complete account of tensed belief. The proposal's most severe drawback is that it *posits* the mind's connection to the world (tensed belief is about tensed properties of events), but it does not explain how this occurs, or even how it is possible for this connection to occur. In short, it seems like it uses a magical theory of reference.

The main data that is straightforwardly explained is the clear ability to find the tensed belief's truth conditions. But there is no explanation that

would point to the mechanism of the belief's formation, to how it refers to the events that it does, or an account of the way action resulting from a tensed belief is produced in a timely manner. The issue is problematic, as it is exactly at this point that we can notice a disanalogy with our normal garden variety beliefs: One can explain the formation of a belief about an object I see in front of me by pointing at the object's real-world properties and the human perceptual mechanisms that give me access to some of them. But an event's *being past* cannot be directly observed through perception. As Callender (2011:84) puts it, "one does not have access to the coming in and going out of existence of events. The popping of events into reality does not make any sound, emit light or exert itself upon the senses in any way. [...] Nor will the existential special-ness of any presently existing events be observable." How then can we become aware of a worldly event's A-properties?

Moreover, there is no error theory about the way we can be *mistaken* about our tensed beliefs. This happens often enough, such as when one sees a long-expired star in the sky, or when one wrongly deduces that the time is now 5:15 by looking at a stopped clock. As we have no account of how the belief refers to the A-properties of the events that it does, we have no account of how it sometimes fails to do so. But it is one thing to posit that a tensed belief latches on to real objective world properties that are independent of the believer; it is another to explain how this happens and what it results in.

To make the point more concrete, let us say that the A-theorist extends the account as I proposed, by claiming that the object of a tensed belief is a proposition, like every other belief's content. In this view, beliefs (7) and (9) below would work in the same manner:

- (7) that George Bush's presidency is past
- (9) that cats are feline

However, there is an obvious story to tell here about (9) and how it relates to other beliefs or how it is grasped: the belief involves a "cat-ness" concept and a "feline-ness" concept. Then, in a generally Fregean picture of linguistic understanding, to understand the content you just need to understand the senses/concepts of the words involved. No matter what the correct account of these concepts is (*e.g.*, definitional, or a perceptual connection with the concept's extensions), we can say something about them. But any story we tell about "cat-ness" cannot be extended to my "past-ness" concept. TAKING TENSE SERIOUSLY, the view that verbal tenses cannot be reduced to any tenseless terms, rules out any kind of definitional account that would define 'past-ness' in tenseless terms; and the way we can be directly connected to instances of *past-ness/futurity*, or

things having *past-ness/futurity*, is entirely obscure if the A-theory is correct in that past/future events or things are ‘not there’, or not as accessible as present events or things.⁹ Hence, even if we assume that one is directly connected to present things when she is having a ‘now’-belief (a theory of reference which I called magical), the account entirely obscures my explananda of section 1.7, our past- and future-tensed beliefs. All in all, we need a considerably elaborate story of reference that has not yet been told.

Notice also that such a theory of reference will become almost impossible if FLUX, the view that things and events constantly change their A-properties, is correct. If the A-theoretic account of tensed beliefs has an alpha-level magical theory to connect, say, my thought (1) attributing present-ness to my class event with the real objective property *being present*, then it seems that it needs an omega-level magical theory to explain how the mind constantly updates my multitude of tensed beliefs to *exactly correspond* to an ever-changing collection of A-properties. I mentioned in section 1.5 that our account needs to have the tools to explain this updating, and these have not been provided, exactly because reference has not been explained.

At this point, the A-theorist might object that I demand too much of an A-theoretic account of tensed beliefs. Might it not be that I can have them in a simple or primitive way, exactly like ‘I’-beliefs that refer to me, or ‘here’-beliefs that refer to where I am? Let us call this PRIMITIVISM. A primitivist will claim that there is no need to further describe *how* we think tensed thoughts, or how we update them. The tense is not in the thought, they might say, but only in the world. There is no further need to describe a *tensed way of thinking*.¹⁰

My reply to the primitivist is that there is nothing simple about either ‘I’- or ‘here’-beliefs. Everyone agrees that they indeed are *about* the thinker and the place of the thought, but the questions “how does that happen,” “how do I acquire them,” and “how do they lead to specific and successful actions” are still good questions without settled answers. Evidence for the ‘I’-belief’s peculiarity is the ever-expanding

⁹ This is the relevant “grounding” objection, a well-noted problem for A-theories of time. Presentism here fares worse when considering the past than other A-theories of time, and both Presentism and Growing Block fare badly with regards to the future. I believe that all A-theories encounter the issue, since all posit an objective ontological difference between things that are present and things that are past or future (*cf.* Mozerky 2011 for an expert summary of the problem and proposed solutions).

¹⁰ Prior might be seen as a primitivist, if one reads his comments (*cf.* Prior 1959) as implying that there is no need for describing what a tensed way of thinking might be, just that relief is directly connected to the fact that my root canal *is over*.

philosophical literature on self-knowledge and the phenomena Evans (1982) has called “immunities to error through misidentification.” Since Perry (1979), the first-person perspective is deemed to be an *essential* part of an ‘I’-belief, and there is a wealth of competing theories attempting to describe its function and connection to other non-perspectival beliefs.¹¹ A similar need to explain the private spatial perspective arises for ‘here’ beliefs too - and since Evans (1982), the manner that ‘here’-beliefs might connect to cognitive maps, perceptual capacities and/or action is a valid subject for investigation in the philosophy of mind and perception.¹² The primitivist A-theorist just cannot insist that she can be silent on these issues.

Furthermore, even if she could support that we are thinking our ‘now’-beliefs in a primitive manner, the need to describe a specific temporal perspective in our way of thinking resurfaces for explaining past-and future-tensed beliefs (my requirement 1.7). In turn, these get directly connected somehow to ‘now’-beliefs during episodes of updating and sharing (my requirements 1.5 and 1.6). If the primitivist A-theorist denies the existence of temporal perspectives for past- and future-tensed beliefs, she cannot explain most of my explananda from section 1.¹³

3.2. Physics makes the matter worse

The insistent hand-waving A-theorist might reply here that it would not be far-fetched to imagine a future, more complete, A-theoretic explanation filling out the explanatory gaps I have mentioned. However, there are tougher problems for her. These arise from the over-reliance on A-theoretic metaphysics, in light of the theory’s tension with the world picture described by the special theory of relativity (STR). I will briefly mention here why this is the case, but not to argue that considerations from physics can conclusively defeat the A-theory in the metaphysics arena, as it has often been assumed. Rather, I will argue that the way the A-theorist has to reply to the considerations from Physics takes away her theory’s intuitive connection to human experience, and hence erodes even further the claim that tensed attitudes favor the A-theory.

¹¹ For just a sample of the labyrinthine literature on this subject, *cf.* Pryor (1999), Shoemaker (1986), Coliva (2006).

¹² Besides Evans (1982), *cf.* Campbell (1994), Recanati (2007), Burge (2009).

¹³ A small digression here is important. Fine (2005) has proposed including perspectival first-person facts and ‘here’-facts in one’s ontology. But neither Fine, nor anyone else that I know of, has proposed that adding perspectival facts in the world is an adequate explanation of how ‘I’-beliefs and ‘here’-beliefs work in our cognitive architecture to bring about the actions that they do. Fine 2005 is not an explanation of how *we* think. My point here is that I do not see how the A-theory’s comments explain this either.

Let me explain: It is widely accepted that STR implies the denial of absolute simultaneity. This means that judging if two events at a spatial distance are simultaneous will be relative to the observer's frame of reference. Under STR then, no spatial hyper-surface can be considered as the objective present. This has been claimed by many metaphysicians to imply that talk of a privileged absolute present would be like talking about a privileged absolute 'here': not useful to describe the world as it really is (Putnam 1967, Sklar 1981, Savitt 2000).

This would not be enough to settle the metaphysics question because the A-theorist has four possible answers at her disposal. She could

(i) assert that STR is wrong (*cf.* Prior 1996, Craig 2000, Zimmerman 2011);

(ii) find specific structures from physics that might be fit to play the role of the privileged absolute present, such as the Alexandroff/Stein Present (*cf.* Maudlin 2007, Hoefler 2011);

(iii) relativize the present by accepting that an event can have different A-properties according to different frames of reference (*cf.* Maudlin 2007, Savitt 2009, Hoefler 2011:75-80) or

(iv) insist that the present is a time or property *unobservable by science* (*cf.* Rakic 1997, Craig 2001).

I cannot here fight for relativity's worth as a scientific theory. But I think it suffices against (i) to mention that a more scientifically viable theory with the same explanatory power still has not surfaced, and explanatory power is what is at stake in this paper.

What I will argue, is that options (ii) to (iv) entirely obscure our tensed attitudes, as all three destroy the intuitive connection to experience that the A-theorist claims to favor her theory:

First, option (ii) does not help, as structures like the Alexandroff/Stein present do not correspond well with what we intuitively take to be the present of our experiences. For example, we often see distant stars, and we often experience rapid events that are time-like separated *as simultaneous*. But these events cannot be in the Alexandroff/Stein present (Savitt 2009). Hence, the A-theorist cannot claim that 'now' beliefs about these events can directly, and accurately, connect to the events or their A-properties, a restriction that goes against our intuitions about our experiences.

Option (iii) fares even worse for tensed attitudes, as it destroys "our everyday intuitions about the existential import of the A-series, *e.g.*, with respect to our experiences of relief." (Müller and Strobach 2012: 476). For example, if one tries to give an explanation for [CLASS] by taking up option (iii), she immediately encounters the problem that there is no way to select one of the different relational A-properties of my CLASS event to serve as the reason for timely action, or the information that is shared between me and my roommate. As with option (ii) above, when the

present is relativized, the resulting A-theory loses the intuitive character of her explanation.

Finally, option (iv) does not help since, if the objective, mind-independent present is *unobservable* by science, then it is at least counter-intuitive to assert that it is constantly *observable* by human beings having true tensed beliefs. Now the A-theorist would not only have a magical theory of reference to explain how our tensed thoughts are automatically connected to objective real-world A-properties, or how we might be able to recognize their truth or falsity, but her theory is magical *by definition*, since it is by definition unexplainable by scientific discourse.

In sum, the retorts of the A-theorist to STR might save her in the metaphysics arena, but they lead to highly counter-intuitive positions, or at least explanations that erode the argument-from-simplicity for the theory's value regarding our tensed attitudes.

3.3. Problems from psychology and cognition

The claim that tensed attitudes favor the A-theory is further eroded when we notice (i) that our 'now' beliefs are sometimes about an extended present; and (ii) that our 'now'-beliefs are usually about the past.

The first fact has just recently been connected to tensed thought and the metaphysics debate (*cf.* Dainton 2001, Le Poidevin 2007, Ismael 2011), but it has been investigated by psychology and cognitive science for more than a century. William James (1890) was the first to characterize the present of our experiences as 'specious', and to define it as "the short *duration* of time that we are immediately and incessantly sensible" (my emphasis).

This definition actually covers two different groups of psychological data. The first is when a temporal interval is perceived both *as present* and *as temporally extended* (Le Poidevin 2004). This occurs primarily during auditory perception, where any percept (a sound) necessarily has duration and is perceived *as having duration*. However, some short sounds, or clusters of sounds, are also immediately perceived *as present*: separate notes, syllables, and sometimes even words are treated by the auditory system as happening *now* (*cf.* O'Callaghan 2009, Soteriou 2011). Similar data can be extracted from the Vision literature as regards the perception of motion. When we see objects moving, our perceptual systems represent temporally extended motion events both as extended and as present (*cf.* Le Poidevin 2007:87, Grush 2005; for a dissenting view, *cf.* Mellor 1981, chapter 6). This data is relevant to our project, as tensed thoughts that are often formed during such episodes refer to, or are about, temporally extended referents. Here are some examples:

(10) that note C s being played

- (11) that someone is now shouting ‘Duck!’
 (12) that the car is currently moving

The second group of psychological data covered by James’s definition of the “specious present” consists of cases when temporally extended events are perceived *as present*, but this time wrongly felt *as instantaneous*. Here the data is more controversial, but it still poses puzzles about the contents of the tensed thoughts they might form. Imagine a complex event *e* that is comprised of two very short distinct events *e1* and *e2* happening at different times, whose combined durations are smaller than the human threshold of perceiving simultaneity (Sternberg & Knoll 1973 and Morillon 2009 put this at 3-5 msecs). Human perception here will give us the wrong information about the world. It will either give the information (i) that *e1* and *e2* are currently happening at the same instant, or (ii) that *e* is now occurring at an instant. (These have to do with the possibly different sensory systems involved in perceiving *e1* and *e2*, cf. Engel 1999, Shore *et al.* 2001, Wittmann 2009). In both cases however, the tensed thought that is grounded on the information received by perception will again refer, or be about, a temporally extended referent.

The problem for an A-theoretic explanation of tensed thought is that it does not have the resources to explain those contents of tensed beliefs that are temporally extended, or to explain how the tensed belief connects to a temporally extended referent. This is because the tensed beliefs we just saw are about an interval, and the A-theory is committed to an objective but *instantaneous* present. Now the option of simply assuming a direct connection to the A-theoretic present to explain how tensed belief refers to the events that it does, or how it is true in the cases outlined above, is not available, and we are left with one more explanatory gap for the A-theoretic account.¹⁴

A bigger explanatory gap can be located when one notices that some, if not all, of our present-tensed beliefs are about what any A-theory would describe as *the past*. Past events or things that are very far away from us often enter into our perception-based thoughts, such as when one looks at the night sky and thinks thoughts about stars that have long since died. Moreover, given the time it takes for the brain to process sensory data, all of our tensed beliefs are, strictly speaking, about the past (Le Poidevin 2004). This becomes especially problematic when an external event is over by the time of the neural event processing its properties (Power

¹⁴ Hestevold (2008) attempts to diffuse this worry by positing an A-theory with a non-instantaneous, but short, present. Any such theory, however, will have a difficulty in constructing an extended single and objective present, since some change can and does occur inside it, either in different parts of the world or in a smaller material scale like atoms.

2012:122), or in cases of fast-moving objects, where by the time I form a thought such as *that x is now at spatial position y*, *x* has already moved beyond *y*. And notice that a time-lag in neural processing also affects the truth value of my belief (1) that the class starts now from [CLASS]. Since an event’s start is *instantaneous*, it will always be past by the time I form a belief about it. Hence, under the A-theory, my belief (1) will be false, or it will not manage to refer to a present event. Once again, positing an objective instantaneous present which is directly (and magically) connected to our tensed beliefs cannot correctly explain the truth-values of some, if not all, of our present-tensed beliefs. The A-theory simply needs to delve deeper into how we think tensed thoughts to explain at least why time-delays in thinking do not destroy reference.

To sum up section 3: contrary to the usual advertising, examining tensed attitudes in depth does not favor the A-theory. The A-theorist is mistaken if she thinks that she has explained all that needs to be explained by merely positing a tensed attitude’s direct connection to real-world objective A-properties (3.1) that, in addition, might be unobservable by science or be very different from the A-properties that we intuitively assign to events (3.2). The resulting theory obscures rather than illuminates human psychology (3.2, 3.3). It cannot explain belief updating (3.1), it cannot explain past/future beliefs (3.1), and it cannot explain ‘now’-beliefs such as (10) or (1) from [CLASS], as their reference time is temporally extended or is in the past (3.3).

4. Mellor’s B-theoretic explanation

It is widely accepted that the first good B-theoretic reply to Prior’s charge that tensed attitudes favor the A-theory was Mellor (1981), further worked out in his later works (cf. Mellor 1991, 1998a & 1998b). Mellor views our [ROOT CANAL] case of tensed attitudes as a danger to the B-theory due to the following argument:

- (i) If the B-theory is true, then when I say ‘thank goodness that my root canal is over’ the object of my relief is a B-fact, such as the fact that the root canal is (tenselessly) over at 10:30am
- (ii) If the object of my relief is a B-fact, then it would have been just as reasonable for me to thank goodness before the ordeal was over
- (iii) It is not the case that it would have been just as reasonable for me to thank goodness before the ordeal was over
- (iv) Therefore, the B-theory is false¹⁵

¹⁵ The argument breakdown is due to Sider (2001).

Mellor's (1981) reply is that the argument is unfair to the B-theorist in that she does not have to accept premise (ii). Let us imagine that at the moment of writing (late September) I am very much relieved that it is warm here in Mexico, and I might reasonably utter:

(13) 'thank goodness it is warm here'

Mellor finds it uncontroversial to say that my relief is about a non-perspectival fact involving spatial positions, something like the following fact:

(14) it is warm in office 314 of the Institute IIF of UNAM in Mexico

However, it *would* be controversial in this case to assume that it is reasonable for me to thank goodness for fact (14) when I am spatially located in Alaska! Mellor thinks—and I agree—that the B-theorist can take the same position regarding [ROOT CANAL]. Indeed, the object of my relief is a tenseless B-fact, but it would *not* have been reasonable for me to thank goodness before the ordeal was over, because in that case I am not located in the relevant temporal position, exactly like, in the Alaska case, I am not located in the relevant spatial position. The B-theorist can thus deny premise (ii) and save the tenseless account of tensed beliefs.

As disarming as Mellor's (1981) response appears against the A-theorist, there is a very important worry for this paper: the position is explanatorily limited when seen as a wholesale theory of tensed belief. To take just one of my explananda from section 1.1, we need to explain the thought process leading to timely action in cases such as [CLASS]. We can deny that premise (ii) is true to respond to the A-theorist, but we have not made any explanatory progress if we cannot explain why the belief (1) that my class starts now—and not (2) that my class starts at 10:30—leads to the agent's timely action.

The later Mellor acknowledges these explanatory gaps and takes some steps towards explaining at least when and how a tensed 'now'-belief is formed. In Mellor (1998a), he combines a primitivist position, such as the one we saw in section 3.1, with the view that 'now'-beliefs arise from the "necessary presence of experience" (1998a: 42). The idea is that any time I am having a conscious experience, say, when I feel pain at t_1 , I necessarily and automatically locate it *in my present*, but only in the sense that a token of a tensed 'now'-belief, say, that I am feeling pain now, necessarily arises at the same time t_1 . For Mellor, we are not really ascribing *present-ness* to our experiences—we are just aware of them when we are having them. A tensed 'now'-belief, then, just *is* an awareness of an experience (Mellor 1998a:43). This is B-theoretic, in the sense that the B-facts about the agent's experience tokens (essentially, just that they happen at time t_1) are enough to explain how tensed beliefs arise in the agent. I submit that this

might be enough to explain the formation of tensed 'now'-beliefs involved in my 1.1 explanandum.

Still, Mellor has to explain the datum of the timely action that follows from a tensed belief in cases such as [CLASS] and [ROOT CANAL]. The explanation he proposes in Mellor (1991) attempts to derive the *causal properties* of a tensed belief in terms of its semantic properties:

"[If $B(IN)$ is my belief that I face food now], the content of X 's belief $B(IN)$ at any time Y is the [...] function $f_{IN}(X,Y)$ from X to Y to the truth condition that X faces food *at* Y . [...] $B(IN)$'s causal function is linked to its content, *i.e.* to its semantic function $f_{IN}(X,Y)$. [...] True beliefs *make desires cause actions* that succeed in achieving the desired end." (Mellor 1991: 23, my emphasis)

Here a true 'now'-belief token, together with the relevant desire, directly causes timely action; and the tensed belief succeeds in producing timely action *exactly because* its truth conditions hold.

I interpret these explanations as primitivist explanations, very close to the A-theoretic primitivist I criticized in section 3.1. Indeed, Mellor (1991) explicitly denies that tensed belief contains any "point of view" element in thought, or any temporally perspectival way of thinking:

"['Now'-beliefs] need no causal surrogates, no internal representations of the agents and times they refer to" (Mellor 1991: 29)

"They do not involve [...] internal representations of oneself or the present" (Mellor 1991: 25)

In essence, Mellor restricts the explananda to the tensed belief tokens. As these are always made at a specific time, say t_A , their truth-conditions are then tied to that time. So when we need to examine the results they cause, say my running at t_{A+1} , we can just point to the times of the belief token and that of the action caused. But a true tokened 'now' belief at t_A will always result in a timely action at t_{A+1} :

"The mechanism that links such a belief to the agent and the time it refers to is simplicity itself: the contiguity of cause and effect." (Mellor 1991: 24)

For Mellor there is no special need to further explain the thought process involved.

5. Against Mellor

I believe that, insofar as these comments are meant to explain away the appearance and cognitive role of tensed belief, they will not do the considerable work we need them to do.

First, it is not clear that Mellor can use necessary facts about experiences in his explanations in the way he imagines. One counter-example can be provided by Richard's (2003) hypothetical case of the person I will call "Maria the precognitive experiencer":

"A person could believe that at any time t her experiences—at least her experiences of external objects—were experiences, not of those objects at t , but of those objects as they are [...] k seconds in the future: she thinks that her perceptions are consistently of how things will be in just a little while. When you ask her a question, she consistently waits k seconds before answering; if she hears the telephone ring, she waits k seconds before answering it; and so on." (Richard 2003:177)

In this example, Richard is attempting to drive a wedge between experiencing an event and automatically locating it under the present. I believe that his counter-example also works against the eliminativist proposal of Mellor (1998a). One might read the case in two ways. Either (i) Maria manages to stop the tensed belief that the phone is now ringing from arising, or (ii) she does form that belief, but it does not have the correct motivational properties we usually associate with 'now' beliefs. The first reading describes a disconnection between Maria's awareness of her experiences and the 'now'-belief that for Mellor (1998a) just *is* that awareness. For Mellor, reading (i) has to be false, as surely Maria is not able to go against a necessary identity statement. But the latter reading is problematic too, because it implies that Maria somehow manages to stop Mellor's (1991) "strong causal fact," of her tensed belief causing timely action, from taking place. Again, it doesn't look like Maria could act against the "powerful contiguity of cause and effect" that Mellor notes. His reply here might be that indeed she cannot, that Maria's condition cannot exist and *that* fact is also a necessary (or strong causal) fact of human experience. But the conceivability of the case puts the burden of proof on him: it certainly does not seem that Maria's condition is nomologically or metaphysically impossible.

The main problem with Mellor's theory, that I think is the source of the problem above, is his explicit denial of the relevant 'now'-like perspectival representation in thought. Let me mention again some of the data we need to explain. One is how and why the mind seems to be thinking in temporal A-notions, for instance when, faced with the belief that the class starts now I make the seemingly reasonable decision that I

have to run (cf my 1.2). Another is that I might engage in conversation with my roommate about the correctness of such a decision (cf. my 1.5). These episodes are easily explained if one assumes that there is something related to the present-ness of my class that is *conceptual*, that can be shared between roommates and form a reason to act. But Mellor's explanation gives us no way that the concept of 'present-ness' can be formed, since he explicitly denies that a specific representation of the present time in the thinker's thought exists, and the tokened tensed belief does not contain any reference to the present time *as such*. If the concept present-ness is needed to explain our data, then Mellor cannot explain them.

Even if one denies that concepts are part of the explananda, simply describing general empirical causal facts that are not part of the subject's train of thought cannot illuminate my thought process in [CLASS] that normally leads to timely action. Mellor proposes that the latter follows because of some necessary properties of causation—in essence the thought-time is transferred to the time of action through the belief token's time. But if we are to explain processes such as inferences, rational decisions, or communication—in short when we are dealing with information processing, mental acts and phenomena such as agency and intention—it is implausible to think that crucial steps of these processes happen *automatically*, and without the appropriate representations in the thinker's mind. It is the agent herself that rationally decides to act in [CLASS]. A mechanistic explanation positing the required causal effects as results of general causal laws will totally obscure, or worse deny, the agent's thought process. Once again, the rationality and sharing explananda force us into explaining *how we think* when we are having tensed beliefs. Mellor's comments, just like the primitivist A-theorist's, cannot be taken to have explained this at all.

I am not claiming here that thinking and acting without conceptually representing events as happening in the present is impossible. It might be true, for instance, that quick perceptions involving temporal information result in non-deliberated quick reflex actions. Even in these cases, however, it is easy, and methodologically preferable, to instead claim that the agent still notes the present, by utilizing a temporally perspectival way of thinking. You can call this a 'now'-like representational element in elementary thought, exactly like the way in which elementary perspectival representational elements, such as spatial egocentric maps, are utilized in fast cognitive processes of spatial information that lead to successful actions. Even when these low-level perspectival elements are not conscious, they have to be *available* in the sense of Burge (2003) or Heck (2000). It is implausible to posit that they do not exist, or that the tensed beliefs that might arise from quick perceptions of temporal data do not

depend on them. Hence, even in seemingly automatic cognitive processes, we need to describe the representational elements if we claim to have explained how timely actions follow from them. General empirical causal facts will not do here either.

Even though Mellor (1998a) in general recognizes my rationality and sharing explananda, sometimes he seems to be talking as if simply describing the ‘now’-thoughts as *indexical* can explain all that needs to be explained. (There are others that have followed his lead, such as Callender 2010 and Power 2012). But as I mentioned in 3.1, it is widely accepted in the philosophy of mind that in order to explain reference, the rationality of the resulting action and sharing, in cases of ‘I’ and ‘here’-indexical thoughts, one needs to analyze the first-person and spatially perspectival points of view.¹⁶ The details between the ‘I’ and ‘here’ explanations are vastly different, and one should expect that they will be different in the ‘now’ case as well. This is a crucial point: since more work is needed in the general area of indexicality, as well as the specific area of temporal indexicality, Mellor cannot conclude that he has explained what needs to be explained.

Mellor’s silence on how we come to represent the present is even more troubling for explaining beliefs that could be expressed in past or future tenses. These tensed beliefs are different to now-beliefs in that they point to different ways that the agent’s temporal perspective is relevant to rational thought; hence Mellor cannot claim that he has explained them by merely explaining present-tensed thoughts. And if concepts are needed to explain rationality and sharing, the problem of the magical appearance of a “present-ness” concept is accentuated, because there is no story for the “past-ness” or the “futurity” concept either.

Finally, without a story explaining ‘now’-like representations, or ‘past’-like representations, one cannot explain the datum of updating (my section 1.6). The question is how my mind reasonably moves from a ‘now’-belief to a past-tensed belief when I notice time passing. Mellor’s causal story might give the answer here that experience gives me a whole new set of ‘now’-beliefs when some seconds pass and new experiences are formed (cf Mellor 1998a:67). But this is not an adequate reply. There is a connection between our ‘now’-beliefs and our past-tensed beliefs. I think ‘x has started’ *because* I once thought ‘x starts now’ and time has passed since then. Moreover, the sudden appearance of a new set of ‘now’-beliefs cannot explain what happens to the old set.

¹⁶ Let me repeat here that the details of such analyses are still debated; for example, Perry has only just recently published a paper attempting to analyze ‘I’-beliefs in the explanatory depth required here (Perry 2012).

Let me sum up the paper so far: I have tried to flesh out two rudimentary accounts of the nature and psychological role of tensed belief from the philosophy of time, and found that they leave considerable explanatory gaps pertaining to reference, updating, rationality, past-tensed beliefs, and the tensed belief’s connection to experience. Since these accounts are the traditional accounts of both the A- and the B-theories, their explanatory failures mean that, at least at the outset, the two metaphysical theories are explanatory on a par, that is, not very good at all. But in one sense it is not surprising that they fail. Explaining the whole range of phenomena outlined in section 1 in the required depth is a very difficult task, more suited to the philosophy of mind and language than the metaphysics of time.

The following two sections attempt to make some progress towards a more adequate account. Once again, I will try to be as neutral-theoretic as possible to avoid prejudging replies, or unnecessarily cluttering up the discussion.

6. Establishing the type

I believe that we can form a good explanation of tensed thought as a distinct psychological type, and in the depth that this paper is demanding. The first step, however, is to find the correct criterion to separate the beliefs with the relevant psychological profile (the tensed ones) from the ones that do not have it (the tenseless ones).

One might be tempted to propose a criterion centering on the use of *verbal tense* in the belief’s expression statements. My current belief that I am writing a paper seems to essentially involve the present progressive tense; my belief that I shaved in the morning essentially involves the past tense; and my belief that it will be extremely difficult to finish the paper on time involves the future tense. In contrast, tenseless beliefs do not seem to essentially involve the past, the present progressive, or the future verbal tense.

Centering on verbal tense, however, would not be the correct criterion. First, it would not be conducive to analyzing tensed beliefs whose essential connection to the past, present or future is encoded in a different grammatical form. This might happen in beliefs expressed in statements involving adjectives such as ‘present’, ‘former’, and ‘future’, or adverbs such as ‘yesterday’, ‘presently’, and ‘previously’. These beliefs should come out as tensed, independently of the verbal morpheme used in their typical expression, as, for example, they also lead to timely action. Secondly, the criterion will encounter problems with natural languages that are very different to English. For example, it will not serve to correctly characterize the tensed beliefs of a monolingual speaker of

Mandarin, as Mandarin provides no strictly grammaticalized tense forms, optionally locating the time of events by means of adverbials and syntax (Hickmann 2003: 16).¹⁷ A third reason is that grammatical verb morphemes, such as the Simple Past verb form in English, are a part of natural language, and thus they end up expressing far more information than merely temporal position. When these verb forms turn out to indicate aspect, modalities, Actionsarten, or pragmatic features of the language in use rather than temporal position, a characterization of the corresponding beliefs as tensed might be entirely wrong. Most damagingly, the criterion will not help us with the paradigm case [CLASS], where the two expressions (1) and (2) use exactly the same verbal tense. If our categorization centers on the verb used, beliefs (1) and (2) would have to be included in the same category.¹⁸ Hence, attempting to define a tensed belief in terms of the verbal tense used to express it would not carve out a category of tensed beliefs as clearly as intended.

We also cannot carve out a tensed belief category from pragmatic considerations, such as centering on the amount of personal stake involved. It is true that many tensed beliefs feel more personal than tenseless beliefs. But consider the difference between my belief that it is not polite to shout at one's mother, in contrast to my belief that it is cold now in Alaska. Assuming that I will not be magically transported to Alaska without my coat in the next hour, the first, tenseless, belief involves me, my intentions and my actions more personally than the latter, tensed, one.

A third criterion that might be proposed would center on the possibility that tensed beliefs are about contingent facts, while some tenseless beliefs look to be closer to necessary facts, or maybe relate to *a priori* sentences. Indeed, it is plausible that some tenseless beliefs, such as my belief that 2 plus 2 equals 4, or my belief that bachelors are unmarried, are not contingent. However, the status of other beliefs—like my belief that it is not polite to shout at one's own mother—is contested; it is an open question at best if they can be called *a priori* or even necessary. And, again, when we consider beliefs (1) and (2) from [CLASS], we can see

¹⁷An example from Hickmann (2003: 55):

(3.6) Ta1 pao3 le (3p run LE) translates ('He ran')

(3.7) Ta1 pao3 zhe (3p run IMP) translates ('He is running')

(3.8) Ta1 zai4 pao3 (3p IMP run) translates ('He was running')

Notice that the verbal morpheme remains the same in all three constructs (pao3 – to run), and 3.7 differs from 3.8 just in terms of the *syntax* of the sentence.

¹⁸ This is why it would be even more misguided to propose that the English Present Progressive Tense encodes tensed belief while the Simple Present encodes tenseless belief. In this case, even (1) will be tenseless, which is not the result we want.

that they both share *the exact same features* regarding the necessity or a-priority of the corresponding sentences I would use to express them. Hence necessity or a-priority would not be a distinguishing feature for defining the categories we are interested in.

Finally, one might nominate as the distinguishing factor the related feature that my tensed belief examples seem to *change their truth-value over time*, while the tenseless beliefs do not. Admittedly, this criterion comes closer to carving out the categories we are interested in; but it has some well-noted problems.

The first is that there are cases where it will not help us in categorizing our respective beliefs. Consider here my, admittedly complex, belief that either I was bald sometime in the past, or I am now bald, or I will be bald in the future. This belief's truth-value does not change over time: it is either true or false, regardless of when I am having it. Nevertheless, one would intuitively put it in the category of tensed, rather than tenseless, beliefs. It resembles my tensed belief (1) from [CLASS] that my class starts now more than my tenseless belief that roses smell nice, and its expression uses past tenses and temporal indexicals in the same way as other tensed beliefs.

A second well-noted issue is that accepting this criterion creates problems with correctly individuating beliefs. The idea is that it seems counter-productive to posit that the same belief can change truth-values over time, in the same manner that it is counter-productive to posit that the same belief can change truth-values over places or believers. It is not wrong of course to say that thoughts such as those expressed by the statements 'I am cold' or 'this city is ugly' *depend* on the person expressing it or the place she is at. When I am in Mexico both beliefs are false, while they are true when I am in Columbus Ohio during winter. But it is strenuous at best to assume that it is the *exact same belief* that I am having in both places, and it is even more strenuous to say that you and I have the exact same belief when we utter 'I am cold'. Extending this observation to tensed belief, I can distinguish my current belief that Greece is now having a rough time from the thought I briefly entertained—and dismissed as false after careful consideration—ten years ago, which I would express with the same words. It simply does not feel like I believed the same thing then as I do now.¹⁹

This is of course related to the controversial issue of whether propositions are *eternal*, propositions usually accepted as our paradigmatic

¹⁹ One might also add some evidence from the way in which language works: I cannot combine the true statement 'it's humid', said by me five years ago, with the also true statement 'it's snowing', said by me yesterday, to say 'it's humid and it's snowing' (*cf.* A. Moore 2004: 390).

belief objects. I cannot here rehearse all the arguments for and against the view that propositions do *not* change their truth value over time, in contrast to the sentences that express them. I will just be content to note that the view has historically been favored by analytic philosophy of language, beginning with Frege and Russell,²⁰ and moving to Evans, Salmon and Richard. For them, the proposition \wedge the tree is covered with green leaves \wedge is the same proposition as \wedge the tree is now covered with green leaves \wedge : an eternal proposition with a definite truth-value depending on the time of uttering the statement expressing the proposition, or the time of believing the proposition. This doctrine might turn out to be correct; but I submit that, at least at the outset, we would need a very good reason to abandon it, especially since no one abandons it in the case of ‘I’-beliefs and demonstrative or ‘here’-beliefs.

In sum then, using the criterion that some beliefs ‘change their truth-values over time’ to characterize them as tensed, would unnecessarily commit us against very plausible pre-theoretical, as well as theoretical, considerations.

I would like to propose a better criterion for individuating the categories of tensed and tenseless beliefs. It is the possible use of a temporal indexical in the tensed belief’s expression, such as the term ‘now’ in my [CLASS] belief (1) that my class starts now. I say ‘possible’ because when the indexical is not overtly expressed, as in saying ‘I am writing a paper’, the same belief could be expressed with a statement using an indexical, as in saying ‘I am *now* writing a paper’ (the italics here and later in this paragraph are only for purposes of exposition). Similarly, my belief that I shaved in the morning could be expressed by saying ‘I shaved *today* in the morning’, and my belief that Clinton will be president can be expressed by saying ‘Clinton will be president *in the future*’. In contrast, something perplexing happens when I say ‘copper is *now* ductile’ or ‘2 + 2 will equal 4 *in the future*’. It sounds as if I am expressing a totally different belief than the ones I would express by saying ‘copper is ductile’ or ‘2+2 equals 4’. In short, it seems that a tenseless belief cannot be expressed by using temporal indexicals.

As a starting point then I propose the following definition for at least separating the two belief types:

DF: A tensed belief is one the believer could express by using a temporal indexical

²⁰ The *locus classicus* for denying this claim is the relatively more recent Kaplan (1979).

Antithetically, a tenseless belief is a belief that is not tensed. This criterion covers natural languages without verbal tense morphemes such as Mandarin,²¹ keeps the similarity to ‘I’ and ‘here’-beliefs intact, clearly separates (1) from (2) in [CLASS], gives the correct result for complex tensed beliefs that do not change their truth-value over time, and is sufficiently neutral concerning the pre-theoretical intuition that I am having different beliefs over time that I might express with the same words, as well as the theoretical position that propositions are eternal.

7. How to proceed further

The previous section has given us an initial way to separate our everyday beliefs into two camps. But definition (DF) might not be enough to explain how it works in our cognitive architecture, as I described the goal in the first section of this paper. One reason is that (DF) is still tied to the linguistic expression of a belief, and as such it does not give us a guarantee that it will illuminate the fundamental differences between two possibly very different *ways of thinking*. It is true that language is extremely important as it points to, or gives data for, the underlying mental structures. But any data from a linguistic analysis is bound to encounter the question whether it really gives us conclusive data for the underlying mental happenings, since one can have thoughts without expressing them in language, or even without being able to express them in the languages with which we are familiar.

To illustrate this point let me look at Smart’s meaning equivalence theory for tensed talk:²²

TOKEN REFLEXIVITY: An utterance *u* of ‘now’ *means* ‘the time of this utterance’, and an utterance of ‘e is happening now’ *means*: ‘e HAPPENS at the time of this utterance’. Similarly for all tensed statements. (Smart 1963, capitals indicate tenseless verbs)

Pertaining to language or semantics, TOKEN REFLEXIVITY might be a true statement. But this is neither here nor there for our purposes, since we would need an additional layer of explanation to deal with tensed *beliefs*. The problem is that when the belief remains unuttered, and there is

²¹ I assume here that the Mandarin terms *zhe* (‘now’) and *le* (‘then’ – see five notes above) are temporally indexical. If not, the definition could instead be:
DF’: A tensed belief is one the believer would be able to express *in English* by using a temporal indexical.

²² I could have used Reichenbach’s (1947) theory here to the same effect. See also the next footnote for a similar theory from Linguistics. Perry 2012:97 has a similar point about self-beliefs not being usefully analyzed as being about “the speaker.”

no “utterance u” to anchor Token Reflexivity, the theory does not have *any* explanation for an action that might result from having said belief, such as my running in [CLASS]. I think that this adequately motivates

REQUIREMENT 1: Analyzing tensed belief should move beyond analyzing natural language.²³

I would like to add a second requirement that follows from my comments in sections 3.5 and 5. In order to be able to connect our tensed beliefs to experience, and the world facts that make them true,

REQUIREMENT 2: We have to analyze how cognition processes temporal information.

In exactly the same way that perceptual beliefs depend on perceptions (Burge 2003), and the way that ‘here’-beliefs depend on cognitive maps and non-linguistic processing of spatial information (Evans 1982), tensed belief often depends on fast, non-linguistic, subpersonal, but highly complex mental processes. Even though the cognitive science literature on what might be called “time perception” is still in its infancy, we already have a lot of data about our mental processing of temporal information that are related to tensed beliefs appearing at a higher level.

Consider the following psychological processes: I feel a tear running down my cheek and think “why am I crying now”? After waiting some time in front of the traffic light I believe (correctly!) that the traffic light will turn green in milliseconds (Hoerl 1998). I hear someone shouting ‘Bill!’ and immediately turn around to see her. I am attacked by a tiger and think automatic thoughts such as the tiger *was* there and *will be* here in a moment, a thought that hopefully leads me to the timely action of running away. One might also point to my ability to perceive sounds that are necessarily temporally extended *as present* (O’Callaghan 2009), or our surprisingly accurate multi-sensory integration of percepts from the same temporal and spatial source that however reach one at different times due to the different processing times in vision and audition (Shore *et al.* 2005).

²³ A digression in case one thinks that we can relegate tensed belief analysis to Linguistics: the way linguists define tense cannot be a starting point to an analysis of tensed belief either:

“The linguistic category of tense typically relates the time of a denoted situation to the time of the immediate *speech situation* or to some other temporal point established in *discourse*.” (Hickmann 2003:15, my emphasis)

This definition is grounded on a speech situation or discourse facts—conditions and events that will typically be absent in the context of an unuttered tensed thought like (1) in [CLASS].

In all these cases, *language* will not help us explain the tensed beliefs that arise, nor the fast and automatic timely actions that they bring about.

The possible absence of language contexts to ground tensed belief, and the latter’s dependence on lower-level temporal processing, do not form conclusive arguments, but at least constitute good indications that we should not limit ourselves to the philosophy of language and assume it will be able to explain tensed belief in the depth that we need. A better strategy would be to start from

REQUIREMENT 3: We should explain the difference between tensed and tenseless beliefs with some difference *in the level of thought*.

This term can cover a wide range of terms from theories of attitudes, such as “belief content,” “belief object,” “belief state” or just “way to believe.”²⁴ Ideally, these terms will be able to be connected to concepts, shared language, as well as definition (DF) from section 6, so that the account is completed.

A final consideration: as glimpsed in section 5 against Mellor’s strong causal explanation, starting from the level of thought does not mean that we can completely disregard representations or concepts. Imagine a possible future-neuroscience according to which the difference in the resultant behavior from tensed and tenseless beliefs is a mere difference in the physical realization of that belief, maybe because the following two neural facts are established:²⁵

- A: [tensed beliefs are realized near the human ear]
- B: [tenseless beliefs are realized near my hippocampus]

This is of course not a full explanation; the theory has to posit and uncover additional layers of neural explanations connecting, say, the human ear to the brain regions responsible for timely actions or relief. These would be extremely complex causal layers to uncover for *every* kind of action resulting from tensed belief, as well as *all* the emotions that tensed thought produces.

Even if these layers of explanation could be produced, and I sincerely doubt that they could, they would not form an adequate explanation for the tensed/tenseless belief difference of the sort I am seeking, as they cannot

²⁴ Hence it is meant, in this text, to cover theories of indexical thought such as those in Perry (2002), Higginbotham (2003), Lewis (1979), Burge (2009), and even views postulating wide belief contents, such as Dretske (1995) and Tye (2000).

²⁵ I cannot resist the urge to point to this sentence about *the future* that, however, uses the Simple Present verbal tense morpheme.

explain how the subject can become aware of the difference between tensed and tenseless beliefs, or why the difference seems *rational*. As I noted in 1.2, one intuitively knows the difference between the two categories: in [CLASS] it seems rational for me to run after a tensed belief, but irrational to run after a tenseless belief when I do not know what time it is. This reasoning can be immediately shared with an interlocutor who should justify my actions (my 1.5). But when the difference between tensed and tenseless belief is only a matter of physical realization, we have to rule out rational thought by, and communication between, normal people who are not neuroscientists. This would be unacceptable.

An explanatorily adequate theory of tensed belief should carefully walk the delicate line between the personal and the subpersonal; the conceptual and the perceptual; the reasonable and the automatic. But this is not surprising—good theories of ‘I’ and ‘here’ indexical thoughts, as well as perception-based demonstrative thoughts, have been walking this fine line for decades. Working towards a similar theory for tensed thoughts should not be viewed as a desperate or impossible task.

8. Concluding Remarks

Let me summarize the paper’s progress so far. I mentioned in section 1 that a good account of tensed belief as a distinct psychological type needs to explain how tensed beliefs normally lead to timely action or relief, how they refer to the events that they do, how they get their truth conditions, how they are shared and updated, and why they seem rational. In sections 6 and 7, I proposed a way to distinguish them from tenseless beliefs, and the following methodological requirements:

- (Req. 1) that we cannot hide the perspectival representations involved
- (Req. 2) that we have to attempt to connect tensed beliefs to the quite diverge ways the human organism processes temporal information
- (Req. 3) that we should avoid language-specific explanations where we can
- (Req. 4) that we should avoid neural causal explanations where we can.

Let me also repeat my assumptions from section 1: that there is such a thing as a belief, that my tensed beliefs can be true (and often are true), and that these beliefs do have a causal role that is evident in descriptions of episodes like [CLASS]. I submit that this is a good enough start for future work.

In this project, the A- and the B-theory are explanatorily on a par, at least for the moment. I take it to have shown in section 3 that tensed thought does not favor the A-theory, because A-theoretic explanations

encounter problems with reference, updating, past-tensed beliefs, and explaining ‘now’-beliefs that refer to past, or temporally extended, events. Similarly (section 5), the traditional B-explanation by Mellor under-describes rationality, the representations involved, and has similar problems with updating and past-tensed beliefs.

Are there any approaches that might fare better in the face of my criticisms against both the A-theory and Mellor’s view? I think that there are, but they are either relatively underdeveloped, or concentrate more on ‘I’ and ‘here’-thoughts, and thoughts involving demonstratives. Theories based on Kaplan (1979) or Perry (2002) would be a good start, as these are very sensitive to the different ways of thinking involved in indexical thoughts. Starting from Burge (2009), Evans (1982) or the mental files framework (Recanati 2012) might fare better, as they give us clear stories about how ‘here’, ‘I’, and demonstrative beliefs are formed in relation to perception, and how they achieve reference. But crucially, all these have only rudimentary comments to offer on ‘now’ and tense, not the fully developed accounts of tensed belief that are needed. Some of them might indeed be applicable to tensed beliefs, but since we are essentially talking about a different way of thinking, considerable work is required to show that they can indeed explain all the data from section 1.²⁶ More work needs to be done on the lower-level cognitive domain too, especially to account for the burgeoning cognitive science literature on what is there called “time perception.”²⁷ Ultimately, this paper is a call for more detail and explanatory progress in the project of analyzing tensed thought and, through it, the human experience of time.

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²⁶ I expand on this point in Tsompanidis (2012), arguing in addition that Kaplan, Lewis, and Perry fail to do so. For my preferred theory see Tsompanidis (2014).

²⁷ For a good view of the field, cf. Vataki et al. (2011). Some recent papers have indeed attempted to explain certain aspects of tensed belief by examining the recent cognitive science literature. Suhler and Callender (forthcoming) explain well our different attitudes towards the past and the future, and Dyke (2011) is an excellent attempt to explain my rationality explanandum in evolutionary terms. Even though I have my reservations regarding both of them, I welcome them and hope to integrate them in a full future account of tensed belief.

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