How Thick is Now? The Prospects of Thick Presentism*

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May 17, 2023

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Contents

*Credit where credit is due: this title which I found terribly original was in its original form pre-empted by a paper by Susan Pockett, which I came across while researching this article. (Pockett (2003))

1 Introduction

Dynamic theories of time that feature an absolute and progressing present seem to give an intuitively much more appealing notion of change than their rival static views on time. Very roughly, we can say that in dynamic views of time, change consists in the becoming present, and passing along into the past, of different states: my ice cone's melting consists of a molten state becoming present, and its more solid state passing into the past. This appears to give a much more robust notion of change than is possible in static views, which is usually seen as a having different properties at different times.[1] As controversial as McTaggart's notorious paper[2] has been – for better or for worse – the idea that change can best be understood in an A-theoretic framework, as some form of becoming, coming into existence, and moving into the past, has struck a chord with some proponents of any kind of A-series, however they otherwise stand on the rest of McTaggart's argument.

While not all proponents of dynamic views of time agree that change is anything over and above a difference in properties at different times[3], there is a lot of intuitive pull to the idea that temporal passage as featured in, e.g., presentism could afford us a more robust notion of change than the B-theorist could offer you: a notion of change that is, or at least involves,"a difference in the sum total of temporal [...]facts from moment to moment".[4] Graeme A. Forbes, who offers a robust defence of this robust notion of change, calls it "McTchange" (the "T" is *not* silent).[5]. Lisa Leininger illustrates the issue with the image of a flip-book. Take a figure, Bob, at different positions on the pages of the flip-book. As you flip through the book, Bob appears to change position. However, Bob does not *really* change position: he remains where he is on every page. The same is true for any notion of change that is reducible to having different properties at dif-

[1] See, e.g., Dyke (2002).
[2] McTaggart (1908)
[3] See, e.g., Skow (2015).
[4] Leininger (2018), 116
[5] Forbes (unpublished manuscript), cited with permission from the author.

ferent times.[6] Real, robust change (McTchange), will not be thus reducible, but rather require temporal passage or becoming in some way like what McTaggart imagined.[7]

Unfortunately, it turns out that this ontologically robust and dynamic notion of change poses a unique challenge to dynamic views, quite separate from McTaggart's original worries about the coherence of the A-series. It has been argued that it is actually rather problematic to analyse this supposedly intuitive notion of change – or related notions such as causation, or even motion – in dynamic views of time, if the present is thought to be temporally unextended, if it has no duration.[8] Moreover, it seems that our experience of the present is not one of a temporally unextended instant, but rather of a temporal interval. As a remedy, some authors have proposed that the present is not temporally unextended, but rather has a duration, albeit a very short one, which could encompass change, motion, or causal relations. This view has been called "thick presentism" by one of its proponents, H. Scott Hestevold.[9]

In this paper, I will first review the arguments that have been given for the view that the present has a temporal extension. Following this, I will briefly recapitulate two of the most elaborate accounts of thick presentism by H. Scott Hestevold and Sam Baron,[10]. The two views agree that temporally extended presents do overlap as time progresses, but they disagree on the question of whether the temporally extended present contains a temporal order of times within them: Hestevold argues that temporally extended, or "thick", presents do not contain an ordering of real times, whereas Baron argues they do. There are four kinds of possible kinds of views on thick

[6] Leininger (2018), 116.

[7] I will take no stance on what the real nature of change is. Minimally, I will argue that it involves losing and gaining of properties, like my hand going from pale to sunburnt on a sunny day. Whether change also requires a difference in the sum total of temporal facts as in McTchange, orwhether change is completely reducible to that, will make no difference to the arguments I present below.

[8] See, e.g., Poidevin (2002) and Backmann (2019).

[9] See Hestevold (2008).

[10] See Hestevold (2008) and Baron (2012)

presentism, distinguished by whether the thick presents are overlapping as time progresses, and whether they contain an ordering or irreducible times. I will discuss all four possible positions, starting with Hestevold's and Baron's existing accounts, before turning to the remaining two possible views, according to which thick presents do not overlap and do or do not contain an ordering of real times within them. We will see that none of the four possible views, neither the two existing ones nor the two possible alternatives, are tenable.

We will see all of the possible thick views share a combination of the following root problems. We see that in order to cache in the lofty goals of providing an ontological robust analysis of change, motion, etc. in thick presentism, we'd have to introduce epicycle after epicycle, each producing new problems for the view. If, e.g., in order to avoid the thick present resembling a kind of mini-eternalist block, we claim that the thick present does not contain real times, then temporal ordering and progression becomes impossible, thereby making any temporal order of cause and effect, any direction of movement, or any change from state to state mysterious. Or if, in order to avoid this, we introduce times, a dilemma lurks: either there is a danger of an explosion of the present, where the present could span millennia, due to the transitivity of compresentness. Or, if we introduce measures to avoid this transitivity of compresentness, we end up with a second temporal progression, a hyperprogression, within the extended presents, if we ever want to have any hope of ordering these times within the thick present. Lastly, if we deny temporal overlap, we get a picture of change, causation, movement, and so on, that stutters: change only happens within an extended present, and stops between them.

Freely combine the two variables of whether there are times as irreducible temporal locations and whether there is temporal overlap, and you get a combination of the problems above. Thick presentism ends up not properly caching in the desiderata which motivated the view in the first place. If presentism needs to be thick to be compatible with change, movement, causation, etc., then presentism is not compatible with these phenomena.

2 Reasons to Think the Present is Temporally Extended

There are powerful arguments for the view that the present has a temporal duration. In this section, I will briefly review these arguments, starting with Zeno's paradox of the arrow, which has been identified as a particularly resilient problem for presentism, before I turn to the more specific arguments regarding change and causation. Some of these arguments, like Zeno's arrow, are well established in the literature, while some, like the argument from causation, are a consequence of the respective thick presentist's views on notions such as causation. All in all these arguments justify a thorough discussion of thick presentism here, even if one might not follow every one of them.

At the heart of Zeno's arrow paradox is the issue whether the supposed movement of the arrow ontologically consists of a series of durationless instants. If that were the case, then the arrow would only ever be able to occupy one particular spatial location in any such instant, and would at any time be perfectly still. The proponents of the view that time consists of durationless instants are thus tasked with explaining how motion can be possible. Robin Le Poidevin reconstructs Zeno's arrow as a problem for the presentist. Le Poidevin argues that motion, which we will treat here as a special case of change, is at odds with presentism. He argues that there are two possible analyses of motion: the static and the dynamic analysis of motion. According to the static analysis of motion, an object is in motion in virtue of it being in one position at one time, and in another position at other times. According to the dynamic analysis of motion, an object is in motion in virtue of it having an irreducible property of being in motion at that instant. Le Poidevin argues that presentism, if taken to entail the view that the present is extensionless, is inconsistent with either analysis. Presentism is inconsistent with the static notion since it would entail references to times that are not real, and it is inconsistent with the dynamic analysis of motion since an object cannot be moving in a durationless instant: if the present is temporally thin, no thing can be in motion during that instant,

since a moving object can only be at an exact spatial location during such an unextended moment.[11]

The presentist faces a similar problem concerning change in general. The issue is that change happens over a temporal interval. Like with motion, change can be analysed as either being reducible to be happening at an unextended instant, or, e.g., as an object having a property at one time and a different one at another, subsequent, time. This latter analysis is problematic for the presentist, since they cannot as easily refer to other times than the present to analyse change, since these times are not taken to be real. *Prima facie*, a presentist then has to either introduce *ersatz* times or Lucretian properties to which to refer, or give a notion of change that is compatible with it happening at an unextended instant.[12] Presentists sceptical of either proposal are understandably drawn to thick presentism, where we can give an account of change happening both over a temporal interval and still being entirely present.

Very much related to this issue is the worry that presentism might not be compatible with irreducibly modally rich notions of causation, in which the cause brings about, necessitates, or produces the effect. The worry, which Sam Baron discusses as a motivation for his own account of thick presentism, is that for such notions of causation, the causal relata need to both be real: if the cause necessitates the effect, or is in any sort of necessitation relation with the effect, such as in the Armstrong-Dretske-Tooley view of laws on nature,[13] the two relata have to be equally real. In presentism, however, a future effect cannot be not as real as a present cause. Sam Baron motivates his own account of a thick presentism with the need to find a way in which the cause and the effect can at least partially overlap in the present, for which the present cannot be unextended.[14]

Another reason to think that the present might be temporally extended

[11] See Poidevin (2002), esp. p. 70.

[12] For a thorough discussion of the issues traditional,"thin", presentism faces in accommodating change, see Leininger (2015).

[13] See, e.g., Armstrong (1983), Dretske (1977), or Tooley (1977).

[14] See Baron (2012), 2–3.

is that the notion that the present is unextended seems to be at odds with our temporal perception. There is a sizeable debate on the phenomenology of the present, on which I am again not taking a stand here, but which we cant take as motivation to seriously discuss thick presentism. Famously, William James argued that our temporal perception seems to include not simply an extentionless present, but the immediate past as well. We do not seem to experience the now as an unextended instant, but rather as an extended length of time that contains change as the addition of objects that are present to us and other objects previously present to us slowly falling away.[15] In a similar vein, Russell argues that there are no genuine temporally unextended perceptions.[16] It has been argued that if this analysis of the perception of the present as temporally extended is correct, then this fact is hard to reconcile with the notion of an unextended present.[17]

For traditional presentism with a notion of the present as an unextended instant, two problems arise: firstly, our perception of the now seems to be specious. Not only does our best current science tell us that there is no objective simultaneity, and hence no objective present, but we also do not seem to perceive the present as unextended. Secondly, there is the issue that even if we can live with the tension of experiencing the present as extended when, in fact, it isn't, we would still have to offer an explanation as to how a continuous consciousness could even be possible if it was comprised of only a sequence of unextended instants in in which we were in a certain mental state. In the following, I will ignore all general problems presentism has, many as they may be, and focus on the issues that arise from temporally extending the present in order to solve the issues mentioned in this section. I will thus not take much of a stance on the tenability of presentism (or related views) in general in this paper, although it hopefully will have become apparent the end that many of these worries can be avoided if one accepted that there is no temporal progression.

[15] See James (1890), 606-610.

[16] See Russell (1948), 226.

[17] For an overview of the debate regarding presentism and the perceived now, see Pockett (2003).

Now that we have introduced the various reasons to motivate the view that the present is extended, let us turn to discussing a selection of possible and actual views.

3 Against Thick Presentism

The most prominent accounts of thick presentism can be divided along two main lines: 1) whether they feature times as real or rather as abstractions at best, and 2) whether the occurring thick present is overlaps with the "new", emerging present as time progresses: either the thick present goes entirely out of existence before the new present is occurring, or subsequent thick presents are allowed to partially overlap. Of the range of possible views, two have been popular in the debate, which we will debate in turn. First, there is H. Scott Hestevold's so-called "limited time-free thick presentism", which treats times as unreal, and favours an account of temporal progression in which subsequent presents overlap. Sam Baron proposes a similar view, which agrees with Hestevold concerning the overlap model of temporal progression, but which, contrary to Hestevold's view, does include real times. Beginning with a brief exposition of Hestevold's view and its problems, we will then go on to discuss Baron's view. I will argue that while Baron's view solves some of the problems Hestevold's view has, it thereby introduces new problems. Lastly, I will discuss the two remaining possible alternative views in which the extended presents do not overlap as time progresses, and which either do or do not feature real times. I will argue that both of these views introduce additional problems which render them altogether unappealing.

3.1 Thick Presents with Temporal Overlap

Overlapping Thick Presentism Without Times

Hestevold's view lays the groundwork for our present discussion of contemporary versions of thick presentism. Motivated by the various problems classical 'thin' presentism has with change, motion, and the like as discussed

above, his view contains the following core tenets: 1) the present is temporally extended, but limited to the length of a temporal atom; 2) subsequent thick presents overlap; and 3) times are unreal. Let us briefly unpack these core tenets before we go on with our critique of this view. Hestevold argues that while the present needs to be extended in order to allow for change, the length of the present needs to be limited to the length of a minimal duration, a temporal atom. Were it not, it could, in principle, be expanded to contain millennia worth of events and objects, all equally present. So if the present were allowed to be extended without limit, Caesar and you could both be compresent now as you are reading this, although Caesar is long gone when you come around to wander the earth. Caesar's crossing the Rubicon, and you, or any other reader in the future (as long as we include the future in our in principle unlimited present), could not only coexistent in the sense that you are both real, but be com*present*. Obviously, this is absurd. One of the core commitments of presentism is that only the present things and events are real, and that while you, reading the paper *now*, are real, Caesar's crossing the Rubicon isn't real any more. So we would have to restrict the present to a very short temporal atom. How long this temporal atom is supposed to be, Hestevold doesn't tell us, only that it is "[...] exceptionally brief [...], e.g. *a butterfly flapping its wings exactly twice*".[18]

Hestevold rejects times as irreducible temporal locations. Apart from the obvious worry that temporally unextended times and a temporally extended present might be incompatible if, e.g., we would want to define the present as the present *time*, he also argues that for the presentist, times would not offer anything useful for our analysis or being present, temporal order, and progression. If we take a thing or an event being present as a measure of that thing's or that event's temporal status, what new information over and above their being compresent would we gather that if we were to learn that these compresent things exist at the same time? At this stage, I will not discuss Hestevold's reasons to reject times any further and rather focus on the problems this move generates. His rejection of timed presentism will, however, become relevant later when we discuss the issue of whether

[18] Hestevold (2008), 334.

consecutive thick presents overlap or not in section 3.2.

Hestevold's view raises some obvious problems, some of which he addresses himself. A first issue regards the length of the extended present. The exact length of the temporal atom remains unspecified, apart from being 'exceptionally brief'.[19] One charitable interpretation would be that a temporal atom is exactly the length of the shortest possible change: the quickest losing or gaining of a property that an object can have in this world.[20] However, merely restricting the length of the present does not exclude the problem Hestevold discussed for unlimited thick presentism. Remember that unlimited thick presentism was supposed to be implausible because it would entail that events or objects that are clearly not compresent in the sense that the one may have gone out of existence long before the other one came about turn out to be compresent after all, like Caesar's crossing the Rubicon and you reading this paper. But is that really any different in limited thick presentism?

Let's come back to Hestevold's own, probably not entirely serious suggestion of a butterfly's flapping its wings exactly twice. This includes the wings going twice, say, from a downward position to an upward position. But when the butterfly raises its wings the second time, its having raised its wings the first time is long gone, though not quite as long as Caesar's crossing the Rubicon is from our perspective. And yet, the proponent of this view would have to admit that the first and second raising of the butterfly's wings are compresent, just as Caesar's crossing the Rubicon and your reading this paper would be in unlimited thick presentism. To this effect, Francesco Orilia argues that if we take Hestevold's example of the present being as long as a butterfly's flapping its wings twice, we could imagine a radioactive particle decaying during the first flapping, such that it is not present any more during the second flapping. *Prima facie*, the radioactive particle is not real any more during the second flapping, but we would have to accept that it is present, because it exists in the present temporal atom.

[19] for a discussion on the plausibility and length of temporal atoms, see Craig (2000).

[20] I will ignore the issue that the duration of the present might fluctuate in our world as time progresses, or across possible worlds. See Hestevold (2008), 336-338.

Orilia thus argues that thick presentism is incompatible with at least one of two equally initially plausible principles, the precedent principle or McTaggart's principle. The precedence principle states that an event e that precedes, or is before, another (present) event e is past. McTaggart's principle holds that being past and being present are incompatible properties.[21] Applied to our butterfly example, there is a tension resulting from the first flapping of the wings being both compresent and before the second flapping of its wings. In order to resolve this tension, we would have to either concede that the first flapping can be both before second flapping, and hence past, and can yet still be present together with the second flapping; or the first flapping is both past *and* present at the time of the second flapping.

While I agree with Orilia's analysis that thick presentism of this sort has to violate one of these two principles, the thick presentist might just bite the bullet and do just that. But there is another principle that they would have to violate. Let's call it the simultaneity principle: if event e occurs either before of after another event e', then e and e' are not simultaneous. This principle is even more basic in the sense that is avoids any talk of A-properties such as being past or present, but is a fundamental principle of any common sense temporal ordering. In fact, it seems to be analytically true, if we want to define simultaneity as neither being earlier or later. A rejection of the simultaneity principle would then simply be contradictory. The only way the thick presentist would get around violating this principle would be to accept that whatever happens in the extended present is simultaneous, and not temporally ordered at all: the first and the second flapping of the butterfly's wings would be strictly simultaneous in the sense that the first flapping is not earlier than the second flapping because they are in no particular temporal order at all, if they are within the extended present.

Hestevold's rejection of times as an irreducible measure of temporal ordering over and above the temporal order resulting from A-properties such as being present suggests that he might propose such a view. However, this would go against how thick presentism was motivated in the first place:

[21] See Orilia (2012), 410–411.

one of the reasons why one might want to propose thick presentism is that a temporally extended present makes room for causal relations *within* the present. But then one would have to argue that there is no temporal ordering between cause and effect. This goes beyond merely rejecting that the cause must be earlier than the effect, which we might want to do anyway: if we wanted to incorporate backwards or simultaneous causation into our account of causation, that principle would have to go anyway. However, if we reject *any* temporal ordering in the extended present, *every* causal relation would be simultaneous, as long as it occurs in the extended present.

Similar consequences would follow for any notion of change or motion within the present. If change, minimally, involves the acquisition or loss of a property, then if that change happens entirely within the present, there is no way to tell whether the property was acquired or lost, whether an object first had and then lost a property or *vice versa*, because for this we would have to know which of the two states was earlier and which later. The same holds for motion: if motion is to be possible within the extended present, the different positions of the moving object would not be temporally ordered. Hence, we could never really know in which direction an object is moving. In order to do this, we would have to refer to any state of the moving or changing object before or after the extended present. But that would mean that to know in which direction an object is currently moving, or to know whether it is acquiring or losing a property, we would have to refer to unreal temporal locations. And avoiding that was the motivation to extend the present in the first place.

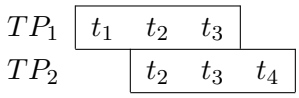
So these are the options: the proponent of Hestevold's view has to either reject the simultaneity principle, which would, *prima facie*, lead to a contradiction, or they would have to give up that the events within the extended present are temporally ordered, which would have unwanted consequences for our notions of change, motion, and causation.

However the proponent of Hestevold's view wants to respond to these issues, the problem at the heart of thick presentism is not restricted to incompatible temporal properties, but, more generally, that the extended

present must, if any change, motion, or causation is supposed to be possible in the present, contain incompatible states. If an object goes from having to losing a property, or from being at one location to the other within the present, then both these incompatible states are compresent. Within the extended present, a changing object both has and has not the property it acquires or loses, or both is and is not at different locations. This problem is especially pressing if, in order to hold on the simultaneity principle, one gives up any temporal ordering within the thick present. If one were to pry simultaneity and compresentness apart, one could could, *prima facie*, give an account of a temporal ordering of events within the extended present. All the events within the present would be compresent but, given that they are temporally ordered, not simultaneous. But in order to achieve that, one would have to find a way to provide such a temporal ordering. For time-free thick presentism, where any temporal ordering is reducible to the A-properties of being past, present, or future, without referring to times, this seems impossible. But if one were to accept times, one could give an account of temporally ordered times *within* the present. This is Sam Baron's view, which we will turn to now.

Overlapping Thick Presentism With Times

Sam Baron proposes a version of thick presentism that deviates from Hestevold's in the sense that he allows for times as irreducible markers for temporal location. In this view, the present encompasses a number of times, and as time progresses, subsequent thick presents partially overlap in the sense that they partially contain the same times. Let's take a thick present, TP_1, encompassing times t_1, t_2, and t_3. As time progresses, TP_1 is replaced by the partially overlapping TP_2, consisting of t_2, t_3, and t_4. Times $t_1 - t_n$ are temporally ordered. A succession of thick presents would look something like this:



With this notion of the extended present, Baron goes on to give an analysis of causation building on this. Let's suppose that event e_1 caused event e_2. Event e_1 spans times t_1 and t_2, and e_2 spans over times t_3 and t_4. While e_1 and e_2 are both partially compresent in TP_1 and TP_2, they are both temporally ordered and do not overlap: at t_3, e_1 has ended and e_2 has come about. And yet still, since both t_2 and t_3 fall within TP_1, we can say that the causal relation between these two distinct and subsequent events falls within the present.[22]

At first sight, that seems to do away with the issues we had with Hestevold's view, because it provides an analysis of how times can be temporally ordered and subsequent, but can still be compresent. Speaking in the terms we defined earlier, Baron's view is able to uphold the simultaneity principle, since the times within the successive thick presents are temporally ordered: they might be compresent, in the sense of belonging to the same thick present, but they are earlier/later ordered within that present and hence not simultaneous in the sense outlined above. That way, Baron's analysis distinguishes between what we called simultaneity and compresentness above. Hestevold could not distinguish between compresentness and simultaneity because his rejection of times as a way to achieve a temporal ordering left no way to provide such an order within the present.

Prima facie, Baron's view can also solve the problem of incompatible states as introduced above. While Baron would still have to accept that incompatible states of a changing object, incompatible positions of moving objects, and causes and their effects are at least partially compresent, they are not simultaneous, because they occur at different, subsequent, times. However, the view would still be left with a serious issue concerning the temporal order of times and notion of being compresent. It seems that

[22] See Baron (2012).

Baron's view either falls prey to an argument stemming from the transitivity of compresentness, or has to introduce a hyper-progression. Let me elaborate.

Barry Dainton discusses, and dismisses, an argument against thick presentism of the kind that Baron proposes.[23] The argument in question is meant to show that such a view would entail an infinite extension of the present, and the presently existing things. Say in TP_1, times t_1, t_2, and t_3 are present, while in TP_2, times t_2, t_3, and t_4 are present. Both t_2 and t_3 belong to both TP_1 and TP_2. Let's stick with t_3. It is, by being part of TP_1, compresent with t_1 and t_2, but by being part of TP_2, it is also compresent with t_4. So anything existing at t_3 coexists with anything at t_1, t_2, and t_4, but also with anything that coexists with anything that exists at t_4, and so forth *ad infinitum*. Dainton argues that this argument against thick presentism presupposes that coexistence is transitive: that if object a coexists with b, and b with c, then a coexists with c. However, as Dainton argues, coexistence is not transitive: the transitivity of coexistence, Dainton holds, breaks down because of the dynamic character or presentism: new events come into reality, and pass gradually into the past, and out of reality.[24]

While Dainton is certainly correct that coexistence, especially of temporally extended items such as events (or persisting objects) is not transitive, the same does not necessarily hold for the compresentness of *times*. And the burden of proof that thick presents are not transitively compresent lies with the thick presentists. Let's elaborate. I have never met my either of my Grandfathers, who died before I was born. Both of them partially coexisted with both of my parents, with whom I coexist. Obviously, I thereby do not coexist with my Grandfathers: coexistence does not appear to be transitive. But does the same hold for the compresentness of temporally unextended, non-overlapping times? The non-transitivity of coexistence of temporally extended things – and events – stems from the fact that these extended items only partially overlap: event e_1 and e_2 partially overlap, and so do events e_2 and e_3, but that does not entail that e_1 and e_3 share any parts.

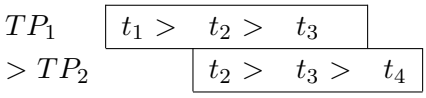
[23] See Dainton (2001), 89–91

[24] See Dainton (2001), 89.

But a relation between unextended times within a temporal order – being compresent – does not necessarily need to be intransitive in the same way that coexistence of extended items such as events or objects is. If we have a temporal order of times $t_1 > t_2 > \ldots t_n$, then what property of that order prevents that the compresentness of t_1 and t_2, and of t_2 and t_3, implies the compresentness of t_1 and t_3?

The answer would probably be that this picture wrongly presupposes that we can treat temporal progression merely as the addition (and subsequent loss) of instants, represented as times, which gives us the temporal order. Rather, what is progressing, and comes onto existence, is a succession of thick presents $TP_1 > TP_2 > \ldots TP_n$. These thick presents are overlapping extended entities, and hence it should not come as a surprise that their proper parts are not ordered in a way that the property of belonging to the same present is transitive. However, having solved the problem of transitivity, this solution lands us with a new problem: if we hold that temporal progression is the subsequent coming into existence of entire, partially overlapping, temporally extended presents, rather than the coming about of new temporal instants, then while this gives us a temporal order of thick presents, it makes the temporal order of times *within* the respective present mysterious.

Let us illustrate the point. In our example above, not only are the thick presents temporally ordered ($TP_1 > TP_2 > \ldots TP_n$), but so are the times within those thick presents ($t_1 > t_2 > \ldots t_n$). This gives of the following order:



The question is where the order of times $t_1 > t_2 > \ldots t_n$ comes from.[25] In Hestevold's view, the only temporal order there is is the one of thick presents $TP_1 > TP_2 > \ldots TP_n$. As we saw, this makes the temporal order

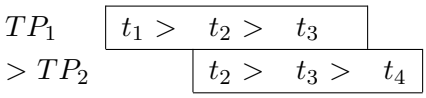
[25] If one wanted to uphold that these times are ordered at all. See Dainton (2001), 90-91.

of the events happening within the extended present problematic. A similar issue looms for Baron's view here. If temporal progression is nothing over and above the progression of the thick presents $TP_1 > TP_2 > \ldots TP_n$, each consisting of several times, then the temporal order of the *times* within the thick present is mysterious. If at t_1, the butterfly's wings are down, and at t_2, they're up, then there is a temporal order of times: t_1 is earlier than t_2. So where does this order come from? It cannot come from the one progression and resulting order of thick present to partially overlapping thick present: an order in a succession of complex entities does not necessarily entail an order of their proper parts. In a sense, it appears that if the only temporal progression is the progression of thick presents, then the thick presents themselves appear as a little static blocks, much like eternalist blocks. But that must be utterly unacceptable to the thick presentist: they themselves declared that dynamic analyses of change, motion, etc. are not compatible with such an static eternalist block. That was the whole motivation for thick presentism the first place! There is change *within* the present: the butterfly's wings go up and down. So there must be some dynamic progression within the present: there must be a dynamic progress of times within the present. So It seems like the thick presentist has to accept both a general temporal progression from thick present to thick present, and a hyper-progression from time to time, which gives us the temporal order of times within those thick presents.

One could at this point attempt to tell a story how the order of times within the thick presents may depend, and be a consequence of, the order of thick presents. Take the following progression of thick presents TP_1, TP_2, and TP_3. TP_1 contains times t_1, t_2, and t_3; TP_2 contains times t_2, t_3, and t_4; and TP_3 contains times t_3, t_4, and t_5. On could say that the fact that t_2 is earlier than t_3 is a consequence of t_2 featuring in TP_1, but not in TP_3, which is later than TP_1, which contains t_3, but not t_2. Thus the temporal order of times is a consequence of the temporal order of the times within it.

But this solution is problematic. Firstly, in this view, there is nothing about the individual times that would account for their order. There is nothing about t_2 and t_3 themselves that makes it the case that t_2 is earlier

than t_3. Secondly, whether or not t_2 is earlier than t_3 within the thick present TP_1 would depend on which times are contained within *other*, earlier or later thick presents. A proponent of Baron's view could of course just hold that the order of times entirely depends on the order of thick presents. The order of times would be ontologically secondary to the order of presents, and that times get their order as thick presents progress. However, this is problematic for the presentist. Remember that in presentism, only the present is real: so the order of times within the present would depend on wich times are contained in the *unreal* past and future. Take this simple progression again:



Taken by itself, the times in TP_2 have no order, they only get their order through the partial overlap with TP_t1, or later TP_3. But that means that *at* t_4, that t_4 is later than t_3, came about by it not featuring in TP_1, a time that is by then unreal. This is particularly ironic given that one of the very reasons to introduce thick presentism was to analyse change, causation, movement, etc. without having to appeal to unreal times – times that we now can't order without referring to the unreal past and future!

That you are even able to order all of the times depends on there only ever being exactly one new time, and one old time less, in any new thick present. You might even say that this is quite intuitive. In the case I have given, the fact that t_2 is earlier than t_3 is determined as much by the content of the earlier thick presents than it is by itself: TP_1 is the first thick present that contains t_3, but not the first that contains t_1 and t_2. So naturally, t_3 is later than t_2. However, that this is possible depends on the fact that I have, for the sake of easily presenting the view, arbitrarily chosen neat thick presents containing three times, where only one new time is added with a new thick present. The reason I did this is maybe because there are some remnant flat presentist intuitions at play according to which temporal progression ticks away one extensionless time after the other. In and of itself, thick presentism does not guarantee that, unless one stipulates that thick

presents tick away to the beat of exactly one time coming into existence with any thick present. But why would that need to be that way?

Prima facie, the thick presents could contain much larger numbers of ordered times. Infinitely many, if times are dense. And with any new thick present, we get a large number of new times. Granted, we'd all know which the new ones would be. But the past or the future wouldn't give us any way by which to order these new times amongst themselves. Say we have TP_1, containing t_1–t_{10}, and TP_2, containing t_5–t_{15}. We'd know by the past that t_{11}–t_{15} are later than t_1–t_{10}, but we wouldn't know whether t_{12} is earlier or later than t_{13}, as there is not yet a thick present in which one is present but the other isn't. And if we assume that the present neither shrinks nor expands, meaning that progressing presents lose times as quickly as they acquire them, then there is never a fact of the matter of whether t_{12} is earlier or later than t_{13}. Even when the next present containing t_{10}–t_{20} comes about, the only thing we know is how the /emphsets of 5 times that overlap with present and futre times are ordered, but not the order of the times within these set: we know that t_1–t_5 are earlier than t_5–t_{10}, etc., but we do not know whether t_2 comes before or after t_3. This is clearly absurd. However: we need to take the possibility that thick presents contain more than three times serious. If only for the reason that if we say that only ever one time gets added to a new thick present, that awfully sounds as if temporal progression is just the temporal progression of times, not thick presents.

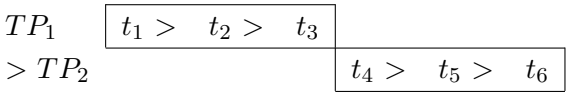
If the above considerations are correct, Baron's view might at first sight solve some of the issues of Hestevold's, but, in turn, introduces a new dilemma: either the compresentness of times runs the risk of being transitive and renders times compresent which clearly are not, or we need a form of hyper-progression to account for the temporal order of times within the thick present if we want times in the present to be ordered. Both options are unpalatable.

3.2 Thick Presents Without Overlap

With Times

Both of the accounts of thick presentism proposed in the literature hold that subsequent extended presents partially overlap. In order to fully explore the space of possible positions, let us briefly discuss the remaining two options: 1) that presents do not overlap and there are no times, and 2) that they do not overlap and there are no real times. Let us begin with the former, before we end with the latter.

By accepting that there are times, such a view could inherit some of the advantages of Baron's account. Within the thick presents, we could have a temporal ordering, thereby avoiding both the violation of the simultaneity principle and the problem of incompatible states. Within the present, we could have temporally ordered, non-simultaneous, yet compresent mutually inconsistent states at subsequent present times, just like in Baron's view. Moreover, by rejecting partial overlap between subsequent thick presents, we could get over the problem of transitivity of compresentness. Take the following succession of times:



This blocks the transitivity problem: while the ordering of times $t_1 > t_2 > t_3$ within TP_1 is compresent, none of these times are compresent with any of the times $t_4 > t_5 > t_6$ in TP_2, thereby blocking the issue that all the times in overlapping presents would be compresent with all other times. So in this view, you reading this sentence would not be in danger of ending up being compresent with Cicero denouncing Catiline, the maiden voyage of the Cutty Sark, and the heat death of the universe.

So why not adopt this view then? There is, as Hestevold argues,[26] and for once I am inclined to agree with him, one severe issue with such a

[26] See Hestevold (2008), 335.

no-overlap model. The issue is that the no-overlap model makes change impossible between the progression from one thick present to the next. At least the kind of change the proponents of thick presentism care about. The whole idea for even proposing that the present is temporally extended was to give an ontologically robust account of change: to provide temporal elbow room *within* the present in which a dynamic change could take place. The loss or acquisition of a property that change minimally could be analysed as consisting in is supposed to occur during the extended present: change occurs over a temporal interval, and that temporal interval is the extended present. That means that real, ontologically robust change can *only* occur within the extended presents. So if we have a progression of thick presents $TP_1 > TP_2 > \ldots TP_n$, we can make sense of change *within* those thick presents, but not *from* TP_1 to TP_2, and so forth. Change would stop at the end of one thick present and resume at the start of the next present. This is a clearly absurd consequence of such a view.

To elaborate, this view is implausible on a number of counts. Firstly, it would make ontologically robust change impossible that would take longer than the length of the extended present, but is not irreducible to temporally shorter incremental changes that would fit into the thick present. The sinking of the Titanic, taken as a change from a ship being afloat to it being involuntarily submerged, certainly took longer than the length of a temporal atom: the ship went under about two hours and forty minutes after colliding with the iceberg. One could argue that such temporally wide changes are reducible to a sequence of micro-changes, all of which fit into the various extended presents, but from one present to the next, no change would take place. In a sense, change stutters. But that'd be a radical departure from our common usage of "change". Moreover, the idea that change could only happen within the extended present is incompatible with the idea of constant change. While in the above image, change might be happening between t_1 and t_3, and again between t_3 and t_5, there would be no change between t_3 and t_4 *in the entire universe*, provided that the present is objective, as presentists often problematically presume. Between t_3 and t_4, our entire universe would just stop, and only restart after t_4, and so forth.

There'd never be change between now and the future. That would also be inconsistent with the idea of change being the driving motor, or at least an indicator, of temporal progression. But that is why a lot of the proponents of dynamical views of time are drawn to ontologically robust notions of change in the first place: that ontologically robust change brings about future states: It is change, e.g. in the position of my fingers, that brings about this at the time of typing as yet unwritten complete sentence into being. But such an account of change and temporal progression is incompatible with the no overlap view, as there is no change between the extended present and the future.

As we discussed above, another motivation for thick presentism was that it supposedly made sense of our temporal perception. Allegedly, we do not seem to perceive the present as temporally unextended. While the temporal duration of the present supposedly accounts for the perceived continuous flow of present experience, the no-overlap model would imply interruptions of this continuous flow with every non-overlapping skipping of one thick present to the next. But we do not experience such non-overlapping skipping. The question that any proponent of such a view would have to answer then is why not: if the temporal extension is supposed to explain why we experience the present not like a duration-less instant, but as an interval, why do we not perceive the interruptions that are caused by one thick present being replaced by the next one? In a sense, the proponent of no-overlap views would have to answer the same question that presentists typically demand an answer for from the eternalist: how to explain that our temporal experience is specious in the sense that it presents itself as a continuous flow with a privileged present, whereas it would be interrupted any view in which the thick presents do not overlap. Before we dismiss the no-overlap model entirely, let us very briefly discuss the last possible position in the logical space: that the thick presents do not overlap, and that there also are no times.

Without Times

We do not need to discuss this position at great length, simply because it shares the same issues of change between subsequent thick presents as just laid out. However, it also inherits the issued any view that does not feature times within the thick present has. As such, it inherits the worst of the flaws with none of the advantages from all of the possible positions discussed above. Remember our main objection against Hestevold's view: he wanted to account for change, movement, etc. within the present, but without times, he had to either concede that, to use his own example, the butterfly's flapping its wings up and then down had to happen simultaneously, without temporal order, or he would need to accept that there is a temporal order, but that seems impossible without introducing times within the present that could provide such an order. Without a way to order the various states within the present: the wings being up, then down, then up, and then down again, it would be impossible to represent change. Change has a temporal order: things change from one state to another. As does movement, and as does causation; all the concepts the thick presentists wanted to elucidate by introducing a temporally extended present. But without a way to order the states within the present, there is no way to say from which state to which a change occurs, in which direction a boat is sailing, and there is no way to say that a cause preceded its effect. In order to do all this, we need a temporal order within the present, and that order requires times: at one time within the present, the wings are up, and at another, down. And without overlap, there is not even a derivative way to order what happens within a thick present.

And so, uniquely combining the worst disadvantages from all the views discussed above, thick overlapping presents without internal times do not only make change from one present to the next, but also within the present mysterious. Which is fair, as to the best of my knowledge, nobody proposes such a view. As for any non-overlapping model, we have seen that in contrast to a model of overlapping thick presents, the idea of non-overlapping presents is not compatible with the very reason why people like Baron and Hestevold

proposed that the present has a temporal extension in the first place: to make sense of change, causation, movement, and our temporal experience. At this stage, it becomes obvious why these positions in the logical space of possible views have been left vacant so far.

We have now covered the entire logical space of possible positions, abd we have rejected them all. None of the four views discussed above was able to cash in the promises of adapting the view that the present is temporally extended, at least not without introducing new, insurmountable issues.

4 Conclusion

The idea of a thick present might at first sight seem attractive: by proposing thick presentism, we could get around the issues that presentism has with regard to causation, change, motion, and temporal experience. However, both prominent extant views of thick presentism, Hestevold's timeless overlap and Baron's timed overlap views, have serious issues: Hestevold's view runs the risk of either being conceptually inconsistent if he is forced to give up the principle of simultaneity, or he has to give up that the events happening within the extended present have any temporal order at all. This move would have unwanted consequences for the notions of change, motion, and causation, which would go against the motivation of proposing thick presentism in the first place. By introducing irreducible times within the present, and thereby arguably divorcing simultaneity and compresentness, Baron avoids this issue. But his view comes at the cost that the temporal order of times is either mysterious, or compresentness runs the risk of being transitive, which could infinitely expand the present. The other two possible positions do not fare any better: abandoning temporal overlap makes change between subsequent extended presents mysterious, and eliminating a temporal order within the non-overlapping thick presents additionally makes any change within these presents as mysterious as it is in Hestevold's position, thereby presenting the worst of these four possible worlds. In conclusion, as attractive as the idea might be that the present is temporally extended

and thereby makes it possible to give a robust notion of change, movement, causation, and even temporal experience, the possible views make these fundamental notions even more mysterious. Presentism, despite being motivated by giving a more natural analysis of change, causation, movement, and temporal extension than rival static views of time, continues to fail to cash in this promise. Change in thin presentism falls prey to Zeno-type issues, or has to refer to unreal times. Change in thick presentism turns out to be just as mysterious.

Where does this all reave us in the grand debate? Dynamic views often include grand claims about being more common sense, providing both more intuitively appealing and ontologically robust notions of important concepts such as change. However, we see time and again that a lot of those promises turn to produce more problems that they are trying to solve. One can easily see how some of the issues we discussed here are translatable to the growing block view, e.g., where we are similarly faced with the issue how temporally thick the additions to the growing block are[27], and at what rate they are added. A thorough discussion of the growing block view has to wait for another time. However, one straightforward way to avoid adding epicycle after epicycle only to end up with a baroque view that has more problems than its rivals without delivering any of the claimed desiderata, maybe the reductive analyses of change, motion, etc., that static views of time propose are not so unreasonable after all.

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[27] See Braddon-Mitchell (2013)

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