

Time's Ontic Voltage

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Philosophy of time, as practiced throughout the last hundred years, is both language- and existence-obsessed. It is language-obsessed in the sense that the primary venue for attacking questions about the nature of time—in sharp contrast to the primary venue for questions about space or spacetime—has been philosophy of language. Although other areas of philosophy have long recognized that there is a yawning gap between language and the world, the message is spreading slowly in philosophy of time.¹ Since twentieth-century analytic philosophy as a whole often drew metaphysical conclusions from arguments with linguistic premises, philosophy of time perhaps may be forgiven for this transgression. Connected to this language-saturated way of doing philosophy, however, is a hitherto unnoticed obsession, equally unhealthy; namely, an obsession with existence. Existence draws the very lines of debate in philosophy of time: “eternalists” believe past, present and future events all ‘equally’ exist, “growing-block theorists” or “possibilists” believe that past and present events exist, and “presentists” believe that only present events enjoy this lofty status. These differences between what events exist as of some other time are supposed to explain the main puzzles surrounding time. This fixation on existence, I submit, is a lingering symptom of the language-saturated days of philosophy of time.² And just as linguistic issues such as the ineliminability of tense fail to elucidate time and temporal experience, so too do the “existence debates” fail to explain much of what is interesting about time. Philosophers should have more to say about such a fascinating topic.

Popular culture is flooded with “step programs” that promise to help one achieve a goal. By following a prescribed recipe of steps, one is instructed on how to get through a bewildering variety of conditions: addiction, anxiety, no-sex marriages, heavy thighs, and the inability to draw manga. Inner peace, health, and brand new talents are all promised. The sales of these books suggest that maybe there is something to this. In this spirit, I offer the following simple Three Step Program that provides the therapy philosophy of time needs. Following these three steps is a sure-fire cure for existence-

¹ Heather Dyke 2003 chronicles three recent attempts to draw metaphysical conclusions from arguments with only linguistic premises.

² If one is an eliminativist about tense, that is, thinks tensed statements semantically reducible to non-tensed statements, then it is natural to also be an eternalist; if one is an ineliminativist, then there is pressure to be a presentist (see Sider 2001, 11-25).

obsession. Once completed, the philosopher of time, in addition to enjoying an enhanced sense of well-being, will be free to pursue exciting new topics.

As with many illnesses, the zero-th step toward recovery is admitting that there is a problem. Given the lack of progress, I take it as obvious that there is a problem. Those deeply affected by existence mania, however, may need to read the paper before fully coming to this realization.

Once ready, the three steps are each questions about the nature of the debate among presentists, possibilists and eternalists. While the answers to these questions are important, the therapy is so successful that it sometimes works even when one answers questions incorrectly; just going through the process is itself healing. Each step is a question:

(Step 1) Are the three models of time metaphysically distinct?

(Step 2) Are the three models of time observationally distinct?

(Step 3) Are the three models of time explanatorily distinct?

The ultimate goal of the therapy is to get the patient to answer *no* to the question asked in Step 3. The main claim of this paper is that, *as regards the data philosophers typically want to explain (see below), the three metaphysical positions are explanatorily on a par*. To see that this is right, one must also answer Step 2 in the negative. Regarding Step 2, I argue that our rival theories of time are at least observationally equivalent. This claim may not seem surprising, given that we are discussing metaphysical theses. However, those deep in the grips of existence mania tend to read too much theory into the data. They argue, or smuggle into the rhetoric, the idea that experience itself directly favors one theory of time.³ My ‘generalized epistemic argument’ in Step 2 puts them on the road to recovery. Having dispensed with the idea that what we experience directly supports one view of time, Step 3 asks whether one metaphysical position can be used as part of an inference to the best explanation of the data. I argue that the differences among these positions are explanatorily impotent – at least as regards the explananda of interest. When this point is recognized, the malady is past and the future bright.

Although the argumentative burden falls on Steps 2 and 3, Step 1 is important to consider. The reason it is significant is that there is a very real threat that the answer to it is also *no*; if so, the answers to the second and third questions are automatically correct. Readers answering *no* to the first question are instantly restored to health and have no need for Steps 2 and 3. (Readers such as this can skip immediately to the conclusion.) For Step 1, the answer itself is not as important as the process of trying to answer it.

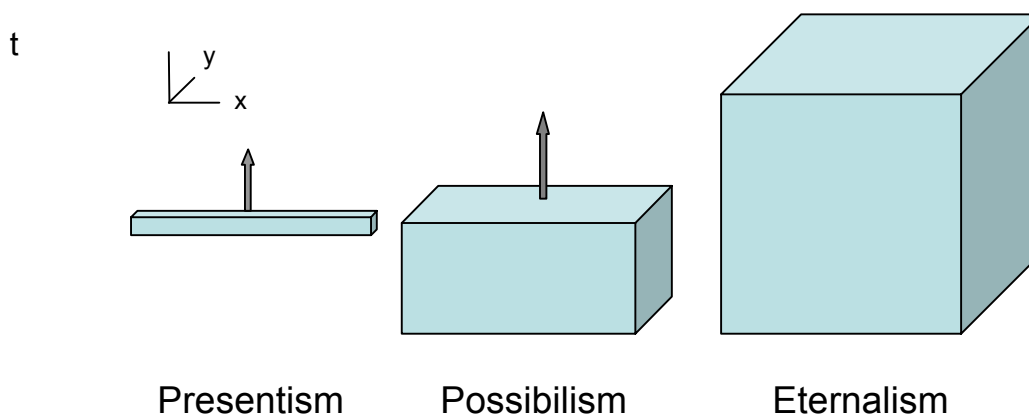
The theme of this paper is that naked existence, if it is a property at all, does not explain much. Or perhaps better: it explains everything and nothing. The existence of particular kinds of objects can explain a lot. The existence of

³ For instance, one commonly hears claims such as: “the reality of tense is experienced by us in a variety of ways which are so evident and so pervasive” (Craig 2000, 133).

atoms helps explain all of the data to which Jean Perrin famously points in his many computations of Avogadro's number. But not any type of atom will do! Only atoms with specific properties will do. What is doing the work in Perrin's explanation is not merely the *existence* of the atoms, but their *nature*, i.e., what causal powers they have, how they interact, and so on. To revert to a more old-fashioned terminology, without specific *essentia*, their *esse* explains nothing. Philosophy of time proceeds by debating the reality of past and future events and then stops without demanding anything more of these events than that they exist or do not exist. Once cured of existence-obsession, we will learn to be more demanding.

The Models and the Data

The central metaphysical dispute in philosophy of time is one among three rival models of time, eternalism, possibilism and presentism. The precise topological and metrical features of time don't figure into the debate. Instead, the positions are distinguished by citing what kind of events each admits into their ontology: past, present or future events.⁴ Eternalists do not discriminate; for them, the past, present and future all 'equally' exist. Past or future events have the same ontological status as spatially distant events. Presentists, by contrast, single out the present as the only time events exist; for them, the past and future simply do not exist. Possibilists – or “growing blockers” – offer a kind of compromise between the two, agreeing with eternalists about the past, presentists about the future, and both about the present.



More on this later, but we should highlight the fact that presentists and possibilists often explicitly or implicitly include a *primitive temporal directionality* in their models. Possibilists think future events *will* become real and then stay real. The 'later than' relation is tied to the direction of ontic

⁴ See, for instance, Dainton 2001, Dorato 1995, Savitt 2002, Sider 2001.

accretion. Similarly, presentists who read their view off a quantified tense logic (see, Prior 1967) distinguish between the temporal operators WAS and WILL BE. Inasmuch as this semantic difference is supposed to reflect an ontological one, the theory is committed to a primitive temporal asymmetry. It is little remarked that inasmuch as primitive directionality is logically independent of the three theses defined via what exists, eternalists also have the option of adding a primitive directionality to what exists (and some do⁵).

On the usual understanding of the debate, the main difference amongst positions lies in what events *exist* when. If on the contrary one envisions models whereby some class of events is existent but ontologically “second class,” i.e., abstract or indeterminate, then those are different positions requiring separate evaluations. The “moving spotlight” view may be such a model; the “unlit” events exist, but in virtue of being unlit they are second class. The present paper will concentrate only on positions differing over the ultimate insult against an event—that it does not exist. This division far and away captures the most popular discussions in the literature. Nonetheless, I believe our treatment here will have lessons for the other views too, albeit indirectly, inasmuch as it puts pressure on showing how a first-class, second-class division of events can explain any of the temporal data.

We shall focus exclusively on the above existence debate and refrain from straying into the related debate over A- and B- theories of time. The reason to do so is that it is not at all clear that the A versus B debate maps perfectly into ours. Famously distinguished by McTaggart, the A-predicates (past, present, future) are monadic predicates whereas the B-predicates (earlier than, later than, simultaneous with) are relational predicates. Turn our A and B predicates into properties; then it seems we have a metaphysical debate over whether the fundamental temporal properties are monadic or relational. Isn't that debate the same as ours? Eternalists are those who believe the fundamental temporal properties are relational, presentists and possibilists are those who believe they are monadic (presentists believing only in one monadic property, possibilists in two). Plausibly, to have relations one needs existing relata, so one can see how the A and B language might mirror our debate.

However, there are some reasons not to conflate the debates. First, there may be more to the A versus B debate than our debate. As Fitzgerald 1985 has argued, one should separate reality-acquisition models of reality, such as our possibilism, from a property-acquisition model of reality, wherein times successively alter their monadic temporal properties. A property-acquisition model, suggested by turning our A-predicates into A-properties, by itself implies nothing (say) about the reality of the future. Second, there are ways of understanding A-properties in an eternalist manner and B-properties in a non-eternalist manner (Parson 2002). The two debates may be, as Parsons, believes, orthogonal, even if there are some connections once one adds supplementary assumptions. Finally, and more pragmatically, linguistic issues

⁵ See Christensen 1993, Maudlin 2007, Weingard 1977.

such as the alleged irreducibility of A-predicates into B-predicates have long dominated the A versus B debate. We want to stay as far as possible from these discussions. The debate among eternalists, presentists and possibilists is already murky enough without further complicating it with talk of A and B properties.⁶ Concentrating on one metaphysical debate at a time seems to be an appropriate strategy.

Let us turn to what I will call, for lack of a better phrase, the *temporal data*. What drives philosophy of time is the fact that people understand time differently than they do space in a variety of ways. That people treat time as different than space doesn't necessarily mean that time *is* significantly different than space, although one explanation might be that it is. Whatever the explanation, it is clear that these differences are the explanada. These are the features that tempt thinkers to add features to time that they do not to space, the features that thinkers offer explanations about in the field, the features constantly appealed to by the disputants themselves. Below I briefly describe the three most common features. What is crucially important is stating the data clearly without reading any particular theory of time into them.

(Present) We think, believe and act as if we all share a global common now; we do not think, believe or act this way about what is here or what is spatially local. No matter where you go, we share a now; but no matter when you are, we don't necessarily share a here.⁷

(Direction) We think, believe and act differently toward the past and future directions. People typically feel relief over past pain but dread over future pain. We tend to believe the present counterfactually depends on the past in a way it doesn't on the future, that actions cause future events but don't retro-cause past ones. We know a lot more about the past than future. We suspect the future is mutable in a way the past is not.⁸

(Flow) This feature, though often mentioned, is harder to pin down without reading the theory into the data. Various phenomena may be associated with it. In common parlance, flow might have a durational or metrical component to it, as when students complain that time crept by

⁶ Suffice to say, past philosophers have conflated many distinct issues. Fitzgerald 1985 blames Gale and his influence for making the A-theory versus B-theory the canonical framework in philosophy of time. Indeed, Gale's "A-theory" is defined as a grab bag of distinct doctrines including (1) the semantic irreducibility of A-properties, (2) temporal becoming (which amounts to a property-acquisition model on his view), (3) ontological differences between past and future, and (4) the idea that change requires an A-series. The theory thus lumps together two or three distinct metaphysical positions with one or two semantic positions, depending on how one understands the change dispute.

⁷ For more on this datum, see Butterfield 1984, Callender 2008.

⁸ For more on this datum, see Horwich 1987.

during a lecture; yet this isn't what typically interests philosophers of time. Rather, flow is usually associated with either change or the present updating. If the first, the datum is why we tend to think that there is a significant difference between temporal and spatial variation. If the second, the datum is the global now referred to in (Present) updating its contents.⁹

To the extent that we can clearly state them, the above data call for understanding.

The question for us is whether the differences among the three models of time offer any resources that help understand these data. In philosophy of time, it's more or less an unstated dogma that some of them can help. Most in philosophy of time treat the belief in their favorite model of time as warranted by a kind of inference to the best explanation of some of the above temporal data. For instance, notice that both presentist and possibilist models treat the present as special: it is the only time that exists for the former, and the cusp of what becomes for the latter. According to both positions the metaphysical present *is* special and objective, so it is tempting to use this to explain Present and perhaps even Flow: the now seems different than the here because it is, temporal change seems different from spatial variation because it really is, and so on. Similarly, some possibilists may take the existence asymmetry between past and future to explain aspects of Direction. Not all agree on every detailed implication, but generally most presentists and possibilists regard their models as warranted by experience or explanation.

By contrast, because she treats the existence of past, present and future events the same, the eternalist can't appeal to any distinction *in existence* to help explain the above phenomena. One can imagine such an argument. For instance, regarding other data, one can imagine an eternalist suggesting that the block universe explains relativistic phenomena. Of course, it would be silly to think that the mere existence of future and past events implies (e.g.) that atomic clocks should behave as they do. (The spatiotemporal metric and how it couples to the dynamics of matter seem at least as crucial.) Lacking distinctions in existence, to their credit eternalists must come up with explanations of the phenomena dig into the details of events to offer an explanation. They must appeal to prevailing temporally asymmetric physical processes, psychology, psychophysics and more to explain the temporal data. Some of these eternalist theories smack of being less than fully developed science, but that is unexpected for speculative hypotheses on the edge of science and metaphysics. If I am right, *all* theories of time need to offer and develop such theories if they are to successfully explain the above temporal phenomena.

⁹ For more on this datum, see Prosser 20xx.

Step 1: Metaphysical Equivalence?

I am primarily interested in showing that our three metaphysical models are explanatorily on a par when it comes to explaining the temporal data. A quick route to my conclusion would exist if the three positions were merely notational variants of one another. If they were, then they couldn't be experientially different, and any apparent difference in explanatory power would be chalked up to the mode of presentation-- as when one is more impressed with a French description of a wine than an English description.

Given the hundred years of argumentation surrounding these three models of time, it's surprising to discover that there exists a very recent and lively debate (the 'triviality debate') among the participants themselves over whether there really is any difference between presentism and eternalism. (As much of this carries over to possibilism as well, for obvious reasons, I will restrict myself in this section to presentism and eternalism.) The argument that motivates this debate is a dilemma stating that the central thesis of presentism, that only present events exist, is either trivial (and hence can be said by the eternalist) or false.¹⁰ Consider the core of the presentist's position:

1. There are only present events.

The worry proceeds by noticing that there are two natural ways of understanding the existential quantification in this sentence. We can read it as an existential quantifier restricted to the present moment or opened up to all times. In the first case we get, in English

2. There are in the present only present events.

which is trivially true. Try to find someone who doesn't believe that. If 2 expresses what statement 1 means, then eternalists subscribe to the defining thesis of presentism. In the second case, when we open up the quantifier domain to include all times, we get

3. There are, were or will be only present events

which is obviously false. Your birth is not a present event. Hence the dilemma: understood as 2, there is no debate; understood as 3, there is a debate but it is over no sooner than stated.

Historically, by formulating their theory using temporal operators, some presentists (most famously, Prior) thought there clearly is a difference between presentism and eternalism. Presentists will understand "Anne Boleyn once existed" as $P\exists xAx$, where P is the pastness operator. Eternalists who hold a

¹⁰ For an articulation of the challenge and varying responses, see Callender 2000; Crisp 2004, Hinchliff 2000, Savitt 2004, and Sider 2006.

token reflective account of translation will understand the sentence as $\exists x(Ax \wedge Bxu)$, where B is ‘the before’ relation and u the utterance of the statement. Since $P\exists xAx$ is not $\exists x(Ax \wedge Bxu)$, it seems the fight is on.

Good contests are not so easily achieved. Granting that there is a syntactic difference between a quantified claim and a quantified claim in the scope of a temporal operator, Sider 2006 asks whether this “this difference is superficial, the result of an arbitrary choice to express the same claim in one vocabulary rather than another” (x). In other words, why isn’t $P\exists x$ just the presentist’s way of stating the eternalists’ $\exists_p x$, where $\exists_p x$ is the eternalist’s quantifier over what he or she regards as past objects? The two forms, $P\exists x$ and $\exists_p x$, seem to have the same inferential role.¹¹

The way to get a significant debate going is to introduce a type of quantification that implies neither existence at the present time nor existence at some time or other. Recent literature appeals to the concept of *existing simpliciter*.¹² To exist simpliciter means to exist without temporal qualification. Existence simpliciter is existence in the broadest sense.¹³ Where 1 is read with existence simpliciter, presentists are supposed to find it true and eternalists to find it false. Now the fight is on.

Still too fast. Serious questions attend the idea of an absolutely unrestricted quantifier. Those with a Carnapian bent¹⁴ will naturally object. For them, as for Austin (see Savitt 2004), they will want to understand what exists simpliciter contrasts with. Present existence contrasts with past and future existence. Existence at some time or other contrasts with fictional and modal existence. But what does existence simpliciter contrast with? Problems with existence simpliciter aren’t restricted to Carnapians, however. Those

¹¹ Well, maybe not. With some clever examples and various translation manuals, Sider finds some inferences that will tease $\exists_p x$, where $\exists_p x$ apart. But I don’t think this settles the issue. First, some of the inferences are ones a presentist may not want to ascribe to their theory, and so one would need to return to a new translation manual. Second, Sider 2006 also gives a logic-based argument for the distinctness of presentism and eternalism. The argument relies on a particular way of translating between eternalist and presentist ‘languages’ to find inferences that they differ on. I have worries about the particular translation manuals Sider offers, but treating this in detail would take me too far from the present task. I also have worries about using logic as what dictates a difference between the two, for it will not necessarily answer the initial worry, namely, that there is only a syntactic difference. Given a syntactic difference, it is not too surprising that one can tease out different inferences. Yet this could arise just because one theory is expressively more powerful than another is, even if they describe the same world.

¹² See Hinchliff 2000, Oaklander 2002, Sider 2006.

¹³ Note that existing simpliciter does not *have* to be read as absolutely unrestricted quantification in the sense of a quantifier whose meaning is not a restriction of any other possible quantifier meaning (see Rayo and Uzquiano 2006), nor does absolutely unrestricted quantification have to be read as existing simpliciter.

¹⁴ See, for example, Dorato 2006 and Savitt 2006.

influenced by Dummett and Putnam will also have problems with existence simpliciter. Even some analytic metaphysicians also worry about the notion (see Hirsch 2002). A hundred years of philosophy of time is at stake, so it pays to be charitable. Despite genuine worries, let's assume existence simpliciter makes sense. Then we finally have a debate, right?

Even this is too fast, if by "debate" we mean one wherein two sides actually disagree about the same claim. For the eternalist, existence is existing at some time. The existential quantifier may be restricted to particular times or opened up to all times; but if something exists then it exists at some time. For the presentist, existence just is present existence. Even with existence simpliciter we only have a debate if both parties actually refer to existence simpliciter when they use 'exists.' I believe in the Loch Ness monster, you don't; we have a real debate because we each understand roughly the same thing by Loch Ness monster. But arguably presentists and eternalists don't understand the same thing by 'exists' and so don't have such a debate.

Drawing on Lewis' idea that meaning be determined by best fit of use and eligibility, Sider (2006) suggests that existence simpliciter is a reference magnet: both presentists and eternalists can refer to existence simpliciter, even if one is right and one wrong about existence. Sider notes that this will not convince the skeptic about the debate, for she will probably not accept the idea that existence simpliciter is an eligible meaning, even if they accept the idea of eligible meanings or existence simpliciter to begin with. Again, with all that is at stake, suppose that existence simpliciter makes sense and that it acts as the reference magnet Sider claims. Then it's time to break out the gloves, right?

Yes, but be ready to hang them up quickly. Once there are different views, the debate is on regarding their plausibility. The big problem facing presentism is how propositions expressing temporal relations, such as that dinosaurs existed, could possibly be true. If some version of the truth-maker principle holds—that what is true depends on what exists—then it is unclear how it can be true that dinosaurs existed. The presentist doesn't look like she has the resources to make this true. If so, there is a genuine debate and presentism loses. The truth-making objection is a can of worms I don't want to open. However, I do want to point out that some natural ways of answering it lead us back to the triviality worry. Suppose, for instance, that the presentist is tempted to add more truth-making resources to their view. When doing so, they had better not add too much; otherwise, the question of equivalence between views rears its head again. Keller 2004, for instance, shows that Meinongian presentism is equivalent to eternalism. Presentists' troubles with truth-makers can present another threat of trivial equivalence.

Despite the skepticism espoused here, I do not want to take a stand on the equivalence issue here. The jury on triviality is still out. Whether we have a genuine debate certainly hangs on whatever the correct positions are in various metaphilosophical debates (for my own views, see Callender 2011). What is important for the reader is merely that she sees that there is a very real possibility of metaphysical equivalence, in which case a hundred years of philosophy of time has been systematically confused and the differences

amongst the three metaphysical positions couldn't possibly account for the temporal data described. To appreciate this threat is to pass Step 1.

Step 2: Empirical Equivalence?

The empirical equivalence of the three models of time might be thought to be obvious. After all, these are three metaphysical views, and the 'meta' is in front of the 'physics' for a reason. Reading the philosophy of time literature, however, with rare exceptions, one does not find this opinion. Instead, one sees constant appeal to the idea that possibilism or presentism's metaphysics is what is directly experienced. It is this idea that I want to dismiss. Perhaps thoughtful presentists and possibilists never really meant to defend this claim; nonetheless, the claim is commonly expressed and always lurking in the background. It is healthy for the view to step into the foreground and be subjected to scrutiny.

My argument builds on similar ones by Williams 1951 and Price 1996, however, both the target and scope of my argument are quite different. Unlike Williams especially, *my point is about existence not making a difference experientially, not directionality.*

In Williams' classic paper he makes an objection to the idea of temporal passage that is sometimes called the "epistemic objection." The objection compares a person in an environment with her time-reversed doppelganger in her time-reversed environment. Williams argues that since the fundamental laws of nature are time reversal invariant, the person and her doppelganger will have the same experiences. Hence, our experience can't be used to argue for a metaphysically robust sense of temporal passage. Price modifies William's argument without any assumption of time reversal invariance:

If we suppose for the moment that there is an objective flow of time, we seem to be able to imagine a world which would be just like ours, except that it would be a four-dimensional block universe rather than a three-dimensional dynamic one. It is easy to see how to map events-at-times in the dynamic universe onto events-at-temporal-locations in the block universe. Among other things, our individual mental states get mapped over, moment by moment. But then surely our copies in the block universe would have the same experiences that we do—in which case they are not distinctive of a dynamical universe after all. Things would seem this way, even if we ourselves were elements of a block universe. (1996, 14-15).

The idea is that there is a one-to-one mapping between experiences in a world of becoming and in a world without. Just by reflecting on experience you can't tell which world you're in.

I want to make the same point as Price but extend it to all three models of time. My contention is that *for distinct pairs of languages that differ only in*

what exists when (i.e., presentist, possibilist, eternalist), there is a one-to-one map between the sentences of the one language and the other language that preserves the empirical. The argument for the claim is as follows. For simplicity's sake, suppose that time is discrete, that mental events supervene on moments, that mental experiences of the world form immediately, and that one's experiences are of the external world. All of these assumptions may be false – the second and third glaringly so – but each can be relaxed without loss. An individual's life is then characterized by a succession of mental states, e.g., mental events m_1 experiencing world w_1 at time t_1 , m_2 experiencing w_2 at t_2 , m_3 experiencing w_3 at t_3 , and so on, for any given observer. So long as our mental events are conceived as part of the world that becomes, how can we sense the passage from nothingness to reality (or reality back to nothingness)? When I experience a changing world (w_1 to w_2) I am part of that changing world: m_2 is brought into existence with w_2 . There are no mental events outside of reality, watching w_1 change into w_2 . Any way you slice it, you've had experiences $\{m_1, m_2, m_3\}$ when t_4 rolls around. Furthermore, *the character of each m is independent of what other m 's and w 's exist or don't exist at other times.* Your experience m_3 of w_3 at t_3 seems really vivid and real? Fine; but one can still map a series of vivid experiences into a four-dimensional manifold. You experience a relentless, inexorable flow? Fine; but relentless inexorable feelings can be stretched out four-dimensionally too. And the reverse can happen too. Your Zen Buddhism class has you feeling stretched out in time, one with eternity? Fine; but that doesn't prevent you from being shrunk back into a series of presently-feeling-stretched-out-in-time experiences.

Unlike Price and Williams, I do not see this epistemic argument as an objection to presentism or possibilism in favor of eternalism. If the epistemic argument is right and the claim expressed above true, a further argument would be needed before one could claim any advantage to one of the metaphysical theories. If eternalism emerges comparatively unscathed, it is only due to the contingent fact that eternalists tend not to argue for their view by appealing to a felt real future or past.

Maudlin 2002 accuses Williams and Price of begging the question. This objection is worth considering, for it will help us refine and defend our argument. Williams assumes that the direction of time is not relevant to the experiences of the subject and her time-reversed doppelganger. But that is precisely the bone of contention. The advocate of passage puts forth a metaphysically robust account of passage to account for one's experience. To assume without argument that it doesn't have experiential repercussions is to beg the question. Same goes for Price: assuming the block universe copies have the same experiences, without argument, begs the question. You can only assume that the experiences of one model map into those of another by presupposing that the differences aren't relevant to the nature of the experience. And the same goes for any generalization of the argument, including mine. Maudlin, I submit, is right that these arguments beg the question without further reason to think that experience is insensitive to the different metaphysical systems in question.

So my argument is only plausible if I can defend the idea that the differences among the models aren't relevant to the nature of our experiences. Fortunately, I can.

Before doing so, let's distinguish between models of time that differ only in what events exist when and models that differ in whether time is inherently directed. As we saw earlier, the two needn't go hand in hand. An eternalist – for instance, Christensen, Maudlin, Weingard – can believe that time is inherently directed. Presupposing that such directionality doesn't matter to experience, and that hence one can map experiences without loss between directed and un-directed worlds, begs the question against such a view. (Presupposing that one *can't* do such a map equally begs the question. Hence the argument seems to turn into a depressing burden-shifting affair.)

However, my claim is not that *any* two models of time are experientially equivalent. The claim is that any two models of time that differ *only in the existence but not nature of events* will be experientially equivalent. So fix directionality and whatever else you think relevant as you will. My claim is only that existence, almost by definition, doesn't add anything to the content of an experience. Experiential states supervene on the existent.

The reason to think this is that one does not have access to the coming in and going out of existence of events. The popping of events into reality does not make any sound, emit light or exert itself upon the senses in any way. Mental states do not exist in a kind of hyper-existence, watching all the other non-mental events come and go into existence. They are themselves part of what comes and goes into existence—if anything does. Nor will the existential 'special-ness' of any presently existing events be observable. We cannot step outside the present and compare present experiences with non-present ones, if such there be.

There are those who have denied this claim. Forrest 2004 argues that consciousness is the by-product of a process on the border of being and non-being. I find such a view deeply implausible. Rather than simply insult it, however, let's look at theories of existence and ask how existence *could* make a difference. Doing this will not only bolster our current argument. Reminding ourselves of how 'thin' a property existence is (if a property at all) will help with our later argument regarding explanation. For these purposes, let us take a brief detour through the literature on the nature of existence. I cannot survey this voluminous literature here, but we can outline several central points.

Since Kant, virtually every discussion of existence begins with the question of whether existence is a property or not. Kant and Hume's opinion, enshrined in the now-standard Frege-Russell view, is that existence is not a property. However, it is often pointed out that the arguments underlying this negative opinion are far from conclusive¹⁵, and the idea that existence is a property is resuscitated. Let us quickly examine the Frege-Russell position and then move to what might be the more promising position for philosophers of time, that existence is a genuine property.

¹⁵ See Williams 1951, McGinn 2000, and Salmon 1987.

According to Frege, the existential quantifier captures all that there is to capture about the nature of existence. Frege treats existence as a function from first-order concepts to truth-values. On this view, objects do not exist or not exist. Strictly speaking, “[i]t is a logical category mistake to ascribe existence to objects” (McGinn 2000, p. x). For something to exist is simply for some propositional function to have an instance. To say Socrates exists is to make Socrates a predicate or property and say that this predicate or property holds of something in the familiar way. To say, for instance, that the future exists, therefore, means that there are true sentences of the form ‘a is future,’ where a is the name of some future event. Clearly to say that some event exists at some time or in the past or the future does not change that experience one jot. The standard Frege-Russell view supports the mapping used in the claim of epistemic equivalence.

On the property view, existence is a property that all existent objects share, just as feline is a property all feline objects have. This view rescues the idea that existence functions grammatically like other properties do; moreover, it salvages the feeling that existence can be important—it’s a real property, and in fact a pre-condition for having other desirable properties. Kant’s hundred dollars, blessed with the property of existence, is worth having. I personally find the arguments in favor of treating existence as a property quite tempting.

However, the ghost of Hume and Kant’s objection that existence ‘makes no addition’ to an object still threatens. Any account of existence as a property must contend with the awkward question of what it adds to an individual. Plainly, the right reply is to say that it adds existence to the individual, just as blue adds blue-ness to an individual, and leave it at that. To say much more is to embark on a fool’s errand. But the crucial question for us is whether existence adds something that would be experienced.

Santayana saw in existence the “strain and rumble of the universal flux,” neo-Thomists see existence as a Perfection, and the Existentialists see it as absurd. Now these strains, rumbles, perfections and absurdities may well alter the character of an experience. They are, however, non-starters:

...Existence must be such that any explicit doctrine that does not impute too much to it will impute much too little. An essence is so nearly nothing without its existence that Existence must be nearly everything; and yet there is so little left of the existent when we abstract from the essence that Existence evaporates to almost nothing (Williams 1962).

As soon as we spell out what existence’s “ontic voltage” (William’s phrase) consists in, we immediately say too much, for there may be existents without any such property and arguably non-existents with such properties.

Hume’s famous point that existence is not observed is widely accepted (Miller 2002). Given his flair for making such points, it’s worthwhile hearing Williams again:

That existence is not observable must be tested by everyone for himself...Now, I respect the person who stares at a doorknob, for example, which is not doing anything in particular, and thinks he can see that it is at any rate existing. I acknowledge for myself that I hardly know what to look for, and may well lack the requisite intuition. In spite, however, of a sympathetic eye for such ontological gems as universals, relations and classes, I don't discover any Existence, and I think that Hume was right on this score. What one observes is not the existing of the knob but just the knob.

Bricker 2004, following Williams, asks how you know *you* exist, if existence is a property? You still have the same parents, the same house, the same color shirt, the same mental state, and so on. It's not as if you are incomplete in some way, like Sherlock Holmes, who neither has nor doesn't have a freckle on his left shoulder. Notice that if existence changed the character of experience in any way, a la Santayana, we would not ask this question. Since it makes sense to ask, we see that existence, even if a property, does not affect the character of any experience.

To escape the generalized epistemic argument, one needs two assumptions, neither plausible. One first needs to assume that one's experiential states do not supervene on only the existent, but that, as in Forrest's view, they supervene upon the existent and non-existent. One then requires that the difference between the existent and non-existent makes a difference to what is experienced. The first claim is obviously quite radical and the second claim flies in the face of virtually every contemporary theory of existence. Time's ontic voltage isn't much of a battery.¹⁶

Step 3: Explanatory Equivalence

We've learned that if our three theories are metaphysically inequivalent, they are nonetheless empirically equivalent rivals. That is not so bad—it's metaphysics, after all. Trope theorists don't think they'll win the battle against universals by predicting the result of a new experiment. Unless one is a hardcore empiricist, there are still theoretical virtues to which one can appeal in an inference to the best explanation. It may be that one model of time best explains the temporal data, and the lack of experimental vindication is nothing to apologize about.

¹⁶ Craig 2000 also criticizes Price's argument, claiming that stringing out my conscious experiences along a 4-dimensional manifold doesn't show that the tense theory is wrong any more than mapping my conscious experiences of tables into a world without tables shows establishes skepticism about tables. Craig is right, but since my argument isn't one for eternalism (compare, anti-tables) this point doesn't affect my argument. Indeed, the analogy with the external world invites us to shift the debate to the explanatory arena, the topic of the next section.

This comforting picture of the debate would be fine if any of the three models actually helped explain the temporal data. I submit, however, that we are not in that situation. Instead, I believe that the differences among these models are explanatorily impotent as regards the temporal data mentioned in section 1. (As regards other data, that remains to be seen on a case-by-case basis.) The question of which best explains the temporal data is akin to asking which model, Thales' water model, Anaximander's apeiron model, or Anaximenes' air model, best explains the QCD jet production at the Large Hadron Collider. None of them do, for they don't have enough structure. Existence, even moving and directed existence, doesn't explain much by itself. Swallowing an existent bare particular doesn't explain the relieving of my headache; but swallowing an existing object with the chemical properties of aspirin does.

Turning to our temporal data, how does (for instance) the existence of present events and non-existence of future ones help explain the phenomena called Present? Present events are a heterogeneous lot if ever there were. What they have in common, according to presentism, is only their existence. But existence doesn't *do* anything, and to have a satisfying explanation of the temporal data, we need to appeal to some qualitative differences—or so I shall argue through a series of illustrations and a generalization of these.

Before getting to the illustrations, however, let's be clear about my argument. I am *not* adopting some overly restrictive empiricist "no epistemic difference, no explanatory difference" thesis. I firmly believe there can be explanatory differences among observationally equivalent rivals. Nor am I arguing that all three models have the same theoretical virtues. Maybe presentism is simplest and simplicity is a guide to truth. I take no stand on this here. What I will argue is that the leading argument in the field¹⁷ – that one or more of the models explains the temporal data – is misguided because the differences amongst these views regarding what events exist when is orthogonal to explaining the temporal data.

Illustration 1: Directionality and Tense

Consider the datum we called Direction. This consists of many asymmetries, but let's concentrate on the attitude asymmetry, for that is the one presentists and possibilists employ most frequently. The challenge, as phrased by Zimmerman, is:

When I notice that a headache, or some other painful episode, has become part of the past, I am relieved that this is so; and when a pleasant experience becomes past, I am often disappointed. If a theory of

¹⁷ Or perhaps more accurately, the leading argument in the field once ordinary language inspired arguments are abandoned...

time makes such changes in attitude utterly mysterious, we should have grave doubts about its adequacy.

Zimmerman and Craig think presentism explains the attitude, essentially because “past pain is non-existent pain, and so no pain at all!” (Craig 2000, 157, fn 69)¹⁸ whereas advocates of possibilism hold that I don’t care about past pains because they are settled.

I want to make two points about such claims: (1) that (non)existence is not doing the work in these putative explanations, contrary to much of the rhetoric, and (2) that even directed existence does not do explanatory work, except if built in by hand.¹⁹

To begin, bearing in mind the lesson of Step 2, we must be careful in how we characterize this datum. Presently having different attitudes towards past and future experiences is not best described as differential experience of the past and future, as Craig 2000, 148 does. When Spinoza said that the mind should be “affected equally, whether the idea be of a thing future, past, or present” (1955; IV.1xii), he cannot be faulted merely by pointing to experience. One must add the ingredient that these feelings are *appropriate* or *rational*—a premise we certainly don’t find in experience.

Do presentism or possibilism make our temporally asymmetric attitudes rational or appropriate? The first sign of trouble is that the two positions are diametrically opposed with regard to the explanatory import of existence. For the presentist, an event’s non-existence explains our lack of caring about it; but for a possibilist, an event’s existence explains our lack of care. If the possibilist adopted the presentist’s connection between existence and care, they wouldn’t care about future headaches! Clearly something more is needed than existence or non-existence. When the presentist says that headaches don’t exist and that’s why they don’t care about them, one immediately wants to respond: so too is future pain non-existent pain (according to presentism)—so why worry about the future? Future pain, Craig answers, *will be* present pain and is thus a cause for concern (ibid). It is not really the non-existence of past pains that makes them objects unworthy of dread. If anything, it is their “non-will-be-ing-ness” that explains why they are not a cause for concern. In explaining the attitude asymmetry, the presentist helps herself to a primitive directionality. The non-existence of events, past and future, has little to do with the answer. As we’ll see, the same is true of the possibilist, except that this case is more complicated because it does contain a genuine temporal asymmetry in existence.

While this observation shows that presentists misidentify what is doing the work in their theory, by itself it does not reveal a fatal flaw. If presentists

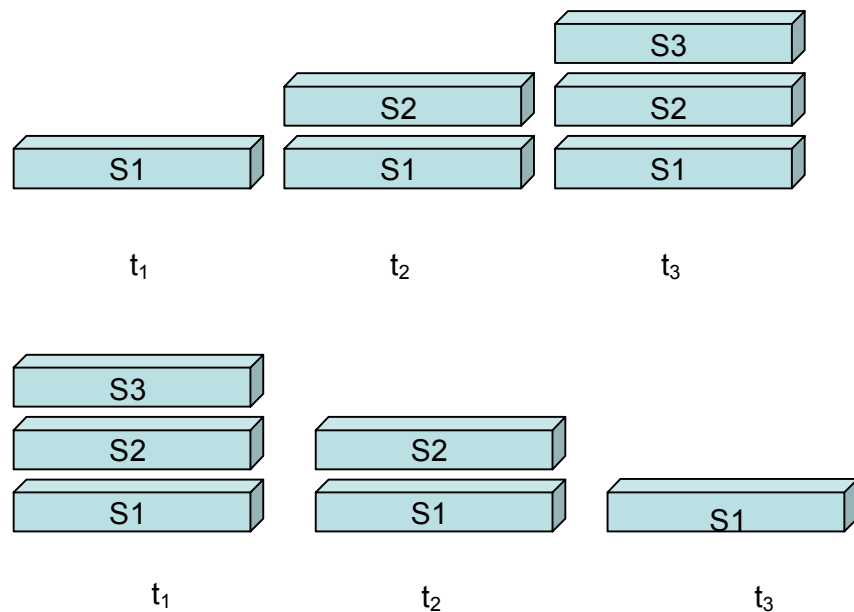
¹⁸ Here is Zimmerman: “Past headaches do not exist; consequently, they have no properties whatsoever, including being painful.”

¹⁹ For a general critique of this style of argument, one can’t do much better than Maclaurin and Dyke 2002 and Mellor 1998. My own critique is focused not on the argument in general, but rather with an eye toward developing my point about existence being explanatorily impotent.

want to include a primitive directionality in their theory, they certainly can. But then so can eternalists, as mentioned earlier.

Let us now turn to possibilism and then a complaint against both theories. Possibilism promises more resources to explain the attitude asymmetry. After all, in this theory the real past is growing. Perhaps this asymmetry can be put to good use?

Again, existence is not doing the work, even for possibilism. One can see this in a slightly modified example from Dainton 2001, 75. For simplicity, consider time to be discrete and restrict attention to three representative chunks of time in Broad's growing block model. Now consider two worlds, a growing world and a shrinking world at three different time slices, t_1 , t_2 , t_3 :



In the growing world, reality consists of S1 at t_1 , S1 + S2 at t_2 , and S1 + S2 + S3 at t_3 . At t_1 the process of absolute becoming creates S1, at t_2 it adds S2, at t_3 it adds S3, and so on. In the shrinking world, reality consists at t_1 of S1+S2+S3, then at t_2 of S2+S1, then at t_3 of S1. In this case the process of absolute annihilation shrinks the sum total of reality.

We now ask the natural question, what is the difference between the growing and shrinking world? The facts look the same: the sum total of reality is changing, and this total is of intermediate size between the times when of largest and smallest sizes. Aren't these merely two descriptions of the same world, but with the 't' parameter differently labeled? Not according to Broad, for he adds a primitive asymmetry: t_2 is *later* than t_1 just in case the sum total of reality at t_2 is greater than the sum total of reality at t_1 . As with presentism, existence by itself doesn't do anything. One needs a primitive appeal to directionality, and that is what is doing whatever work is being done.

But then it is not the difference in what exists between eternalism, presentism and possibilism that matters, for it's the primitive directionality that is doing the work.²⁰ To cast explaining Direction as a benefit of presentism or possibilism, therefore, is a bit misleading, since the primitive directionality is doing all the work. The appropriate contrast would be with eternalism with a primitive directionality, a la Christensen, Maudlin or Weingard.

Matters are even worse than this, however. Even if we tie the existence asymmetry to a primitive directionality by fiat, that still doesn't do any good. The reason is that we have not adverted anywhere to the contents of the universe, the nature of the events that happen, and so on, and this opens up a serious explanatory gap. A primitive directionality like Broad's, which defines the earlier than relation only in terms of what exists when, will also be explanatorily impotent. Following Dainton, call the direction picked out by memories, causation, counter-factual dependence, knowledge, attitude and so on the *world-arrow*. Call the direction picked out by Broad's primitive the *block-arrow*. The question arises: why think the block-arrow points in the same direction as the world-arrow? Why think, for instance, that the direction of accumulating memories is the direction of growing and not shrinking reality? It should not be *part of the theory* itself that the two arrows are aligned. That is akin to positing dormative virtues to explain the causal powers of narcotics. The alignment should follow from the theory, not be the theory.²¹

However, the alignment plainly does not follow from possibilism. Dainton appeals to the nomological possibility of the world being a so-called Gold universe. A Gold universe is one wherein the world starts out in a low entropy state, entropy rises for a long time, then entropy starts to decrease until the universe ends in another low entropy state. An inhabitant of the 'other side' of the universe, one with a thermodynamic arrow flipped with respect to ours, would presumably tell the opposite story. If we actually lived in a Gold universe the possibilist would face the odd situation wherein the universe grows in the direction opposite to which entropy increases, memories accumulate, knowledge grows, etc. Assuming only that the knowledge and memory asymmetries are central to our psychological states, people in the time-reversed section of a Gold universe would have memories of events that haven't yet existed. They would know more about what hasn't yet existed than

²⁰ Compare with D. H. Mellor's 1998 "tu quoque" reply to the question of why we feel relief only when pain has the property *pastness* and not simply when the feeling is *after* the pain. He admits that he doesn't have a good explanation of why feeling relief after pain but not before pain is typically appropriate, but then asks does the tensed theorist have a good explanation of why feeling relief when pain *is past* is appropriate?

²¹ Some aspects of what I have called Direction might be tied to existence as part of some theories. Tooley 1997 for instance, ties the causal relation to the block arrow definitionally. We might tolerate definitional "explanations" of some aspects of Direction, especially if they do some work for us. But Dainton claims, and I agree, that one can rerun the above objection. Here we would obtain a misalignment between the world arrow minus causation and Tooley's causal arrow.

what has existed. They would think what exists depends counterfactually on what hasn't yet existed. Presumably, they would care more about past pains than future pains! This example highlights in a dramatic way the explanatory irrelevance of possibilism. It should be clear that we could run the same objection against presentism's alleged explanation of our differential attitudes toward the past and future.

Clearly, Dainton's point is more or less an application of the Williams *et al* objection of section 3. It is worth reminding the reader that, as before, this objection begs the question against views like those of Maudlin. A time gradient field might preclude a Gold universe or 'backwards' people. But if all one has is an asymmetry in what exists, and no qualitative asymmetry, there are no grounds for objecting to a Gold universe. The Gold universe is perfectly apt. Indeed, the example is even better than it has to be. Remember, the existence-obsessed philosopher of time doesn't care about the content of the events in the world; she cares only about when they exist. Since when they exist does not affect what they are, we can devise examples to display explanatory impotence at will.

Our discussion has uncovered two deficiencies in presentist and possibilist explanation of Direction. First, there is the misadvertising: even by each theory's own lights, it is a primitive directionality that is doing the work, not the claimed existence or non-existence of some events. Second, even a primitive arrow of existence doesn't do the work. There is no logical or (in a time reversal invariant world) nomological link between the directional phenomena in Direction and the arrow of existence. To explain the attitude asymmetry, one needs to appeal to the contents of the universe. When one does, all manner of explanatory riches open up to one (see, e.g., McLaurin and Dyke 200x, Suhler and Callender, ms).

Illustration 2: Present

People commonly believe that the present is an objective feature of the world. They talk, think and behave as if there were a global now shared by all, yet they do not similarly talk, think and behave this way about what is here. There is also a phenomenological feature often appealed to: the present is supposed to be more vivid, more impressive, more...real. Presentism is supposed to explain this disparity in talk and behavior between the here and now, and also it's supposed to explain this alleged phenomenological datum (or at the very least, this alleged datum is commonly used rhetorically in motivating presentism). The idea is simple: only the present exists, that is why it is special. Similarly, possibilism says that the cusp of being and non-being is objective, and that is why the present is special.

Does an objective present really explain these features? Take the alleged phenomenological datum, vividness. One may naturally question whether there is such a datum, for surely it derives from comparing an experience at

the time of experience with a memory of an experience; yet this is not at all the same as comparing an experience at a time with another experience at another time's vividness. But we need not even get into that argument, for things that exist are no more vivid than things which don't exist—no more than things which exist are more rumbling, straining, perfect or absurd than things that don't exist. As before, we cannot allow the tensor to smuggle in some differential content to the experience.²²

Can presentism or possibilism be part of an inference to the best explanation of the non-phenomenological data, the talk, thought and action treating the present as special? As before, the content of the events does not make a difference for the tensor. These theories ask of events only that certain ones, the present ones, exist, and that the rest don't. As before, this leaves a wide chasm between the explanandum and the explanans. We can exploit this gulf to show the explanatory irrelevance of presentism and possibilism.

Imagine, to take a fanciful example, that people and objects tended to move at much faster relative velocities than they currently do. In this case, time dilation effects would be obvious in our everyday lives, not something hidden in atomic clocks on planes, muon decay rates, and so on. The relativity of simultaneity would be painfully apparent. People in this world could not use the word 'now' with one another and assume that it picked out for another anything like the same event as they intended. Signals would have to be dated for there to be reliable communication. In such a world it would be surprising if the word 'now' even developed. It would be the height of arrogance to suppose your hyperplane of simultaneity was the only real one—when everyone you meet disagrees. Still presentism or possibilism might be true of such a world. The evidence so suggestive of Lorentz invariance may march into existence, along a preferred foliation, one time step at a time. Yet the truth of it would not cause the inhabitants to think there is any special present. Or imagine that we were creatures without the benefit of sight or sound. Suppose we could communicate only through slower means of communication, such as smell. Smelling burnt toast in the house doesn't tell us when the toast was burnt. As in writing letters, wherein a letter is most useful when it has a time written on it, one would need to date all communication. It's hard to imagine the use of the word 'now' in such a world, and it's not terribly likely it should develop and be endowed with such objective significance—even if in this presentist or possibilist world it really did have such significance! In these worlds, the present would be objective, but the contents of the world would not lead us to think so.

Alternatively, imagine an eternalist world wherein creatures used sight and sound to communicate. Rather than dating all correspondence, inhabitants of such a world might introduce the indexical "now" as a shortcut in the language. They might think, talk and behave as if there were an

²² Indeed, I argue elsewhere that the phenomenological data aren't what presentists and possibilists say they are. They believe the data are what they are only because they haven't looked closely (see Callender 2008).

objective present even if there weren't one.²³ In this world (which might be ours), the present is not objective, but the contents of the world lead its inhabitants to think it is.

There are logically and nomologically possible worlds wherein the data described by Present obtain in an eternalist world and wherein the data described by Present fail to obtain in non-eternalist worlds. Once again, this huge gap between explanandum and explanans is due to the fact existence and non-existence doesn't change the nature of events.

Illustration 3: Becoming and Free Will

It is often said that possibilism will explain an aspect of free will, namely, the perceived openness of the future and the settledness of the past. Lucas 1986, for instance, says that we experience the future as an open realm of possibilities. As before, we must guard against smuggling the theory into the data: we may *take it* that the future is open, but we do not *experience it* as open for we only ever experience the present. As we know from Step 1, in fact possibilism will have a problem connecting 'openness' with the future and not past. Put this objection aside, however. Can the non-existence of the future be at all relevant to why we feel we are free in that direction and not the other?

Perhaps, but it's not obvious how. Since the models don't differ over the nature of the events that exist, we can again exercise our freedom to fill in the contents as we please -- for all the models care. Obviously the details hang on one's account of free will, but suppose, to take an easy example, one felt that freedom depended on their being many genuine options available to one. The non-existence of the future doesn't get one that. After all, possibilism is compatible with physical determinism. If the world is deterministic, then given the physical state on any present time slice there is a unique future permitted by the laws. In a possibilist deterministic world non-existent future events are determined to come into being a unique way, given the existent events prior to them. A non-existent future doesn't buy one an ability to have done otherwise, unless one can somehow take advantage the difference between being metaphysically and nomologically open. Even worse, perhaps the laws of nature are future-deterministic but past-indeterministic; that is, the laws may evolve present states stochastically toward the past but deterministically toward the future.²⁴ If determinism versus indeterminism has anything to do with our freedom, then we would feel free in the direction we were more determined according to the possibilist!

Of course, it's naïve to think that free will hangs on our laws being deterministic or not. I use that only for expository ease. By now readers have all the tools needed to construct for themselves the charge of explanatory

²³ See Butterfield (1984) and Callender (2008).

²⁴ As a result, the laws of nature necessarily would be time reversal non-invariant.

impotence with the myriad further claims not considered here. If the non-existence of certain events are the cause of some of our temporal data, then if those events exist the data should not appear; if the existence of said events is the cause, then their non-existence should imply the absence of the temporal data. Eternalism, possibilism and presentism fail to explain the data through the most primitive application of Mill's methods. Pointing out that ghosts lack existence is useful in certain contexts, but if we want to explain the eery creaking noise in the night one needs to roll up one's sleeves and explain matters in terms of the character of things.

5. Conclusion

Upon seeing the point about explanatory impotence, you have successfully completed the Three-Step program and are cured of existence-mania. Before considering all the benefits of completion, let's pause to be clear about the resulting view.

First, it is not in any way generally anti-metaphysical. The Step Program does not view as empty any dispute without empirical repercussions. There are plenty of genuine metaphysical debates answering *yes-no-yes* or even *yes-yes-yes* to counterparts of our three questions, e.g., whether time is discrete or continuous. Indeed, if eternalism, possibilism and presentism turn out to be metaphysically distinct, there may even be *genuinely compelling arguments for or against one of these metaphysical positions compatible with everything I said here*. My position is that the metaphysical positions are empirically equivalent and that the differences between them are explanatorily impotent *as regards explaining the temporal data*. This leaves room for other arguments. Though I don't think so myself, perhaps the logical argument from fatalism spells the end for eternalism, or questions about the persistence of objects picks out one theory as superior.²⁵ But we need to put behind us the idea that one is a simpler explanation of the phenomena, since none explain the temporal phenomena. Furthermore, inasmuch as I believe explaining the temporal data is *the* interesting question in philosophy of time, we should downgrade the importance of this particular metaphysical debate.

Second, the argument is not a stealth defense of eternalism. Eternalists do come away from my critique comparatively unscathed. But that is, to repeat, only because by treating past, present and future events equally, they have not often been tempted to explain the temporal data with their theory

²⁵ Or, to mention an argument I do believe, we could add to the temporal data the Michelson-Morley experiments, muon decay rates, and so on, in support of eternalism. The presentist and possibilist could then respond with my empirical equivalence of Step 2, and they would be right. One doesn't observe that an event on Alpha Centuri is simultaneous with my now but not yours; this is inferred. But that doesn't mean that an objective global now is part of the best explanation of the data. It isn't (see Callender 2000).

itself.²⁶ Indeed, for all I have said, eternalism might just *be* presentism or possibilism in a different vocabulary. The other reason that eternalists come away comparatively unscathed is that they have actually embarked on the sorts of projects that might explain the temporal phenomena. They appeal to actual or hypothetical asymmetries in the world to explain our differential attitudes toward past and future. Some have appealed to the thermodynamic asymmetries, others the asymmetries of radiation, and still others hypothetical temporally asymmetric fields of one kind or other. There remain questions about whether the observed physical asymmetries can do the job required of them, and there are questions about whether the hypothetical fields connect in the right way to their explanatory targets. But at least these are positive research programs wherein one can evaluate success in a clear manner. Or in explaining the present, eternalists have appealed to concrete reasons why people might treat the present as objective: the rapidity of reliable communication, the stability of macroscopic properties, low relative velocities, and so on. Again, there may be questions about the details of these approaches, so that a presentist like Craig can deride them as pop socio-biology, but at least they keep their eye on the ball.²⁷

Now to the rewards. There really are an interesting set of problems motivating philosophical study of time. We do treat time and space very differently, despite their both being modes of extension treated similarly by our fundamental scientific theories. We imagine time to have a much richer structure than space. If anything about time calls for explanation, clearly this fact does. As it turns out, philosophy of time rises to the call by framing a debate among three metaphysical positions, positions that are empirically equivalent to one another, explanatorily equivalent to one another and perhaps even metaphysically equivalent to one another.

There is a better way to conceive of the debate. Philosophers of time should model the debate the way philosophers of mind frame theirs. The natural sciences don't have sophisticated theories of intentionality and consciousness. There seems to be an explanatory gap between our experience and the so-far incomplete description of our experience provided by the natural sciences. There is an honest-to-goodness problem over how to explain

²⁶ 'Not often' but perhaps not 'never.' Dorato 1995 writes, "If future events were as real as past ones, we should observe as many instances of backward causation as we observe of normal, forward causation" (52). Yet the reality of future events doesn't give one any reason to expect *equal numbers* of tokens of causation and retro-causation. Dorato is not exactly guilty of the sin described here, for when making this claim he is explicitly using a theory of causation essentially tied to the un/reality of events. Still, it is an example of an eternalist tempted to use the mere existence of the future itself in an explanatory manner.

²⁷ For eternalists who posit physical asymmetries in time to ground aspects of what we called Direction, see Albert 2001, Horwich 1987, and Price 1996; for eternalists who attempt to explain the seeming objectivity of the present using physical and psychological resources, see Butterfield 1984 and Callender 2008; for eternalists who attempt to explain the the attitude asymmetry with a combination of cognitive science and/or evolution, see Maclaurin and Dyke 2002, Suhler and Callender, forthcoming.

consciousness, for instance. Philosophers of mind then suggest explanations using naturalistic resources to explain consciousness (which, if picked up, might develop as parts of natural science) or they look elsewhere and supplement the naturalistic resources, either with new 'naturalistic' resources or 'non-naturalistic' resources. They then argue about whether the explanation actually succeeds in accounting for consciousness. Similarly, philosophy of time ought to refine our description of what needs to be explained, carefully examine science and the way it treats time, compare the two, and then try to account for any explanatory gap that arises. The gap may be filled in with scientific or metaphysical resources. However it works out, it's now clear that presentism, possibilism and eternalism need more resources to close the gap. The eternalism debate need not itself be eternal.

References

- Albert, D. 2001. *Time and Chance*. Cambridge: MA: Harvard University Press.
- Bricker, P. 2004. "Discussion – McGinn on Non-Existent Objects and Reducing Modality" *Philosophical Studies* 118 (3), 439-451.
- Broad, C. D. 1983. *Examination of McTaggart's Philosophy*, Vol. II, Part I. Cambridge: Cambridge University Press.
- Butterfield, J. 1984. "Seeing the Present" *Mind*, 93, 161-76.
- Callender, C. 2000. "Shedding Light on Time" *Philosophy of Science*, 67, S587-S589.
- Callender, C. 2008. "The Common Now". *Philosophical Issues* 18, 339-361.
- Callender, C. 2011. "Philosophy of Science and Metaphysics"
- Christensen, F. M. 1993. *Spacelike Time*. Toronto: University of Toronto Press.
- Craig, W. 2000. *The Tensed Theory of Time*. Dordrecht: Kluwer Academic Publishers.
- Dainton, B. 2001. *Time and Space*. Ithaca: McGill-Queen's University Press.
- Dorato, M. *Time and Reality: Spacetime Physics and the Objectivity of Temporal Becoming*. Bologna: CLUEB, 1995.
- Dorato, M. 2005. "The Irrelevance of the Presentist/Eternalist Debate for the Ontology of Minkowski Space-time". In: *The Ontology of Spacetime*, (ed.) D. Dieks, Elsevier.
- Dorr, C. 2005. 'What We Disagree About When We Disagree About Ontology', in *Fictionalist Approaches to Metaphysics*, ed. Mark Kalderon, Oxford University Press, 234–286.
- Dyke, H. 2003. "Temporal Language and Temporal Reality" *Philosophical Quarterly*, 53, 380-391.
- Forrest, P. 2004. "The Real but Dead Past: A Reply to Braddon-Mitchell" *Analysis* 64, 58-361.
- Fitzgerald, P. 1985. "Four Kinds of Temporal Becoming," *Philosophical Topics* 13: 145-177.
- Grünbaum, A. "The Meaning of Time," in *Basic Issues in the Philosophy of Time*, Freeman, E. and W. Sellars (eds.), pp 195-228. La Salle, IL: Open Court, 1971.
- Hinchliff, M. 2000. "A Defense of Presentism in a Relativistic Setting" in Howard, D. (ed.) *Philosophy of Science*, Supplement to Volume 67, Number 3. S575-S586.
- Horwich, P. 1987. *Asymmetries in Time: Problems in the Philosophy of Science*. Cambridge, MA: The MIT Press.

- Keller, S. 2004. "Presentism and Truthmaking" in *Oxford Studies in Metaphysics*, Vol. 1. Edited by Dean W. Zimmerman, OUP, pp. 83-106.
- Lucas, J.R. 1986. "The Open Future", in *The Nature of Time*, ed. Raymond Flood and Michael Lockwood. Oxford: Basil Blackwell.
- Maudlin, T. 2002. "Remarks on the Passing of Time", *Proceedings of the Aristotelian Society* volume CII (part 3), 237-252.
- Maclaurin, J. and Dyke, H. 2002. "Thanks Goodness That's Over': The Evolutionary Story" *Ratio* VX, 276-292.
- McGinn, C. 2000. *Logical Properties*. Oxford: Clarendon Press.
- McTaggart, J. M. E. "The Unreality of Time," *Mind*, New Series **68**: 457-484, 1908.
- Mellor, D. H. *Real Time II*. London and New York: Routledge, 1998.
- Miller, B. 2002. "Existence", *The Stanford Encyclopedia of Philosophy (Summer 2002 Edition)*, Edward N. Zalta (ed.), <http://plato.stanford.edu/>.
- Oaklander, L.N. 2002. "Presentism, Ontology and Temporal Experience," in Craig Callender (ed.) *The Royal Institute of Philosophy Supplement 50, Time, Reality, and Experience* (Cambridge: Cambridge University Press, 2002): 73-90.
- Parson, J. 2002. "A-theory for B-theorists" *Philosophical Quarterly*, 52, 1-20.
- Price, H. *Time's Arrow & Archimedes' Point: New Directions for the Physics of Time*. New York and Oxford: Oxford University Press, 1996.
- Prosser, S. 'Why Does Time Seem to Pass?', *Philosophy and Phenomenological Research*, forthcoming.
- Rayo, A., and Uzquiano, G. 2006. (eds.) *Absolute Generality*. Oxford University Press.
- Salmon, N. 1987. "Existence", in *Philosophical Perspectives, 1: Metaphysics*, James Tomberlin, ed., Ridgeview Press, pp. 49-108.
- Savitt, S. 2002. "Being and Becoming in Modern Physics", *The Stanford Encyclopedia of Philosophy (Spring Edition)*, Edward N. Zalta (ed.), <http://plato.stanford.edu/>.
- Savitt, S. "Eternalism and Presentism in Perspective" *The Ontology of Spacetime*, ed. by Dennis Dieks (Elsevier, 2006).
- Sider, T. 2006. "Quantifiers and Temporal Ontology" *Mind* 115(457), 75-97.
- Suhler, C. and Callender, C. 2011. "Explaining the Temporal Value Asymmetry", forthcoming.
- Tooley, M. 1997. *Time, Tense and Causation*. Oxford: Oxford University Press.
- Weingard, R. 1977. "Spacetime and the Direction of Time" *Nous* 11, 119-131.

Williams, D.C. 1951. "The Myth of Passage," *Journal of Philosophy* **48**, 457-72.

Williams, D.C. 1962. "Dispensing with Existence" *Journal of Philosophy* 59, 748-63.

Zimmerman, D. 200x. "The Privileged Present: Defending an 'A-Theory' of Time" in Ted Sider, John Hawthorne, and Dean Zimmerman (eds.), *Contemporary Debates in Metaphysics* (Malden, Mass.: Blackwell).