

Time for a Change:
A refutation of presentism

by

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Abstract

Presentism is the view that necessarily, it is always the case that only present objects exist and time passes. In this characterization, 'exist' is not inherently tensed, and does not imply existence at any particular time. The passage of time, according to presentism, is best understood as the successive objective instantiation of the fundamental properties (A-properties) futurity, presentness, and pastness by times. Presentism, characterized as such, faces three main objections: the reference objection, the grounding objection, and the objection from the special theory of relativity. Presentists cannot offer an adequate response to the latter objection, and can only avoid succumbing to the first two objections by adopting a descriptive account of propositions and a new account of truth grounding. The main motivation for presentism – the argument from experience – also faces serious objections, and is ultimately refuted by another objection from the special theory of relativity. A new version of presentism formulated in accordance with an analogy to quantified modal logic, Barcan presentism, can be shown to offer a better response to the reference objection than classical presentism. Barcan presentism, however, should still be rejected based on the grounding objection and the objection from the special theory of relativity.

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Introduction

It is somewhat of a paradox that despite the eloquence with which people speak of time (nearly every graduation speech includes some temporal metaphor), there is still no widespread consensus among philosophers as to the nature of time. For example, there are many different schools of thought concerning the way that objects exist in a universe with a temporal dimension. Some hold that objects are, so to speak, “carried along the river of time” in their entirety, leaving no trace of their existence in the past, nor projecting any glimmer of existence into the future. This kind of intuition is most closely modeled by the view called ‘presentism’.

Metaphysical views about time, like anything else, should not be carelessly adopted. I am, however, continuously surprised by the popularity of presentism, considering, in my opinion, the lack of motivation for the view, as well as the strength of the objections it faces. In light of this, I have decided to give presentism a thorough evaluation. First, I will determine what, exactly, the classical presentist view must be. This involves precisifying the terms presentists use in characterizing their position, as well as giving the theses accepted by all presentists. Next, I evaluate what I take to be the strongest objections against presentism, as classically formulated, and conclude that the presentist does not adequately respond to all these objections. Granting, charitably, that it is possible for a view to be so strongly motivated that it can be justifiably held in the face of serious objections, in section two I evaluate the most common motivation for presentism: the argument from experience. The argument from experience to presentism, I will show, is ill-founded and invites new objections to which it succumbs. Finally, in section three I consider a new formulation of presentism, Barcan presentism, which is modeled after an analogous position in the philosophy of modality. After re-evaluating the objections given against classical presentism in light of the resources available to

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the Barcan presentist, I will conclude that although Barcan presentism is stronger than classical presentism, it too cannot adequately respond to all objections, and should be abandoned.

1.0 Introduction

As stated above, this section will consist of an exposition and evaluation of the classical position in the philosophy of time called ‘presentism’. I will start by distinguishing between the ontological claim made by presentists and the presentist view concerning the passage of time. By precisifying both the ontological claim and presentist intuition about temporal passage, we can formulate the characteristic thesis accepted by all presentists. Based on this characteristic thesis, I will then evaluate the most common objections against presentism, as well as the best ways for the presentist to respond to these objections. After showing that the presentist cannot adequately respond to all objections raised against her view, I will conclude that classical presentism be abandoned.

1.1 The Characteristic Thesis of Presentism

Presentism is often claimed to be the naïve or intuitive view concerning the ontology of time. In fact, John Bigelow (1996) claims that up until the twentieth century everybody took the truth of presentism for granted.¹ The presentist holds, quite simply, that time passes and only present objects exist. Presentists do not just think their view happens to be true now, though it perhaps was not true in the past or will not be true in the future. For example, a view which holds that past and present objects exist would be undifferentiated from presentism at the first moment in time (if there were one). So presentists should hold that it is always the case that only present objects exist. And they do not think that it is a mere contingent truth. After all, the very nature of

¹ Bigelow, John (1996). “Presentism and Properties”. *Nous*, Vol. 30; Blackwell Publishing, p. 35 – 52.

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temporal existence is what is being debated. So presentists must hold that, necessarily, it is always the case that only present objects exist.

1.11 Only present objects exist

The presentist slogan that only present objects exist is not only unclear by being temporally and modally unspecific; the claim that it is necessarily always the case that only present objects exist is unclear as well. Arguably, the truth of existence claims differ based on the context of utterance. For example, typical utterances of “there is no more beer” said while looking into an empty fridge, are considered to be true even though, considering all the beer in the world, the claim is false. Likewise, typical utterances of “Caesar does not exist” said while considering only presently existing things, could be considered to be true even if presentism is false and past objects, including Caesar, exist. So, the presentist thesis that necessarily, it is always the case that only present objects exist needs clarification since the meaning of the word ‘exist’ is apparently highly flexible. To this end, Ned Markosian (2004) characterizes the presentist view using the most unrestricted reading of ‘exist’: “[a]ccording to presentism, if we were to make an accurate list of all the things that exist – i.e., a list of all the things that our most unrestricted quantifiers range over – there would not be a single non-present object on the list” (p. 47). This sort of description is meant to rule out the unrestricted existence of things like moon bases, which may eventually unrestrictedly exist, and dinosaurs, which used to unrestrictedly exist, while allowing for the unrestricted existence of things like the CN Tower and the Statue of Liberty.

An issue which arises rather quickly in the discussion of which things unrestrictedly exist is whether the term ‘unrestrictedly exist’ is itself tensed. For example, in the phrase ‘only present objects exist’, it could be claimed that the verb ‘exist’ is present tense, which would make ‘only

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present objects exist' really read 'only present objects presently exist'; a trivially true statement, and one with which even opponents of presentism would agree.² On the other hand, reading the 'exist' in the phrase tenselessly yields 'only present objects existed, exist, or will exist'; something manifestly false. For example, if only present objects existed, exist, or will exist, then there must presently be something which was the island vaporized by the U.S. hydrogen bomb test. Since there is no such object, the tenseless reading of 'only present objects exist' must be false. Opponents to presentism hold that since presentists cannot define their position in either tensed or tenseless terms, presentism must be false. This is known as the triviality objection against presentism:

- 1) If presentists are able to coherently characterize their position, then the statement of what exists according to presentists is not trivially true or manifestly false.
- 2) It is not the case that the statement of what exists according to presentists is not trivially true or manifestly false.
- 3) Therefore, it is not the case that presentists are able to coherently state their position.³

The truth of premise (1) of this objection is obvious enough; presentism is a view specifically concerning what exists, so the characteristic thesis of presentism needs to be non-trivially true or manifestly false in order to be differentiable from opposing positions concerning what exists.

The truth of premise (2), as stated earlier, is based on the presentist's use of a tensed or tenseless 'exist'. If presentism is characterized by stating that only present objects presently exist, then presentism is trivially true. If presentism is characterized by stating that only present objects

² From here on in, instances of 'only present object exist' are really abbreviations of 'necessarily, it is always the case that only present objects unrestrictedly exist'.

³ Thomas Crisp (2004) first coins this type of objection against presentism as 'the triviality objection' in his paper "On Presentism and Triviality".

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existed, exist, or will exist, then presentism is manifestly false. Even Markosian's carefully worded characterization of the presentist ontology is trivially true if read as "if we were to make an accurate list of all the things that *presently* exist [...] there would not be a single non-present object on the list", and manifestly false (there is no H-bombed island presently around) if read as "if we were to make an accurate list of all the things that *existed, exist, or will exist* [...] there would not be a single non-present object on the list".

In defending presentism from this objection, Thomas Crisp (2004) rejects premise (2) of the triviality objection. He begins by evaluating three readings of the presentist thesis that only present objects exist:

(Pra) Only present things exist now (i.e. at present).

(Prb) Only present things existed, exist, or will exist.

(Prc) Only present things (tenselessly) exist. (Crisp 2004, p. 16)

(Pra) and (Prb) are the readings in which 'exist' is irreducibly tensed, while (Prc) is the way to read 'exist' tenselessly. In (Prb), the tensed nature of 'exist' is expressed by the disjunction of all the times to which 'exist' could be relative. In (Prc), the tenseless nature of 'exist' is expressed by a supposedly completely non-time-relative sense of exists. As stated above, (Pra) is trivially true and also accepted by non-presentists; as such, it does not succeed in characterizing the presentist position when asserted as necessarily always the case. Crisp holds that since the quantifier in (Prc) does not carry any information as to which time objects exist at to be quantified over, (Prc) must imply the claim that for every x, if x existed, exists, or will exist, then x is a present thing. But this claim amounts to saying "only present objects existed, exist, or will exist", which just is (Prb). So, Crisp holds that (Prc) implies (Prb).

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Crisp claims that, regardless of whether the existential quantifier is completely unrestricted or restricted to things which exist in time (Crisp holds that these domains are in fact the same (Crisp 2004, p. 18)), (Prb) is not manifestly false; we do not perceive past or future objects not being included in the domain of these quantifiers, although perhaps an argument could be made that there, nevertheless, are such objects. The opponent to presentism might reply, at this point, that simply making true or false claims about non-present objects is enough to warrant their inclusion in the domain of our quantifiers.

Presentists can respond by appealing to the analogous way claims about characters in a work of fiction can be true or false without entailing the existence of those characters. Claims about fictional characters are not existentially committing as long as the claims are restricted to being true or false within the fiction. The way a claim is restricted to being true or false within a fiction is for that claim to be made within the scope of an operator representing the world of the fiction. For example, the claim that Sherlock Holmes is a cocaine addict can be true while not entailing the existence of Sherlock Holmes. That sentence expresses the proposition that within the story *The Sign of Four*, Sherlock Holmes is a cocaine addict. We can introduce an operator, ‘THE-SIGN-OF-FOUR’, which operates on sentences, and the sentence that results from concatenating the operator and the sentence ‘Sherlock Holmes is a cocaine addict’ is true just in case, within the story *The Sign of Four*, that sentence is true. Analogously, according to the presentist, claims about past or future objects are not existentially committing as long as they are made within the scope of a temporal operator representing “the story” of what was or will be the case. For example, sentences concerning the island vaporized by the hydrogen bomb can be true or false when concatenated with the ‘IT-WAS-TRUE-THAT’ operator, usually shortened to just ‘WAS’, without entailing the existence of the island destroyed by the U.S. hydrogen bomb test. Crisp’s

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response to the triviality objection, then, is to deny premise (2): It is not the case that the statement of what exists according to presentists is not trivially true or manifestly false.

According to Crisp, to assert that it is manifestly false that our quantifiers do not quantify over past things like the island vaporized by the hydrogen bomb is to confuse the truth of a de dicto claim that WAS(for some x, x is the island destroyed by the H-bomb and x will not exist at time t) with the de re claim that for some x, x was the island destroyed by the H-bomb and x is no longer present.^{4,5} So, since (Prb) is not manifestly false, nor is it trivially true (since non-presentists could still make a case for quantification over non-present objects), premise (2) of the triviality objection is false and the objection unsound. Consequently, presentists can characterize their view in terms of (Prb) without succumbing to the triviality objection.

Theodore Sider (2001) objects to the claim that tenseless existence collapses into tensed existence. Sider argues that while we can predicate tenseless existence, (Prc), of objects whose constituent parts are located at different times, we cannot predicate tensed existence using any of the disjuncts of (Prb) (where to exist, all of an object's parts must exist) of those very objects.

Sider's objection can be given as follows:

- 4) If (Prc) implies (Prb), then anything which exists according to (Prc) exists according to (Prb).
- 5) It is not the case that anything which exists according to (Prc) exists according to (Prb).
- 6) Therefore, it is not the case that (Prc) implies (Prb).

⁴ Quantification within the primitive 'WAS' operator is not existentially committing, and time t is the present.

⁵ De Dicto claims are about the truth of the proposition, while De Re claims are about the subject. See Salmon (1997).

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Sider considers an object, *x*, composed of a dinosaur and a computer. According to (Prc), this object exists.⁶ However, it does not exist now, there is no time in the past at which it existed, and there is no time in the future at which it will exist. It is not such that it existed; *x* has a part which *did* not exist (the computer part). It is also not such that it exists; *x* has a part which *does* not exist (a dinosaur). It is also not such that it will exist; at no future time, presumably, will all of *x*'s parts coexist.⁷ Since none of the disjuncts of (Prb) are satisfied, we cannot predicate existence of *x* by appealing to the tensed 'exist' of (Prb). But, remember, we could predicate existence of *x* by appealing to the tenseless 'exist' of (Prc). So, (Prc) must not imply (Prb); a tenseless 'exist' is void of any relativization to times, and does not mean "existed, exists, or will exist". Crisp is simply mistaken in thinking that if a tenseless 'exist' carries no information about which time is being quantified over, then we can relativize quantification to any *one* time we want. Furthermore, since presentists should want to be able to talk about anything which may exist (for instance, if there really are dino-computers), they should prefer the 'exist' of (Prc) over (Prb).

Although, in light of Sider's objection, the presentist should not use (Prb) in characterizing their position, characterizing presentism in terms of (Prc) remains unaffected. Crisp's response to the triviality objection against presentism only requires that (Prc) be a viable candidate for characterizing presentism. That (Prc) does not imply (Prb) does not, by itself, affect the soundness of Crisp's reply. As such, the presentist's claim that necessarily, it is always the case

⁶ Provided something is in fact composed of a dinosaur and a computer.

⁷ This is assuming that in order to exist at time *t* all of an object's parts must exist at *t*. The objection, however, is just that there is a difference between (Prb) and (Prc). So, one is free to highlight the difference by asserting the conditional "if you hold that an object exists at time *t* if and only if all of the object's parts exist at *t*, then (Prc) does not reduce to (Prb)" while denying the antecedent.

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that only present objects (tenselessly) exist is neither trivially true nor manifestly false, and characterizes the presentist position.

1.12 The passage of time

According to classical formulations of presentism, what objects our most unrestricted quantifiers range over is a changing matter of fact. That is in part because time passes. What is it for time to pass? One way of understanding the notion involves the A-theory of time. The A-theory of time is roughly the view that events are first future, then present, then past. The ordered series in which events objectively instantiate these temporal properties is the A-series. This is in contrast to the B-theory of time, according to which there is no fundamental fact about which moments are past present or future. According to the B-theory, global events are fundamentally ordered according to which events precede or follow other events, and no fundamental property of any global event ever changes.⁸ For example, according to the A-theory of time, it is a fundamental fact of reality that World War II is a past event. This fact is not relative to a time; it is just a fact simpliciter about World War II. According to the B-theory of time, however, the A-property *pastness* being predicated of World War II is less fundamental than the B-property of *being earlier than the time of this utterance*. For instance, it has always been the case that World War II is earlier than the year 2011, but it has not always been the case that World War II is past; it is only past at times later than 1945.

Presentists are often proponents of the A-theory of time, probably due to their shared belief in an objective present moment which changes.⁹ However, the presentist A-theorist's view that

⁸ An event is an instantaneous "snapshot" of the state of a given system: what things exist, what properties those things have, and what relations those things stand in. A global event is a "snapshot" of all events.

⁹ Josh Parsons (2002) claims that even though most A-theorists also hold that which moment is objectively present changes, A-theorists qua A-theory are not committed to the passage of time. Parsons holds that the A-theory of

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future times become present and then become past is not seamlessly reconciled with the presentist's denial of any existence outside of the present. For instance, it is unclear how times which do not exist can *become* anything. The changing times objection may be given as follows:

- 7) If the A-theory of time is true, then future times change into the present time, and the present time is changed into past times.
- 8) If future times change into the present time, and the present time is changed into past times, then future and past times exist.
- 9) So, if the A-theory of time is true, then future and past times exist.
- 10) If presentism is true, then it is not the case that future and past times exist.
- 11) So, if the A-theory of time is true and presentism is true, then it is the case that future and past times exist and it is not the case that future and past times exist.
- 12) It is not the case that future and past times exist and that it is not the case that future and past times exist.
- 13) Therefore, it is not the case that the A-theory of time is true and presentism is true.

The first premise of this objection follows from the A-theory notion that pastness, presentness, and futurity are objective fundamental properties instantiated by global events, as well as the presentist notion that time passes (which global event instantiates which A-series property genuinely changes). The reasoning behind premise (8) is that in order for something to have properties there must *be something there* having the properties. So, in order for a future time to have the property of *being five minutes from now* it must exist in order to have that property

time is strictly a view concerning the existence and fundamentality of A-properties (*pastness, presentness, and futurity*), and this by itself does not have anything to do with the change in instantiation of these properties.

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(mutatis mutandis for past times). Premise (10) is simply stating the presentist thesis that existence is limited to the present.

One response the presentist can give to the changing times objection is to deny premise (7). Instead of saying that times change, the presentist can account for the change of the present moment in terms of change in the truth value of maximal consistent propositions. Maximal consistent propositions are propositions representing a complete state of affairs in the universe. For example, that there exists one atom is a relatively simple complete state of affairs, and an unlimited amount of conjunctions consistent with this claim may be added to this proposition to produce other complete states of the universe. That these propositions are maximal means that they include all information about the state of affairs they are describing; a proposition describing two atoms must also include descriptions of any relations which hold between them. On this account, then, times just are maximal consistent propositions which completely describe reality. Some of these propositions correspond to what will be true (future times), and some correspond to what was true (past times). If the truth value of these propositions is what changes, but not the propositions themselves, and these propositions just are times, then there is no need to posit existence beyond the propositions themselves. The response can be formulated as follows:

14) Times are maximal consistent propositions.

15) If times are maximal consistent propositions, then according to the A-theory of time, a change in A-series properties is a change in the truth value of maximal consistent propositions.

16) So, according to the A-theory of time, a change in A-series properties is a change in the truth value of maximal consistent propositions.

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17) If according to the A-theory of time, a change in A-series properties is a change in the truth value of maximal, consistent propositions, then premise (7) is false.

18) Therefore, premise (7) is false.

Ned Markosian (2004) endorses this approach to non-present times for the presentist because of the strong analogy between temporal operators and modal operators (temporal operators modify the truth value of present-tense propositions by relativizing the truth of a proposition to a time just as modal operators modify the truth value of propositions by relativizing their truth to possible worlds). For Markosian, talk of non-present times should be cashed out the same way talk of possible worlds is for people who hold that possible worlds are just certain maximal consistent propositions. Past and future times, according to Markosian, are maximal consistent propositions which were true or will be true (Markosian 2004, p. 76). Some maximal consistent proposition corresponds to what will be true ten years from now, and some maximal consistent proposition corresponds to what was true ten years ago. That the propositions are maximal (include every fact) is because if they fail to include some fact, like some dispositional property, then that dispositional property does not exist at that time; times just are the propositions. That these propositions are the ones which will be and were true is simply a brute fact.

This view of non-present times is contentious at best. The idea of non-present times simply being those propositions within the scope of a past or future tense operator (with a metric) whose truth is brute seems to fail to capture what it is people talk about when they make claims about the past or future. David Lewis (1986) criticizes a parallel view in the modal case: the view that possible worlds are maximal, consistent propositions. He objects that propositions just aren't the types of things that can be worlds. If possible worlds are propositions, then all the concrete stuff

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around us would not constitute a world; it is not a proposition (Lewis 1986, p. 140).

Analogously, if times just are tensed propositions, then none of the events we take ourselves to be witness to or a part of presently occur in time; no real-life event is identical to a proposition.

A reasonable objection, then, is to deny premise (14) of the above argument:

19) If times are maximal consistent propositions, then it is not the case that all our everyday experiences are a part of, or occur at, times.

20) All our everyday experiences are a part of, or occur at, times.

21) Therefore, it is not the case that times are maximal consistent propositions.

To paraphrase Sider (2001) in defending premise (19), the maximal consistent propositions invoked by Markosian *point beyond themselves* to the past or future (Sider 2001, p. 41). Perhaps the ersatz should take Lewis' analogous suggestion to the ersatz modal realist and claim that they can do without times altogether (Lewis 1986, p. 140). On this account, there are no times, just representations made by maximal consistent propositions. A-series claims are true just in case they correspond in the right way to some maximal consistent proposition. For example, the A-series claim "my 4th birthday is past" is true just in case whenever my 4th birthday is included in a true maximal consistent proposition, it is a past tensed maximal consistent proposition. Recall that what the presentist is trying to do, at this point, is to account for the passage of time by appealing to a change in A-series properties. Appealing to a change in A-series properties, however, seemed to imply that past and future times themselves change (premise (7) in the changing times objection), which in turn pressured the presentist to accept the existence of these changing times. According to the analogous suggestion Lewis offers the ersatz modal realist (do without possible worlds altogether), however, a change in A-series facts

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(temporal passage) is a change in the truth value of maximal consistent propositions. If a presentist endorses this option, she is in a position to offer another objection to premise (7) of the changing times objection:

12a) A-series facts correspond to representations made by true maximal consistent propositions.

13a) If A-series facts correspond to representations made by true maximal consistent propositions, then according to the A-theory of time, a change in A-series properties is a change in the truth value of maximal consistent propositions.

14a) So, according to the A-theory of time, a change in A-series properties is a change in the truth value of maximal consistent propositions.

15a) If, according to the A-theory of time, a change in A-series properties is a change in the truth value of maximal consistent propositions, then premise (7) is false.

16a) Therefore, premise (7) is false.

However, now it would seem that the presentist needs something for the representations made by maximal consistent propositions to be representative of. The presentist does not want to admit to the existence of times other than the present, yet it seems they must if the maximal consistent propositions are to be representative. To deny the existence of non-present times, then, is for the presentist who claims that A-series facts correspond to representations made by true maximal consistent propositions to be, as Sider puts it, “unwilling to accept an ontology robust enough to bear the weight of the truths he feels free to invoke” (Sider 2001, p.41). This objection to (12a) goes:

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22) If A-series facts correspond to representations made by true maximal consistent propositions, then the presentist A-theorist accepts the existence of non-present times.

23) It is not the case that the presentist A-theorist accepts the existence of non-present times.

24) Therefore, it is not the case that A-series facts correspond to representations made by true maximal consistent propositions.

If the presentist denies that the maximal consistent propositions representing what was and will be the case represent non-present times (deny premise (22)), then it seems the presentist is claiming that these representations are of nothing. Oddly enough, presentists may not be bothered much by this implication. Presentists who want to maintain that maximal consistent propositions are representative can claim that although these representations are of nothing, they *were* or *will be* of something. Although it may seem that by invoking primitive tense in giving the truth conditions of tensed propositions the presentist is cheating, this line of response will be defended later when addressing objections to presentism based on problems with truth-grounding.

A rather unintuitive option for the presentist, but an option nonetheless, is to simply bite the bullet and accept that although past and future times do not exist, future times become present and the present becomes past times. This account is Meinongian in nature and supposes that existence is a property which things (such as times) can either have or not have, but the lack of which does not prevent something from satisfying other predicates like *will become present*. By accepting a Meinongian version of presentism, then, presentists are able to reject the claim made in premise (8) of the changing times objection against A-theory presentism (if future times

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change into the present time, and the present time is changed into past times, then future and past times exist). The Meinongian presentist response to the changing times objection is as follows:

25) Non-existing things can satisfy any predicate (except existence entailing predicates) that existing things do.

26) If (25), then existence is not required of a time in order for it to change or be changed into.

27) So, existence is not required of a time in order for it to change or be changed into.

28) If (27), then (8) is false.

29) Therefore, (8) is false.

The trouble with the Meinongian account is that it directly conflicts with the intuition the presentist is originally trying to account for by holding that past and future times do not exist.

The presentist is trying to deny that properties are tacked on to things *at* non-present times, not that we can say that things used to be such that things had certain properties (much like the *de dicto/de re* distinction made earlier). As Simon Keller (2004) puts it: “we might worry that, once we have admitted non-existent objects into our ontology, existence – and presentism – cease to be very interesting” (Keller 2004, p. 90). For the presentist to say that properties are tacked (just not existence) on to things *at* non-present times is to ignore the underlying ideological difference between presentism and non-presentism. The worry can be expressed in the following objection:

30) If Meinongian presentism is true, then presentists can hold that on top of the things at the present time, there are things at non-present times.

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- 31) If presentism needs to remain consistent with presentist intuitions regarding non-present things, then it is not the case that presentists can hold that on top of the things at the present time, there are things at non-present times.
- 32) Presentism needs to remain consistent with presentist intuitions regarding non-present things.
- 33) So, it is not the case that presentists can hold that on top of the things at the present time, there are things at non-present times.
- 34) Therefore, it is not the case that Meinongian presentism is true.¹⁰

Although Meinongian presentism may not be consistent with the classical presentist intuitions characterizing the difference between presentism and non-presentism, it does still remain an option for presentists willing to give up those intuitions; the ideological difference between presentism and non-presentism just becomes a bit less clear.

Having looked at some accounts of what exactly presentists mean when they claim that time passes and only present objects exist – the characteristic theses of presentism – the presentist intuition concerning the nature of time is much clearer. By “only present objects exist”, the presentist is asserting that for every x (anything in the domain of our non-temporally-restricted quantifiers), x is a present thing. Recall as well that, according to presentism, it is necessarily always the case that only present objects exist. By “time passes”, the presentist appeals to the notion of a fundamental A-series of time, according to which the properties of

¹⁰Graham Priest (2005) endorses a version of Meinongianism according to which ‘there are’ implies existence, while ‘some things are’ does not. Presentists who appeal to Priest’s Meinongianism would avoid this objection by denying the truth of premise (30); presentists need only hold that some things are at non-present times, and not that there are things at non-present times. I think the claim that there is an existential distinction between ‘there are’ and ‘some things are’ needs much more examination and defense than can be given in this paper. For this reason, I will not consider presentism formulated in accordance with Priest’s Meinongianism.

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pastness, presentness, and futurity take turns being instantiated by times. Furthermore, in order to avoid commitment to the existence of times which change in their A-series properties, presentists can cash out the truth of A-series claims in terms of maximal consistent propositions (ersatz temporal realism), or adopt a form of Meinongian presentism. If presentists choose the ersatz temporal realist option, then they still owe an account of what exactly it means for a tensed maximal consistent proposition to represent what was or will be the case, if propositions are representational at all. If presentists choose to be Meinongian presentists, then they forfeit the ideological difference between presentism and non-presentist positions, and also take on the burden of an ontology that admits non-existing things. Now that the presentist position is clearly understood, I will evaluate the main objections against presentism formulated as such.

1.2 Objections to Presentism

Regardless of how the passage of time is cashed out by the presentist, the ontology endorsed by the presentist – that only present objects exist - faces objections. The first of these has to do with the presentist's inability to refer to non-present things. Consider, first, the proposition that Ryan Kesler plays hockey. According to a popular view of propositions, the constituent parts of this proposition are the semantic content of 'Ryan Kesler' and 'plays hockey' (Mill (1867), Kaplan (1979), Salmon (1989), Braun (1998)). Furthermore, the semantic content of 'Ryan Kesler' just is the referent of the name 'Ryan Kesler' (the guy himself), and the semantic content of 'plays hockey' just is the property *plays hockey*. Regardless of whether the proposition is true or false, if Ryan Kesler and the property *plays hockey* just are the constituents of the proposition that Ryan Kesler plays hockey, for the proposition to exist at all requires that Ryan Kesler and the property *plays hockey* exist. So, on this account of propositions, a proposition exists just in case its constituent parts exist, and the constituent parts of a proposition

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just are the things in the world which serve as the semantic content for those expressions. The trouble for the presentist arises when wholly past or wholly future individuals are the constituent parts of propositions. An example is the proposition that Vasily Zaytsev was a sniper. If the proposition in question exists (and it better if we are entertaining it), and if the referent of the name 'Vasily Zaytsev' just is Vasily Zaytsev, then it would seem that Vasily Zaytsev must exist. But presentists hold that Vasily Zaytsev does not exist, since he is not among the presently existing things. So, according to presentism, either we are not really talking about Vasily Zaytsev, or a non-existing thing has the property *was a sniper*. We can formulate the reference objection to presentism as follows:

- 35) If the proposition that Vasily Zaytsev was a sniper exists, then the constituent parts of the proposition that Vasily Zaytsev was a sniper exist.
- 36) If the constituent parts of the proposition that Vasily Zaytsev was a sniper exist, then Vasily Zaytsev and the property *was a sniper* exist.
- 37) The proposition that Vasily Zaytsev was a sniper exists.
- 38) So, the constituent parts of the proposition that Vasily Zaytsev was a sniper exist.
- 39) So, Vasily Zaytsev and the property *was a sniper* exist.
- 40) So, Vasily Zaytsev exists.
- 41) If Vasily Zaytsev exists, then presentism is false.
- 42) Therefore, presentism is false.

Presentists can offer a reply to this kind of objection; they can deny premise (37). The presentist can reject the above analysis of propositions in favour of a descriptive account of propositions. A descriptive account of propositions is one where the semantic content of a proper

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name, such as ‘Vasily Zaytsev’, is a definite description only applying to one thing.¹¹

Furthermore, according to this view, past and future tensed sentences, such as ‘Vasily Zaytsev was a sniper’, really express a proposition with the form WAS($\exists x$ (x is the referent of ‘Vasily Zaytsev’ and x is a sniper)). Recall that quantification within the scope of a past or future tense operator (‘WAS’ or ‘WILL BE’), according to the presentist, is not existentially committing, much like quantification within a fiction. Markosian (2004) accepts a version of this account, though he holds that present tensed sentences can still express singular propositions. This account is presentist friendly because there are no existing non-present constituent parts of the proposition; all the existential quantification takes place within the scope of a primitive past tense operator.

Although adopting a descriptive account of propositions allows presentists to respond to the above objection, commitment to a descriptive account of propositions is arguably an unacceptable price to pay in order to save one’s view. Strong objections against descriptive accounts of propositions are put forward by Kripke (1980), Salmon (1986, 1989), and Soames (1987, 2008). Even accepting a hybrid account, such as Markosian’s, where the propositions we entertain are descriptive only when they are about non-existing things, begs for an explanation from the presentist as to why propositions change in this way. For example, there seems to be no good reason for thinking that I go from believing something about my goldfish, Harry, while he is still alive, to believing a non-existentially-committing-claim about the referent of the name ‘Harry’ after he is dead and flushed. For these reasons, presentists should be wary of accepting a descriptive account of propositions.

¹¹ The unique description cannot contain any references to non-present things either. For example, the definite description which serves as the semantic content for the name ‘Plato’ cannot be “the most famous student of Socrates”.

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The second objection against presentism I will consider follows naturally from the presentist's solution to the first objection and concerns the presentist's inability to ground the truth of primitively past or future tensed propositions. It is a trivial claim that some propositions are contingently true and some are contingently false. Furthermore, there seems to be some reason why the proposition that there are bears is true and the proposition that there are trolls is false. One reply is that there in fact is no such reason. On this account, some propositions are just brutally true and others are just brutally false.¹² Many philosophers reject this view and instead hold that for a proposition to be true is for the world to be a certain way such that the proposition in question is made true by the way the world is. By 'way the world is', the issue of whether propositions are grounded by the existence of some object, a truthmaker (truth supervenes on the existence of some object in the world), or whether propositions are grounded by the totality of what exists (truth supervenes on being) is left open. Regardless, if the truth of a proposition is grounded in the way the world is, then since presentists hold that the way the world is is just the way the world *presently* is, presentists cannot ground the truth of past or future tensed propositions. The grounding objection against presentism is then as follows:

43) If presentism is true, then all true propositions are grounded in what is presently the case.

44) It is not the case that all true propositions are grounded in what is presently the case.

45) Therefore, presentism is false.¹³

Premise (43) is suggested by the ontological thesis of presentism itself: for every x , x is present. So, whatever it is that makes a proposition true (be it a truthmaker, supervenience on

¹² I do not know of any philosophers who actually hold this view.

¹³ Alex Baia (2011) presents a version of this objection he calls "a master grounding objection against presentism" (p. 4). Theodore Sider (2001), John Bigelow (1996), David Lewis (1992), Simon Keller (2004), and Ben Caplan & David Sanson (2010) also evaluate versions of this objection (Bigelow and Caplan & Sanson attempt to refute it) but refer to it as 'the truthmaker objection'.

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being, etc.) it must exist presently. If it does not exist presently, then by the ontological thesis of presentism, it does not exist. The truth of premise (44) is easy enough to see when we consider past or future tensed truths. For example, what presently grounds the truth of the statement “Einstein had crazy hair”? According to the presentist ontology, it cannot be that there exists some truthmaker (Einstein with crazy hair), for Einstein does not presently exist. It also cannot be the present state of being of the universe because how the universe presently is is consistent with the past having been many different ways (one of which, presumably, is one where Einstein did not have crazy hair).

One response the presentist can offer is to deny premise (44). For instance, the presentist can claim that in fact the present moment does have tensed properties which ground the truth of tensed propositions. For example, the above tensed claim “Einstein had crazy hair” is grounded in the tensed property instantiated by the present *that Einstein had crazy hair*. The response is then:

46) If there presently exist tensed facts, then all true propositions are grounded in the present.

47) There presently exist tensed facts.

48) Therefore, all true propositions are grounded in the present.

It would seem, however, that there is good reason for rejecting premise (46) upon an examination of the nature of tensed facts. Ben Caplan and David Sanson (2010) argue that the existence of a tensed fact is analogous to the existence of the set having only me as a member: {Curtis}. Even though the worlds at which {Curtis} exists are precisely the worlds at which the proposition that Curtis exists is true (so, the truth of the proposition supervenes on the existence of my singleton set), we would still not want to ground the truth of the proposition that Curtis

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exists in the existence my singleton set (Caplan and Sanson 2010, p. 27). Instead, we want the truth of the proposition that Curtis exists to be explained in terms of the person Curtis.

Analogously, we should not think that the present existence of some tensed fact is what grounds the truth of a tensed proposition. Instead, the truth of tensed propositions is grounded in what makes it the case that there is presently some tensed fact: the past or the future. So, premise (46) is false.

Putting the above problems with premise (46) aside for the moment, it was previously noted that the present is consistent with the past having been many different ways (and that the future will be many different ways). An account, then, is required from the presentist as to how the way things presently are includes facts about the way things were or will be. One way the presentist can hold that there are presently existing tensed facts is for tensed facts to be like dispositional properties.¹⁴ It is just in virtue of being the way it is that the present has these properties, just as it is in virtue of having certain physical properties that a wine glass has the dispositional property of being breakable.

This response relies on the strength of the analogy being drawn between tensed properties and dispositional properties. There is, however, good reason to think that this analogy is weak.

The objection goes as follows:

49) If (47) is true, then tensed facts are analogous to dispositional facts.

50) Tensed facts are not analogous to dispositional facts.

51) Therefore, it is not the case that (47) is true.

¹⁴ Dean Zimmerman (2008) offers this as one of the presentist responses to the truthmaker objection (grounding objection) (p. 217-218).

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A comparison of tensed and dispositional facts lends support to premise (50). According to some, what it is for something to have a dispositional property is for certain contrary-to-fact (counterfactual) conditional statements about that thing to be true.¹⁵ Assume the counterfactual account of dispositional properties. Consider the example of a wine glass having the dispositional property of being fragile. On this account, the wine glass has the dispositional property of being fragile just in case at all the close possible worlds where the wine glass is handled roughly it breaks. The close possible worlds are those determined by the similarity to the actual world, and the similarity metric is determined by the conversational context of the utterance of the claim in question (Lewis 1986). So, a wine glass has the dispositional property of being fragile just in case in typical conversational contexts in which ‘this wine glass is fragile’ is uttered, at the close possible worlds to the actual world, that wine glass breaks when handled roughly. Tensed properties, however, cannot be analyzed in an analogous manner. For example, it is reasonable to hold that at least some of the closest possible worlds, determined by typical conversational utterances of the sentence ‘Yesterday I used a spoon to eat my macaroni’, are such that at present they are duplicates of this world and yet ‘Yesterday I used a spoon to eat my macaroni’ is false. It is easily possible that the present be as it is, and yet yesterday I ate my macaroni with a fork. In the case of future tensed properties, it is even easier to see how the present could be as it is and yet it be equally likely that I have toast or cereal for breakfast tomorrow morning. So, even if the counterfactual account of dispositional facts is true, tensed facts do not function in an analogous way.

A different response the presentist can give to the grounding objection is to deny premise (43) (if presentism is true, then all true propositions are grounded in what is presently the case).

¹⁵ Some philosophers who support the counterfactual account of dispositional properties include Ryle (1949), Quine (1960), and Mackie (1973).

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Presentists can claim that the grounding objection only recognizes one type of grounding: grounding in what is the case. This is not, however, the type of grounding to which presentists should appeal. Instead of grounding truth in what is the case, presentists should ground truth in what was, is, or will be the case. The response goes:

52) True propositions are either grounded in what is the case or grounded in what was, is, or will be the case.

53) If presentism is true, then it is not the case that true propositions are grounded in what is the case.

54) So, if presentism is true, then true propositions are grounded in what was, is, or will be the case.

55) If (54), then it is not the case that if presentism is true, then all true propositions are grounded in what is presently the case.

56) Therefore, it is not the case that if presentism is true, then all true propositions are grounded in what is presently the case.

First, the presentist is able to assert the truth of premise (53) based on the success of the grounding objection previously considered in this section. The distinction between the two types of grounding made in premise (52) is discussed by Ben Caplan and David Sanson (2010), and treated at length by Alex Baia (2011). Caplan and Sanson claim that the notion of “pointing beyond” reality is really the common sense approach to grounding the truth of tensed propositions, and Baia argues that to claim truth is grounded only in what is the case is to make an unfounded assumption about the nature of grounding (Caplan and Sanson 2010, p. 37; Baia 2011, p. 4). If you are a presentist, then you most likely employ the use of primitive tense

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operators when evaluating propositions expressed by past or future tense sentences.¹⁶ There is no reason, therefore, that the presentist cannot appeal to a notion of truth grounding according to which the grounding “buck” stops at the primitive tense of these propositions. If tense operators are taken as primitive, then they cannot be reductively analyzed in terms of what is now the case. Accordingly, true propositions employing such non-reductive tense operators just are grounded in the corresponding tense. So, the truth of a proposition can be grounded in what was, is, or will be (depending on which primitive tense operator is being used) the case. Baia argues that since there is no reason to prefer one type of grounding over the other, the presentist is free to appeal to the grounding principle according to which truth is grounded in what is the case (which he labels ‘E-grounding’), or the grounding principle according to which truth is grounded in what was, is, or will be the case (which he labels ‘P-grounding’); supporting the truth of (52) (Baia 2010, p. 5). It just so happens that P-grounding works better for presentists.

Appealing to non-reductive grounding in what was or will be the case should not be confused with a brute-truth account of tensed propositions. Baia claims that the presentist, when asked why the proposition that WAS(there are dinosaurs) is true, can respond by claiming that it is because the proposition that there are dinosaurs used to have a truthmaker. If further pressed on what grounds the truth of this latter proposition, that there are dinosaurs used to have a truthmaker, the presentist would reply that there are dinosaurs has a truthmaker used to have a truthmaker. There is no need to invoke presently instantiated tensed properties or brute truth, only primitive tense.¹⁷ Demanding any further account from P-grounders as to how tensed propositions are to be analyzed is to fail to grasp what it means for an operator to be primitive.

¹⁶ As was explained on p. 23-24 when giving the presentist response to the reference objection.

¹⁷ Baia also notes that what opponents of P-grounding might see as an infinite regress is no worse than the regress that occurs for the E-grounder when asked about the grounding of what is now the case.

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Another example of a primitive operator is negation. For a negated proposition to be true is just for the proposition being operated on by the negation operator to *not* be the case. Note that using the English locution ‘not’ is acceptable when describing how a proposition’s truth value is affected when inside the scope of the negation operator. Likewise, the P-grounder holds that using the English locutions ‘used to be’ and ‘will be’ are acceptable when describing how a proposition’s truth value is affected when inside the scope of the WAS or WILL BE operators.

Although the P-grounder is able to avoid being forced into giving a reductive account of tense operators, there may still be some justification for preferring E-grounding over P-grounding. Because of the inherent difficulty, if not circularity, in explaining the nature of any primitive operator, it is reasonable to hold that one’s view should include the least amount of primitive operators as possible. Presentists who P-ground truth, however, must appeal to at least two more primitive temporal operators in addition to the primitive operators common to every other view (negation, for example).¹⁸ The objection can be given as follows:

57) P-grounding requires more primitive operators than E-grounding.

58) If (57), then all else being equal, E-grounding is preferable to P-grounding.

59) Therefore, all else being equal, E-grounding is preferable to P-grounding.

This objection does not completely refute the notion of P-grounding, but it does pressure presentists to justify their appeal to a less-preferable theory of truth grounding. It would seem, however, that the only justification presentists can offer for appealing to the less-preferable P-

¹⁸ Up to an infinite amount of additional primitive temporal operators may be required if a temporal metric is introduced.

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grounding is that it is required by their ontology. Although presentists are still free to accept P-grounding, it is a cost that presentism requires a less preferable theory of truth grounding.

The last objection against the classical formulation of presentism that I will consider in this section is perhaps the most convincing. It is the objection from special relativity. According to the special theory of relativity (STR), what is presently occurring, and therefore what presently exists, is not an objective matter of fact, but is instead relative to an inertial frame of reference. An inertial frame of reference is an inertial path along which an object moves (Sider 2001, p. 44). According to STR, if I were to fly into outer space at speeds close to that of the speed of light while an observer stayed on Earth, then the observer and I would disagree about which events are simultaneous with each tick of our respective watches. Events that appear to me to be simultaneous with the fifth tick of the minute hand of my watch might appear to be simultaneous with the eighth, tenth, or perhaps even the five hundredth tick of the observer's watch. So according to STR, carefully made simultaneity judgments will differ in different frames of reference. Finally, STR does not imply that the simultaneity judgments made with respect to one frame of reference reflect objectively simultaneous events, while those judgments made with respect to every other frame of reference do not (there is nothing in the theory that privileges one frame as "getting it right").

The trouble with reconciling presentism, the view that only present objects exist, with STR, the view that what is presently occurring is relative to inertial frames of reference, can be expressed as follows:

60) If presentism is true, then there is objective simultaneity.

61) If STR is true, then it is not the case that there is objective simultaneity.

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62) STR is true.

63) So, it is not the case that there is objective simultaneity.

64) Therefore, it is not the case that presentism is true.

That presentists are committed to a notion of objective simultaneity (Premise (60)) is a direct consequence of their thesis that only present objects exist. According to the presentist, if I exist, then for something else to exist requires that its existence be simultaneous with my own. That STR implies relative simultaneity has already been defended (above) by appealing to differences in what is simultaneous with the ticks of the observer's and the astronaut's watches. Premise (62) is supported by experimental evidence. Carefully synchronized pairs of atomic clocks become significantly unsynchronized if one of the pair is put in a different inertial frame of reference (say, put on a space shuttle accelerating at 38,000km/hr). This implies that different events are simultaneous with the respective tick of each clock.

There are two presentist responses to this objection that I will consider: first, denying what is considered to be a verificationist interpretation of STR; and second, claiming that presentism can be adapted to be consistent with STR. The first response is fairly standard, and is considered by Mark Hinchliff (1996), Dean Zimmerman (2008), and Theodore Sider (2001). The response goes:

65) STR is compatible with there being a privileged inertial frame of reference which reflects what is absolutely simultaneous.

66) If (65), then it is not the case that if STR is true, then it is not the case that there is objective simultaneity.

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67) Therefore, it is not the case that if STR is true, then it is not the case that there is objective simultaneity.

Sider (2001) refers to this response as “retaining an arbitrary hyperplane” (p. 47). The justification for premise (65) is that although STR does not distinguish any inertial frame of reference as the privileged objective frame of reference, this is ultimately an epistemic issue. STR is, strictly speaking, consistent with there being a privileged inertial frame of reference, though unknown to us, that reflects which events are truly simultaneous, thereby constituting an objective present moment. Judgments of simultaneity made in accordance with any other frame of reference are objectively incorrect.

Although this response does allow presentism to be consistent with STR, Sider points out that it is “scientifically revisionary” (Sider, 2001, p. 47). Not only is STR, even in principle, not able to distinguish a privileged frame of reference, but almost everybody will not be in the privileged frame of reference. That almost everyone’s (if not everyone’s) judgments about what is presently happening will be objectively incorrect should be troublesome for a view which claims to vindicate our naïve /everyday intuitions concerning time. This response will come up again in the next section in discussing the motivation for presentism.

Sider (2001) and Hinchliff (1996) also consider a response to the objection from STR against presentism of the second sort. Presentism, it is claimed, can be adapted to be consistent with STR. One version is what Sider calls ‘Here-now-ism’ (Sider 2001, p. 46). Here-now-ism is the view that all that exists is a single spacetime point; there are no spatiotemporally distant events. Hinchliff expands on this version of presentism to include certain spatiotemporally

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distant points (Hinchliff 1996, p. 131).¹⁹ This version of presentism, however, is even more upsetting than retaining an arbitrary hyperplane of simultaneity. On this view, judgments about simultaneity are not only incorrect when not made from the privileged spacetime point, they do not exist at all (a judgment requires the existence of an agent, but nothing exists outside of the privileged spacetime point). Furthermore, this view still suffers from the problem associated with retaining an arbitrary hyperplane in that STR does not distinguish such a privileged spacetime point. So, on top of being exceedingly egocentric in nature (obviously everyone would be compelled to believe that theirs is the existing spacetime point since you must exist in order to believe anything at all), most people's assertions concerning their own existence would be false! Because there is no motivation for holding this view except to make presentism consistent with STR, and a multitude of problems associated with it, Here-now-ism should not be adopted by presentists.

It appears that in order to save presentism from the objection from STR, presentists must hold that our best scientific theory about the nature of spacetime is incomplete, and that most people's judgments about what is going on does not really reflect objective reality. These, as mentioned earlier, seem to be big prices to pay for a metaphysical view claiming to best reflect our prima facie intuitions about time. Perhaps examining how exactly the thesis of presentism is supposedly supported by our experiences and pre-philosophical intuitions can shed some light on why the presentist might be willing to accept the consequences of retaining an arbitrary hyperplane in order to respond to the objection from STR.

2.0 Introduction

¹⁹ The points Hinchliff includes are those on the "surface of the past light-cone" in Minkowski spacetime (Hinchliff 1996, p. 131). Understanding the nature of Minkowski spacetime is not important to understanding this version of presentism, nor does it affect the response.

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Important caveats and refinements aside, it is often reasonable to take things at face value: if it seems that something is the case, the best explanation is often that that something *is* the case. But, of course, things are not always as they seem. Consider our experience of time. We seem to experience it as passing or flowing. Presentists, who hold that only presently existing things exist, say that the best explanation of our experience is that time *is* passing or flowing.²⁰ Though presentism faces a number of objections, this is the main argument motivating the presentist position.²¹

This section critically evaluates the argument for presentism based on our experience of time. First, I present the argument from experience in its most basic form. After refining the argument from experience, I consider an objection due to Robin LePoidevin (2007). LePoidevin proposes an explanation of our experiences which does not entail that time actually passes or flows. I show that LePoidevin's objection is unsuccessful, and offer my own objection to the argument from experience based on the special theory of relativity. Ultimately, I will conclude that the argument from experience is unsound.

2.1 The argument from experience

The argument from experience to presentism is as follows:

68) If we have certain temporal experiences, then presentism is true.

69) We have certain temporal experiences.

70) So, presentism is true.

²⁰ There are ways to hold that time passes without being a presentist, but the presentist account is what I will be evaluating in this section.

²¹ The other argument is based on some sort of appeal to our intuitions about the nature of time. It is unclear to me whether or not the intuitive argument for presentism itself depends on appeals to temporal experiences. In any case, the focus of this section is only on the argument from experience for presentism.

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There are various ways of precisifying the argument. One version of the argument from experience Robin LePoidevin (2007) considers is based on a certain feature of our temporal experience: that “we perceive only the present” (p. 77). Premise (68) can then be reformulated accordingly: if we perceive only the present, then presentism is true. Likewise, premise (69) would be changed to assert the antecedent of the newly formulated first premise.

However, there are two good reasons for thinking that premise (69) of this version of the argument from experience - that we perceive only the present - is false. First, since it takes time for light to reach us, and even more time for sense organs and brains to process it, what we are really only perceiving is the very recent past (LePoidevin 2007, p. 79). Second, we have reason to believe that our perceptions must be of some duration. For example, we do not perceive (or at least do not consciously perceive) visual or auditory stimuli which happen sufficiently fast.²² We also have reason to think that any moment, including the present, would have to be instantaneous. If a moment were to have any duration, then it would be divisible into earlier and later moments. A fundamentally present moment cannot have earlier and later moments, though, so it must not have any duration (LePoidevin 2007, p. 79-80). But now it becomes clear that in order to perceive only the present we would have to perceive an instant using our faculties of perception which are incapable of perceiving instants. For the two reasons just given, the second premise of this formulation of the argument from experience is false and the argument unsound.

LePoidevin considers another formulation of the argument from experience which attempts to capture the intuition behind the first formulation - that our experiences are due to

²² LePoidevin claims that the threshold for perceiving visual stimuli is around twenty milliseconds, while the threshold for perceiving auditory stimuli is around two to three milliseconds (LePoidevin 2007, p. 80). Whether or not these thresholds are accurate, as well as whether our body physiologically responds to stimuli of extremely short duration is not important; what matters is that a stimulus must last for some time, however short the duration, for it to be consciously perceived (it is the argument from experience, not from unconscious physiological response).

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properties of the present moment - without admitting to the direct experience of the present moment. Here, LePoidevin supposes the relevant temporal experience is that “we perceive events as present, i.e. as happening *now*” (LePoidevin 2007, p. 77). Unlike in the case of perceiving only the present, simply claiming that we perceive events as present allows for our experiences to be a result of an instantaneous moment, but not themselves instantaneous. We can now reformulate (68) as follows: if we perceive events as present, then presentism is true.

Unfortunately, in this reformulation of the argument, premise (68) is false. That is because presentism could be false and we would still experience events as present. If you represent an event as occurring at the time you experience it, then you experience it as present. So, any non-presentist can explain why we experience an event as present if we represent it as occurring at the time we experience it. So, the first premise of this formulation of the argument from experience - if we experience events as present, then presentism is true - is false and the argument unsound.

We are now in a position to consider a third version of the argument from experience. This version appeals to two separate features of our temporal experience offered by LePoidevin on behalf of the presentist. The first is that our experiences are temporally limited (LePoidevin 2007, p. 84). The presentist can easily explain why this is the case: only present events can cause our experiences, and the present moment keeps changing (LePoidevin 2007). The second relevant feature is that we experience intersubjective agreement about what event is presently happening²³ (LePoidevin 2007). Again, the presentist can explain this experience by simply appealing to the fact that on the presentist account there only ever is one global event happening for us to experience; that which is presently happening (LePoidevin 2007). Using these features

²³ ‘Or that which very recently happened’ in light of the criticism for the first formulation of the argument.

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of our temporal experience, the argument from experience is formulated as follows:

71) If our experiences are temporally limited and we experience intersubjective agreement about what is happening, then presentism is true.

72) Our experiences are temporally limited and we experience intersubjective agreement about what is happening.

73) Therefore, presentism is true.

It seems hard to deny that our temporal experiences have these features, so it is plausible that premise (72) is true. But is it plausible that premise (71) is true? As was the case with the second version of the argument from experience considered above, opponents of presentism need to show that these features of our temporal experience are not incompatible with every position other than presentism. One such position is eternalism. Eternalism is the view that what is included in the domain of our most unrestricted quantifiers never changes; the domain includes wholly past and future things. For instance, if an eternalist were to make a list of all the things that exist, the list would include the CN Tower and the Statue of Liberty, as well as dinosaurs and moon bases. Eternalists typically hold a view about the existence of objects at different times which is closely analogous to existence at different places in space. As Steven Savitt explains: “there is no[thing] more special about the temporal present (the *now*) than there is about the spatial present (the *here*),” (Savitt 2006, Section 2.1) and that “[f]uture and past events at a place, on this view, are no more or less real than distant events at a time” (Savitt 2006, Section 2.1).

Recall that the B-theory of time is the view that there is no fundamental fact about which moments are past, present, or future. According to B-theorists, events are fundamentally ordered according to which events precede or antecede other events (the B-series). On this view, the truth of claims about A-series properties (which events are past, present, and future)

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essentially depends on facts about which events are earlier or later than the time from which a claim is made.

LePoidevin offers eternalism in conjunction with the B-theory of time as an example of a non-presentist position compatible with the temporal limitation of our experience and our intersubjective agreement about what is presently happening (LePoidevin 2007, p. 87). The conjunction of these two views paints a picture of reality as consisting of an ordered series of events, all of which exist at their respective moments in a temporally static universe. LePoidevin claims that eternalism with the B-theory of time is consistent with the temporal limitation of our experience and our intersubjective agreement about what is presently happening. Reconciling these two features of our temporal experience with eternalism and the B-theory requires giving some further account about the nature of reality and perception.

For starters, eternalist B-theorists owe an explanation of why we always perceive present (or slightly past) events instead of future ones. According to eternalist B-theorists, events which we will perceive in the future already exist. And they clearly have the causal power required to cause us to experience them, because we do experience them at a future time. So, it seems natural to ask the eternalist why, since all events share equal perception-causing power, we perceive earlier events but not later ones.

LePoidevin replies that the eternalist can respond by appealing to a temporal asymmetry in causation (LePoidevin 2007, p. 85); the causal chain resulting in our perceptual experiences only runs in one direction (earlier to later). However, this response naturally leads one to ask the eternalist the following question: Why, since all earlier events are not violating the temporal asymmetry of causation, do we only experience *certain* earlier events? To answer this

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question, the eternalist must appeal to some principle such as there being no causation at a temporal or spatial distance (LePoidevin 2007). The causal effect of events on our perception takes time to reach us.

The eternalist B-theorist also owes an account of why, since sufficient time has elapsed for the causal effect of many earlier events to have reached us, we do not perceive many earlier events simultaneously. Why, for instance, at any given time, do I not continue to perceive all the events I have already perceived since my birth if eternalist B-theory is true? LePoidevin suggests that the eternalist may appeal to the forces of natural selection, as well as limitations in our information-processing systems (LePoidevin 2007, p. 86). Although beings who continue to perceive earlier events are logically possible, according to LePoidevin, beings such as these would most likely fall victim to the forces of natural selection (LePoidevin 2007, p. 86). I would die rather quickly if I continued to perceive myself as safe in bed when I am in fact being chased by a lion, for example. Furthermore, because our information-processing systems have a limited capacity, it is most beneficial for a perceiving being to continually move all but the least temporally distant events into memory to make room for new perceptions (LePoidevin 2007).

Finally, the eternalist can explain our intersubjective agreement about what is presently happening by pointing out that typical uses of ‘we’ pick out the people with whom we are readily able to communicate (LePoidevin 2007, p. 86). In addition, the speed at which sensory information is transferred is, generally speaking, faster than the rate at which events noticeably change. So, people in relatively close proximity to one another agree when asked “What is happening now?” because light and sound travel faster from the event in question to our sensory organs than changes between states of the world can be perceived (LePoidevin 2007). If, on the other hand, light and sound were to travel much slower, people a few meters apart may in fact

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disagree when asked “What is happening now?”

Recall the argument from experience: if our experiences are temporally limited and we experience intersubjective agreement about what is presently happening, then presentism is true; our experiences are temporally limited and we experience intersubjective agreement about what is happening; therefore, presentism is true. On the basis of Robin LePoidevin’s explanation of our temporal experience, we are in a position to offer the following objection to premise (71) (if our experiences are temporally limited and we experience intersubjective agreement about what is happening, then presentism is true).

74) Our temporally limited experience and intersubjective agreement about what is presently happening is explained by the eternalist B-theory of time.

75) If our temporally limited experience and intersubjective agreement about what is presently happening is explained by the eternalist B-theory of time, then premise (71) of the argument from experience is false.

76) Therefore, premise (71) of the argument from experience is false.

LePoidevin claims that by appealing to different principles concerning the nature of causation, perception, and natural selection, eternalism with the B-theory of time is completely consistent with the relevant temporal features of experiences. According to LePoidevin, then, the first premise of this formulation of the argument from experience - if our experiences are temporally limited and we experience intersubjective agreement about what is presently happening, then presentism is true - is false and the argument unsound.

Although LePoidevin claims that the eternalist B-theory of time is consistent with the

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temporal limitation of our experience and intersubjective agreement about what is presently happening (LePoidevin 2007, p. 87), proponents of presentism have a good reply to his objection against the argument from experience. Recall that LePoidevin's non-presentist account of the temporal limitation of our experience and our intersubjective agreement requires the truth of five separate principles concerning our perceptions: i) there is a temporal asymmetry in causation, ii) there is no causation at a spatial or temporal distance, iii) natural selection has preferred beings with certain perceptions, iv) our information-processing systems are limited in their capacity, and v) the speed at which sensory information travels is very fast. There are good reasons for thinking (74) is false.

First of all, it is plausible to think that causation is not necessarily temporally asymmetric if time travel is possible. If I jump in a time machine and travel to the past, then some of my future actions are the cause of some past events. For example, my setting of the time travel dial to 1947 (in the year 2010) and travelling back in time would be what caused my appearing in 1947. This type of story is completely consistent with a static B-series ordering of events, yet violates the principle of temporal asymmetry of causation (Lewis 1976). We therefore have reason to believe that LePoidevin's principle of temporally asymmetric causation is incorrect.

LePoidevin's second principle is that there is no action at a spatial or temporal distance. This principle is contentious as well. Certain experimental setups in physics, originally called 'EPR experiments' (Einstein-Podolsky-Rosen), have arguably demonstrated that there can be causation at a spatial distance; between two objects which are outside of each other's up-

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facing light cones in Minkowski space-time.²⁴ EPR experiments involve measuring the spin of a pair of particles, along an axis chosen at random, which have been released in a state of quantum entanglement. When one particle happens to be randomly measured along the same axis as the other, the spin value of the two particles matches one hundred percent of the time, even though individually each particle has a random chance of measuring spin-up or spin-down. Since this match rate obtains instantly upon measurement regardless of the distance between the two particles, the results of the experiment suggest that instantaneous causation-at-a-distance occurs between the two particles. There is a good reason, then, to think that causation at a spatial or temporal distance takes place. Thus, we have good reason to think (74) is false and LePoidevin's objection to the argument from experience is unsound.

I conclude that, although, as LePoidevin has shown, the non-presentist can provide *some* sort of explanation for our relevant temporal experiences, presentists have good reason to reject LePoidevin's explanation. I have argued that Robin LePoidevin's explanation involves two dubious principles – causation is temporally asymmetric and there is no action at a spatial or temporal distance – that should be rejected for independent reasons. But suppose I am wrong about that. For instance, it could be claimed that the conditions under which the principles of temporal asymmetry and no action at a spatial or temporal distance fail are exceedingly rare, and play little or no role in our everyday experience. As such, our everyday experiences are still consistent with eternalism and the B-theory of time.²⁵ I believe the presentist has another

²⁴ Minkowski space-time diagrams are graphs representing one spatial dimension and the temporal dimension. Time is represented by the Y-axis, and the spatial dimension by the X-axis. Lines on the graph represent the movement of an object through space over time. An object moving at light speed (the most spatial displacement possible in one unit of time) is represented by a diagonal line at 45 degrees to the X-axis. The set of coordinates which could be causally influenced by an object travelling at light speed is then determined by a cone-shaped area facing up from any given coordinate.

²⁵ Thank you to Bryson Brown for pointing this out to me during the question period after I presented a version of this section at the 2011 SEP conference.

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effective reply: the presentist explanation of our experience is much simpler, more natural, and more intuitive than Robin LePoidevin's conjunction of principles. So I conclude that Robin LePoidevin's explanation should be rejected and his objection to the argument from experience is unsound.

2.2 An objection from the special theory of relativity

Though I think LePoidevin's objection to the argument from experience is unsuccessful, I do believe that the argument from experience is unsound. If we take the special theory of relativity (STR) seriously, we can see that presentism cannot adequately account for the temporal limitation of our experience or our intersubjective agreement about what is presently happening. It is important for me to stress that my objection here is *not* the objection evaluated in the previous section that presentism is incompatible with STR. Rather, for the sake of argument, I will grant that there are versions of presentism that are compatible with STR and show, under that assumption, that no version of presentism adequately accounts for the two experiences in question. Thus, the argument from experience is unsound.

It is a familiar point that STR makes trouble for presentists.²⁶ The presentist view that there is an objective set of simultaneous events constituting the present moment is in tension with STR. STR is commonly interpreted as claiming that there are different sets of simultaneous events constituting a present moment relative to each inertial frame of reference. I believe there are two reasonable options available for the presentist who wishes to reconcile her view with STR. The first, which Sider (2001) describes as 'retaining an arbitrary hyperplane' (p. 47) and which was evaluated earlier, is for the presentist to claim that although STR does not distinguish

²⁶ Theodore Sider (2001) discusses this in chapter two of *Four Dimensionalism: An ontology of persistence and time*.

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any inertial frame of reference as the privileged objective frame of reference, this is ultimately an epistemic issue. STR is, strictly speaking, consistent with there being a privileged inertial frame of reference, though unknown to us, that reflects which events are truly simultaneous, thereby constituting an objective present moment. Judgments of simultaneity made in accordance with this frame of reference are objectively correct, while judgments made in accordance with any other frame of reference are objectively incorrect. Call this version of presentism 'Privileged Frame of Reference Presentism' (PFORP). The argument from experience can then be run in favor of PFORP:

77) If our experiences are temporally limited and we experience intersubjective agreement about what is presently happening, then PFORP is true.

78) Our experiences are temporally limited and we experience intersubjective agreement about what is presently happening.

79) Therefore, PFORP is true.

It is clear, though, that premise one of the argument from experience to PFORP is false. Most, if not all, people will not be in the privileged inertial frame of reference; even the smallest acceleration will change which inertial frame of reference you are in, not to mention the acceleration of planetary and galactic bodies. So most peoples' experiences do not reflect the way reality actually is.

This disparity between our experiences and reality also extends to our judgments about the temporal limitation and intersubjective agreement of our experiences. Since the temporal limitation of our experiences does not necessarily reflect the temporal limitation of the privileged frame of reference posited by PFORP, then it could be the case that PFORP is false and we

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would still have those experiences. Likewise, since our intersubjective agreement about what is presently happening is not necessarily due to the accurate experiencing of an objective present moment as posited by PFORP, then it could be the case that PFORP is false and we would still have intersubjective agreement. So we can have *both* of the experiences used to argue from experience to PFORP in scenarios where PFORP is false. I conclude that the first premise of the argument is therefore false and the argument is unsound.

Recall that there is a second way to reconcile presentism with STR. Instead of holding that there is a privileged inertial frame of reference, proponents of presentism could instead hold that *every* frame of reference is privileged. In other words, in any given frame of reference, there is an objective present moment which defines the set of objectively simultaneous events with respect to that frame of reference. This is not to say that events happen at both time t and some other time distinct from t , but that an event happens at time t with respect to one frame of reference, and at some other time distinct from t with respect to another frame of reference. There is no frame-independent time at which events happen *simpliciter* on this view. Call this version of presentism ‘Equal Opportunity Presentism’ (EOP). The argument from experience then runs as follows:

80) If our experiences are temporally limited and we experience intersubjective agreement about what is presently happening, then EOP is true.

81) Our experiences are temporally limited and we experience intersubjective agreement about what is presently happening.

82) Therefore, EOP is true.

Clearly, the objection lodged against the first premise of the argument from experience to

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PFORP will not be successful against the first premise of the argument from experience to EOP since, according to EOP, our experiences *do* track the way things actually are.

We are in a position to offer a different objection to EOP, however. According to the essential characteristics of presentism outlined at the beginning of the paper, EOP is incompatible with the core idea of presentism. By accepting EOP, presentists sacrifice the view that the way things presently are for one person is the way things are for everyone. Presentists should want the list of things in the scope of their most unrestricted quantifier to be the same for everyone. Presentists should reject that existence is relative to frames of reference. We should reject a view that entails that I can make it true with respect to my frame of reference that you do not exist just by speeding up or slowing down. Anyone attracted to EOP should instead endorse a hybrid of eternalism and the A-theory of time to avoid frame-relative existence.²⁷ We are, however, in a position to conclude that no version of presentism provides an adequate explanation of the temporal limitation of our experience and our intersubjective agreement about what is presently happening, while at the same time preserving the essential characteristics of the presentist position.

2.3 Conclusion

My aim was to show that no version of the argument from experience to presentism is sound. After considering various ways of formulating the argument, I considered an objection from Robin LePoidevin and concluded that the objection was unsound. What LePoidevin attempted to do, and I did not even *attempt* to do, is to provide an adequate B-theoretic account

²⁷ This hybrid view is often called the ‘moving spotlight theory of time’ due to the metaphorical spotlight of the present sequentially being shined over the eternally existing times. The moving spotlight theory of time has also been shown to be consistent with STR, as recently argued by Bradford Skow (2009) in his paper “Relativity and the Moving Spotlight”. Furthermore, the moving spotlight theory of time’s compatibility with STR does not entail frame-relative existence.

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of the temporal limitation of our experience and our experience of intersubjective agreement about what is presently happening. Eternalist B-theorists still owe one and I have done nothing to discharge this burden. The arguments considered suggest that a non-presentist account of the temporal limitation of our experience and our intersubjective agreement may still succeed. It is plausible to suppose, however, that the argument from experience was the only thing presentism really had going for it. So, if we should reject the argument from experience to presentism, we are left with no reason to endorse presentism.

3.0 Introduction

In the previous sections, classical presentism was rejected based on two categories of objections: those arguing for the falsity of the position as classically formulated (the reference objection, the grounding objection, and the objection from the special theory of relativity), and those questioning the motivation for holding the position in the first place (the argument from experience for presentism). Recently, however, developments in modal logic have allowed for new ways of understanding positions in the philosophy of time. For example, modeling tense logic after quantified modal logic permits for the formulation of a different form of presentism called ‘Barcan Presentism’ - so named after Ruth Barcan Marcus, discoverer of the modal Barcan formula discussed in this section (Barcan 1946) - which may have the resources to resist many of the objections against the classical formulation. This section will consist of a formulation and evaluation of Barcan Presentism. I will begin by briefly looking at developments in the logic of modality, whose supposed analogy to tense operators aids in the Barcan formulation of classical positions in the philosophy of time.²⁸ Next, I will look at what modifications, if any, to the classical presentist’s position are required in order to obey the modal

²⁸ See p. 8 for discussion on tense operators.

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analogy, as well as how the existing principles of presentism fit into the new view. Having given a formulation of the new Barcan presentist position, I will, at this point, re-evaluate the objections which posed serious problems for classical presentism to see if they remain equally as potent against Barcan presentism. I will ultimately conclude that Barcan presentism, although superior in some respects to classical presentism, still cannot provide an adequate response to the grounding objection or the objection from the special theory of relativity. Furthermore, Barcan presentism requires that presentists sacrifice all claims to being the intuitive position in the philosophy of time and, being that this is the main motivation for the position, should be abandoned.

3.1 The Modal Analogy

The logic of modality on which the Barcan presentist position is modeled is the simplest quantified modal logic (SQML). SQML is an artificial language made up of a grammar and semantics. The grammar of SQML includes a primitive vocabulary of individual constants, individual variables, n-place predicates, connectives, operators, and parentheses.²⁹ Individual constants are represented by lower case letters a through w with or without numerical subscripts, individual variables are represented by lower case letters x through z with or without numerical subscripts, and n-place predicates are represented by upper case letters with or without numerical subscripts. The connectives of SQML are ' \rightarrow ', normally understood as equivalent to "only if" in English, and ' \sim ', normally understood as equivalent to "it is not the case that" in English. The operators of SQML are ' \forall ', normally understood as equivalent to "for any" in English; and ' \square ', normally understood as equivalent to "it is necessarily the case that" (also analyzed as "at all possible worlds") in English (Sider, 2010).

²⁹ Most of the following exposition of the grammar of SQML is from Sider (2010).

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Well-formed formulas (wffs) of SQML are those strings of primitive vocabulary which count as grammatical sentences in SQML.³⁰ The wffs of SQML are defined as follows:

- i) If Π is an n -place predicate and $a_1 \dots a_n$ are terms, then $\Pi a_1 \dots a_n$ is a wff of SQML.
- ii) If Φ and φ are SQML wffs, and α is a variable, then $\sim\Phi$, $(\Phi \rightarrow \varphi)$, $\forall\alpha\Phi$, and $\Box\Phi$ are wffs of SQML.

Furthermore, only strings that can be shown to be wffs of SQML by using (i) or (ii) are wffs of SQML (Sider 2010, p. 90). We can, however, introduce two new symbols into the vocabulary of SQML which stand as abbreviations for strings of operators and connectives: ‘ \exists ’, normally understood as being equivalent to “there exists something” in English, is introduced as an abbreviation for ‘ $\sim\forall\sim$ ’, and ‘ \diamond ’, normally understood as being equivalent to “it is possible that” (also analyzed as “at some possible world”), is introduced as an abbreviation for ‘ $\sim\Box\sim$ ’.

The semantics of SQML specify whether a valuation function (a function whose inputs are wffs and whose output is either 1 or 0) assigns a 1 or 0 (truth or falsity) to wffs.³¹ Whether a valuation function assigns a 1 or 0 to some wff of SQML is relative to an SQML model, M , and an assignment function, g , of variables to individual constants. An SQML model, M , consists of an ordered triple $\langle W, D, I \rangle$. W is a non-empty set of worlds (indicated in the semantics by ‘ w ’ with or without superscripts). D is a non-empty set of things (the domain of quantification). I is an interpretation function which assigns each individual constant in M to some members of D , and assigns an ordered set, $\langle u^1, \dots, u^n, w \rangle$, to all n -place predicates in M , where u^1, \dots, u^n are members of D and w is a member of W . A variable assignment, g , is a function that assigns each variable in a model, M , to an individual constant (Sider, 2010). An SQML model, M , then,

³⁰ This definition of wffs is mostly from Sider (2010).

³¹ The following description of models of SQML is mostly from Sider (2010).

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assigns (based on an interpretation) all the names at a world to things in the domain, and assigns ordered sets of these things to every predicate at a world, and a variable assignment, g , temporarily assigns an individual constant to each variable. The identity relation is also added to SQML, where $\lceil x = x \rceil$ and $\lceil x = y \rightarrow (\varphi(x, x) \rightarrow \varphi(x, y)) \rceil$ are axioms; if $\lceil x=y \rceil$ then some or all instances of ‘ x ’ can be substituted for ‘ y ’ (Linsky & Zalta, 1994).

Valuation functions (V), in a model M , under a variable assignment function g for wffs of SQML are as follows:³²

For any terms α, β , $V_{Mg}(\alpha = \beta, w) = 1$ iff $[\alpha]_{Mg} = [\beta]_{Mg}$ (where $[\alpha]_{Mg} = I(\alpha)$ if α is a name and $[\alpha]_{Mg} = g(\alpha)$ if α is a variable).

For any n -place predicate Π and any terms $\alpha_1 \dots \alpha_n$, $V_{Mg}(\Pi\alpha_1 \dots \alpha_n) = 1$ iff $\langle [\alpha_1]_{Mg} \dots [\alpha_n]_{Mg}, w \rangle \in (\Pi)$.

For any wffs Φ, ψ and variable α ,

$$V_{Mg}(\sim\Phi, w) = 1 \text{ iff } V_{Mg}(\Phi, w) = 0$$

$$V_{Mg}(\Phi \rightarrow \psi, w) = 1 \text{ iff either } V_{Mg}(\Phi, w) = 0 \text{ or } V_{Mg}(\psi, w) = 1.$$

$$V_{Mg}(\forall\alpha\Phi, w) = 1 \text{ iff for every } d \in D, V_{Mg}[\alpha/d](\Phi, w) = 1.$$

$$V_{Mg}(\Box\Phi, w) = 1 \text{ iff for every } w \in W, V_{Mg}(\Phi, w) = 1.$$

A wff of SQML is valid in a model, M , iff for any variable assignment, g , and at any world among W , the formula is true. A formula is SQML-valid iff it is valid in all SQML models.

³² All of the valuation function exposition is based on Chris Tillman’s handout for his April 2011 presentation of “The World is Full of Possibilities”.

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The Barcan formula, ' $\diamond\exists xFx \rightarrow \exists x\diamond Fx$ ', named after its discoverer Ruth Barcan Marcus (1946), is true in all SQML models. The proof theory I will employ in demonstrating the validity of BF is the axiomatic proof theory of SQML. To prove the validity of a claim using the axiomatic proof theory of SQML, one begins by assuming the truth of the negation of the claim being proved. Each subsequent line of the proof is either an axiom of SQML, or follows from the application of a logical rule to a previous line in the proof (the right hand column gives the justification for how that line was derived). Deriving a contradiction by only appealing to axioms or previous lines in the proof means that the original claim, the negation of which was assumed for the proof, is true in all SQML-models (valid). In this way, BF can be shown to be true in all SQML-models:

83) $\sim (\diamond\exists xFx \rightarrow \exists x\diamond Fx)$	(negation of BF)
84) $\diamond\exists xFx, w^0$	(83), valuation function for $(\Phi \rightarrow \psi, w)$
85) $\sim \exists x\diamond Fx, w^0$	(83), valuation function for $(\Phi \rightarrow \psi, w)$
86) $\forall x \sim \diamond Fx, w^0$	(85), quantifier exchange
87) $\exists xFx, w^1$	(84), discharge \diamond
88) Fa, w^1	(87), discharge \exists
89) $\sim \diamond Fa, w^0$	(86), discharge \forall
90) $\square \sim Fa, w^0$	(89), modal operator exchange
91) $\sim Fa, w^1$	(90), discharge \square

X (91) and (88) are contradictory. ' $\diamond\exists xFx \rightarrow \exists x\diamond Fx$ ' is true in all SQML-models.

According to the Barcan formula, which is true in all SQML-models, if it is possible that there exists an x such that x satisfies predicate F, then some x exists such that it is possible that x

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satisfies predicate F. For example, if it is possible that there exists an x such that x is a unicorn, then *there exists* an x such that it is possible that x is a unicorn. The converse Barcan formula (CBF), ' $\exists x \diamond Fx \rightarrow \diamond \exists x Fx$ ', is also valid according to SQML as given above.³³ So, BF can be conjoined with CBF to yield the biconditional ' $\diamond \exists x Fx \leftrightarrow \exists x \diamond Fx$ ' (it is possible that there exists an x such that x satisfies predicate F if and only if there exists an x such that it is possible that x satisfies predicate F). The common domain of quantification in SQML also validates the rather unintuitive claim that necessarily, for anything x there necessarily exists something y such that x is identical to y: ' $\Box \forall x \Box \exists y (x=y)$ '.³⁴ In other words, it is necessarily the case that everything necessarily exists (NENE). That this is a valid formula seems strange considering how, intuitively, most things could fail to exist. Nevertheless, the validity of the claim can be demonstrated in much the same way that BF and CBF were.

³³ 1. $\sim(\exists x \diamond Fx \rightarrow \diamond \exists x Fx, w^0)$ (negation of CBF)
 2. $\exists x \diamond Fx, w^0$ (1), valuation function for $(\phi \rightarrow \psi, w)$
 3. $\sim \diamond \exists x Fx, w^0$ (1), valuation function for $(\phi \rightarrow \psi, w)$
 4. $\diamond Fa, w^0$ (2), discharge \exists
 5. Fa, w^1 (4), discharge \diamond
 6. $\Box \sim \exists x Fx, w^0$ (3), operator exchange
 7. $\sim \exists x Fx, w^1$ (6), discharge \Box
 8. $\forall x \sim Fx, w^1$ (7), quantifier exchange
 9. $\sim Fa, w^1$ (8), discharge \forall
 X (9) and (5) are contradictory. CBF is SQML-valid.

³⁴ 1. $\sim \Box \forall x \Box \exists y y=x, w^0$ (negation of NENE)
 2. $\diamond \sim \forall x \Box \exists y y=x, w^0$ (1), operator exchange
 3. $\sim \forall x \Box \exists y y=x, w^1$ (2), discharge \diamond
 4. $\exists x \sim \Box \exists y y=x, w^1$ (3), quantifier exchange
 5. $\sim \Box \exists y y=a, w^2$ (4), discharge \exists
 6. $\diamond \sim \exists y y=a, w^2$ (5), operator exchange
 7. $\sim \exists y y=a, w^3$ (6), discharge \diamond
 8. $\forall y \sim y=a, w^3$ (7), quantifier exchange
 9. $\sim a=a, w^3$ (8), discharge \forall
 10. $a=a, w^3$ Identity axiom
 X (9) and (10) are contradictory. NENE is SQML-valid.

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Based on the validity of NENE, BF, and CBF, one might think that SQML is incompatible with modal actualism (the view according to which only actual things exist). For instance, there is possibly a thing which is a unicorn if and only if there exists something which is possibly a unicorn. But, since necessarily everything necessarily exists, this means that necessarily the thing which is possibly a unicorn exists. It seems unreasonable, however, to pick out any actually existing thing as that thing which is possibly a unicorn. So, if we want to say that it is possible for unicorns to exist, then it would seem we must say that necessarily there exist possible, but not actual, unicorns. Actualists, however, do not want to say that merely possible things (like unicorns) exist. So, it looks like actualists must reject SQML as a theory which best represents the logic of modality.

Historically, the actualist response has been to reject that the domain of quantification, D , employed in SQML is common between possible worlds, and to instead accept a variable domain of quantification.³⁵ On this account, domains of quantification are different based on the world in which quantification is taking place. Since domains of quantification are different in each world, models of variable domain quantified modal logic (VDQML) are different from models of SQML.³⁶ A model, M , of VDQML is an ordered quadruple, $\langle W, D, L, I \rangle$. W is a non-empty set of possible worlds (just as in SQML). D is a non-empty set of things; a “super set” of all the things at all the worlds. L is a function that assigns to any $w \in W$ a subset of the member of D . $L(w)$ can also be referred to as D_w (D_w is all the objects – a sub-domain of W – which exist at world w). Finally, I is an interpretation function such that: if α is an individual constant, then $I(\alpha) \in D$; and if Π is an n -place predicate, then $I(\Pi)$ is a set of ordered $n+1$ -tuples $\langle u_1, \dots, u_n, w \rangle$,

³⁵ Linsky and Zalta (1994) look at the variable domain response (p. 13-23), as does Williamson (2003) (p. 20-33).

³⁶ The exposition of a model, M , of VDQML is taken mostly from Sider (2010), p. 244.

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where u_1, \dots, u_n are members of D , and $w \in W$ (Sider, 2010). Valuation functions for wffs of VDQML are the same as valuation functions for wffs of SQML.

Because the sub-domain (D_w) of one world may fail to include objects which are in the sub-domain of a different world, it is easy to see how BF and CBF are invalid according to VDQML. The member of D used to discharge an existential quantifier (and so, in the sub-domain D_{w_1}) at one world may not be a member of the sub-domain of a different world, and therefore cannot be used to discharge the universal quantifier at that world. Premise (89) of the proof for the validity of BF given above, then, is invalid.³⁷

There is good reason, however, for thinking that VDQML is not a good candidate for analyzing the nature of modal claims in natural language (like English). Williamson (2003) points out that in order to claim something is not in the domain of quantification of your world (so, not in the sub-domain, D_w , of your world) you must in fact be quantifying over it. Anything which *is* or *is not* anything is being quantified over. The only way proponents of VDQML are able to assert that there are things outside of the domain of quantification of some world (say, the actual world) is to do so in a metalanguage. This means that the resources of a metalanguage used to describe restricted quantification in an object language will always outstrip the resources of the object language being analyzed. Seeing as English is the metalanguage being used to describe restricted quantification in VDQML, the resources of English must therefore outstrip the resources of VDQML. But then we should not be interested in the quantifiers of VDQML; what we should be interested in is the domain of quantifiers in English. Because quantification in English is not accurately modeled by VDQML, VDQML should be rejected. Furthermore, since

³⁷ A formal proof for the VDQML-invalidity of BF is given in Kripke (1963).

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SQML is so widely accepted and prevalent in analyzing modal claims, the actualist is better off trying to find a way to reconcile his view with BF, CBF, and NENE.

Linsky and Zalta (1994, 1996) argue that there in fact is an actualist-friendly interpretation of the BF, CBF, and NENE. Recall that the problem reconciling these valid formulas of SQML with actualism is that there necessarily exist things which satisfy predicates at some non-actual world. Linsky and Zalta claim that the actualist should embrace the necessary existence of objects which exemplify properties at non-actual worlds. That these objects exemplify properties at non-actual worlds does not mean that they are not in the domain of the quantifiers at the actual world (in fact, the common domain of quantification ensures that they are). So, strictly speaking, these objects are actually existing possible objects. Since all that actualism requires is for any existing object to be an actually existing object (an object in the domain of the actual world's quantifiers), it turns out that actualism is consistent with BF, CBF, and NENE.

The actualist still has a question to answer: if possible objects are in the domain of the actual world's quantifiers, then where are they? Linsky and Zalta claim that objects which only have their properties at non-actual worlds are actually non-concrete (this should be intuitive seeing as they also only satisfy the 'being-concrete' predicate non-actually). Non-concrete possible objects are not spatiotemporally located (you cannot kick them), but are different from abstract objects in that they are only contingently non-concrete. Contingently non-concrete objects are contingently non-concrete because they only satisfy the concreteness predicate at some non-actual world. So, contingently non-concrete possible objects actually exist, but are nowhere and only satisfy predicates which do not entail concreteness.

3.2 The temporal case

SQML analyzes the truth of modal claims in terms of quantification over possible worlds (for example, it is possible that there exists a unicorn just in case there exists a unicorn at some possible world). Arguably, the truth of temporal claims is analyzable in terms of quantification over times. Furthermore, arguments for the common domain of quantification between worlds seem to equally apply for a common domain of quantification between times. For instance:

92) If the domain of quantification varies between times, then the quantifiers at some time do not quantify over everything.

93) If the quantifiers at some time do not quantify over everything, then something is not being quantified over by the quantifiers at some time.

94) If something is not being quantified over by the quantifiers at some time, then ‘Something is not being quantified over by quantifiers at this time’ is true at that time.

95) It is not the case that ‘Something is not being quantified over by quantifiers at this time’ is true at that time.

96) So, it is not the case that something is not being quantified over by the quantifiers at some time.

97) So, it is not the case that the quantifiers at some time do not quantify over everything.

98) Therefore, it is not the case that the domain of quantification varies between times.

If the analogy between modality and tense is strong in the above sense, then it seems reasonable to hold that modality and tense are analogous in other ways as well. For example, it seems reasonable to hold that tense operators work much the same way that modal operators do. A grammar and semantics for a quantified tense logic (QTL) can then be given. The vocabulary

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of QTL is the same as the vocabulary of SQML, except instead of analyzing the modal operator ‘ \Box ’ as “at all worlds/necessarily it is the case that”, ‘ \Box ’ is analyzed as “at all times/it is always the case that”. Accordingly, the operator ‘ \Diamond ’, an abbreviation for ‘ $\sim\Box\sim$ ’, means “at some time it is the case that”. Well formed formulas of QTL are the same as the well formed formulas of SQML. Whereas a model, M , of SQML consisted of an ordered triple $\langle W, D, I \rangle$, a model of QTL consists of an ordered triple $\langle T, D, I \rangle$; where T is a non-empty set of times instead of worlds (D and I are the same as in SQML). Valuation functions for well formed formulas of QTL are the same as the valuation functions for well formed formulas of SQML, except that all instances of ‘ w ’ (a world in W , distinguished from other worlds in W with subscripts) are changed into ‘ t ’s (times in T , distinguished from other times in T with subscripts).

Just as the Barcan formula is validated by SQML (with a common domain of quantification), the validity of a temporal version of the Barcan formula can be demonstrated by showing a contradiction arises if you assume its negation.³⁸ The temporal Barcan formula (TBF) is read as ‘if at some time there exists an x such that x satisfies predicate F , then there exists an x and at some time it satisfies predicate F ’. Furthermore, just as CBF and NENE are also validated in SQML, the temporal converse Barcan formula (TCBF) and claim that always everything always exists (AEAE) are also validated on QTL.³⁹ So, it is always the case that everything always exists, and something exists at some time and F s iff it exists and it F s at some time.

Just as the combination of BF, CBF, and NENE seemed, at first, to make trouble for the modal actualist, so TBF, TCBF, and AEAE seem to be inconsistent with the ontological thesis of

³⁸ The proof for the validity of the TBF is exactly formally analogous to the previously given proof for the validity of BF.

³⁹ The proofs for the validity of TCBF and AEAE are exactly formally analogous to the previously given proof for the validity of CBF and NENE.

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presentism. Presentists, once again, hold that only present objects exist. TBF, TCBF, and AEAE, however, seem to entail that there exists things which only satisfy present tense predicates at non-present times. For example, at some (past) time there exists an x such that x is a dinosaur iff there exists an x such that at some (past) time x is a dinosaur (TBF + TCBF), and x exists (AEAE).

Presentism, though, is not incompatible with TBF, TCBF, and AEAE for the same reason that actualism is not incompatible with BF, CBF, and NENE. Presentists need only hold that there is nothing not in the domain of our present quantifiers. TBF, TCBF, and AEAE make it the case that everything is in the domain of our present quantifiers (the domain of quantification is common between times). So, strictly speaking, there is no problem reconciling the ontological thesis of presentism with the above theorems of QTL. Furthermore, presentists can give the same explanation that actualists give for the whereabouts of all the present x s which F-pastly or F-futurely, but do not presently F; they are non-concrete. Once again drawing an analogy to the modal case, it should actually be intuitive that these things are non-concrete because they are not-presently satisfying the 'is-concrete' predicate. So, presentism combined with TBF, TCBF, and AEAE - Barcan presentism (BP) - gives the following picture of reality: there presently exists everything which existed, exists, or will exist, and all these things go in and out of concreteness (their properties change).

3.3 Objections to presentism re-evaluated

It turns out that not only is presentism compatible with common domain QTL, but the resulting position, Barcan presentism, demands a re-evaluation of the objections lodged against presentism. Recall the reference objection against presentism (p. 21): the objection based on the

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constituent parts of singular propositions (propositions in which the semantic content of a name is just what it denotes). In order to avoid referring to existing wholly past and wholly future things, the presentist had to abandon singular propositions and adopt a descriptive account of propositions where definite descriptions stand in the place for names. Recall the example used earlier concerning Vasily Zaytsev and the property of *being a sniper*. Instead of having Vasily Zaytsev as the semantic content of the name ‘Vasily Zaytsev’ in the proposition that Vasily Zaytsev was a sniper, then, presentists must hold the proposition expressed by the sentence ‘Vasily Zaytsev was a sniper’ is really that $WAS(\exists x(x \text{ is the referent of ‘Vasily Zaytsev’ and } x \text{ is a sniper})$. The presentist embeds the present tense analogue of the proposition employing the definite description within a primitive tense operator (‘WAS’ or ‘WILL BE’). Quantification within the scope of a tense operator is not existentially committing, and so the ontological thesis of presentism is saved. This response, however, is only available to those willing to accept a descriptive account of propositions, and it seems odd that the semantic content of a name suddenly shifts when its referent apparently ceases to exist.

Barcan presentists, however, are not forced to adopt a contentious general account of propositions. Because Barcan presentists hold that everything presently exists (either concretely or non-concretely), Barcan presentists can accept singular propositions which require the existence of things which are only concrete at non-present times. So, since the reference objection turns on the truth of the premise that if Vasily Zaytsev exists, then presentism is false (premise (41)), the Barcan presentist should be able to offer a response of the following sort:

99) Presentism is consistent with TBF, TCBF, and AEAE.

100) If (99), then presentism is consistent with the existence of things which are concrete at non-present times.

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101) So, presentism is consistent with the existence of things which are concrete at non-present times.

102) If (101), then it is not the case that if Vasily Zaytsev exists, then presentism is false.

103) Therefore, it is not the case that if Vasily Zaytsev exists, then presentism is false.

So, the Barcan presentist ontology is not inconsistent with the leading account of propositions, unlike classical presentism.

Whether the presentist accepts a descriptive account of propositions or the existence of singular propositions, the grounding objection still needs to be addressed. Just because the Barcan presentist can accept the existence of singular propositions which refer to things that are concrete at non-present times does not mean that he has given the grounding conditions for these propositions. Once again, the grounding objection demands that the presentist give an account of what grounds past or future tensed propositions. Since the presentist can only refer to how things presently are and what properties things presently have, the presentist can only ground tensed propositions in what is presently the case. The presentist, however, cannot ground tensed propositions in what is presently the case. So, presentists cannot ground the truth of tensed propositions; so, presentism is false.

Traditionally, the presentist response to this objection was to appeal to a different type of truth grounding (P-grounding). P-grounding, however, was shown to be less preferable than E-grounding because it requires taking too many things as primitive. Although Barcan presentists have a more robust ontology at their disposal, it would appear that the Barcan presentist must still invoke P-grounding to respond to the grounding objection. Consider the proposition that WAS(Vasily Zaytsev is a sniper). The Barcan presentist can assent to the existence of Vasily

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Zaytsev (existing non-concretely), but the Barcan presentist cannot claim that Vasily Zaytsev *is* satisfying the predicate “is a sniper” at a past time. The presently existing Vasily Zaytsev only satisfies the predicate “was a sniper”. The presentist must, therefore, hold that true past (and future) tense propositions do not presently have truthmakers or presently supervene on being, but are still primitively grounded in what was or will be the case (P-grounding). The price the P-grounder pays in accepting more primitive operators than the E-grounder, however, seems compounded on the Barcan presentist account. The Barcan presentist P-grounder has access to exactly the same objects the non-presentist E-grounder (everything which ever did, does, or ever will exist), but the Barcan presentist P-grounder still requires at least two more primitive operators than the non-presentist E-grounder. If Barcan presentists must still appeal to new primitive operators to ground the truth of non-present tense propositions even with the rich ontology of Barcan presentism, then, at the very minimum, presentism loses some intuitive appeal.

The last objection against presentism to be re-evaluated in light of the new Barcan presentist position is the objection from special relativity. Recall that based on the special theory of relativity, what events are simultaneously occurring (and therefore which things presently exist) is relative to each inertial frame of reference. Presentists, however, do not hold that existence is relative to anything; things exist when they are objectively present, and do not exist when they are objectively future or past. To hold that existence is relative to frames of reference and that no frame of reference is ontologically privileged is no different than holding that existence is relative to different times and that no time is ontologically privileged (especially since events in one frame of reference are simultaneous with earlier or later “ticks” of other frames’ watches). So, presentism is incompatible with special relativity.

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Barcan presentists, however, can offer a response to the objection from special relativity. Because, according to Barcan presentism, all past, present, and future things presently exist, and it is only a past or future thing's state of concreteness that changes, everything must therefore exist simultaneously. STR, presentists may claim, only requires that what sets of objects exist simultaneously is frame relative; it says nothing about concreteness. So, strictly speaking, since in any frame of reference all things past, present, and future exist (some are concrete and some are not concrete) the same set of objects will exist in all frames. Simultaneous existence across inertial frames of reference and the special theory of relativity are, therefore, consistent. The Barcan presentist response to the objection from STR, then, is to deny premise (61) of the objection (if STR is true, then it is not the case that there is objective simultaneity):

- 104) STR is true.
- 105) If STR is true, then concreteness, not existence, is frame relative.
- 106) If concreteness, not existence, is frame relative, then there is objective simultaneity.
- 107) So, there is objective simultaneity.
- 108) So, STR is true and there is objective simultaneity.
- 109) Therefore, it is not the case that if STR is true, then it is not the case that there is objective simultaneity.

The truth of (104) can be granted based on experimental data (as it was when defended earlier). Premise (105) is true based on AEAE, which is valid according to QTL. That concreteness, not existence, is frame relative is completely consistent with STR (it just happens that STR is usually interpreted – however incorrectly - as entailing frame relative existence). Premise (106) may be demonstrated using an example. Imagine I am travelling in an inertial

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frame of reference at close to the speed of light relative to an observer's frame of reference. Imagine also that when I left on my journey, at time t_1 , my spaceship contained an easily destroyable object. At time t_5 in my frame of reference, I destroy said object. It turns out that the destruction of the object is simultaneous with time t_3 in the observer's frame of reference. On the classical interpretation of STR, the easily destroyable object, the observer, and myself exist simultaneously at time t_4 in my frame of reference, while the easily destroyable object, the observer, and myself do not exist simultaneously at time t_4 in the observer's frame of reference; hence no objective simultaneity. According to Barcan presentism, however, the easily destroyable object, the observer, and myself exist simultaneously at t_4 in both frames of reference; the easily destroyable object just happens to be non-concrete in the observer's frame of reference. The rest of premises of the argument follow from natural deduction.

There are two reasons why the above response might not be entirely satisfactory. First, although STR is compatible with the simultaneous existence of everything, it seems that Barcan presentists cannot accept that, according to STR, what is *occurring* is relative to frames of reference. For example, although Barcan presentists can reconcile their view with the truth of propositions claiming that in some frame of reference Elvis exists, Barcan presentists would be hard pressed to reconcile their view with the truth of a proposition claiming that in some frame of reference, an occurrence of Elvis singing is simultaneous with the inaugural opening of the first moon base, and in another frame of reference, an occurrence of Elvis singing is not simultaneous with the inaugural opening of the first moon base. Concrete or not, Elvis cannot simultaneously satisfy the predicates *is singing* and *is not singing*. So, what is simultaneously occurring is still relative to frames of reference, making premise (106) false, and the argument unsound.

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The second reason why the Barcan presentist response to the objection from STR is unsatisfactory is that the issue of frame-relative concreteness is just as much a problem as was frame-relative existence. For example, the Barcan presentist would not want to claim that the easily destroyed object in the earlier example is simultaneously both concrete and non-concrete at time t_4 . STR, however, does not distinguish a privileged frame of reference as that which correctly represents what is concrete and what is non-concrete (the objection should look like the familiar objection from STR by now). At this point, classical presentists seemed committed to a scientifically revolutionary view (privileged frame of reference) according to which some people are objectively wrong when they think they can kick something, while others are objectively correct about that same judgment.⁴⁰ Barcan presentists, it would seem, are forced to accept the exact same view. Therefore, Barcan presentism should be abandoned.

3.4 Conclusion

Barcan presentism, arguably the strongest form of presentism, cannot adequately respond to the objections which were so troublesome for classical presentism. It is worth pointing out that when giving the characteristic ontological thesis of Barcan Presentism, the debate over whether ‘exist’ can be read tenselessly or whether it is irreducibly tensed becomes a non issue; according to the temporal Barcan formula, everything which existed, exists, or will exist does in fact presently exist.⁴¹ The little bit of ground the Barcan presentist does make concerning the existence of tensed singular propositions does not seem worth the price presentists must pay. The Barcan presentist can admit to the existence of tensed singular propositions only by also

⁴⁰ I only consider the privileged frame of reference view as an option for presentists because, as was argued in section two, presentists who want to hold that every frame of reference is privileged are better off being eternalist moving spotlight theorists.

⁴¹ Sider’s objection to the tenseless reading of ‘exist’ implying ‘existed, exists, or will exist’ requires that an object’s (dino-computer) past and future parts do not presently exist.

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admitting to a plethora of presently existing non-concrete entities. This unintuitive consequence by itself would not be enough reason to abandon Barcan presentism if, by appealing to such entities, the Barcan presentist were able to respond to most of the other objections faced by presentists. The Barcan presentist, however, must still choose from the unattractive options available to the classical presentist in order to respond to the grounding objection; unintelligible tensed properties, brute truths, or a version of truth grounding which, it has been argued, is less preferable than its competitor. Also, Barcan presentism does not reconcile any better than classical presentism with the special theory of relativity. STR is notorious for being difficult to reconcile with the presentist ontology, and has also been shown to cause problems for what is often claimed to be the motivating argument for presentism; the argument from experience. Even though Barcan presentism changes the problem of frame-relative existence to frame-relative concreteness, the Barcan presentist must still accept a scientifically revolutionary position to keep STR consistent with the main thesis of presentism. Furthermore, by accepting such a scientifically contentious position, the Barcan presentist cannot avoid the unintuitive consequence that most people have objectively incorrect judgments about reality. For presentists to accept this consequence is for presentism itself to become the unintuitive metaphysical position in need of correspondingly strong supporting arguments. Because presentism relies almost entirely on intuitive merit, and does not have arguments clearly showing it to be superior to the alternative positions, presentism should be abandoned.

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