

Presentism, eternalism, and phenomenal change

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Abstract Normally, when we notice a change taking place, our conscious experience has a corresponding quality of *phenomenal change*. Here it is argued that one's experience can have this quality at or during a time when there is no change in which phenomenal properties one instantiates. This undermines a number of otherwise forceful arguments against leading metaphysical theories of change, but also requires these theories to construe change as a secondary quality, akin to color.

Keywords Time · Experience

1 Introduction

There are various theories of time; various theories, that is, of duration, succession, change, and other temporal phenomena. There are also various theories of temporal experience; various theories, that is, of subjective *appearances* of temporal phenomena. And there are competing views about which theories of time cohere with, presuppose, or exclude which theories of temporal experience.

My view is that, correctly understood, the facts of temporal experience are compatible with every self-consistent theory of time, but that all self-consistent theories imply that temporal phenomena are utterly unlike what our experience of them suggests. In particular, I maintain that the status of change is akin to that of color: both are objective features of things that lack the distinctive quality common to the experiences by which we apprehend them.

The goal of this paper is to substantiate these claims, as regards two of the main contemporary metaphysics of time: presentism and eternalism.

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2 Phenomenal change

I have spoken of the distinctive quality common to the experiences by which we apprehend changes. It will be useful to have a name for this quality, and the natural choice is “phenomenal change,” used here in contrast to “ordinary change” or change *per se*. The phenomenal/ordinary distinction is a familiar one in the philosophy of mind, where it is common to distinguish between, for example, ordinary green and phenomenal green: an afterimage that results from staring at a red light instantiates the latter, but not, presumably, the former.

The ordinary/phenomenal distinction also pertains to temporal aspects of experience, although the need to draw it here may not be as obvious. If you listen to music or watch a bird glide across your field of vision, you have an experience that instantiates the property that I am calling phenomenal change. But there is a danger of confusion in speaking of phenomenal change that is not present in talk of phenomenal green. For, “phenomenal change” might alternatively be taken to refer to a change of phenomenal properties, as “temperature change” is ordinarily taken to refer to a change of temperature. This would be a misunderstanding in the present context, since, in my view, it is an open question whether phenomenal change, understood as the quality common to the musical and bird-watching experiences mentioned earlier, essentially involves ordinary change, or whether, like phenomenal green, it can be instantiated in the absence of its ordinary counterpart.

To forestall any inadvertent question-begging on this point, I define an “experience as of change” as an experience that instantiates the property of phenomenal change, properly understood as analogous to phenomenal green, phenomenal loudness, etc. An experience *as of X* need not be an experience *of X*, nor an experience of *X* an experience as of *X*. A mirage is an experience as of water without being an experience of water (there being no water present to experience), and if one were to mistake a rain puddle for a discarded mirror, one’s experience would be of, but not as of, water.¹

My main claim is that you can have an experience as of change at or during a time when no change takes place in terms of what phenomenal states you are in, or what phenomenal properties you instantiate. Thus, consider a moment of time at which you instantiate one or more phenomenal properties, or a period of time such that there are phenomenal properties F_1, F_2, \dots, F_n such that at every moment in that period, you instantiate F_1, F_2, \dots, F_n and no other phenomenal properties besides these. Call the experience or (collectively) experiences you have at that moment or during that period a “presentaneous experience.” My claim is that a presentaneous experience can be an experience as of change. (I do not take any stand here on whether you must undergo changes in the non-phenomenal properties you instantiate, in order to have an experience as of change.)

¹ An experience as of change may be loosely defined as an experience of the sort one normally has when one perceives a change; similarly, an experience as of green is loosely defined as an experience of the sort one normally has when one perceives something green. The “as of” locution has its limits, however, inasmuch as not every experience that exhibits phenomenal change can be easily characterized in as-of terms. The experience that one has when subject to the waterfall illusion, for example, is difficult or impossible to describe in as-of terms, although it does instantiate the property of phenomenal change.

My argument for the possibility of presentaneous experiences as of change is as follows:

- A1 Your first experience (of the day, say) could be an experience as of some change taking place.
- A2 If your first experience could be an experience as of some change taking place, then a presentaneous experience can be an experience as of change.
- A3 Therefore, a presentaneous experience can be an experience as of change.

A2 is a truism. Your first experience occurred through the instantiation of one or more phenomenal properties that you instantiated before instantiating any other phenomenal properties. Whatever your first experience was, therefore, it was a presentaneous experience. If it was an experience as of change, it was a presentaneous experience as of change.

There are two sorts of objections to A1: objections that deny the possibility of any first experience at all (of one's day, or of one's life), and those that concede the possibility of a first experience, but deny that a first experience can be specifically an experience as of change. I consider two objections of the first type, and two of the second.

First objection: "Maybe every conscious being must have an infinite history of experience."

Reply: Even if, implausibly, each of our experiences is in fact preceded in time by some other experience, it is at least *possible* for a conscious being to have a merely finite history of experience. To the best of our knowledge, we ourselves have had only a finite number of experiences in our own lives. Moreover, every experience of which we are capable is an experience as of a state of affairs having at least some minimum duration. (This is so even if we can have experiences that lack any objective duration, as measured by a clock.) In order for me to have had an infinite number of experiences, my experience to date would have to encompass an infinite amount of apparent time, which it does not.

Second objection: "It is impossible to say when a given experience begins or ends; experiences have essentially vague boundaries. Consequently, even though each experience has finite duration, and even though you have only a finite number of experiences, there is no fact of the matter as to when you first begin to have experiences, and therefore no first experience."

Reply: While there are vague phenomenal predicates, "is a conscious experience" is not one of them. Everything that I know of is either clearly a conscious experience, or clearly not a conscious experience. There is no room for borderline cases here. A thing may be vaguely a painful experience (intense tickles, for instance), but a thing cannot be vaguely a conscious experience. Furthermore, even if there were things that were only vaguely experiences, plenty of experiences as of change begin sharply, without introduction by vague or "penumbral" experience: think of seeing a lightning bolt suddenly flash across the sky.²

² According to some accounts of vagueness, the claim that "is a conscious experience" is vague is actually consistent with the existence of a first experience. See Williamson (1994).

The two objections considered so far deny the possibility of any first experience. The next two objections grant the possibility of a first experience, but maintain that a first experience cannot be an experience as of change.

Third objection: “In order for an experience as of change to occur, there must occur, in succession, a number of suitably related experiences not as of change, culminating in the experience as of change. Thus, any experience as of change is necessarily preceded by other experiences that are not as of change.”

Reply: This conflicts with the evidence of introspection. The objection entails that every experience as of change is preceded by a “running start” of temporally prior experiences that are not experiences as of change. But this is simply not what we find in our actual conscious experience. We very often have experiences as of change that are not preceded by corresponding experiences as of stasis. If you wake up to the sound of an alarm steadily increasing in volume, your experience as of change is not preceded by any experience at all. And even when an experience as of change is preceded by an experience as of changelessness, it is not always as of changelessness in any relevant respect: I can have an experience as of a comb running over my scalp, even if prior to that I had no scalp-related tactual experience at all.

Fourth objection: “An experience as of change is necessarily a four-dimensionalistic block of experiences each of which is not an experience as of change.”³

Reply: Like the previous objection, this one is phenomenologically suspect. When I have an experience as of some smooth, continuous change—when watching a leaf drift to the ground, for example, or listening to a steadily rising tone—my experience does not contain or decompose into a series of experiences that are not as of change. I can have an experience as of jumpy, stepwise, or discontinuous change, but not every experience as of change that I have is like this.

My claim here is not that an experience as of smooth change does not consist of a series of discrete events; it is only that it does not consist of a series of conscious mental states, unless these are themselves experiences as of smooth change. Perhaps the experience I have when watching the leaf drift down is generated by—or, if some kind of materialism is true, just *is*—a staccato sequence of neural discharges. But if so, the individual discharges do not each generate or constitute an individual experience, unless it is a suitable experience as of change.

Could an experience as of smooth tonal change decompose into an infinite number of experiences as of durationless tone events? No: we cannot have an experience as of an instantaneous event; every experience of which we are capable is as of something’s happening, or, as the case may be, not happening, over some interval of time.

Could the experience decompose into a series of experiences as of unchanging tones without my noticing it? It might be suggested that if each of the experiences composing the overall rising-tone experience is as of a very brief steady tone, I would not notice that the overall experience is actually as of a very fine stepwise tonal increase. But this suggestion makes sense only as a reprise of the harmless objection that an experience as of change might consist of a staccato sequence of non-experiential states or events. If my experience consists of a series of distinct steady-tone experiences,

³ Four-dimensionalistic, because some may hesitate to ascribe spatial dimensions to conscious experiences.

this cannot escape my notice, at least not if I am paying close attention to the experience while free from serious cognitive impairment. When it comes to phenomenal experience, appearance is reality (barring inattention and impairment). The rising tone experience might comprise unchanging pieces of experience, but only if by “pieces of experience” we mean something like the neural discharges mentioned earlier—that is, non-experiential causes or constituents of the experience.

3 Extensionalism, retentionalism, and fundamentalism

By claiming that there are presentaneous experiences as of change, I am aligning myself with Augustine, Husserl, and other proponents of “retentional” accounts of phenomenal change, and against the “extensional” accounts of Dainton and Broad.⁴

According to extensional accounts, an experience as of change is a diachronic complex consisting of a sequence of distinct, briefer experiences. Successive experiences as of change combine to form more extensive streams of conscious experience (e.g., between periods of dreamless sleep) in an interlocking or overlapping fashion, where each diachronically complex experience shares most of its constituent sub-experiences with the complex experiences that come immediately before and after it:

The extensional account of phenomenal change may be adequate for experiences as of jumpy or discontinuous change, but it fails as an account of experiences as of smooth or continuous change. As noted earlier, when I listen to a steadily ascending musical tone, my experience does not decompose into a series of briefer sub-experiences, unless these are themselves experiences as of smoothly ascending tones that fit together to form the overall sound experience. There is no point trying to apply the extensional analysis to these sub-experiences, since the same problem will arise again: the only series of experiences that constitutes *any* experience as of smooth change is a series of experiences as of smooth changes.⁵

In contrast to the extensional approach, retentional theories of phenomenal temporality treat phenomenal change as a quality that a temporally unextended (and therefore unchanging) state of mind can possess. So far, by my reckoning, so good. However, retentionalists go too far when they attempt to *analyze* phenomenal change in terms of the simultaneous existence of more basic phenomenal elements—“retentions” and “protentions,” as Husserl calls them. For one thing, the nature of these retentions and protentions is something of a mystery. In order for them to combine to form an experience as of change, they must have some phenomenal reality of their own. But it will

⁴ The retentional/extensional distinction is due to Dainton (2008, pp. 624–625).

⁵ Different versions of extensionalism are defended by Broad (1923, pp. 346–362) and Dainton (2000, pp. 162–182). These theories differ from one another chiefly in how they account for the fact that a given sequence of experiences constitutes a whole experience as of change. According to Broad, they do so by falling within the scope of a single act of internal awareness; according to Dainton, they do so by standing to one another in a primitive relation of “co-consciousness.” In terms of Fig. 1: Broad interprets the braces as indicating the scopes of successive acts of internal awareness (where each act of awareness is simultaneous with the latest experience within its scope), while Dainton interprets them as demarcating successive slugs of diachronically co-conscious experiences.

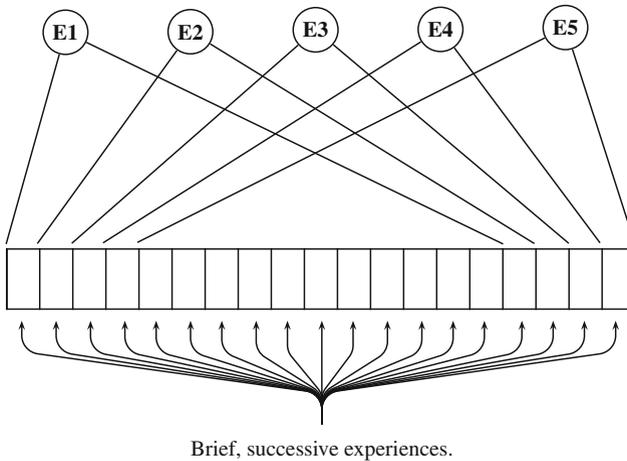


Fig. 1 The extensional picture. **E1** = first experience as of change; **E2** = second experience as of change; **E3** = third experience as of change; **E4** = fourth experience as of change; **E5** = fifth experience as of change

not do to think of them as pale or faded versions of ordinary sense experiences: when I watch a ball rolling down an inclined plane, the appearance is not that of an ordinary ball followed by a trail of spectral quasi-balls that are more ghostlike the farther they are behind the leading ball (Fig. 2):

But if retentions and protentions do not differ from one another (and from immediate sensations or “primal impressions,” as Husserl calls them) with respect to phenomenal force and vivacity, in what respect do they differ? To say that the difference is just primitive and *sui generis* does not seem very satisfying, but, after all is said and done, it is hard to see what else a retentionalist can say.⁶

Anyway, the retentionalist faces a deeper problem here, similar to the one that arose earlier for the extensional approach. No matter what sorts of experiences retentions and protentions are, if they combine to form an experience as of smooth change, they must themselves be experiences as of smooth change. Otherwise, there will be no room for them in a subjective appearance of smooth change, such as one has when listening to a single, rising tone. Whatever retentions and protentions may be, they are therefore not the sort of things to which we can, in general, reduce experiences as of change.

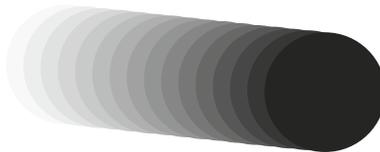


Fig. 2 Not what it is like

⁶ Dainton discusses this aspect of retentionalism in Dainton (2000, pp. 148–150, 154–155) and (more sympathetically) in Dainton (2008, p. 629).

So, while the retentionalists are correct to hold that an experience as of change can be presentaneous (and maybe even instantaneous), they are incorrect to hold that phenomenal change is essentially a phenomenally complex quality of experience. There are no phenomenal properties distinct from the property of phenomenal change such that for the property of phenomenal change to be instantiated is just for those other phenomenal properties to be instantiated. An experience as of change cannot, in general, be reduced to experiences that are not themselves as of change, any more than an experience as of green can be reduced to experiences that are not themselves as of green.⁷

4 Metaphysics of change

We now turn from phenomenal change to change *per se*. It is a truism about change *per se* that it essentially involves some one thing having different properties at different times. Philosophical debate over the nature of change centers on how best to understand this truism, given that the naive interpretation of it turns out to be untenable.

Naive interpretation:

A change takes place only if there is a thing, x , a time, t_1 , another time, t_2 , and a property, ϕ , such that (1) x exists at t_1 and has ϕ , and, (2) x exists at t_2 and does not have ϕ .

Consider a papaya. According to the naive interpretation, for the papaya to change from unripe to ripe, there must be two times, t_1 and t_2 , such that (1) the papaya exists at t_1 and is not ripe, and, (2) the papaya exists at t_2 and is ripe. (1) has the form of a conjunction:

The papaya exists at t_1 and the papaya is not ripe.

as does (2):

The papaya exists at t_2 and the papaya is ripe.

Listed separately, the four conjuncts are as follows:

- (1a) The papaya exists at t_1 .
- (1b) The papaya is not ripe.
- (2a) The papaya exists at t_2 .
- (2b) The papaya is ripe.

The problem is now obvious: (1b) contradicts (2b). And, in general, the naive interpretation of the truism about change entails that a change occurs only if something both has and does not have the same property. In short, the naive interpretation implies that change is impossible.

⁷ For the retentional approach, see Augustine (398/1991, 11.20.26), Husserl (1991, pp.21–36) and Broad (1938, pp.281–288).

There are three main alternatives to the naive interpretation, corresponding to three main metaphysics of time. What makes these interesting is that they all have surprising, and in some cases counter-intuitive, implications about how the world works.

The first metaphysical system is what I shall call *parts eternalism*.⁸ On this view, what it is for a thing to persist is for it to have non-zero extent along a fourth, non-spatial dimension (of time). For a change to occur, on this view, is for a temporally extended object to exhibit qualitative variegation across its temporal extent. The position is normally stated in terms of temporal parts, the idea being that a persisting thing can be thought of as a totality of temporal parts, each of which occupies a different region or (ultimately) moment of time from all of the others. Roughly, a temporal part of a thing corresponds to everything contained in the space occupied by that thing at, or during, a given point or period of its existence. A changing thing is one whose temporal parts differ from one another in some qualitative respect (that is, other than simply by occupying different times).

When do two temporal objects, A and B, count as parts of another, encompassing temporal object? They do so when they satisfy certain regularity conditions. Different versions of parts eternalism can posit different regularity conditions, but they will all include conditions of spatiotemporal proximity and qualitative similarity. A typical proximity condition would dictate that in order for A and B to count as parts of the same temporal whole, they must either occupy overlapping or contiguous spatiotemporal regions, or there must be objects O_1 , O_2 , O_3 , etc., such that A and O_1 are spatiotemporally overlapping or contiguous, and O_1 and O_2 are spatiotemporally overlapping or contiguous, and O_2 and O_3 are spatiotemporally overlapping or contiguous, and O_3 and...B are spatiotemporally overlapping or contiguous. This condition rules out discontinuous or “skippy” motion, where a thing moves from one place to another without carving out any connected path in between. To allow for skippy motion, one would have to work with a more permissive proximity condition.

A typical condition of qualitative similarity would dictate that spatiotemporally contiguous or overlapping objects bear a sufficient degree of overall similarity to one another, in order to count as parts of a single temporal whole; how much overall similarity, or similarity in which respects, will depend on the specific eternalist theory. In general, the right combination of proximity and similarity conditions will be one that tallies well with the requirements of a scientifically informed ontology, allowing no more skippy motion, and no more abrupt qualitative change, than physics demands.

This sketch of parts eternalism suggests the following alternative to the naive interpretation of the truism about change:

Parts eternalist interpretation:

A change takes place only if there is a thing, x , two times, t_1 and t_2 , and a property, ϕ , such that (1) x has a ϕ part at t_1 , and, (2) x has a non- ϕ part at t_2 .

Thus interpreted, the truism avoids the contradiction implied by the naive interpretation, since it does not imply that anything exists in contradictory states (of both

⁸ In the literature, it has also been called “perdurantism,” “four-dimensionalism,” and “the block universe theory,” although each of these labels has also been applied to positions distinct from what I am calling parts eternalism. The most prominent defenses of parts eternalism are Lewis (1988); Heller (1990), and Sider (2001).

having and not having the same property). This advantage does come at a certain cost, inasmuch as it requires us to give up the idea that the ways a thing no longer is are not ways that it in any sense *is*. But, as we shall see, the alternatives to parts eternalism have their own counter-intuitive implications, and it may be that some such trade-off is inevitable.

A different metaphysics of time, similar in spirit to parts eternalism, is properties eternalism. According to this, “instantiation” is not a single relation (between properties and the things that have them), but a class of relations, each of them indexed to some time. These indices are suppressed in ordinary speech, but are supplied by a more perspicuous notation. For example, instead of saying (ambiguously, on this view) that the Moon is full, we should say that the Moon is-on-Friday full, or that the Moon is_{Friday} full. In a properly sophisticated version of the theory, various instantiation relations will be indexed to individual moments of time. For a thing to persist, according to properties eternalists, is for it to stand to properties in instantiation relations indexed to different moments. For it to change is for it to relate to incompatible properties via instantiation relations indexed to different times. For example, a papaya changes from unripe to ripe by virtue of instantiating _{t_2} the property of being ripe and instantiating _{t_1} the property of being unripe (where t_1 is earlier than t_2). Just as parts eternalists must specify the conditions that two temporal objects must satisfy to count as parts of a greater temporal whole, properties eternalists must specify the conditions that two instances of time-indexed property instantiation must satisfy, in order to count as instantiations of properties by a single thing. The situation here is exactly parallel to what we saw with parts eternalism.

Properties eternalism yields the following alternative to the naive interpretation of the truism about change:

*Properties eternalist interpretation:*⁹

A change takes place only if there is a thing, x , two times, t_1 and t_2 , and a property, ϕ , such that (1) x exists at t_1 , (2) x exists at t_2 , (3) x has _{t_1} ϕ , and, (4) it is not the case that x has _{t_2} ϕ .

This reading of the truism about change avoids inconsistency, since there is no contradiction, for example, in a papaya both having_{Friday} the property of being ripe and lacking_{Monday} the property of being ripe. But, like parts eternalism, properties eternalism achieves consistency only at a cost. It requires us to abandon the idea that a change necessarily involves some one thing having a property at one time but not at another; indeed, it requires us to regard the undifferentiated notion of *having* that is

⁹ This interpretation of the truism about change corresponds to the “adverbial” version of properties eternalism defended in Haslanger (1989). A different version, defended in van Inwagen (1990), yields the following interpretation:

A change takes place only if there is a thing, x , two times, t_1 and t_2 , and two properties, ϕ_{t_1} and ϕ_{t_2} , such that (1) x exists at t_1 , (2) x exists at t_2 , (3) x has ϕ_{t_1} , and, (4) it is not the case that x has ϕ_{t_2} .

I focus on the adverbial version of properties eternalism, because it seems to have certain advantages over the other version; for example, it allows us to retain the commonsense notion that the occurrence of a change essentially involves the instantiation, over time, of incompatible properties.

built into this idea as incoherent. But again, it may be that no consistent interpretation of the truism about change can be made to square with all of our untutored intuitions.

According to both parts and properties eternalism, there is a sense of “is” in which everything that ever is always is. Past and future temporal objects exist as fully as present ones; a thing always figures in all of the time-indexed instantiation relationships that it ever figures in. This is what makes both theories forms of eternalism. According to a third theory, presentism, only the present is real, all talk of “the past” and “the future” ultimately reducing to talk about the present (or, according to some presentists, talk about non-entities). A presentist may allow that there is such a fact as that Caesar crossed the Rubicon, but only if he can make this fact out to be an entity that exists entirely in the present. In any case, neither Caesar nor any act of portentous Rubicon-crossing exists, according to presentists—although there was a time when they did exist.

According to presentists, for a change to take place is just for something to have a property, and to have lacked it (or, to have it and to be going to lack it). Similarly, presentists hold that for a change to have occurred is for something to have had a property that it had been lacking or was going to have, and that for a change to be going to occur is for a thing to be going to have a property that it will have lacked or will be going to have. Whereas eternalists see tense as an ultimately disposable linguistic device for specifying temporal positions that could be specified equally well in tenseless ways, presentists see tense as indispensable for the purpose of conveying information about how things are not (but were or will be). According to presentists, to say that X existed (or that X will exist) is not to assign a somehow existent X a location at some temporal distance from the present. It is to say something that does not admit of any illuminating analysis, and that does not imply that X exists in any way. The presentist interpretation of the truism about change is as follows:¹⁰

Presentist interpretation:

A change takes place only if there is a thing, x , and a property, ϕ , such that (1) x has ϕ , and (2) there was a time when x existed without ϕ , or there will be a time when x will exist without ϕ .

This avoids contradiction, because, as presentists understand it, the claim that a papaya is ripe is consistent with the claim that it used to exist in an unripe condition. For presentists, the ripening of the papaya neither involves the existence of a ripe thing and of a distinct unripe thing, nor reduces to the existence of something that bears multiple instantiation relations to distinct ripeness-related properties. It is simply for the papaya to have existed in an unripe state, and to be (i.e., be now) ripe.

How long is the present? The most natural answer for a presentist to give is that the present has no duration at all. If he chooses, a presentist can accord the present some duration, but only on condition that no change occurs within its span. Otherwise,

¹⁰ For presentism, see Bigelow (1996); Hinchliff (1996), and Bourne (2006). More sophisticated variants of the following principle are possible. For example, a presentist could say that x changes iff x has ϕ and either (1) there was a time such that for every time that existed after that one, x existed at that time without ϕ , or, (2) there will be a time such that for every time that will exist before that one, x will exist at that time without ϕ . (Alternatively, one could replace the “either...or” with an “and.”)

the presentist will be left with no consistent account of change: it will remain to be explained how a change can occur over the course of a present span of time.

5 Phenomenal change and presentism

Experiences as of change can seem to pose a major challenge to any presentist metaphysics. This is because such experiences seem to reveal themselves to us as diachronically complex entities: phenomenal wholes whose parts do not all exist at the same time, and therefore do not, contrary to presentism, all exist now.

Consider the experience you have while watching someone inflate a red party balloon. This is not an experience as of a single stage in the inflation of the balloon – not a phenomenal freeze-frame, as it were, of the process of inflation. When you turn your attention to the visual experience, what you seem to introspect is a *whole change* of visual imagery. If asked to describe your experience, you would normally say that it is an experience of an expanding balloon, not an experience of a balloon in a single state of expansion accompanied by a short-term memory of the same balloon's having recently been slightly smaller (and perhaps an expectation that it will soon be slightly larger). You seem to *experience the change* that the balloon undergoes as completely and straightforwardly as you experience its redness.

This suggests the following argument against presentism:

- B1 Presentism entails that every experience is a presentaneous experience, since the only experiences that exist, according to presentists, are those that exist at the present time.
- B2 But, an experience as of change essentially comprises multiple sub-experiences that all equally exist, despite existing at different times (and not, therefore, at the same, present time).
- B3 Therefore, presentism entails, erroneously, that there are no experiences as of change.

A presentist has a seemingly natural, but in fact unsuccessful, objection to this argument. This is that, *contra* B2, it is enough for an experience as of change that you *have* some experience and *have had* some suitably different experience in the recent past. This objection fails, in the first place because having had one experience and having another, relevantly distinct experience is not sufficient for having an experience as of change, and in the second place because, as argued in Sect. 2, one can have an experience as of change before one has had any other experiences at all.¹¹

A better objection to B2 is that a *presentaneous* experience can be an experience as of change. So, although presentists are committed to holding that all experiences are presentaneous, this does not prevent them from admitting, as of course they must, that we do have experiences as of change. Historically, opponents of presentism might have replied that presentaneous experience as of change makes sense only given a controversial retentional analysis of phenomenal temporality. Now that we have found a way to

¹¹ For the first point, see James (1890, pp. 606–607, 629).

make sense of presentaneous phenomenal change without recourse to retentionalism, this reply is no longer available.

I conclude that there is no good phenomenological argument against presentism. Nevertheless, presentists must acknowledge that if their view is correct, the real nature of change is quite unlike anything that our experiences as of change would naturally lead us to suppose: presentists must regard change as a secondary quality. This is because if presentism is true, our experiences as of change are experiences as of something that does not, and indeed cannot, exist, namely: co-existent non-simultaneous beings (objects, states, or what have you).

An experience as of change is not an experience as of one thing existing and some other thing or things having existed; as noted earlier, when I have an experience as of change, it is as of a process or chain of events whose temporal parts or phases are all equally real. This is the grain of truth contained in the unsuccessful phenomenological argument against presentism. An experience as of change (like the one in the balloon example) may or may not be an experience *of* a complete change, but it is, essentially, an experience *as of* a complete change—complete with all its parts or phases—and not merely as of an individual part or phase thereof. In short, an experience as of change is an experience as of a diachronically complex reality, a period of time all of whose contents are real, and over which a change takes place. This is precisely what presentists reject.

So, although an experience as of change may be an experience *of* something that presentists can allow, it is not an experience *as of* anything that is to be found in the presentist's world-view. Anyone who accepts this world-view therefore commits himself to regarding change as a secondary quality.

6 Phenomenal change and eternalism

As with presentism, there are initially plausible phenomenological arguments against both sorts of eternalism. Against properties eternalism, it may be argued that in order to have an experience as of change, one cannot have (in any sense or senses) all the phenomenal properties one ever has; against parts eternalism, it may be argued that in order to have an experience as of change, one's mind cannot in any sense contain all the conscious experiences it ever contains. Eternalists can respond to these arguments by pointing to the possibility of a presentaneous experience as of change, and its implication that the instantiation of a single phenomenal property (or the existence of a single experience or phenomenal state) can be sufficient for the occurrence of a phenomenally changing experience.

But although phenomenal temporality poses no insuperable challenge to eternalist metaphysics of time, eternalists are, like presentists, committed to viewing conscious experience as a profoundly misleading guide to the temporal structure of reality.

An experience as of change *as change is understood by parts eternalists* would be an experience as of one thing having a certain property, and another thing lacking it. Specifically, it would be an experience as of some thing, X, existing at t_1 , with property ϕ , and some other thing, Y, existing at some other time, t_2 , without ϕ , where X and Y satisfy the regularity conditions outlined in Sect. 4. Such an experience might

be an experience *of* change, but it would not be an experience *as of* change, or at any rate, not as of a change with respect to ϕ . Someone who sees a movie for the first time, without knowing anything about the science or technology involved, will, like the rest of us, have experiences as of moving images. When we inform him that what he sees are actually only still shots in rapid succession, he can rightly say that *that is not how it appears*. In order for the experiences we have while watching a movie to be as of sequences of unchanging images, they would have to include an appearance of enduring static images, in which case the experience of watching a movie would be more like that of viewing a slide-show.

Parts eternalism tells us that a change consists of the existence of a number of unchanging temporal objects, each permanently occupying a certain position in time distinct from the rest. A smooth change, according to parts eternalism, must involve an infinite number of such objects. This is because if a temporal object has only a finite number of temporal parts, then it will consist of temporal parts that do not themselves have temporal parts. These simple temporal parts will be either extended or (more standardly) unextended. If extended, the existence of the temporal object comprising them can involve at most only the occurrence of a stepwise change, each step corresponding to one of the object's constituent temporal parts. If unextended, the simple parts cannot collectively constitute a temporally extended state of affairs (being finite in number), nor, therefore, a change of any continuous kind.

Since a smooth change, as the parts eternalist conceives of it, must involve an infinite number of temporal objects, an experience as of a smooth change, as understood by the parts eternalist, would have to be an experience as of an infinitely complex entity or state of affairs. But while we may have experiences *of* infinitely complex entities, we certainly do not have experiences *as of* infinitely complex entities. In fact, we probably cannot even have an experience as of a sequence with a hundred phases: just try to imagine a light flashing a hundred times in a row. An experience as of smooth change, as this is understood by parts eternalists, is therefore impossible for us. (The same goes for properties eternalism, according to which the occurrence of a smooth change involves an infinite number of property instantiations.)

An experience as of what eternalism (parts or properties) counts as a smooth change is therefore impossible for us, and experiences that exhibit smooth phenomenal change are not experiences as of what eternalism counts as smooth change. Not that eternalism can be faulted on this score: an experience that exhibits smooth phenomenal change is arguably an experience that fails to correspond to anything that is possible by any consistent account. The apparent duration of any state has some lower bound: it is not the case that for every experience as of an enduring state, we can have an experience as of some briefer state. It follows that an experience as of smooth change involves the subjective appearance of one or more indivisible temporal intervals, within each of which a change occurs. The spatial analogue would be a smooth color gradation across a region of space comprising a finite number of indivisible extended subregions. In neither case does the appearance square with any consistently describable reality, with the doubtful exception of a reality in which objective change and synchronic variegation exist as simple unanalyzable features of the objects that exhibit them. The fact is that a reality that conformed to the phenomenal appearance of smooth change would be to that extent a phenomenalist's reality.

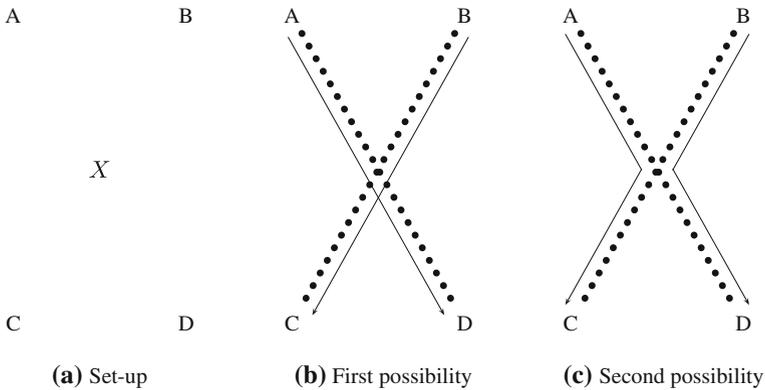


Fig. 3 Two possibilities

A different reason why eternalists must accept a secondary conception of change pertains to stepwise as well as smooth change. This is that both theories count as phenomenally changing experiences some that are *not* as of change, or at least not as of a change in the respect that eternalism predicts.

Consider the following experimental set-up.¹² Two spotlights of the same shape, size, color and brightness are directed at a dark, featureless wall. The spotlights do not shine steadily, but blink on and off, in synch, at the same rapid but discernible rate. One light is intermittently illuminating the wall at point A, the other at point B; see Fig. 3a.

The person controlling the spotlights now simultaneously angles both of them down, so that the one initially trained on A ends up trained on D, and the one initially trained on B ends up trained on C, so that at some point in time, both lights are trained on X. Suppose that you are sitting between the spotlight operator and the wall, facing the wall. What sort of experience will you have? There are two possibilities. First, you might have an experience as of an intermittently luminous object moving from A to D, and another such object moving from B to C, both objects passing each other at X; see Fig. 3b. Alternatively, you might have an experience as of an intermittently luminous object moving from A to X, and then colliding with another such object moving from B to X, so that the former object ends up at C, and the latter at D; see Fig. 3c. You are more likely to have this latter experience if you hear a clicking sound when both spotlights are trained on position X, but even without any cross-modal cue, you can see the play of light as in 3c. If the experiment is repeated over and over, you can even see it now as in 3b, now as in 3c.

The fact that there is a difference between experiences 3b and 3c shows that an experience as of change is not *just* an experience as of the existence of spatiotemporally proximate, qualitatively similar objects. To the extent that we can describe experience 3b in terms of temporal objects satisfying the parts eternalist's regularity conditions, we can give the very same description of experience 3c. In both cases, there is the same subjective appearance of temporal objects standing to one another in relations of similarity and spatiotemporal proximity—the same objects, and the

¹² For the original discussion of this sort of case, see Metzger (1934).

same relations, in both experiences. Yet, these are clearly experiences as of *different* changes—experience 3c is, among other things, as of a change in direction; experience 3b is not. In both cases, the experience is therefore as of something over and above what parts eternalism counts as a change (even, as in this case, a stepwise change).

Can a parts eternalist say that 3b is an experience as of two spatiotemporally straight objects, whereas 3c is as of two spatiotemporally bent ones? He can if he wants, but then he must acknowledge that the experiences are as of something that his theory rules out. According to parts eternalism, there are no straight or bent spatiotemporal objects over and above the smaller temporal objects they comprise. If there were a bent spatiotemporal object extending from B to X to D, and the existence of this object did not reduce to the existence of the smaller objects that fell within its spatiotemporal boundaries, this would be an object whose existence involved changes that parts eternalism cannot account for. It would involve, for example, a change from being located between B and X to being located between X and D, where this change did not reduce to the existence of something with a temporal part between B and X and a temporal part between X and D.

Of course, whether you have experience 3b or 3c, what your experience is *of* is the same play of light on the wall. And in neither case do you experience a moving thing, since nothing that you see in either case moves; all that happens is that different parts of the wall are momentarily illuminated in sequence. But none of this changes the fact that 3b and 3c are *as of* changes, and different changes in each case.

Analogous points apply to properties eternalism. To whatever extent we can describe 3b in terms of time-indexed instantiation relations, we can describe 3c the same way. The tempting way out is to say that in 3b, the experience is as of (1) a thing that is_{t₁} at B and is_{t₂} at X and is_{t₃} at C, whereas in 3c, the experience is as of (2) a thing that is_{t₁} at B, and is_{t₂} at X, and is_{t₃} at D. But what decides whether there is a thing satisfying description (1) versus description (2) is a matter of how the stated instances of (time-indexed) property instantiation fit into an overall pattern of instances of (time-indexed) property instantiation, in conformity to appropriate regularity conditions. (A collection of instances that do *not* conform to appropriate regularity conditions is: {being_{t₁} at A, being_{t₂} at C, being_{t₃} at B, being_{t₄} at D}.) If experience 3c is as of something that moves along an angled path other than just by bearing appropriately related time-indexed instantiation relations to appropriately related properties, then it is an experience that fails to correspond to anything that actually exists, according to properties eternalism.

To sum up the discussion of this section: if an eternalist conception of change is correct, our experience presents change to us as involving both more and less than what it actually involves: more, when it presents a change as something over and above a collection of temporal objects or time-indexed property-instantiations; less, when it presents a smooth change as comprising a finite number of phases, or covering a finite number of time intervals. Given either kind of eternalism, phenomenal change resembles change *per se* no more than a phenomenally green experience resembles a head of lettuce.

7 Conclusion

We easily lapse into thinking of green things as having a property similar to phenomenal greenness. Descartes was among the first to emphasize that this is a mistake. Leibniz took things a step farther by conceiving of spatial qualities as secondary. The final step, also hinted at by Leibniz, but more widely associated with certain Kantian thinkers (such as F.H. Bradley), is to treat temporal qualities as secondary. Although this requires a more radical re-envisioning of our world than the earlier steps, it is no more at odds with the evidence of introspection, and may even be forced upon us by any consistent metaphysics of time.¹³

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¹³ The relevant sources here are [Descartes \(1641/1984\)](#); [Leibniz \(1714/1989, pp.20–22\)](#), and [Bradley \(1930, pp.30–45\)](#). I thank those who attended my presentation at the 2008 SEP conference, and an anonymous reviewer for *Synthese*, for their valuable comments and suggestions.