

Temporal Ontology in Perspective

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Abstract

Do non-present things exist? A number of authors have argued that this question lacks substance in that the rival temporal ontologies—Presentism (non-present things don't exist) and Eternalism (non-present things exist)—are not properly distinct, and so temporal ontology faces a problem of triviality. The debate has centred on the tense of 'exists' and the indexicality of 'is present'. I show that this needn't be the case: *firstly*, one can provide non-indexical criteria of ontological commitment for the different temporal ontologies; *secondly* the resulting formulations of the temporal ontologies are distinguished in terms of their observer-independent, non-indexical structure, showing that triviality is avoided at the level of ontological commitment by removing indexicals. I demonstrate how the resulting account of temporal ontologies relates to standard accounts, and how the resulting account of presentism avoids conceptual problems standardly raised against accounts of presentism. Finally I show how physical theory can be brought to bear on the temporal ontologies, and suggest that eternalism should be preferred on naturalistic grounds.

1 Introduction

'Presentism' holds that only present things exist. This contrasts with 'eternalism', which holds that events with distinct temporal locations are equally real. There is a large literature on the *physical* definability of presentism, especially concerning presentism's (lack of) consistency with relativity theory.¹ However,

¹Putnam (1967) famously argues that presentism is untenable in Minkowski spacetime. (Gödel (1949) makes a similar argument that time is 'ideal', in the Kantian sense, in light of general rela-

such a debate is worthwhile only if presentism and eternalism are relevantly distinct theses. This paper addresses this prior conceptual issue: do the presentist and eternalist have a genuine disagreement about what exists?

The apparently clear distinction between presentism and eternalism has been the subject of much scrutiny in recent literature. The debate about the *triviality problem* — that presentism and eternalism differ merely notationally — has centred on the proper reading of the term ‘exists’ as used by the presentist and eternalist: it is standardly alleged that eternalists and presentists attach different meaning to the same term, and as such their ontological disagreement is merely apparent. In what follows, I argue that the threat of triviality should be understood not as concerning primarily the notion of existence, but instead as stemming from the problems of change and indexicality associated with the *A* theory of time which the presentist adopts. As such, the triviality problem is a special case of McTaggart’s famous critique of the *A* series. I show how the triviality problem is dissolved by providing non-indexical criteria for ontological commitment for each rival temporal ontology. In this way, it is shown that the charge of triviality fails: on the perspective-invariant framework, presentism and eternalism make distinct claims and thus can be compared and contrasted on the same terms. I argue that eternalism should be preferred on naturalistic grounds.

The paper is structured as follows. Sec. 2 presents the triviality problem and makes the case that the problem stems from the problem of indexicals in the philosophy of time. In sec. 3 I argue that the key problem is the commitment to the change of the present moment by presentist (and *A*-theorists in general). Sec. 4 builds on a suggestion of C. D. Broad by using a two-dimensional model of time to provide a non-indexical account of *A*-theoretic change. I use the two-time model to present externalist ‘supertemporal’ ontologies and show how they avoid the charge of triviality. I address standard misconceptions about the coherence and motivation of two-dimensional time by demonstrating that the supertemporal ontologies clarify and resolve a number of standard problems faced by temporal ontologies whilst preserving their key motivations. Sec. 5 recovers a more familiar internalist version of presentism and other temporal ontologies by using ‘supertemporal’ indexicals, showing standard temporal on-

tivity.) Responses to Putnam’s paper have focused on the definability of a relativistic ‘becoming’ relation on Minkowski spacetime (e.g. [Stein \(1991\)](#)). The separate question of whether *presentism* is tenable in light of relativistic constraints is an active issue in the philosophy of physics literature; see [Wüthrich \(2011b\)](#) for a recent discussion.

ologies to be special cases of supertemporal ontologies and so demonstrating that the supertemporal ontologies do not add extra ontological cost. In sec. 6, I use my results to develop a naturalistic argument against non-eternalist ontologies due to their explanatory dispensability, suggesting we should take non-eternalist ontologies to be non-trivially false. Sec. 7 is the conclusion.

2 Temporal Ontology and Triviality

Presentism is usually defined by means of the following existence claim:

Existence Postulate (EP). All and only present things exist.

Presentists accept EP. Eternalists reject EP, holding instead that existence is independent of temporal location — things located earlier and later than the present time are no less real than present things. However, it has been alleged by many that the apparently clear dispute between presentists and eternalists is not genuine; that contrary to appearances, presentism differs from eternalism in a merely trivial or notational sense.² Discussions of this ‘triviality problem’ cover two distinct but related charges:

TRIV1. Presentism and eternalism are not genuinely distinct ontological theses (i.e. they differ in a merely ‘trivial’ sense — cf. Savitt [2006], Callender [2011]).

TRIV2. Presentism is either trivially true or clearly false (cf. Meyer [2005]).

It is not simply the distinction between presentism and eternalism that is threatened with triviality, but presentism itself. Responses to the triviality claim typically address both *TRIV1* and *TRIV2*; it is common to deny *TRIV1* by adjusting the definition of presentism, thereby avoiding *TRIV2*. However, it does not follow that *TRIV1* and *TRIV2* are equivalent. Presentism and eternalism could be distinct without the former being non-trivially true, and the non-triviality of presentism does not entail that it is relevantly distinct from eternalism. For dialectical purposes, my goal is a denial of *TRIV1*. This involves the presentation of a new formulation of presentism that happens to avoid *TRIV2*. Call those that accept *TRIV1* ‘trivialists’ and those that reject *TRIV1* ‘anti-trivialists’.

²The charge that presentism differs from eternalism in a merely trivial way has been presented in different forms by Lombard (1999), Callender (2000, 2011), Ludlow (2004), Meyer (2005), Savitt (2006), Dorato (2006). Explicit defences of the non-triviality of the presentism/eternalism dispute have been given by Hinchliff (1996, 2000), Sider (1999, 2001, 2006), Crisp (2004), Markosian (2004), Wüthrich (2011a). These lists are not exhaustive.

2.1 Pro-Trivialism

The current literature on *TRIVI* focuses on the meaning of the verb ‘exist’ and its variants as used in EP. To be continuous with the literature, I take it that in order for the presentist and the eternalist to have a non-trivial disagreement, there must be some proposition concerning the existential status of some thing (object, event, etc.) on which the presentist and eternalist disagrees, and which bears some explanatory relevance. After all, if the presentism/eternalism distinction is to be relevant in the context of relativistic physics — i.e. for the relativity of simultaneity to be in some interesting sense inconsistent with presentism — then the two positions had better have some clear ontological distinction such that one sits better with the ontology suggested by relativistic theories. This gives a general naturalistic constraint on the distinction between presentism and eternalism — it might be relatively easy to find a superficial disagreement between the presentist and eternalist (e.g. at the level of notation), but ideally we want the two to disagree about something relevant to scientific explanation.³ We can start with a simple statement:

(P) Plato **exists**.

Given EP and Plato’s evident non-presentness, the presentist considers (P) to be false. Conversely, the eternalist considers (P) to be true. The problem raised by trivialists is that ‘exists’ as it appears in both EP and (P) is ambiguous, and that none of the plausible disambiguations of (P) divides the opinions of the presentist and the eternalist. Following Savitt (2006), we can give three different readings of ‘exists’: (1) the *tensed* reading, where ‘exists’ is read as ‘exists now’; (2) the *detensed* reading, where ‘exists’ is read as ‘did exist, exists now, or will exist’; (3) the *tenseless* reading, where ‘exists’ is read as ‘tenselessly exists’. This gives us three new statements:

(P₁) Plato **exists now**.

(P₂) Plato **did exist, exists now, or will exist**.

(P₃) Plato **tenselessly exists**.

Evidently (P₁) is false and (P₂) is true, and thus if there is a genuine dispute between the presentist and eternalist, it concerns neither of these readings of

³Callender (2011) provides a very helpful discussion about the presentist/eternalist dispute at the level of metaphysics, observation and explanation, arguing that the dispute is merely *apparent* at each level.

Table 1: The triviality problem (*TRIV1*).

	Presentist	Eternalist
(P ₁)	F	F
(P ₂)	T	T
(P ₃)	T	T

‘exists’. Hence our focus is on (P₃). Meyer (2005) takes the tenseless reading to be ‘*x* temporally exists’, and Savitt (2006) takes it to be ‘*x* timelessly exists’. Despite these terms being superficially opposed, each author has the same concept in mind. Meyer means by ‘temporally’ that ‘*x* is located in time’, with the specific time being irrelevant to the ‘exists’. Savitt likewise focuses on an ‘exists’ that is not indexed by time. Both take statements such as (P₃) to be uncontroversially true. Plato’s life is well documented, and his places and (approximate) dates of birth and death are known. Thus, it is uncontroversial that Plato is temporally located, and thus tenselessly exists, and hence this ought not be denied by the presentist. Given this, we can draw table 1. As depicted, on no row is there disagreement, and thus, in the absence of a further disambiguation of ‘exists’, there is no genuine dispute between the presentist and the eternalist with respect to (P).

2.2 Anti-Trivialism

The standard response offered by anti-trivialists is to deny that (P₁)–(P₃) are exhaustive. For instance, Mark Hinchliff holds that although presentists and eternalists “agree that [Plato] does not presently exist and that he existed [, t]hey disagree about whether [Plato] *just plain exists*” (Hinchliff, 1996, p. 123, my emphasis). The contention is that presentists are concerned not with any of the above disambiguations of ‘exists’, but with ‘existence *simpliciter*’. This differs from the above analyses of ‘exists’ insofar as it quantifies over an unrestricted domain, whereas the above analyses quantify over restricted domains: (P₁) ranges over the domain of present things; (P₂) ranges over the domain of past, present and future things; (P₃) ranges over the domain of all things ‘in time’. The move to an unrestricted domain of quantification in response to the triviality objection is also made by Sider (1999, 2006), Markosian (2004) and Crisp (2004). Markosian and Crisp both defend the presentist thesis that non-present things are in the domain of “our most unrestricted quantifier”

Table 2: The anti-trivialism argument.

	Presentist	Eternalist
(P ₁)	F	F
(P ₂)	T	T
(P ₃)	T	T
(P₄)	F	T

(Markosian, p. 47; Crisp, p. 17). This gives us a fourth reading of ‘exists’ — ‘exists *simpliciter*’, and thus a fourth disambiguation of (P):

(P₄) Plato exists *simpliciter*.

The anti-trivialist contention is that the presentist holds this statement to be false and the eternalist holds this statement to be true, as illustrated in table 2, in which the putative distinction between presentism and eternalism is highlighted. The introduction of this fourth precisification of ‘exists’ has served to create a stalemate within the literature:

1. Trivialists have expressed their dissatisfaction with the concept of unrestricted quantification (Savitt, 2006; Dorato, 2006; Callender, 2011), with Savitt holding that “there is good reason for doubting its intelligibility” (Savitt, 2006, §1). Savitt and Dorato, each citing Austin (1962), contend that existence *simpliciter* requires, but is devoid of, a contrast class, unlike the tractable readings of ‘exists’ in (P₁)–(P₃).
2. The trivialist is unlikely to be taken by the presentist’s use of ‘unrestricted’ in reference to the domain of quantification. The distinction between having existed and existing as non-present is precisely that which is at issue in the triviality debate, and yet it is required in order to make sense of existence *simpliciter*.
3. Recall that we are concerned with *TRIV1*; our goal is to locate a clear disagreement between the presentist and eternalist concerning (e.g.) the ontological status of Plato. *Even if* we allow the presentist’s move to quantification over an unrestricted domain, it does not follow that this resolves *TRIV1*. Although the presentist may require such a move in order to properly state their position (as is the contention of Hinchliff, Markosian

and Crisp), the eternalist requires only something like “all spatiotemporally located events exist” to adequately state their position.⁴ The eternalist may provide truth conditions for statements such as (P) without appealing to unrestricted domains of quantification, hence there is insufficient reason for thinking that the eternalist has either the desire or the means to declare (P₄) to be true.⁵

These points collectively motivate an alternative approach to the problem. In particular, the indexicality of ‘is present’ and the presentist’s commitment to the changing properties the present and existence raise an incommensurability problem with the eternalist. The chief worry is that the presentism/eternalism issue hangs on the former position’s reliance on temporal indexicals and the latter’s independence of temporal indexicals: presentism is invariably stated in indexical terms, with the presentist’s criterion for existence depending on what is (indexically) ‘now’; eternalism has no analogous dependence on temporal indexicals in its criterion for existence. As such, it is legitimate to worry that presentism and eternalism disagree only insofar as the former gives an *internalist* account of reality (‘from the inside’) and the latter an *externalist* account (‘from the outside’). In this respect, a non-indexical formulation of presentism would allow the two positions to be compared and (ideally) contrasted in the same externalist terms.

2.3 Presentism and Indexicality

The appeal to an unrestricted domain of quantification by the presentist is an attempt to avoid *TRIV2* by denying that the “exists” in EP is present-tensed, and hence avoid the worry that presentism and eternalism differ only in terms of the former’s use of temporal indexicals. However, it is crucial that this approach still incorporates temporal indexicals — what belongs to the unrestricted domain depends upon what is indexically present (i.e. simultaneous⁶ with the

⁴We may ignore the complications concerning what it means to have a spatiotemporal location.

⁵It may be objected to this that it is sufficient for a genuine dispute that the presentist takes (P₄) to be false and the eternalist takes (P₄) to be neither true nor false. However, the eternalist’s failure to attach a truth value to (P₄) is alone insufficient to express their official position regarding the ontological status of Plato. For the eternalist, ((P₃) is true) encapsulates their positive ontological commitment *re* Plato, and ((P₄) is not false) does not.

⁶As noted in the introduction, I am ignoring relativistic constraints that would apply to any substantial version of presentism. I take it as far from clear that presentism *could* be in any interesting way be incompatible with relativistic physics. For any such incompatibility, it is a necessary condition that presentism be a substantial position, and it is precisely this with which the present paper is concerned.

speaker/thinker). This version of EP can be stated as follows.

Unrestricted EP (UEP). All and only **present** things belong to the unrestricted domain.

The indexical element of UEP is emphasised — ‘present’ in UEP functions as an indexical. The key move by the presentist in the use of unrestricted quantification is to commit to a non-present-tensed reading of EP, whilst still incorporating its dependence on the temporal indexical. To be clear: the domain of ‘existing’ things is not itself time-indexed, but the criterion for being included in this domain — being located at the *present* time — *is* an indexical matter.⁷ Indeed, Hinchliff holds that a substantive distinction between presentism and eternalism “cannot be formulated in nonindexical terms” (Hinchliff, 2000, p. 577). As such, if the presentist appeals to UEP, their ontological commitment still depends on an indexical — namely what is *present*.

It is apparent in the contemporary literature on triviality, as well as in the wider literature on distinctness of the *A* and *B* theories of time, both that temporal indexicals are crucial to *A* theories and that the relationship between indexicals and ontology is problematic. In this case, it is clear that the indexical role of ‘present’ is a problem. UEP is intended as a general principle — a criterion for what exists. Whereas a presentist and an eternalist can (at least *prima facie*) meaningfully disagree at some time t_0 whether some event located at some past time t_{-1} exists, EP and UEP are *not* claims about some particular time or event, nor are they made at some particular time. Rather both EP and UEP are timeless principles (not token utterances) concerning the connection between temporal properties and existence, namely that only things that are ‘present’ exist. As such, the indexicality of ‘present’ here is puzzling: the content of a version of EP ought not depend upon who holds it and when; it should be possible to provide a nonindexical version of EP.⁸

In sections 3–4, I bypass the problem of indexicality in the triviality debate by presenting externalist criteria for presentism — free from indexicals — , in which “is present” does not function as an indexical. The externalist account of presentism is in contrast to traditional internalist accounts in which “is present”

⁷Whether this combination is tenable is a separate issue that this paper does not address.

⁸It might be objected that presentists generally prefix versions of EP with “It is always true that...” or “Necessarily, ...” and that this suffices to make EP a general claim not restricted to a particular time or perspective. However, even with such a prefix, the referent of “present” is context sensitive and so depends upon a choice of temporal perspective for its content.

functions as an indexical, such as those defended by the anti-trivialists mentioned above. Section 5 shows how a familiar internalist account of presentism can be recovered by introducing a new kind of temporal indexical, but the crucial point is that presentism and eternalism are compared and distinguished on the same externalist terms. This avoids the worry that presentist and externalist worlds differ solely in terms of the perspective used to describe them. The externalist account of presentism I present avoids both *TRIV1* and *TRIV2*: on my account, presentism is both distinct from eternalism and has non-trivial content. I show that on this account, presentism avoids standard conceptual problems aimed at accounts of presentism. Indeed I provide naturalistic grounds for taking presentism to be non-trivially false, and hence for preferring eternalism, though I leave the reader alternative grounds for defending such an account of presentism.

This paper exclusively explores this externalist approach of providing non-indexical criteria of ontological commitment for the different ontologies. I also use the externalist approach to raise alternative criticisms for *A* theories that I find to be compelling. As such, the *A* theorist may opt to seek refuge in ‘hybrid’ approaches to presentism, such as that of UEP, which aim to combine a seemingly tenseless existential quantifier with an indexical notion of presentness.⁹ I present and defend no arguments against the legitimacy of such approaches. I take the search for an externalist account of presentism to be worthwhile in its own right and offer this paper as a demonstration of the strengths and weaknesses of externalist *A* theories.

3 Presentism and Change: An externalist account of presentism

The view of time characterised by McTaggart’s *A* series¹⁰ has two central features: (1) moments are divided into past, present and future classes; (2) the divisions are dynamic — future things *become* present things and present things *become* past things. The literature on the ‘*A* theory’ of time has largely focussed on the tension between these two features.¹¹ It is common to hold not only that

⁹For approaches of this kind, see [Tooley \(2000\)](#), [Fine \(2005\)](#), [Williamson \(2013\)](#), [Rasmussen \(2015\)](#), [Correia and Rosenkranz \(2015\)](#).

¹⁰Cf. [McTaggart \(1908, 1927\)](#).

¹¹McTaggart’s paradox stems from his contention that time cannot, on pain of contradiction, have both of these features, and therefore moments do not form an *A* series. As McTaggart also holds

the past, present and future are distinct, but also that the present is objectively special. Presentism is the most extreme theory in this respect, holding that only what is present exists, and thus that the past and future are nonexistent or empty.¹² However, EP does not exhaust the presentist's position. In line with the two features of the *A* series, presentists invariably hold also that what exists *changes* via the movement of the present moment to later times.¹³ Call this the 'Change Postulate' of presentism.

Change Postulate (CP). The content of the present moment changes.

For completeness, in order to capture the presentist's commitment to a unidirectional movement of the present moment, a third postulate is required:

Direction Postulate (DP). The present moment moves from earlier to later¹⁴ times.

This third postulate is not crucial to the discussion.

Different versions of presentism can be defined in terms of the distinct postulates. Call the minimalist version of presentism consisting of EP but not CP (nor DP) 'Synchronic Presentism'.¹⁵

Synchronic Presentism. EP.

This is to be contrasted with a version of presentism explicitly adopting the change and direction postulates, 'Diachronic Presentism'.

that time, by conceptual necessity, requires both of these features, he concludes that time is 'unreal'.

¹²Again, there is a range of presentist positions available here: a substantialist presentist could hold either that past and future times exist devoid of events, or that the times themselves don't exist; a relationalist presentist could only make sense of 'unoccupied' past and future times by committing to some kind of modal realism — see [Newton-Smith \(1980, pp. 42–7\)](#).

¹³Of course, many presentists would rather avoid such apparent quantification over 'later times'. One can instead hold that the content of the present moment changes, and that its change appears to have some directional component — i.e. certain things 'come into' existence and others 'go out of' existence for the presentist, and these directed terms imply a direction of time even for those such as [Tallant \(2010\)](#) who are reluctant to refer to 'later times' at all.

¹⁴The presentist (and *A*-theorist in general) may wish to exclude *B*-theoretic relations like 'earlier' and 'later' from their ontology. DP can instead be written: "past moments *were* present and future moments *will be* present," so as to incorporate the directedness of the ordering relations in the *A* series.

¹⁵The term 'static' is frequently used in place of 'synchronic' in the metaphysics of time literature (often as a pejorative term) to refer to the alleged lack of 'dynamism' of non-*A*-theoretic models of time. However, as [Price \(1996, p. 13\)](#) notes, this usage of 'static' implies a time frame with respect to which the relevant object does not change, but this would require a further temporal dimension with respect to which the structure were unchanging. Hence, the terms 'static' and 'dynamic' in this context, though evocative, fail to refer to a qualitative property of such models. I use 'synchronic' and 'diachronic' to distinguish between commitment and non-commitment to CP. The model I present for 'diachronic' presentism may well be charged with being 'static' — I wish to here flag that I don't take this to be a substantial objection.

Diachronic Presentism. EP+CP+DP.¹⁶

The presentist requires CP in order to avoid the problematic view entailed by synchronic presentism that only one set of simultaneous events *ever* exists. This view does not allow for the existence of temporally-extended states of affairs, and therefore: (i) clashes with our scientific understanding of a large range of phenomena that require temporal extension (such as the working of our own brains); and (ii) undermines the claim that presentism is motivated by our temporal phenomenology — after all, we believe we’re temporally extended, we plan for the future, we experience change, succession and duration, we don’t believe we’ll instantaneously cease to exist, etc.

3.1 Externalising EP and CP

We can provide externalist versions of EP and CP. First, take the ‘PRESENT’ to be the name of a thing, i.e. a collection of entities, events, or a proper part of spacetime. In the case of a 4D classical spacetime, the PRESENT is a 3D subspace consisting of an equivalence class of events related by simultaneity. Crucially, the term ‘PRESENT’ is non-indexical — the object to which it refers is independent of the time at which one uses the term, and so ‘PRESENT’ does not necessarily pick out the time of utterance. I use capitalised terms in this paper exclusively for non-indexical *A*-theoretic terms. All lower-case uses of the terms are indexicals. As such, it is possible for the referents of tokens of indexical terms ‘the present’ and ‘now’ to not be PRESENT. In sum: the PRESENT is an object; PRESENTNESS is the property of being colocated with that object — a thing “is PRESENT” iff it possesses PRESENTNESS. Importantly, the term ‘is’ in “*x* is PRESENT” is tenseless — the PRESENT is an object with a temporal location that is independent of that of any particular observer or time.¹⁷ EP can then be restated as follows:

Externalist Existence Postulate (EEP). All and only PRESENT things exist.¹⁸

Here, ‘exist’ is to be read as tenseless. (This reading brings in a key tension with the change postulate, which is the subject of sec. 3.3.) Given the nonin-

¹⁶A version of Diachronic Presentism without DP is definable: existence is confined to the present, and different ‘presents’ exist at different times, but there is no directed ordering of presents.

¹⁷Were ‘is’ present tensed, the triviality problem would reoccur. The use of non-indexicals and tenseless terms in this approach is specifically to avoid triviality.

¹⁸I take “things within the PRESENT”, “things simultaneous with the PRESENT,” and “things that *are* PRESENT” (where this usage of ‘PRESENT’ refers to a *property* of being simultaneous with the PRESENT) to be interchangeable.

dexicality of EEP, the presentist must hold that the PRESENT is simultaneous with itself.¹⁹ We can externalise CP as follows:

Externalist Change Postulate (ECP). The content of the PRESENT changes.

It is key that ECP makes use of a PRESENT. CP is uninteresting if one reads ‘present’ as an indexical, since it amounts to the claim that things change over time, i.e. the world does not possess the same properties at every time — given this, one’s indexical present ‘changes’ if one occupies multiple times. ECP is more interesting since it implies that the PRESENT is occupied by things with distinct temporal locations. In sec. 4 I show that combining EEP and ECP allows for the presentist to commit to PRESENT events located earlier and later than themselves.

3.2 Presentism without change

With respect to a PRESENT, it is evident how the eternalist and the presentist might appear to have a clear dispute — the presentist holds that all and only things within the PRESENT exist (accept EEP), and the eternalist rejects this. However, EEP is in direct tension with ECP, as we see in sec. 3.3, which raises a foundational problem for the presentist and threatens to collapse presentism to a redescription of eternalism. Before addressing this, we may first use a PRESENT to define toy temporal ontologies. The models depicted in figure 1 use a PRESENT to distinguish a range of distinct temporal ontologies. Figures 1a–1d depict candidate externalist models of the four stock temporal ontologies: (a) presentism; (b) the *growing block* — the view that past and present (and not future) things exist;²⁰ (c) the *moving spotlight* — the view that past, present and future things exist, with present things ontologically distinguished;²¹ and (d) eternalism. p , q , and r are three events respectively located at times t_1 , t_2 and t_3 , where $t_1 < t_2 < t_3$.²² Figures 1a, 1b and 1c include a PRESENT — depicted by the black horizontal line — located at time t_2 , entailing that on these models, q has the property of

¹⁹For the PRESENTIST, this is trivial: only existing people may wonder whether they exist.

²⁰The ‘growing block’ is presented and defended by Broad (1923) (though not under this name), and more recently Tooley (2000). This position is also frequently referred to by the name ‘possibilism’.

²¹The moving spotlight theory is presented (and critiqued) by Broad (1923). Gale (1968) derives the name from Broad’s metaphorical description of the view. The moving spotlight is standardly presented as the conjunction of the *A* theory of time and eternalism, with the temporal metaphysics of the former and the event ontology of the latter.

²²I use time coordinates for ease of presentation. The arguments of the paper do not require the reality of spacetime points or metrical properties.

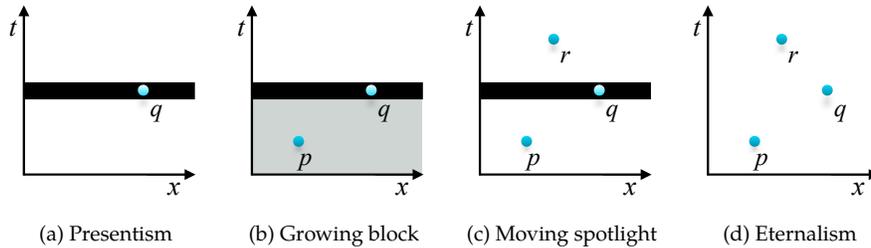


Figure 1: *The standard temporal ontologies.*

‘PRESENTNESS’ (in virtue of being *simultaneous with* the PRESENT), p has the property of ‘PASTNESS’ (in virtue of being located *earlier than* the PRESENT), and r has the property of ‘FUTURITY’ (in virtue of being located *later than* the PRESENT).²³ Given their different ontological commitments, the (externalist) presentist does not commit to p and r , the growing block-ist does not commit to r , and the moving spotlight-ist commits to all three events.

These externalist models of presentism, growing block and moving spotlight differ from eternalism insofar as the former three are *A-ontologies* and the latter is a *B-ontology*. The *A-ontologies* each make special reference to *A-properties* (characteristic of McTaggart’s *A series*), principally a mind-independent, or structural, distinction between present and non-present times. As a *B-ontology*, eternalism rejects such a distinction (as is characteristic of McTaggart’s *B* [and *C*]²⁴ series.) The lack of a PRESENT in figure 1d indicates that the eternalist does not require such a structure — given that the eternalist ontologically includes events independently of whether they are (indexically or nonindexically) present, they do not require any present/non-present distinction in order to state what exists.

This marks two clear points of departure for an externalist account of presentism — ‘PRESENTISM’ — and eternalism. Firstly, PRESENTISM requires a PRESENT,²⁵

²³Let the ‘earlier than’ relation be an asymmetric, transitive and irreflexive binary relation that holds between pairs of moments of time, and temporally separated pairs of events, and ‘later than’ to be its converse.

²⁴The lack of *A-properties* from both the *B* and *C* series makes it quite arbitrary that the rejection of *A-properties* is generally seen as characteristic of a *B* theory of time. A *C* theory of time (Farr, MS) rejects *A-properties* as well as time-directed facts (*B-properties*).

²⁵There do nonetheless exist presentist positions in the literature that commit to only a local, or point, present, so as to avoid the clash between a privileged spacelike present moment and relativity theory. This paper is not concerned with the controversial issue of the relation between presentism and physical theories. The primary concern is the conceptual issue of distinguishing presentism and eternalism, and this is prior to the issue of their compatibility with current physics.

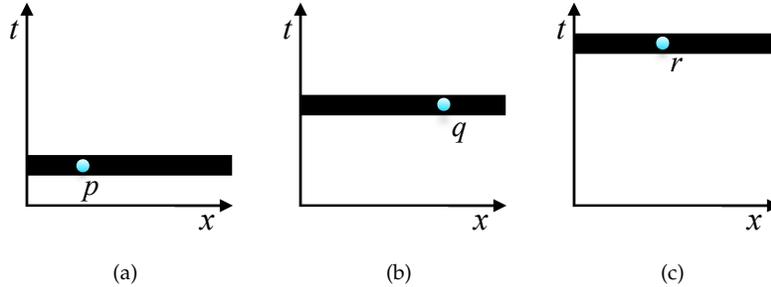


Figure 2: The ‘change’ of the presentist model.

and eternalism does not. Secondly, the PRESENTIST eliminates NON-PRESENT events from their ontology, whereas the eternalist either rejects a PRESENT, or explicitly commits to the existence of non-PRESENT events.²⁶

3.3 Presentism with change

The model in figure 1a satisfies EEP — it singles out a PRESENT at which all existing events are located. However, there is nothing in this model to satisfy ECP. As figure 1 shows, the PRESENTIST’s acceptance of EEP and the eternalist’s (and growing block-ist’s and moving spotlight-ist’s) rejection of EEP is sufficient to distinguish their views *only* in case ECP is not taken into account. As we’ve seen, such an account of PRESENTISM is inadequate — ECP is necessary for an externalist account of presentism to avoid the conclusion that only one time ‘ever’ exists. In order to incorporate ECP into the presentist’s position, we require a *diachronic* (not merely *synchronic*) distinction between PRESENTISM and eternalism. Figure 2 illustrates the combined entailments of EEP and ECP and hence the PRESENTIST’s diachronic commitments.²⁷ The task is to interpret figure 2 in such away that EEP combined with ECP entails neither incoherence nor a collapse to eternalism.

²⁶Note that by ‘event’ I am exclusively referring to point events — events that have infinitesimal temporal extension. Temporally-extended events, like a music festival, may be present whilst having non-present parts. The presentist does not commit to non-present things through commitment to the existence of an only-in-part present festival.

²⁷If we read figures 2a, 2b and 2c as a sequence running from left to right, then figure 2 also illustrates the combination of EEP, ECP and an analogue of DP. Although it would be unusual for a presentist to hold that the PRESENT moves but that there is no fact of the matter as to the direction in which it does so, it is worth stressing that it is CP that is problematic here, so we needn’t discuss DP.

Figures 2a, b and c are mutually inconsistent — each depicts a distinct PRESENT. The standard response to this problem is that only one of these pictures obtains *at a time* and which picture obtains depends upon what time it is. This response explicitly makes use of temporal indexicals and so does not apply in our case. Moreover, this implicit time-indexing of the present moment is deeply problematic in any case. If x is present only *relative to*, or ‘*at*’, the time of its occurrence, it is non-present relative to all other times. Thus, observers located at different times disagree about which time is present, and thus which events exist, and there is no independent structural feature of the world to which we can appeal in order to resolve the disagreement one way or the other. We cannot say that one set of observers is privileged, or that only one exists, as this assumes an objective distinction between ‘present observers’ and ‘non-present observers’, which begs the question.

This point is an instance of McTaggart’s (1908) famous critique of the *A* series. McTaggart argues that the *A* series is internally inconsistent: pastness, presentness and futurity are incompatible properties, and yet each event possesses all three. McTaggart anticipates the *A* theorist’s response that no event possesses all three *simultaneously*, and responds that in trying to account for events’ merely *successive* possession of the properties, the *A* theorist is faced with a vicious regress.²⁸ The key to McTaggart’s critique of the *A* series is this concept of *A*-change. The problem for the *A* theorist is to account for *A*-change. However, it is popular among *A* theorists to hold that *A*-change is just a primitive of their theory — i.e. it admits of no deeper analysis. For example, in defending his four-dimensional model of the ‘flow’ of time, Storrs McCall holds that “the universe [...], though it changes, does not change *in* time. Rather, its change *constitutes* the flow of time” (McCall, 1994, pp. 30-31). McCall’s model has been criticised on the grounds that this primitivist account of *A*-change is problematic.²⁹ Smart (1980, 1995) in particular is critical of such ‘Heraclitean’ (primitivist) accounts of change, holding them to be “obscure” (1980, p. 7). Indeed, this general objection to *A* theories is not simply that *A*-change is taken as a primitive; it is rather that the apparent contradiction of the *A* series is swept under the rug by appeal to primitive *A*-change. If *A*-change is not inconsistent, then primitivist accounts of *A*-change fail to explain *why* this is the case; instead they merely *assume* that *A*-change is not inconsistent.

²⁸The subtleties and controversies of McTaggart’s ‘regress’ argument are well-documented in the literature and are not of direct relevance to this paper.

²⁹cf. Smart (1980, 1995), Nerlich (1998), Farr (2012).

As with indexicals, I'll leave to one side the issue of whether the *assumption* of the consistency *A*-change is satisfactory, and instead offer a model that provides a consistent account of *A*-change. As an attempted resolution to the McTaggart's critique of the *A* series, Broad (1938, pp. 277-279) suggests the adoption a second temporal dimension in order to allow the extension of (point) events in this second time dimension, and hence for the assignment of different *A*-properties to different segments of the supertemporally-extended events.

If there is any sense in talking of presentness moving along a series of events, related by the relation of earlier-and-later, we must postulate a *second* time-dimension in addition to that in which the series is spread out. An event which has zero duration and therefore no history, in the first time-dimension, will yet have an indefinitely long duration and a history in the second time-dimension. (Broad, 1938, p. 278)

We can build on Broad's suggestion in order to model the combination of EEP and ECP, thereby providing a version of PRESENTISM that avoids both TRIV1 and TRIV2.³⁰

4 Supertemporal Ontology

Our task is to combine EEP and ECP. Incorporating a 'supertime' dimension, τ , and hence moving from one-dimensional to two-dimensional time, allows us to read figures 2a, 2b, and 2c as four-dimensional representations of a five-dimensional spacetime indexed by different, successive $_{\tau}$ ³¹ supertimes. The PRESENT can now be understood as a four-dimensional subspace of a five-dimensional spacetime, which decomposes to a set of supertime-indexed three-dimensional subspaces within a four-dimensional (3+1) spacetime. In this case, the horizontal lines in figures 1 and 2 are *superpresents* — supertemporal 'snapshots' of the temporally and supertemporally extended PRESENT.³²

Figure 3 depicts the four-dimensional PRESENT on a *two-time* model. The diagram compresses the five-dimensional spacetime down to three dimensions:

³⁰Though suggestive of this approach to avoiding McTaggart's conclusion, Broad dismisses it on grounds that it too leads to a regress, and as such fails to develop it. Schlesinger (1980) argues convincingly that Broad's regress argument fails against the two-time approach.

³¹Given the use of two temporal dimensions, I will use τ subscripts when using supertemporal terms, and t subscripts when using temporal terms.

³²'Superpresent' is not capitalised since a superpresent is a supertime-indexed representation of the PRESENT, and so not a perspective-invariant structure.

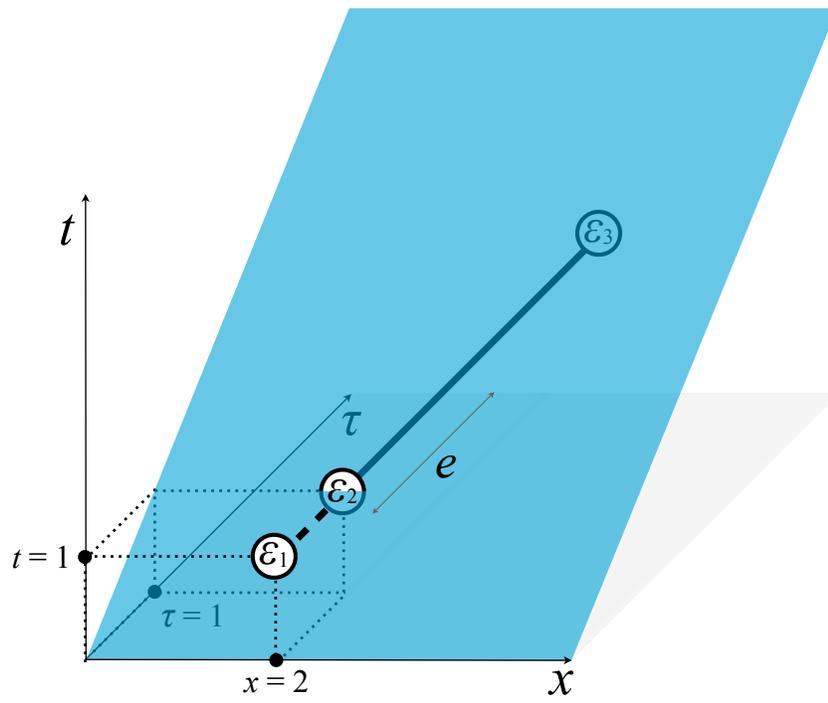


Figure 3: *The Two-Time Model*

a space axis, x (to be read as representing three-dimensional space), a time axis, t , and a supertime axis, τ . The shaded plane represents the (spatially extended³³) four-dimensional PRESENT.³⁴ The four-dimensional PRESENT provides the diachronic present/non-present distinction that is required for the conjunction of EEP and ECP. The PRESENT is defined such that later $_{\tau}$ superpresents are located at later $_t$ times. As such, the content of the PRESENT changes over time insofar as each supertime-slice of the two-time model contains a superpresent with a distinct temporal location, satisfying ECP.³⁵

4.1 The different A-regions

The introduction of the supertime dimension provides extra degrees of freedom for events³⁶, as alluded to by Broad: by being extended in an extra dimension — supertime — an event can take on incompatible properties at some *time* by being located at (extended over) multiple *supertimes*. On one-dimensional time, an *object* can undergo change its monadic properties with respect to time insofar as it can be temporally extended — thus taking on different properties at different points in time (depending on how it is identified over time) —, but events lack such freedom. It is due to this that A-change is problematic: on one-dimensional time, an event cannot undergo change with respect to being PAST, PRESENT OR FUTURE. Two-dimensional time, on the contrary, allows an event to be supertemporally extended.

This extra freedom provided by two-dimensional time allows for the definition of two different kinds of event. Let us reserve the term ‘event’ in the context of two-dimensional time for a *line* with a unique set (x, y, z, t) coordinates and with non-zero supertemporal extension (a range of τ coordinates). Let a *superevent* be a *point* in the five-dimensional space, (x, y, z, t, τ) . Figure 3 depicts event e , located at $(x = 2, t = 1)$, extended across the entire τ -axis,

³³The present is depicted as spatially extended in figure 3 for illustrative reasons only. A suitably relativistic version of such a model would require this to be seen as a frame-dependent representation.

³⁴The PRESENT is represented in figure 3 such that it is located at all (t, τ) where $t = \tau$. This is a coordinate-dependent representation for illustrative purposes. The PRESENT should be understood as a coordinate-independent structure signifying the region of superspacetime at which all and only ‘PRESENT’ things are located.

³⁵This externalist account of the change of the present moment provides an analogue of the A-theorist’s ‘moving now’. Note that the ‘direction of the movement’ of the PRESENT here is somewhat arbitrary. The PRESENT equivalently ‘moves’ to *earlier* times at *earlier* $_{\tau}$ supertimes. What is objective on this picture is the positioning of the PRESENT in the time–supertime plane, which is such as to produce a monotonic gradient.

³⁶Here I again use the term ‘event’ exclusively for temporally non-extended events. See footnote 26.

and the superevent ε , located at $(x = 2, t = 1, \tau = 1)$. Event e can be decomposed into a set of superevents, each with the same x (y, z) and t coordinates as e , such that a superevent is a supertime-dependent representation of an event. Each superevent has a unique A -property, and thus e may be assigned different A -properties on different supertime slices of the two-time model. The solid line connecting ε_2 and ε_3 represents the FUTURE segment of e ; the dashed line connecting ε_1 and ε_2 represents the PAST segment of e ; superevent ε_2 is the PRESENT segment of e . It then follows that e is first $_{\tau}$ FUTURE, second $_{\tau}$ PRESENT, and third $_{\tau}$ PAST.³⁷ It is *events* that possess the multiple A -properties of PASTNESS, PRESENTNESS and FUTURITY, and hence events that undergo $_{\tau}$ A -change. Each superevent possesses at most (determinately) one. As such, delineating the temporal ontologies at the level of *superevents* rather than events removes the problem of change, which as we have seen is central to the triviality problems.

4.2 Deflating supertime

How should we think about the ontological commitments of an additional time dimension? The primary function of supertime in this model is to provide the A series' extra variables; supertime is the dimension of A series change. We can think of this as fully analogous to time as providing the freedom for three dimensional objects to change. Time is a variable which effectively allows an object to take on a range of mutually exclusive properties. The time dimension itself is an abstraction that is not in any sense easy to visualise—it is standardly depicted in scientific texts by compressing space to two dimensions and depicting time as a third dimension. However, the concept of the three dimensional world changing over time is so widespread so as to have become domesticated in our thought. Supertime allows the A series to make use of an 'at-at' theory of A series change insofar as we can take an event to change from being PAST to PRESENT exactly in virtue of being PAST 'at' one point in two-dimensional time and PRESENT 'at' another point in two-dimensional time.³⁸ In this sense, the A series does not require the concept of monadic change to ground its core commitments. Just as we can understand the time dimension in deflationist terms, as providing the necessary freedom for objects to change in various respects, we can understand the supertime dimension is similarly deflationist terms.

³⁷Again, capitals are used to denote externalist A -properties. In this case, the PAST, PRESENT and FUTURE are each non-indexical regions of the two-time model, and superevents possess the properties of PASTNESS, PRESENTNESS and FUTURITY in virtue of being located within these regions.

³⁸This is analogous to Bertrand Russell's 'at-at' theory of motion (Russell, 1938).

Skow (2009, 2012) takes a something like a fictionalist interpretation of supertime, referring to his usage of the concept of supertime as a ‘metaphor’ (Skow 2009, p. 673; Skow 2012, p. 224). Skow’s key point is that the reader should interpret his usage of ‘supertime’ as a convenient shorthand for what can otherwise be stated in terms of primitive tense operators. Primitive tenses are employed in Prior’s (1967) tense logic, and are standardly appealed to by *A* theorists, particularly presentists. Interestingly, Smith (2011) takes supertime-based *A* theories and primitive-tense-based *A* theories to be fundamentally distinct, arguing that supertime-based³⁹ approach to the *A* series avoids problems he takes to be endemic to the primitive-tense-based *A* theories. On Smith’s account, primitive tenses are insufficient to get around McTaggart’s contradiction. Smith argues that supertime-based *A* theories, on the other hand, avoid McTaggart’s contradiction but are undesirable due to complications owing to their inflated ontology. Given the context of this paper, I am committed to supertime not being read as shorthand for primitive tenses: the purpose of offering an externalist account of the *A*-ontologies is precisely to avoid dependence on tenses. However, the two-dimensional picture of time I’ve used to ground the *A* series is designed precisely at capturing the core claims of a primitive tense-based approach to the *A* series without actually relying on tenses. Supertime offers an externalist presentation of the *A* theorist’s commitments. In this sense, it does not offer any additional ontological commitments that aren’t implicit in a primitive tense-based approach.

4.3 The supertemporal ontologies

We are now in a position to provide externalist definitions of the different *A*-ontologies that satisfy ECP, which in this case are *supertemporal* ontologies. Each superevent is (exclusively) *either* PRESENT, FUTURE, *or* FUTURE, and this is not subject to ‘change’ in any sense. If we take ‘presentism’ to hold that there are only PRESENT superevents, then there is no problem of change to worry about — the presentist can simply commit to a single, well-defined region of the two-time model. This provides us with a new, two-time account of PRESENTISM.

PRESENTISM. All and only PRESENT superevents exist.

Given the definition of the PRESENT as a temporally and supertemporally extended region of the two-time model, PRESENTISM explicitly endorses *both* EEP

³⁹Smith (2011) uses the term ‘hypertime’.

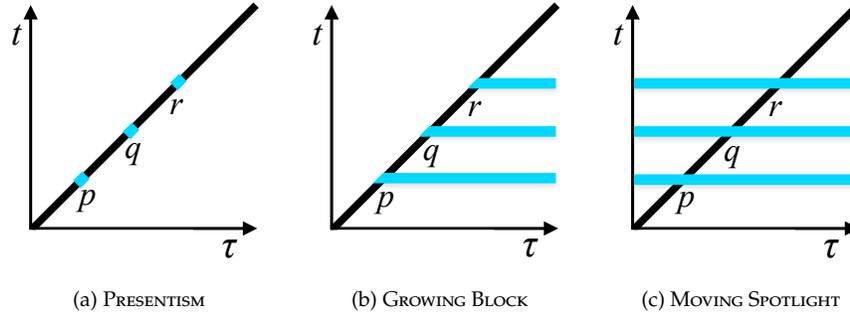


Figure 4: The different supertemporal ontologies depicted on time–supertime planes of the two-time model. The black diagonal line is a suppressed one-dimensional representation of the four-dimensional PRESENT. The blue horizontal lines represent events. For the PRESENTIST, events are wholly located in the PRESENT. For the GROWING BLOCK-ist, events are located in the PRESENT and PAST, and hence events are supertemporally extended into the PAST region. For the MOVING SPOTLIGHT-ist, events are located in the PAST, PRESENT and FUTURE, and hence events are supertemporally extended through each of these regions.

and ECP. Moreover, the notion of ‘existence’ employed here is not subject to the triviality problems — ‘exists’ here is tenseless. Using an externalist definition allows for the PRESENTIST to hold that all and only superevents ‘ever’ exist.

We can also define two separate, rival, supertemporal ontologies that each reject EEP:

GROWING BLOCK. All and only PAST and PRESENT superevents exist.

MOVING SPOTLIGHT. All and only PAST, PRESENT, and FUTURE superevents exist.

Figure 4 depicts these supertemporal ontologies in terms of the relative ontological commitments to the supertemporal extension of events p , q and r introduced earlier.

4.4 Avoiding triviality without indexicals

Whereas the analysis of section 2 focused specifically on the *tense* of the verb “exists”, we need not resort to such worries. This is because the semantics for PASTNESS, PRESENTNESS and FUTURITY are tenseless. Thus:

1. the PRESENTIST holds that all and only PRESENT things *tenselessly* exist

2. the GROWING BLOCK-ist holds that all and only PAST and PRESENT things *tenselessly* exist
3. the MOVING SPOTLIGHT-ist holds that all and only PAST, PRESENT and FUTURE things *tenselessly* exist.

How can we relate this to the issue of Plato's existential status? Although it is established that Plato is *temporally* past, this does not entail that Plato possesses any particular *A*-property as we have understood them. There are a number of issues that complicate this discussion. For one, we have understood *A*-properties as applying to superevents, and (hence) sections of events, whereas Plato is a temporally-extended *object* (or set of objects related by an identity-over-time relation). We can instead discuss the events comprising Plato's life. Take one of these to be a point event, and call it π . We can take π to have a specific temporal coordinate, but leave open its supertemporal coordinate(s). We can locate the disagreement between the PRESENTIST, and the MOVING SPOTLIGHT-ist and GROWING BLOCK-ist in terms of the following statement:

(II) π is wholly PRESENT.

The PRESENTIST accepts (II); for the PRESENTIST, nothing extends beyond the PRESENT. Hence, according to PRESENTISM, π is located where and only where it is PRESENT. The MOVING SPOTLIGHT-ist and GROWING BLOCK-ist reject (II). According to MOVING SPOTLIGHT, π extends into the PAST and FUTURE; π 'exists' even where it is merely PAST or FUTURE. According to GROWING BLOCKISM, π extends into the PAST.

Crucially, the three supertemporal ontologies differ from eternalism insofar as they are *A*-ontologies; they commit to the existence of *A*-properties. As such, the supertemporal ontologies commit to ECP and eternalism does not. Rather, eternalism contains no PRESENT, so no such thing can change. Given this, it follows that: (i) the supertemporal ontologies are non-trivially distinct; (ii) the supertemporal ontologies and eternalism are non-trivially distinct. Thus, triviality is avoided.

4.5 Why PRESENTISM doesn't collapse to eternalism

Given its commitment to a temporally extended PRESENT, it may be objected that PRESENTISM collapses to eternalism, and hence there is a recurrence of TRIVI. The problem is that the planes of existence of the PRESENTIST and the eternalist are isomorphic — the PRESENT corresponds to the four-manifold of the eternalist, just tilted into an extra dimension (compare figures 1d & 4a). The fact

that the PRESENTIST attaches ‘PRESENTNESS’ to each member of their plane of existence is alone insufficient to distinguish their position from the eternalist’s, as this would make the distinction a matter of notation. However, this overlooks a key issue. Although the planes of existence of the PRESENTIST and eternalist are isomorphic, the eternalist has no counterpart to the PRESENTIST’s regions of *nonexistence*. By employing the two-time model, the PRESENTIST incorporates unoccupied non-PRESENT regions of their model that the eternalist does not. As eternalism does not require the full *A*-theoretic structure of a PRESENT, the eternalist commits to no analogous regions of nonexistence. So although the planes of existence are isomorphic, the regions of nonexistence are not, and hence PRESENTISM and eternalism are distinct. The regions of nonexistence on the PRESENTIST’s model provide it with a modal richness that eternalism lacks — all superevents are PRESENT, but it is well-defined for there to be non-PRESENT superevents. Because of this, the PRESENTIST thesis that all superevents are PRESENT is non-trivial, since one can provide truth conditions for a superevent to be non-PRESENT.

What is significant here is that PRESENTISM and eternalism differ not over what *things* they take to exist — there is clearly an isomorphism from the PRESENTIST’s ontology of superevents to the eternalist’s ontology of events. The PRESENTIST and eternalist do give different interpretations to these ontologies: for the PRESENTIST, it is an ontology of superevents that share the property of PRESENTNESS, and are also partitioned into distinct equivalence classes of temporal and supertemporal simultaneity⁴⁰; for the eternalist, it is an ontology of events (with no supertemporal extension) that share the property of (tenseless) existence. However, the key distinction between the positions is what the PRESENTIST excludes from their ontology: there *could be*, but *are not*, PAST and FUTURE superevents. This involves a modal commitment for the PRESENTIST. If the PRESENTIST excludes the PAST and FUTURE regions of superspacetime as possible locations altogether, their position does appear to amount to a redescription of eternalism. As such, the PRESENTIST requires either a form of modal realism about non-PRESENT superevents (such that they have merely possible, non-actual existence) or substantivalism about superspacetime. Modal realism in this case would be a type of relationism about superspacetime. It is this extra structure to which the PRESENTIST commits, over and above the structure required by the eternalist, that gives PRESENTISM explanatory power that eternalism lacks. If this

⁴⁰For a suitably relativistic version, there’d be no such equivalence classes.

extra structure were explanatorily useful, this would provide reason to be a PRESENTIST. However, as we see in sec. 6 there is precisely nothing to be explained by such structure, implying that PRESENTISM is non-trivially false on naturalistic grounds.

4.6 Disambiguating ‘past’, ‘present’ and ‘future’

The externalist account of supertemporal ontologies presented contains as key terms a number of externalist analogues for traditionally indexical terms. The use of externalist terms is to get around the problems of triviality without the use of indexicals. The unfamiliar externalist formulations of the supertemporal ontologies give back more familiar internalist formulations when indexicals are reintroduced. This is the aim of the next section. First, it is important to guard against misreadings of the externalist terms.

The two-time model contains regions of ‘PAST’, ‘PRESENT’ and ‘FUTURE’. These are not to be confused with the (indexical) *temporal* past and future. The two-time model allows a superevent to have the *A*-property of PASTNESS in virtue of being located in the PAST. This is *not* equivalent to being in the ‘temporal past’, nor indeed being in the ‘supertemporal past’. Each of the latter two notions involves an indexical — the temporal indexical and the supertemporal indexical respectively. For example, World War II is in my (and your) temporal past in virtue of it being earlier than my (your) current temporal location (given that I am writing this sentence, and you are reading this sentence, at a time later than the end of WWII). This gives us three types of statements about the ‘past’.

⟨*x* is PAST⟩. *x* is located in the PAST region of the two-time model. [Externalist]

⟨*x* is past_{*t*}⟩. *x* is located at an *earlier time* than this utterance. [Internalist]

⟨*x* is past_{*τ*}⟩. *x* is located at an earlier *supertime* than this utterance. [Internalist]

As indicated, only the first of the three is externalist — it lacks reference to (super)temporal indexicals. As such, it is of a different kind to the two internalist statements. The temporal and supertemporal senses of ‘is past’, ‘is present’ and ‘is future’ are two-place predicates — *x* is past_{*t*} *only relative to* some temporal location (e.g. my indexically present temporal location). An observer on the two-time model may be located at a later_{*τ*} point in supertime than a particular superevent, and in which case, the superevent is in the observer’s supertemporal past. Being temporally and/or supertemporally past, present or future

is relational in that it depends on being earlier_t (earlier_τ) than, simultaneous_t (simultaneous_τ) with, or later_t (later_τ) than some point. Whether a superevent is PAST, PRESENT, OR FUTURE is a separate issue from whether it is earlier_t or earlier_τ than the temporal/supertemporal location of some observer. One is PAST, PRESENT, OR FUTURE purely in virtue of one's location within the two-time model. This is an *externalist* account of the 'past', 'present' and 'future', free from indexicals. Superevents do not 'become' PAST, PRESENT, OR FUTURE; they are tenselessly PAST, PRESENT, OR FUTURE.

The 'unchanging' nature of superevents in the externalist account provided dispels a common criticism of two-time models. After suggesting the two-time model, Broad (1938) objects that it is inadequate for just as supertime is required to account for the movement of the 'now' in time, a third time series is required to account for the movement of the 'now_τ' in supertime, and so on *ad infinitum*. This same criticism is raised by many — cf. Dunne (1939, p. 133), Smart (1949, p. 484), Black (1959, pp. 56–7), Oaklander (1983). The regress argument does not apply in our case. The two-time model suffices to account for EEP (or the equivalent postulates of the GROWING BLOCK and MOVING SPOTLIGHT) and ECP. There is no further need in our case to account for the 'movement' of the 'now_τ' in supertime in externalist terms — we can just take this as merely indexical.

The disambiguations of 'past', 'present' and 'future' are crucial to avoiding standard problems levelled at temporal ontologies, such as TRIV1 and TRIV2. We are nonetheless free to adopt an *internalist* view of *events*, based on their supertemporal components, and hold that they *become*_τ PRESENT and PAST. This gives us back a more traditional-looking temporal ontologies.

5 The Supertemporal Indexical: Internalising the Supertemporal Ontologies

The supertemporal ontologies have been presented in externalist terms to demonstrate that triviality can be avoided without the use of indexicals. A consequence of this is that the presentation of the supertemporal ontologies is unfamiliar. In particular, PRESENTISM appears quite distinct from the view commonly referred to by the term 'presentism'. This section offers an internalist presentation of the supertemporal ontologies by introducing a supertemporal indexical.

5.1 Avoiding triviality with indexicals

Let's reconsider (P₁).

(P₁) Plato exists *now*.

In section 2 we took “now” to function as a temporal indexical, picking out the time of (e.g.) utterance. Given this assumption, we saw that the ‘presentist’ and ‘eternalist’ (as we then used the terms) cannot disagree as to the truth value of (P₁). This is because it is uncontroversially true that Plato is not located at the time that you are reading this sentence. Plato is in the temporal past, relative to you and me. However, introducing supertime provides us with an alternative indexical — the supertemporal indexical. As such, we can restate (P₁) such that “now” picks out the *supertime* of utterance.

(P₁*) Plato exists *now*_τ.

Thus, we are concerned with whether Plato is located on *this* particular supertime-indexed spacetime. What truth value is assigned to (P₁*) by: (a) the PRESENTIST; (b) the MOVING SPOTLIGHT-ist; (c) the eternalist?

(a) PRESENTISM holds that all and only PRESENT things exist; and the *A*-property of a thing is determined by the region of the two-time model it inhabits. For the PRESENTIST, we are CURRENTLY located in the PRESENT in virtue of the fact that we exist. Given the assumption that Plato (tenselessly) exists, and the fact that he is located at an earlier_t time than us, it follows that he must also be located at an earlier_τ supertime than us. If some superevent constituting the life of Plato were located at the same supertime as us, and an earlier time, then it would occupy the PAST, which is ruled out by PRESENTISM. Therefore, according to the PRESENTIST, it is false that Plato exists *now*_τ.

(b) The MOVING SPOTLIGHT-ist's answer is more straightforward. Plato tenselessly exists and is therefore located on the two-time model. On the MOVING SPOTLIGHT, events are supertemporally extended. Therefore, every event constituting Plato's life extends through supertime, and thus is (partially) located on *this* supertime-indexed spacetime. Therefore, according to the MOVING SPOTLIGHT-ist, it is true that Plato exists *now*_τ. The same goes for the GROWING BLOCK.⁴¹

(c) The eternalist's position is slightly more complicated given their lack of commitment to a supertemporal dimension. However, for the eternalist, rather

⁴¹To find disagreement between the GROWING BLOCK and MOVING SPOTLIGHT we could instead use as an example a FUTURE superevent, *s*. In which case, the MOVING SPOTLIGHT entails that the existence of *s* and the GROWING BLOCK entails the nonexistence of *s*.

Table 3: The non-trivial distinction between PRESENTISM and eternalism.

	PRESENTISM	MOVING SPOTLIGHT	Eternalism
(P_1^*)	F	T	T

than there being a string of supertime-indexed spacetimes, there is just one spacetime with zero supertemporal extension. We can arbitrarily index this to supertime if we wish; the point is that the spacetime is not supertemporally extended. The eternalist can simply interpret “now _{τ} ” as picking out the actual, single spacetime on which we are located. For the eternalist, Plato occupies an earlier region of the same spacetime. Thus, the eternalist can legitimately hold that Plato does indeed exist “now _{τ} .”

Table 3 demonstrates the disagreement between the PRESENTIST and both the eternalist and MOVING SPOTLIGHT-ist with respect to (P_1^*) . PRESENTISM is clearly distinct from both the MOVING SPOTLIGHT and eternalism (i.e. both *A*- and non-*A*-theoretic eternalist ontologies) with respect to (P_1^*) . As such, *TRIVI* is simply avoided. Though one may legitimately wonder *now* about Plato’s existence, it is the supertemporal indexical and not the temporal indexical that can make sense of the worry.

5.2 The two faces of PRESENTISM

PRESENTISM can be defined in wholly nonindexical terms — $\langle x \text{ ‘exists’ iff } x \text{ is PRESENT} \rangle$ — whereas presentism is traditionally understood as crucially dependent on the temporal indexical — $\langle x \text{ ‘exists’ iff } x \text{ is “now”} \rangle$. Indeed, recall Hinchliff’s claim that the distinction between presentism and eternalism “cannot be formulated in nonindexical terms” (Hinchliff, 2000, p. 577). The strategy adopted in this paper to deal with the problems of triviality is precisely to provide a nonindexical account of presentism in terms of the externalist properties of the two-time model. It is for this reason that PRESENTISM may appear to not be a presentist position. However, this can be countered using the supertime-indexed account of PRESENTISM.

As we have seen, on the two-time model, we can understand figures 2a–2c as different supertime-indexed representations of the two-time model, or ‘supertime slices’. Each supertime slice provides a supertime-indexed spacetime containing a unique superpresent, with this being differently located on different supertime slices. We can thus understand the PRESENTIST’s ontological

commitment *relative to a supertime* as extending only to superevents on the superpresent, which are simultaneous in time and supertime with themselves. From this internalist perspective, existence does not extend beyond those superevents that are simultaneous _{τ} with the observer. This is perfectly compatible with the externalist perspective in which all PRESENT things *tenselessly* exist.

The externalist account of PRESENTISM is not incompatible with the traditional internalist accounts of presentism. On the contrary, it offers the PRESENTIST two modes of talking about PRESENT superevents that are not temporally (or supertemporally) simultaneous with oneself. First, the PRESENTIST may make use of the *tenseless* reading of 'exist'. This is how PRESENTISM was presented in sec. 4. What tenselessly exists for the PRESENTIST is all that is PRESENT, regardless of the temporal location relative to oneself. Plato tenselessly exists for the PRESENTIST insofar his life is restricted to the PRESENT region of superspacetime. What tenselessly exists for the PRESENTIST is all that is *ever* PRESENT. Second, the PRESENTIST may make use of a 'present'-tensed reading of 'exist', namely 'exist *now _{τ}* ' — existence relative to *this* supertime. Again, refer to figs. 2a–2c and read these as supertime slices of the two-time model. As we just saw, this allows for the PRESENTIST to hold that Plato does not *exist now _{τ}* .

There is no contradiction in the PRESENTIST holding (Plato (tenselessly) exists) to be true and (Plato *exists now _{τ}*) to be false; these are simply different modes of speaking about the same PRESENTIST ontology. In this way, PRESENTISM dissolves a set of problems standardly raised at versions of presentism. Presentism is standardly criticised for its inability to account for (1) facts about non-present events, and (2) cross-time relations. Both (1) — the *grounding problem* — and (2) — the *cross-time relations problem* — are standardly taken as problems for presentism, since the lack of belief in (say) facts about the past, and in cross-time relations such as cause–effect relations, are both seemingly irrational — we have good epistemic grounds for both types of belief and can readily distinguish between putatively true and false beliefs of each type. PRESENTISM avoids both problems, and it does so precisely because of its tenseless commitment to the temporally and supertemporally extended PRESENT.

If we ask what the PRESENTIST takes to *exist now _{τ}* , we get back an ontology that matches standard presentations of presentism: reality is restricted to what is temporally simultaneous with oneself (e.g. Plato doesn't *exist now _{τ}*). This restricted ontology — what *exists now _{τ}* for the PRESENTIST — is by itself incapable of accounting for facts about earlier times/supertimes and for cross-time(supertime) relations. However, once we look to the tenseless ontology of

the PRESENTIST, we get back a temporally and supertemporally extended set of PRESENT superevents that ground both cross-time relations and facts about non-indexically-present times, such as Plato’s having a beard. As such, PRESENTISM avoids commitment to non-PRESENT things and commits to things located at different times without engendering a contradiction. This is a simple resolution to the grounding and cross-time relations problems. All that is required in this case is to appeal to the tenseless commitments of PRESENTISM. As we saw in sec. 2, standard formulations of presentism cannot avoid the problems in this way for the reason that, *without introducing supertime*, the ontological commitments of the presentist and eternalist cannot be distinguished in tenseless terms. Indeed, as we saw in sec. 4.5, the PRESENTIST requires some form of modal realism about the unoccupied non-PRESENT parts of superspacetime.

6 The Bigger Picture

I have shown that using the two-time model suffices to distinguish PRESENTISM, the GROWING BLOCK, the MOVING SPOTLIGHT, and eternalism. Given the substantiveness of the dispute, we are free to consider whether any of the (super)temporal ontologies is objectively preferable to the others.

6.1 The MOVING SPOTLIGHT and the GROWING BLOCK entail our non-PRESENTNESS

On the MOVING SPOTLIGHT and GROWING BLOCK, only one segment of each event is PRESENT. This has a particularly unwelcome consequence, namely that the vast majority of the model is *non*-PRESENT. If supertime is infinitely extended, then only an infinitesimal segment of each event is PRESENT. This is problematic insofar as the key motivation for holding an *A*-ontology is to account for our first-person phenomenology of time: the primacy of the present moment, and the awareness of the passage of time.⁴² However, if we occupy a world of which the vast majority is non-PRESENT, then (in the absence of some kind of anthropic *deus ex machina*⁴³) we have overwhelming grounds to believe that we do not inhabit the PRESENT.⁴⁴ In this case, a key motivation for the model is un-

⁴²There are independent reasons to be skeptical of such an approach, as I address in sec. 6.2.

⁴³E.g. ruling out the consciousness of non-present persons — cf. Forrest (2004).

⁴⁴Bourne (2002) and Braddon-Mitchell (2004) both suggest, in a slightly different context, that any theory that entails scepticism about the truth of indexical statements such as “is it ‘now’ now?” is flawed. Given the nonindexical nature of the PAST, PRESENT and FUTURE in the two-time model,

dermined — we cannot hope to explain the phenomenology of the ‘present’ in terms of the two-time model if the relevant theory (MOVING SPOTLIGHT OR GROWING BLOCK) entails that we almost certainly do not experience PRESENTNESS. Thus, the MOVING SPOTLIGHT and GROWING BLOCK undermine the motivation for adopting a two-time model in the first place, and as such are distinctly unappealing supertemporal ontologies. As such, PRESENTISM is the preferred supertemporal ontology.⁴⁵

From this, we are left with two alternative positions: PRESENTISM, which is realist about *A*-properties; and Eternalism, which is not. These two positions, we have seen, disagree in terms of modality and spacetime structure. What we can see is that if we externalise presentism by giving it a non-indexical criterion of ontological commitment, then we get back PRESENTISM, which is isomorphic with eternalism at the level of what exists, but commits to further regions of non-existence. In this sense PRESENTISM is a more extravagant ontology than eternalism. Nonetheless, this is what is needed for the presentist to get around McTaggart’s critique and without resorting to indexicals, which as we have seen muddle the debate with the eternalist. However, beyond avoiding McTaggartian critiques of the *A* series, does PRESENTISM have any further motivation?

6.2 What does PRESENTISM explain?

PRESENTISM, the MOVING SPOTLIGHT and the GROWING BLOCK are each realist about *A*-properties: there are facts about what is PAST, PRESENT and FUTURE that are functionally independent of our own temporal (and indeed supertemporal) location and perspective. A consequence of this is that such properties can enter into third-person explanations of phenomena — explanations of phenomena that make no reference to our own perspective, as is characteristic of scientific explanation. However, this prompts the question of what such properties could explain.

Consider the following questions:

1. Am I present?

this exact argument does not apply.

⁴⁵It is worth stressing here that this is a *theoretical* problem that is faced by GROWING BLOCK and MOVING SPOTLIGHT and avoided by PRESENTISM, and not an epistemic or skeptical problem. As noted by Cameron (2015), the PRESENTIST would still the skeptical problem of “am I present?” insofar as *even if* PRESENTISM were true, it does not follow that the PRESENTIST would *know* this — for all the PRESENTIST knows, they could be in the PAST of a GROWING BLOCK. HOWEVER, PRESENTISM avoids this as a theoretical problem insofar as it entails the non-existence of non-PRESENT things, whereas GROWING BLOCK and MOVING SPOTLIGHT explicitly commit to such things.

2. Does my experience of time correlate with the passage of time?

Each of these questions is peculiar, and indeed symptomatic of a bad theory. This is because of the crucial indexical elements of the present and of temporal passage, which render one's own presence and one's own coordination with temporal passage to be tautologies. By externalising *A*-properties, worries about whether one is PRESENT and whether the PRESENT follows oneself around are rendered substantial — I could be non-PRESENT insofar as the non-indexicality of 'PRESENT' entails that ⟨I am PRESENT⟩ is not a tautology. As such, the externalist *A*-properties are capable of entering into explanations of phenomena. However, it is immediately clear what the problem with this is. Once *A*-properties are detached from *us*, we straightaway face major problems. First, as we have just seen, the non-PRESENTIST ontologies entail OUR OWN NON-PRESENTNESS, and so are no use in this respect. Second, though PRESENTISM entails one's OWN PRESENTNESS, it does so at the price of removing a contrast class for PRESENTNESS — according to PRESENTISM, every part of our own existence is within the PRESENT, and so there is no experience of non-PRESENTNESS with which to contrast experience of the PRESENT.

Indeed, the very first-person nature of our temporal experience undermines such a third-person explanation of it in terms of externalist *A*-properties — just as with the problem of consciousness. In the case of temporal passage, the key problem is this: 'present' functions as *either* (1) an indexical, *or* (2) a non-indexical. If (1), presentness itself cannot function in third-person explanations. If (2), presentness doesn't follow us around in the way required to explain our temporal experience. To look for an externalist version of *A*-properties to explain our temporal experience is itself in principle misguided. The purpose of externalising presentism (and the growing block and moving spotlight) is simply to avoid triviality. As we have seen, this can be done, showing that presentism and eternalism are in principle conceptually distinct and capable of offering distinct explanations of phenomena, and showing that a non-indexical account of presentism is achievable. This exercise has shown that the extra explanatory power offered by the non-eternalist ontologies are not needed to explain anything about time.⁴⁶ As such, although PRESENTISM is non-trivially distinct from eternalism and preferable to the other supertemporal ontologies,

⁴⁶One can imagine situations in which multiple temporal dimensions would offer the simplest physics for some phenomenon, in which case externalist *A*-properties could be explanatorily useful, but such cases would be far removed from the actual motivations for *A* theories of time such as presentism.

its has no motivation other than being realist about *A*-properties, which is not itself motivated by our experience of time.

7 Conclusions

The conclusions of the paper are as follows.

First, the triviality problem of temporal ontology is a special case of the problem of *A*-change. It is the presentist's commitment to the change of the present moment that leads to the problem of triviality. By presenting externalist models of the temporal ontologies, the problem of temporal indexicals has been bypassed, and it can be seen that the different temporal ontologies may be distinguished in externalist terms.

Second, the *A*-ontologies do not differ from eternalism at the level of *what exists* — as we have seen, the ontologies of PRESENTISM and eternalism are isomorphic. Rather, eternalism, as a *B*-ontology, differs from the *A*-ontologies at the level of *change*. The *A*-ontologies are realist about *A*-properties — things, independently of us, undergo a change in the properties of FUTURITY, PRESENTNESS and PASTNESS. Eternalism makes no such commitment and hence does not incorporate the basic (super)temporal structure of the *A*-ontologies.

Third, and as a consequence of the second point, the question of what temporal ontology to adopt is ultimately an issue *within* the *A* theory. We can distinguish *A*-ontologies that are directly comparable and ontologically distinct. However, unless one is an *A*-theorist, one ought to be an eternalist. Moreover, we have seen that it is misguided to look for naturalistic grounds for realism about *A*-properties.

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