

Complex Experience, Relativity and Abandoning Simultaneity

Introduction

This paper presents an argument from the special theory of relativity to what I call *dynamic experience*: that the structure of an experience is extended over a period of time. Central to this argument is the following claim: if a complex experience is (or correlated with) a spatially extended physical entity, it is not what I call *static experience*: it does not occur all at one moment.

The paper is structured as follows: I describe and explain what I mean by *phenomenal parts*; I outline opposing positions in a current debate in our experience of time; I briefly describe how the special theory of relativity defines time; then I explore the possibility of static experience. I find the resulting possibilities implausible and, thus, I conclude that experience is dynamic. Finally, I briefly outline some implications of this conclusion for what we may assume about the relationship of phenomenology to the physical world.

1. Background

1.1. Phenomenal parts

Before proceeding to the main argument, I want to outline some important assumptions that I make about experience. This concerns what I call *phenomenal parts*.

1.1.1. Definition

Contemporary philosophy of mind refers to how the world appears in our experience of it as the *phenomenal character*, the 'what it is like' of that experience (e.g. Kriegel, 2007). It is also assumed that this phenomenal character is complex: it has elements and relations between these elements. Many philosophers refer to these elements as *phenomenal properties* (e.g. Double, 1985; Chalmers, 2003). Thus, a typical experience is a complex of phenomenal properties.

I assume that at least *some* such phenomenal properties are incompatible; that is, that whatever seems blue does not seem red. Yet, such incompatible properties can occur together in one experience. One may experience a red ball *and* a blue cube together. Thus, the experience has incompatible phenomenal properties - we might say, one seems to be (or is) red, the other seems to

be (or is) blue.¹

Generally, properties occurring in the world have a bearer or bearers: the properties are *had* by something. This bearing or possessing occurs at some time (or place, given it is physical). For *incompatible* phenomenal properties to occur together, they must be borne or possessed by different things.²

These things are constituents of the phenomenal character: if you lose or gain one bearer, you lose or gain its properties – including *phenomenal* properties; thus, you change what the experience is like. For this reason, I call these bearers of phenomenal properties the phenomenal *parts* of experience.

What, then, are phenomenal parts? One might suggest neural processes (e.g. Double, 1985; Bisiach, 1997) or even physical objects in the world (e.g. Toinneau, 2004). To narrow the discussion of this paper, however, I will generally assume physicalism about them; in doing so, I assume that, whatever they are, phenomenal parts *have* spatial location, *can* have spatial extension and can even be separated from each other in space.³

1.1.2. Correlates

Further on, we will examine a suggestion that phenomenal parts are not spatially separated; thus, phenomenal parts are not spatial parts of the experience. This may complicate the claim that the phenomenal parts are physical, as how can different physical parts occupy the same space?

To allow this possibility, I will refer to any possible *spatial* parts of experience as the parts of the phenomenal parts' *correlates*. However, by 'correlates', I mean only whatever physically happens when the experience happens; I do not pretend to know how such correlation works; and, where this

1 It may be that an experience only *seems* to instantiate incompatible properties but that they are actually compatible; thus, one thing can have both the property of seeming to be wholly red and the property of seeming to be wholly blue. There might be, for example, an account similar to the relativized properties solution to the problem of incompatible intrinsics advanced by some philosophers of persistence (see Hinchliff (1996) and Sider (2003) for discussion).

One might explore such alternative accounts. However, I think they will only complicate the point of this paper, while still leading to the same conclusion. As a result, I do not discuss them here.

2 I am using 'things' broadly here: the term refers to anything that is not just a property or relation but can *bear* properties or stand in relations. Depending on your ontology, it can include concrete particulars, processes, events, states, etc.

3 For reasons of focus, I do not consider that phenomenology, and thus phenomenal parts, have no spatial properties at all (McGinn, 1995). For a discussion on this issue given the special theory of relativity, see Lockwood (1981) and Allen (2006).

is not an issue, I do not assume mere correlation between phenomenal and physical parts; I assume identity.⁴

Lastly, it should be noted that I assume the physical correlate of experience occurs *when* the phenomenal parts occur. That is, the time of experience and its correlates are identical.⁵ (Given relativity, this is significant).

1.1.3. Spatial distribution

Even where there are only correlates, I will assume that the correlates at least are distributed in space. Thus, the entire experience, if it occurs in space, does not occur at a single point in space. This is motivated by a great deal of empirical evidence (Blackmore, 2003; Bisiach, 1997). For example, visual experience seems to occur over more than one cognitive process, each of which is at a different location in the brain (Goodale and Milner, 2005, pp. 60-62). Thus:

[A]lthough you may think that you see a single integrated representation of a visual scene, like an image on a movie screen, your brain is actually analyzing different aspects of the scene separately using different visual ‘modules’. The products of these modules may never be combined into a single picture in the brain – even though these outputs have to be cross-referenced or bound together in some way. (*Ibid*, p. 58)

1.1.4. Relations and phenomenal parts

Lastly, phenomenal parts stand in relations to each other. A trivial relation is that they are part of the *same* experience; they are ‘co-conscious’, to use a term from Brooks (1994; also Dainton, 2000). Other significant relations are any *spatial* relations between them. For example, they may be separated in space or coincident (they fully overlap one another).

However, the *more* significant relations here are temporal relations. In this paper, we ask: are phenomenal parts *simultaneous* (they exist or occur at the same time) or are they *successive* (one exists or occurs after the other)?

4 Note also that this concerns the *parts*, not the phenomenal properties. I do not assume that phenomenal *properties* are physical.

5 Although I do not argue for it here, I consider this simultaneity of the two to be one reason why something would be considered to *be* an experience’s correlate. I assume nothing that follows denies *this* simultaneity of experience and correlate. The argument of this paper concerns the simultaneity between different phenomenal parts (and, of course, *between* spatially separated correlates), not between parts and their correlates. There should not be a problem, then, for any theorists who assume that mind-body relations such as supervenience or realisation are simultaneous this way e.g. Kim (2000, p.9). See fn. 9 for another issue regarding these relations.

The natural assumption is that what we experience, no matter how complex, no matter the variety or number of phenomenal parts (and relations between them), happens entirely at one moment. My argument may be surprising: it is that this natural assumption is mistaken. Let us begin by considering the experience of change.

1.2. Experienced change

It is a common claim that our experience is as immediately of *change* as it is of colour or shape. For example, we seem to have an immediate or direct experience of the *flow* of a river as much as its colour; we immediately or directly *hear* a *succession* of notes as much as hear their loudness. This claim goes back as far as William James; the *duration* of it is often called the ‘specious present’. It is rarely criticised regarding how our experience *seems*, something which is assumed by most contemporary philosophers (Hoerl, 1998; Kelly, 2005; Grush, 2005; for an opposing view, see Plumer, 1985).

Some phenomenal structure is this apparent change. If this structure is understood in terms of phenomenal properties and relations between them, we might ask: is there a change between these phenomenal properties?

Two kinds of explanations are put forward: one, retentionalism, assumes that we do *not* experience actual change; the other, extensionalism, assumes that we do. As we will see, the difference in their explanations seems to involve different conceptions of how experience occurs in time.

1.2.1. Retentionalism and static experience

According to the *retentionalist*, change is represented in experience by something that is *retained*: a ‘primary impression’ of one stage in the change is simultaneously accompanied by a *retained* impression of an earlier stage (Merleau-Ponty, 1962; Husserl, 1991; Miller, 1998; Gallagher, 2005; Kelly, 2005).⁶ In other words, the bearers of phenomenal properties, the phenomenal parts – these are all at one moment; it is just that one or more of these are of previously experienced events.

⁶ Anyone familiar with Husserl’s theory of time-consciousness will notice that I (like many others) neglect the ‘protentional’ part of Husserl’s original structure. This is mainly for descriptive simplicity.

Fig.1.

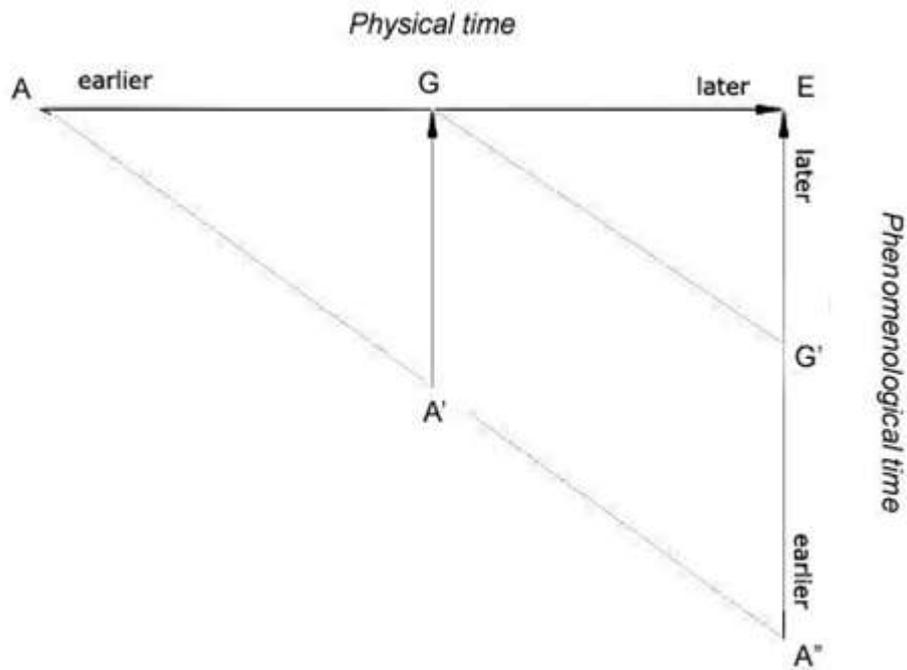


Fig. 1. is a retentionalist illustration of our experience of a piece of music.⁷ Following Husserl, the 'notes' (A, G, E) along the top line are 'primary impressions' – the original sound heard. As such, they are first and foremost something experienced, rather than something independent of experience (e.g. a hammer striking a piano string).

On hearing such new notes, we retain (in some form) the previous notes in our experience. For example, on the far right vertical, we hear the note *E* while retaining 'something' of the previously heard *G* (represented by *G'*) and the *A* heard before *that* (represented by *A''*). This is the 'phenomenological time' of the diagram, where the 'earlier' phenomenological times are further down the vertical lines.

The significant feature here is that our experience of the successive notes – or indeed of *any* change – is *all at one moment*: *E*, *G'* and *A''* are *simultaneous*. The retentionalist provides an analysis in which there is no *actual* change from one phenomenal part to another. As Grush states, '[r]etention is consciousness of the not-now that is mediated by something that is now, a *retention*.' (Grush, 2006, p.427)

7 Adapted from Husserl (*ibid*, p.189); see also Merleau-Ponty(1962), Miller(1998) and Dainton(2000).

For this reason, I call *this* kind of experience a *static experience*, for the experience, the *phenomenological time*, is a phenomenological *state*. Its phenomenal parts are simultaneous.

1.2.2. Extensionalism and dynamic experience

According to the *extensionalist*, however, the change is represented *by temporally separated* parts of experience (Dainton, 2000; Hoerl, 1998). The phenomenal properties of an experience of change are instantiated at *different* times. The relevant phenomenal parts are not simultaneous. It is this difference in when they occur that at least partly explains how what we experience appears to be a change; it is because it *is* a change.

Consider the retentionalist diagram. The extensionalist holds that the experience of G followed by E extends over the *top line* (the 'physical' time in the diagram). There is no need for any extra phenomenological time or 'running-off mode'. Thus, the experience comprised of these phenomenal parts is itself a change.

For this reason, I will call this kind of experience a *dynamic experience*.

1.2.3. Assuming presentism

Many philosophers seem to think that retentionalism is the better, more intuitive theory (e.g. Kelly, 2005) or can simply be assumed (e.g. Grush, *ibid*). As such, extensionalism is the more counterintuitive alternative. Now, this does not seem to be because we *experience* change as the retentionalist describes it. Instead, it seems to be because, however complex it might be, and whatever it *seems* to be of the world, an experience really has *simultaneous* phenomenal parts.

The main reason, I suspect, that this is assumed is due to the assumption of *presentism*. This is the view that, however it might seem, the only moment which exists in any genuine sense is a single present moment. If this is true, the claim that the structure of experience could extend over several moments of time is simply false (for an outline of presentism, see Hinchliff, 1996 or Le Poidevin, 2005).

However, it is generally accepted that if the theory of relativity is true then *presentism* is false (Mellor, 1998; Sider, 2003). Similarly, I will argue that the claim that experience has simultaneous parts, and thus that there is static experience, is also false.

1.2.4. Assuming conscious time is physical time

Before moving on, one more issue needs to be addressed. This argument assumes that the time when an experience occurs is that of a physical time, i.e., a time when physical events occur. An anonymous referee has raised the following worry: might this assumption rest on a category mistake?

If 'the time when an experience occurs' refers to the time that we merely seem to experience, then yes, it is a category mistake. It is a mistake to assume that a *merely* apparent 'time' is time at all; by definition, a merely apparent *x* it is not really *x*.

What 'time' might we merely seem to experience? One candidate could be the 'specious present' outlined in the above debate. If we merely seem to experience this then it is a category mistake to think of this as a real duration. Thus, we should not conclude anything from this specious present about the temporal relations of phenomenal parts.

However, in the retentionalist/extensionalist debate, to assume that we *merely* seem to experience it begs the question. We *must* assume it given the static conception of experience; we must *not* given the dynamic conception of experience. But *neither* conception should be assumed at this stage. Thus, we should not assume that there is, at least, this category mistake.

What *is* assumed is that when an experience actually (rather than seems) to occur is also when a physical event occurs (see §1.1.2, and footnote 11). But, unless consciousness and the physical world exist in entirely different time-lines (something not considered here) this assumption does not rest on a category mistake. And if this assumption is admitted, the rest of this argument should follow.

Let us turn, then, to the theory of relativity.

1.3. The Theory of relativity

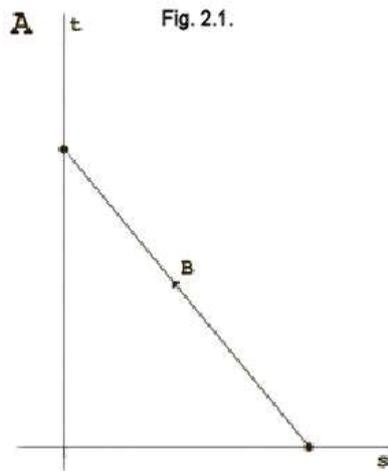
The dominant conception of time and space in modern physics is that originally formulated in the special theory of relativity. The theory of relativity holds that simultaneity between spatially separated things is *relative* to an inertial frame.

1.3.1. The train and the platform

A common example in the literature is of two observers, one on a moving train and the other on a platform (e.g. Dainton, 2001). Say you are on a train passing through a station: you can see the platform approaching, the board bearing the station's name moving by, the various people grabbing

their bags and moving toward the edge of the platform, other people just standing and waiting.

Relative to you and your train, the station is moving. To yourself and the train, you are *not* moving (we assume for now, but this assumption will be criticised later). In physical terms, you and the train occupy the same *inertial reference frame*. And anything that has the same velocity as you also occupies this inertial reference frame. But anything that moves at a different velocity does *not* share your inertial frame.

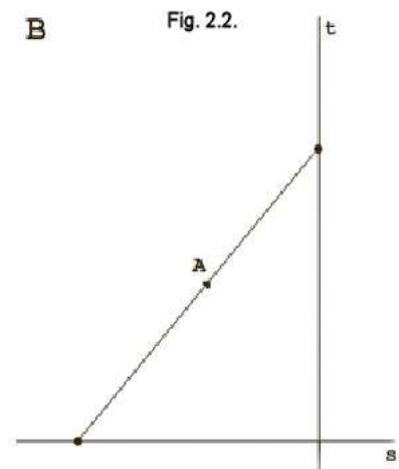


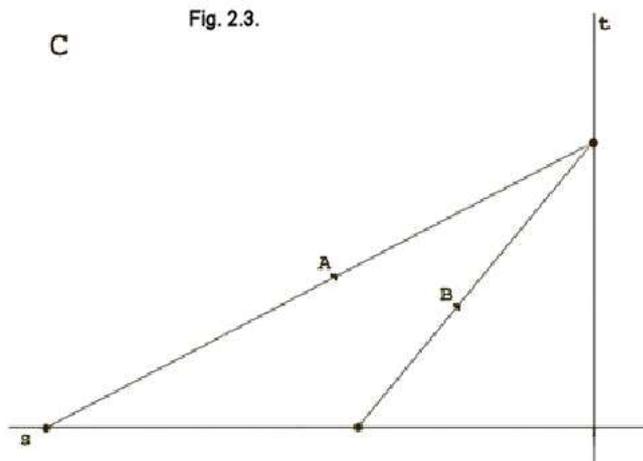
Continuing the example, let us assume that your train is not decelerating, but is moving constantly through the station. Let us call the train's frame A. Call the frame of the station (and those standing still on it) frame B.

According to the train and your frame (A), the station frame (B) has a particular velocity: it moves at a particular speed in a particular direction (e.g. at five miles an hour to the left, Fig.2.1). According to B, to a person on the station platform, A, the train, is in motion in the opposite direction (to the right, Fig.2.2).

To complete this example, imagine the inertial frame of a *second* train (and its passengers) coming from the other direction into the station but at the same speed. Call this frame C.

According to C, the platform (B) is in motion in the *opposite* direction of motion as it is for your train - and your train (A) is moving faster (at 10 miles an hour) in the same direction as the platform (Fig.2.3).





So, for each of us – A, B and C - the others are in motion. But, for each of us, we ourselves are not moving, are at rest, in our own frames. Again, if several bodies are at rest to each other, they share the same inertial frame *by definition*. But, to do so, they must have the same velocity: the same speed *and* direction. (This is important later, as we will see).

1.3.2. Arbitrary inertial frames

It might be asked of the previous discussion: from which of these frames can genuine motion be measured? Are the trains really moving at the velocity measured by the platform, by one of the trains or by some meteor skirting the atmosphere?

Newton defined the frame of absolute space as the frame from which motion could be judged; and later theoreticians expanded this in the theory of *the ether* (Lange, 2002). However, with the theory of relativity, this changed: from Einstein onwards, *which* frame we choose to define motion is arbitrary and conventional. *None* are privileged when it comes to deciding something's velocity. Thus, there is no frame-independent absolute velocity (*ibid*).

This is important, as we will see, because another consequence of the theory of relativity is that time is *also* relative.

1.3.3. Relative space and time

According to the theory of relativity, along with the velocity, the distance between two objects or points and the duration between two events is different for different inertial frames. Most significantly, this applies to events that, according to some inertial frame, are *simultaneous and separated by a particular distance*.

This relative simultaneity and succession is because of the speed of light in all inertial frames is invariant. The same light signal has a speed of 3×10^8 metres per second no matter which frame you chose. As a result, the simultaneity and distance of events change.

Consider Fig.3.1. and Fig.3.2. Someone (B) is standing exactly in the middle of the platform as

another (A) goes by on a train. At each end of the platform is a perfectly reflecting mirror.

The person standing on the platform lights a cigarette, causing a flash (c_1 , in both diagrams) casting light in all directions. Two light travel in opposite directions along the platform and each bounces off a mirror at either end (e1 and e2).

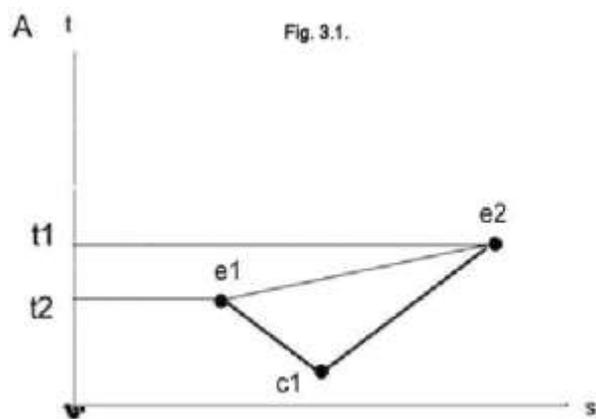


Fig. 3.1. illustrates what happens for A on the train. One end of the platform has moved closer since the flash while the other has moved further away, along with the mirrors.

Thus, the distances travelled by each beam of light over that time are *different*. But the speed of light is the *same* in both directions. Because of the difference in their distances, light takes *longer* to reach and strike one mirror (e2) than it does to reach the other (e1).

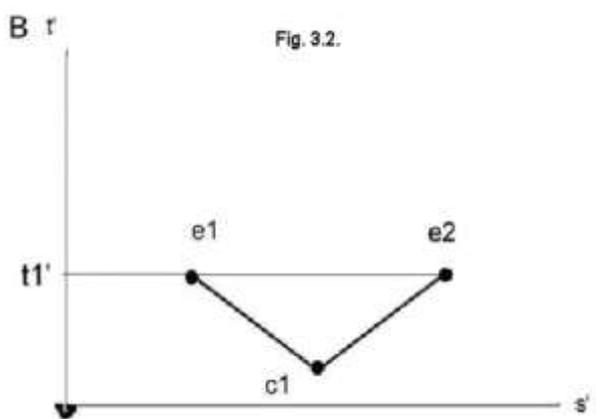


Fig. 3.2. illustrates what happens on the platform. For B, the mirrors are equidistant from the source throughout. There is no change in the distance between person and either mirror from when the cigarette is lit to its reflection in the mirror. This is because there is no motion between them; the lighter, mirrors and platform are in the same frame.

Moving at the same speed, then, each beam of light strikes their mirrors (e1 and e2) at *the same time* ($t1'$). Thus, the two events e1 and e2 are simultaneous.

Thus, what is simultaneous on the platform is successive on the train. This holds for any two events separated in space, as the change in motion changes the distances between them and thus the amount of time it takes light to travel.

The relativity works both ways. It also applies to *succession*. Some events are successive according to only some inertial reference frames (the train) while, in other frames, they are simultaneous (the platform).

1.3.4. Exceptions to relativity

There can be absolute simultaneity, however, between *spatially coincident* entities, entities which occupy exactly the same points in space. If coincident entities are simultaneous in any inertial frame, they are simultaneous in all inertial frames.

For many philosophers, the only absolute temporal relations between spatially separated entities are the *succession* of cause and effect (Mellor, 1998). No causal relata are simultaneous in an inertial reference frame and, as we saw with the light and mirrors example above, a causal chain can extend over space.

Thus, space and time are not absolutes. In different inertial frames, different spatial distances and durations hold between the same two events. That is, the duration or distance between any two events depends on your *velocity*; and, for those moving at a different velocity, the duration and distance between these exact same events will be different.

1.3.5. Space-time intervals

However, the theory of relativity also holds that the variations in space and time between frames are *connected*. In modern physics, this connection is expressed by conceiving of them as *aspects* of one four-dimensional extension: *Minkowski space-time* (Dainton, 2000). Space-time is invariable across *all* frames even though the aspects are not. This makes duration and distance in *space-time* similar to depth and width in *space*. Here's how Feynman puts it:

[I]f it were impossible ever to move, and we always saw a given object from the same position, then [...]we would always see the 'true' width and the 'true' depth [...]because we *can* walk around that we realise that depth and width are [...]just two different aspects of the same thing.

Can we not look at [relativistic variation in space and time] in the same way? (Feynman, 1971, 17-1)

Similarly, when it comes to space and time, observers vary in their motion so *insignificantly* that their judgements of space and their judgements of time both seem to be universal and to be of very different features of reality. However, according to relativity, they are not.

To finish, let us introduce some specific terminology:

- i* *Space-time points* are referred to as *events*, analogous to pre-relativistic spatial locations and temporal moments.

- ii *Extensions between events* are called *intervals*, analogous to pre-relativistic distances and durations.⁸

Just like distance and duration, intervals are only extensions between events. One cannot assume there is anything physical over them connecting the relevant events. Stating that two events are *connected* over an interval neither explains *how* they are connected or *what* connects them.

As already discussed, however, relativity does define some physical connection over intervals. In relativity, *causal relations* connect events. That is, what connects two events is that one event causes the other. We saw this in the example of the light striking the mirror. Indeed, we experience it every day in the physical events which occur around us.

This concludes the section focussing only on relativity. With that aside, we now turn to the argument for dynamic experience.

2. The argument for dynamic experience

The structure of space and time outlined in the last section gives the following argument for dynamic experience. (References to previous sections are given in parentheses):

Intervals are *invariants* across space-time (§1.3.5.): they have their extension (at least in special relativity) independent of arbitrary (§1.3.2.) inertial reference frames. If different phenomenal parts (or their correlates) are at different points in space or time (§1.1.3.), they are physically connected over an interval.

However, the only physical connections defined in relativity are causal relations (§1.3.4.). Thus, if what connects phenomenal parts is defined in relativity, it is causal relations.

Causal relations only connect events occurring at different times (§1.3.4.). Therefore, if phenomenal parts are connected by causal relations, they occur at different times. Thus, the experience of which they are part has its structure over different times. The experience is dynamic.

As can be seen, this argument is very general: given any complex experience, its physical parts will be connected by successive (causal) relations. Let us look at some responses to this.

8 For more details on intervals in general, see Feynman(1971, 17-1) and Mellor(1998).

2.1. Non-causal intervals

We might say that this argument only turns on our ignorance or the limits of relativity: we only know of causal connections; we do not know of any other physical connections. Can we then conclude that there are *no* other physical connections? Certainly not: non-causal physical connections are certainly possible. And so, it is possible these connections are over an interval which is simultaneous in some frame. If this is true, experience *can* at least be static in *that* frame.

However, this does mean that, in order to assert any sort of static experience, one *must* give an *alternative* connection to causation. The question for someone who rejects causation, then, is this: if the phenomenal parts are physically and non-causally connected, *what is that connection?*

However, even if an alternative to causation (over a non-causal interval) connects the parts, this does not return us to the simple assumption that experience is static. It makes experience *arbitrarily* static or dynamic because the simultaneity or succession of its parts is relative to arbitrary frames. Thus, retentionalism or extensionalism only holds relative to an arbitrary frame. Given some other arbitrary frame, the *other* theory will describe experience correctly.

In any case, this answer can only be put forward when we provide an alternative physical connection to causation.⁹

9 Some philosophers hold that *non*-temporal dependency relations such as supervenience or realisation hold between mental and physical properties. Could these also connect phenomenal parts across non-causal intervals?

I do not think so. First, this discussion concerns simultaneity of one phenomenal part and another phenomenal part, not the simultaneity of any phenomenal part and its correlate (given part and correlate are different). But this latter simultaneity is the simultaneity beneath supervenience and realisation. Why this is so raises the second point: supervenience and realisation could *only* be over the required non-causal intervals if they related phenomenal parts and correlates separated by space. Yet, nothing in the literature on these relations explores such an option. (I am not even sure what an option like that means, e.g., what is meant by saying that my pain is *here* but is realised over *there*?)

For an excellent discussion on supervenience, realisation and emergence, see Kim (2000).

(And my thanks to an anonymous referee for raising this point).

2.2. Simultaneous phenomenal parts

There may, however, be other ways we could hold that phenomenal parts are simultaneous without being relative to an arbitrary frame. I can think of two (although I invite others if they are available).

Firstly, two things can be absolutely simultaneous if they occupy the same space.¹⁰ Thus, if *phenomenal parts* are in the same place, they can be simultaneous independent of any frame. Thus, the experience *is* static (at least, in regards to its phenomenal parts).

Secondly, we might deny that *all* frames are arbitrary. We argue that some frame is *privileged*. Then, we deny that space and time are relative. We insist that there is an absolute space and time and so absolute simultaneity. This simultaneity is described in the privileged frame.¹¹ Retentionalists can then argue that experience is static in *that* frame.

The phenomenal parts of experience *could* be absolutely simultaneous if the experience is correlated with something that has no spatial extension; that is, if each experience occurred at a single space-time *point*. However, as discussed, this does not match empirical evidence (see §1.1.3.). We assume that experiences are spatially extended.

However, we might still argue that the experience has absolutely simultaneous *phenomenal* parts. They do so by not being spatially separated parts. Since their spatial location does not vary, they can be absolutely simultaneous.¹²

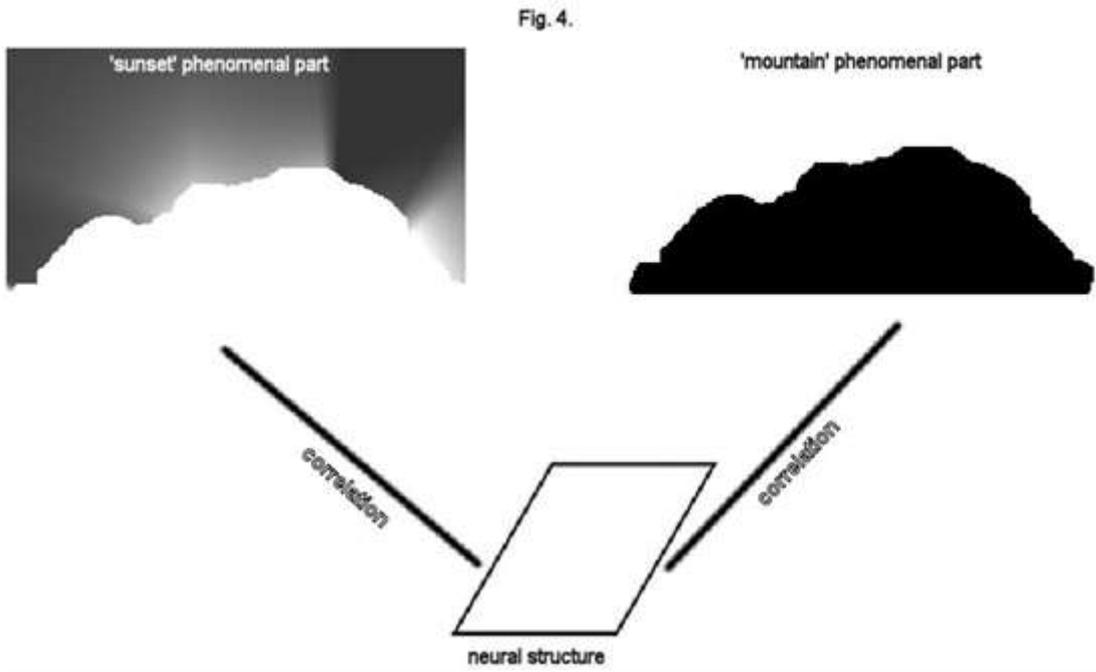
This is where we might bring in 'correlate' talk. To give this position as much room as possible, we assume that the spatial parts belong to the correlates and not the experience itself. Then, we say: although the correlates' parts have different locations to one another, all of the experience's phenomenal parts *perfectly* overlap with one another.

10 Described in terms of space-time intervals, there would be an interval of zero extension between them. That is, there would be *no* interval between them.

11 Pre-relativity, the frame is the frame of the 'ether' and was held to exist by, among others, Poincaré (Lange, 2002). I consider it here because, although it revokes the *relativity* of time in special relativity, it is consistent with its mathematical description.

12 As a reminder, we assume that experiences and their parts have *some* spatial location (see fn. 4).

Here is a simple example: consider seeing a mountain silhouetted against a sunset; there is a phenomenal part for the silhouette and another for the sunset. The exact same physical structure correlates with both the silhouette part and the sunset part (Fig.4.). Otherwise, one phenomenal part will be located somewhere the other is not; and, in not being coincident, one cannot say that they are absolutely simultaneous.



Yet, if this is true, several *different* phenomenal structures are correlated with exactly the *same physical structure*. This leads to a problem.

We may have an explanation, or a rule, or a law (however you want to say it) for how *one* of these phenomenal parts is correlated with the underlying physical structure. Whatever explanation, rule or law this is, it cannot be used to explain how the physical structure is correlated with the *other* parts. The explanation, rule or law must state that the given physical structure leads to *that* phenomenal part. Another part will be very different to that part, as the silhouette/sunset example shows, and thus will not fall under it.

Most experiences are far more phenomenally complex than that of a sunset and a silhouette. Thus, most experiences will need a different particular explanations/rules/law for how *each* part correlates with the experience's physical structure.

2.3. Relatively simultaneous parts

The next possibility for simultaneous parts is this: an experience has simultaneous phenomenal parts relative to a *privileged* frame. However, this claim provokes the same question as the claim that the parts are connected by 'some interval' (§2.1). Just as we asked then: why should *that* interval connect the parts, now we can ask: why should *this* frame be privileged?

If we cannot provide an answer, then we merely assume there is such a frame.

2.3.1. The subject's frame

One answer is that the frame is the frame of the *subject*. That is, the subject occupies a single frame. Thus we might argue that the frame of the subject, regarding the simultaneity of their own phenomenal parts, is the privileged frame.

In illustrations of relativity, such as those given above, subjects are treated as occupying one frame (and indeed as sharing that frame with much larger objects such as trains). At least one current paper on Husserl and relativity assumes the subject has a single frame (Alves, 2008). However, *can* a subject occupy a single frame?

According to Bergson, they cannot:

[I]f a passenger is shaken up, it is clearly because the physical points of which his body is composed do not maintain unchanging positions with respect to the train nor, in general, with respect to one another. They therefore do not form a single system with the train or even amongst themselves [...] [c]onsequently [the physical points] have their own times t' , t'' , etc [...] (1999, p.137)

Bergson noticed that, in the train example, the subject is treated as being *one body with one velocity*. This is common practice in physics: a planet is treated as having one velocity about the sun; the solar system is treated as having one velocity about the galactic centre. Yet, it is not true that the parts of any such complex objects move at the same velocity. So why do physicists proceed on the assumption that it is?

All the parts of a body can be assumed to have a single velocity, what is sometimes called the *centre of mass* velocity, for practical purposes because the difference in the parts' relative velocities is quite small; they are, to each other, quite close to rest. This negligible difference in speed is relative to the scale of their calculations: as an example, the speed of a bullet train can be neglected when

calculating the impact of a kilometre-wide meteor's smashing into the earth, at a literally astronomical speed of 30,000 km/hour, even if the train is moving opposite to the earth's rotation.

These differences are relatively negligible but they are still *differences*, and this will not do for assigning a single frame to a subject. The single velocity is not necessarily the velocity of any of the body's *actual* parts. It is an abstraction calculated *from* such velocities.

A subject's body or brain as a single moving object has an equally abstract velocity. Therefore, *that* velocity, at least, cannot get us a privileged frame for our physical correlate.¹³

2.3.2. The frame occupant

We reject the centre-of-mass frame as *the* frame for the subject. However, something in the subject might still occupy the privileged frame, a frame from which the phenomenal parts of one's experience are simultaneous.

What is the 'something' that occupies the frame? For now, we need only insist that this 'something's' role is to be the *occupant* of the frame in which phenomenal parts are simultaneous. Let us refer to it from now on as the *occupant*.

The question, then, is: do we have a reason for believing that the occupant is in a privileged frame? If not, we return to the original problem: we merely *assert* that there is a privileged frame. All we do in saying that there is also an 'occupant' is state that 'something' is in that frame.

One reason might be that the privileged frame is shared by *all* occupants. As we will see, this may have an experimental implication; namely, we may be able to *demonstrate* its existence.

2.3.3. Multiple privileged frames

However, why should the 'occupants' of each subject share a frame? After all, different *relative* frames can differ in their definition of space and time; what is simultaneous in one frame may not be simultaneous in another.

However, a variety of privileged frames do not just differ. They *conflict*: As each is privileged, each defines *the* space and *the* time. Thus, if one privileged frame defines two events as simultaneous and another privileged frame defines those same events as successive, we do not have relative perspectives of some invariant (such as an interval), we have contradicting descriptions of what is

absolute. This is because both frames, being privileged, define absolute, not relative, values of time. Thus, the same events will be absolutely simultaneous *and* absolutely successive.

The only way around this problem is to assume that all occupants share one privileged frame.

2.3.4. One privileged frame

As we saw in the discussions on the two trains and the platform (§2.1.), the velocity of a frame (e.g. C) can be different in different frames (e.g. A and B). This is true also of a privileged frame; and the velocity of a privileged frame will also be the velocity of the *occupants* of that frame.

As discussed, velocity is not just speed; it is *direction* too. And relative velocity is not just relative speed; it is also *relative direction*. Imagine I am standing on a platform as a train goes by and you are on the platform opposite facing me; thus, my left is your right and vice versa. The train passes between us. If the train passes to *my* left, then, it will pass to *your* right.

Similarly, if the occupant in one subject's brain shares the frame of the occupant in another, then their shared *direction* of motion will be the same. They will, as it were, be occupying a train moving in *one* direction. If each subject is facing a different way, this direction of the occupants will be different relative to each subject, just as the train moves to my left and your right.

This may give us a way to detect the occupant velocity.

2.3.4.1. An experiment

In order to carry out this (very sketchily described) experiment, we must assume the following:

- i) A particular experience is the same type of physical process in both subjects.¹⁴
- ii) We can detect this physical process.

If we accept these¹⁵, we can attempt to detect the privileged frame via its velocity:

¹⁴ Some philosophers might deny this assumption. For example, those who think the mind can be *multiply realized* may suggest that different physical structures in each subject's brain will correspond to their otherwise similar experiences. I think that, if this is true, it will make neuroscience very difficult. However, even with it, there is a workaround:

Place only the one subject in the experimental situation, and then turn them *around*. If there is such an occupant frame (and given the same experience throughout rotation), whatever it is will remain moving in the same direction relative to the lab; thus, relative to the subject, it will rotate in the opposite direction.

¹⁵ This may be a lot to accept and so the experiment may not be something we can even get started on. Note,

1. Put two subjects into two detectors capable of detecting the physical process that is the experience.
2. Stimulate the subjects the same way. (e.g. get them to play Tetris, view visual illusions).
3. Face the subjects in opposite directions.

As the subjects are facing in opposite directions, relative to each subject, the privileged frame should be moving in the *opposite* direction for each of them.

If the occupants move to the first subject's *right* (that is, the right of their body overall), they will move to the second subject's *left*. Thus, if there is a single privileged frame for the occupants of an experience, and we can physically detect these parts, there should be this physically detectable difference. If there *is*, we have a very strong case for saying that there is a privileged frame.

2.3.4.2. Will the experiment reveal a privileged frame?

However, it is unlikely that such an experiment will show anything of the sort. Firstly, the preferred correlates of experience, neural processes, neither move *as one* in different directions, depending on how subjects are placed, nor at a velocity independent of the velocity of the brain or body.¹⁶

This absence of direction in the neural processes suggests an absence of a shared frame between them. If we still want to preserve the privileged frame, we must come to this conclusion: neural processes, at least, do not occupy the privileged frame. If the occupants *do* occupy this frame, then they are not neural processes. If the occupants *do not* occupy it, then there is still no answer about which frame *is* privileged.

2.4. Summary

In summary, phenomenal parts are either causally connected, or are connected by some unknown non-causal interval, or they are simultaneous according to some privileged frame. I have argued the last two options are problematic due to relativistic concerns. As a result, I conclude that experience is dynamic.

however, that the point of this experiment is to see if there is *any* way to show there is a privileged frame. If we abandon it, we are back to merely assuming that there is a privileged frame (or abandoning the idea altogether).

¹⁶ I would also suspect there is not even a preferred direction between the neural firings in *one* brain. Neural transmissions radiate in all directions (Lockwood, 2005). However, this is not as decisive as the other points for one might simply claim some of those transmissions are not correlates.

3. Abandoning simultaneity

If we hold that a complex experience is dynamic, we abandon actual simultaneity between its parts. In this final section, I want to discuss the implications of this abandonment.

3.1. Retentionalism and extensionalism

It should be clear that there are implications for retentionalism as laid out here: if there is a retained structure to experience it is not because the phenomenal parts of experience are *simultaneous*. Given the retained structure is introduced to explain our experience of change given the parts *are* simultaneous, I would suggest that we prefer the simpler alternative of extensionalism.

However, there are other implications as well.

3.2. Rough simultaneity

One reaction to the argument for dynamic experience might be that, so long as the phenomenal parts are ‘roughly’ simultaneous, nothing regarding our understanding of experience needs to change. What does ‘roughly’ mean? Events are roughly simultaneous if the duration between them is so brief as to be undetectable. For example, the time it takes for a light signal to travel the distance between two neurons, as defined in *any* frame, is so negligible that it cannot be measured on an fMRI. Separated by such a brief duration, events may, for all practical purposes, seem to be simultaneous. We might say that, on the current scale of neurological research, there is no difference here. As a result, what we detect as experience (or its correlates) will be the same.

My response to this line of reasoning is simply this: *Why should* phenomenal parts be separated by brief durations? Why assume that the physical correlates of an experience *must*, despite *not* being simultaneous, *seem* that way?

A knee-jerk response would be this: the phenomenal parts of the experience *seem*, for the subject, to be simultaneous. This is Bergson’s objection when, in 1911, he debates Einstein on the topic. Experienced simultaneity, for Bergson, *is* simultaneity:

[I]t is obvious that simultaneity implies [...] an instantaneous perception [...] I open my eyes for a moment. I perceive two flashes in that instant coming from two separate points. I call them simultaneous because [...] my act of attention is indivisible, yet [...] my attention is at once shared between both of them, divided and yet not split up.

... [This simultaneity] is absolute in that it does not depend on mathematical convention, or upon any physical operation such as the setting of clocks. (Bergson, 1999, p.156)

Thus, with Bergson, one might argue that, since the events we experience *seem* simultaneous, the best explanation is that phenomenal parts, what we do experience, *are* simultaneous.

I tend toward the view that, where we can, we ought to ground concepts in our experience and phenomenology. Yet, I do not think experienced simultaneity is one which we need to explain *by* simultaneity. This is because I do not know what *positive* feature of experience is picked out by simultaneity. It seems to me that what we call experienced *simultaneity* is just experienced *absence of duration*.

Well, should we not try to explain what *seems* to be an absence of duration with *actual* absence of duration?

3.3. Absent duration, absent representation

There is a saying among some contemporary philosophers of consciousness that 'the absence of representation is not the representation of absence' (Dennett, 1991, p.359; Blackmore, 2003, p.81). I take this to mean that, in some cases where we do not experience what we would expect to be present, it is not because we experience its *absence*. This would suggest we experience *something*: an 'absence'. Instead, it is because there is no appearance at all; we have no experience of *anything*.

Thus, Dennett, in trying to eliminate the need for what he calls 'figment' (a 'something' we experience) to explain what we see as our blind spot, argues that we just do not experience the blind spot (Dennett, *ibid*; for a recent excellent discussion on this, see Noë, 2004, pp.47-59).

Similarly, my suggestion is that we experience simultaneity *by failing* to experience duration between two events. That is all. There is nothing added to what we experience. For, what *could* be added in order to experience simultaneity? To suggest anything would suppose there is a *more* primitive experience of things which is of them being neither simultaneous nor separated by time. What could *that* be like? If we are left wondering what it could be like, then it suggests that it does not matter; we have not experienced it. Simultaneity (as absence of temporal order) and non-simultaneity (as temporal order) encompass the range of temporal features in our experience.

Whether or not what we experience as these simultaneous events are *genuinely* simultaneous is an entirely different question (one I hope I have answered here). In any case, however such an account goes, 'seeming' cannot support the idea that phenomenal parts are simultaneous in all cases of

experience. For we sometimes *seem* to experience things over time (as discussed earlier in §1.2).

Thus, I conclude the following:

Phenomenal parts of experience, even when they seem to be simultaneous, are not simultaneous.

To illustrate the implications of abandoning simultaneity, let us look at how it might alter our understanding of a specific example from neurological research.

3.4. Example: the illusion of conscious will

Libet's experiments into the timing of consciousness and its associated neural activity are taken by some to show that we do not voluntarily or freely act even when it seems to us that we do. This loss of free will is an uncomfortable result. As Wegner notes, 'we each have a profound sense that we consciously will much of what we do, and we experience ourselves willing our actions many times a day' (Wegner, 2002, p.2). That is, we feel that we *do* will certain things to happen and that we are *aware* of doing this. To lose this is to lose a very great deal. However, this loss is just what Libet's experiment seems to show.

Drawing on Libet's own 2004 account, I will briefly describe the experiment and why it leads to this result. I will then explain why I do not think it is necessary to draw it.

There are two important components in this research:

a) As Libet explains, even prior to his research, it was known that, when we decide to act, a *readiness potential* (RP), 'a recordable electrical charge in brain activity [...] regularly and specifically' precedes the resulting act by about 800ms (Libet, 2004, p.124). Many supposed then that the readiness potential, always accompanying the voluntary acts, is *caused* by our will to act (*ibid*).

b) In the experiment, the subject was the judge of the act's volition; if it *seemed to them* to be a free action, Libet treated it as such. This was contrasted with bodily acts which subjects do not experience as voluntary (e.g. movements of limbs due to clinical conditions such as Tourette's or Parkinson's etc. (*ibid*, 129)). In other words, the subject *experiences* the action as caused by their own (at least, apparent) free will.

3.4.1. Finding the moment of the will

The investigators could tell that the RP precedes the voluntary act by 800ms. They could tell just by

glancing at a clock as the RP occurs, and then when the act occurs. Both were objective and public. But how does one measure a subjective and private voluntary act?

What will not work is giving some signal when you decide to act – e.g. shout ‘I’ve decided!’ There’s no guarantee that you consciously decided to act when you shouted and *any* possible delays matter in this experiment.

Instead, Libet tried the following:

1. In each trial, subjects were asked to note the position, when they decided to act, over which a spot passed as it rotated around a clock’s face (similar to a seconds hand). This position gave a time which Libet called *W-time*.
2. The experimenters then measured where the spot was when the RP occurred; Libet called this *RP-time*.

3.4.2. Result

Libet’s question, then, was this: The RP always precedes a voluntary act by 800ms; but how long before the act was our *will* to act?

Our will seems for us to be the first cause of a voluntary action. If this is true, our willing should come before the RP. The RP would, perhaps, be an *effect* of will. As such, given the W-time is the time we decide to act (as we report it), the RP-time should be *later* than the W-time.

However, instead, what Libet found was this: the RP-time is 550ms *earlier than* the W-time.

From this Libet concluded that the RP occurs before the conscious decision to act. However, as the RP is one of the causes of the voluntary act, the conscious decision could only be a *mediate* cause between the RP and the voluntary act. That is, *if*¹⁷ it causes the voluntary act, it is itself *caused* by the RP. Therefore, it is not, despite how it seems, a genuinely voluntary act.

We might say: when we consciously will something to happen, we do not genuinely will it; something in our brain has already started it happening.

3.4.3. An analysis assuming dynamic experience

Both the methods and results of Libet’s experiments have been heavily discussed since they were

17 The conscious decision might, of course, be epiphenomenal. I do not consider this here.

first published.¹⁸ However, it does not seem as if any question the following description of what occurs:

The readiness potential occurs at an earlier moment to the one we report as being *when* we decide to act. As a consequence, it cannot be something which we experience *while* experiencing the reported time. If we do assume that our experience of the reported time happens *when* we experience (what seems to be) our free will, then the readiness potential is *earlier* than both reported time and will.

This analysis assumes that we experience one event 'while' or 'when' we experience another. Yet, note why we think we *do* experience these simultaneously: it is because they *seem* to be simultaneous. Yet, if experience is dynamic, then our experience of what *seems* to be simultaneous is not *actually* simultaneous. However we take apart what we experience, the various parts will be at different times.

This changes the situation because it undercuts the conclusion about the timing of the complex experience. If the subject's experience of their voluntary act precedes what they experience of the clock, *even though they are not aware of this precedence*, then we cannot conclude that the readiness potential precedes the act of will. The central troubling claim is based on a mistake.

A lot more could be said about this (regarding, for example, neurology and cognitive science). I leave such a discussion for those more qualified to tackle it. My only intent in using the Libet experiment is (i) to demonstrate how dynamic experience alters our assumptions about the relationship between experience and physical processes and (ii) as a case study of how useful such an alteration may be.

Conclusion

In this paper, I stated that most theories of experiences assume that experiences have simultaneous parts: that is, they are *static*. This is true even of popular theories about experienced change. Yet, I argued, according to the theory of relativity, simultaneity of spatially separated events is relative to inertial frames. As a consequence, there are problems with assuming that experiences are static.

I argued then that we should consider the phenomenal parts of experience to be causally connected and thus dynamic. We should consider this *even if* they seem to be simultaneous. I demonstrated

18 See Dennett(1991), Flanagan(1992), Libet, Freeman & Sutherland(1999), Blackmore(2003) and Libet(2004).

this conclusion's significance by re-examining Libet's research into volition.

This conclusion might be too much. There could be other reasons to demand static experience which overcome any objections from physical theory. If so, this would compel us to deny relativity (as Bergson did). Even so, it still demonstrates that in order to preserve a particularly common assumption about experience we cannot assume physical theory simply supports it.

Is this the final say on the matter? I doubt it. I have left out complications that might come from more advanced physics: I have not considered quantum mechanics as there are still open questions about uniting it with relativity; and I have not considered *general* relativity as I think this only complicates the account with ultimately the same result.

Our conception of time has undergone enormous change in the last century. This has been due to physical theory but it is also due to many philosophical arguments and clarifications that have been inspired by it (for a clear and thorough discussion, see Le Poidevin, 2003). Considering how much this conception of time has altered, it should be no surprise that there are implications for how we explain consciousness in time.

Perhaps what *is* surprising is that the implications for consciousness have not been considered more deeply. I hope the argument here is at least one step toward rectifying that neglect.¹⁹

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