A MINIMAL ACCOUNT OF TEMPORAL EXPERIENCE

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ABSTRACT

There are two features of temporal experience, *perceptual presence* and *temporal extension*, which I take to be essential. These features are both phenomenally grounded and intuitively plausible, yet they seem to be in conflict with one another. The truth of one seems to guarantee the falsity of the other. The first feature is that we only ever perceive that which occurs in the present. Perception is restricted to the *now*. However, in conflict with this, we perceive temporally extended events. We perceive events that unfold over an interval of time. If we only perceive events that occur now, then we cannot also perceive events that take time. This is the Puzzle of Temporal Experience.

I develop the Minimal Account, according to which perceptual experience has a minimal temporal content. By appealing to a direct reference account of indexicals, I set out the conditions under which a perceptual experience of a temporally extended perceptually present event can be considered accurate. In doing so, I provide a solution to the Puzzle of Temporal Experience.

The Minimal Account contributes to the current debate by analysing previously discussed puzzles of temporal experience. It helps to progress the debate by approaching these puzzles from a different perspective and providing a new solution.
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PART 1: TEMPORAL EXPERIENCE

1.1. INTRODUCTION

In my thesis I develop an account of the temporal content of perceptual experience, which I refer to as the *Minimal Account* of temporal experience. I focus on what I take to be two essential features of perceptual experience, *perceptual presence* and *temporal extension*. Perceptual presence is the feature that, phenomenally speaking, we perceive the *present*, recall the *past* and anticipate the *future*. Temporal extension is the claim that we perceive temporally extended events; perception is not limited to the momentary now, rather we *perceive* events that unfold over an interval of time. In developing the temporal content of these perceptual features, the Minimal Account provides a solution to the Puzzle of Temporal Experience. The puzzle states that these two features, perceptual presence and temporal extension, conflict with one another.

I develop an account of the temporal content of perceptual experience by providing what I take to be the veridicality conditions of a perceptual experience of a perceptually present, temporally extended event. I take the veridicality conditions to provide the conditions under which one’s experience is accurate; the conditions under which one’s experience accurately presents the temporal properties and relations of the perceived event.
My discussion is generally focused on visual perceptual experience, although I do on occasion appeal to auditory perceptual experience. I do not intend to favour a particular theory of perceptual experience over another. Rather, I intend to be neutral on the metaphysical theories of perception. My account should be applicable whether perceptual experience essentially has representational content, i.e. if Representationalism is correct, or whether perceptual necessarily involves an acquaintance relation between the perceiver and the objects of perception, i.e. if Naïve Realism is correct. I do endorse the claim that we are perceptually aware of external physical objects. That is, I deny that all that we are perceptually aware of are mental images or sense data. Although I talk in terms of perceptual content and perceptual presentation, the Minimal Account does not assume the truth of Representationalism.¹

In developing the Minimal Account of perceptual experience, I also intend to be neutral on the metaphysical theories of time. The Minimal Account provides an explanation of how temporal properties and relations are perceptually presented in experience. This account is about how things perceptually seem and not about the nature of time itself. The Minimal Account does not entail that time passes, nor does it deny this possibility; the

account that I develop should be consistent with a tensed or a tenseless theory of time. That is, I intend to be neutral on whether there is an objective past, present and future (i.e. A properties), or whether events stand in the relations of earlier than, simultaneous with and later than (i.e. B properties).² My discussion of A properties in what follows can be re-phrased into a discussion of B properties.

My overall claim is that the Minimal Account presents the correct veridicality conditions for the temporal content of perceptual experience. In defending this claim, I appeal, not only to how things perceptually seem, but also to theories of the meaning of temporal utterances, by doing so I provide a new way of accounting for our temporal experience.

My thesis is divided into five parts. The first half of parts two, three and four present my positive thesis, i.e. the Minimal Account, of perceptual presence, duration and succession, respectively. The second half of parts two, three and four, presents an alternative view. Whatever reasons there may be to favour these alternative views might be thought of as objections to the Minimal Account. I argue that the minimal view I have developed is better placed to account for the temporal phenomenon under discussion. Some of the material

² See McTaggart (1908) for an argument against the reality of time. See Le Poidevin (1998) for a discussion of McTaggart and of tensed versus tenseless theories of time.
in chapters 2.1., 2.2. and 5.1. are based on a paper co-authored with Joel Smith (Connor and Smith, 2019).

The first part of my thesis sets out the Puzzle of Temporal Experience, providing a detailed account of the two phenomenally grounded but seemingly contradictory claims, *perceptual presence* and *temporal extension*. In part two I develop the Minimal Account of perceptual presence. According to which, the temporal content of perceptual presence is exhausted by the direct reference to the time denoted by ‘now’. That is, I argue that the temporal content of a perceptual experience presenting an event as happening *now*, contains as an element only the time $t$, where ‘$t$’ is the time denoted by the token use of ‘now’. In the second half of part two, I develop an alternative account of perceptual presence, the *Token-Reflexive Account*. According to the Token-Reflexive Account, perceptual presence can be captured in terms of the perceived event being presented as simultaneous with one’s perceptual experience of it. I argue that the Token-Reflexive Account faces problems that the Minimal Account does not, and as such, the Token-Reflexive Account does not provide a more suitable account of perceptual presence.

Parts three and four concern *temporal extension*, where this means that we perceive events that unfold over a temporally extended interval. In part three I develop the Minimal Account of duration, according to which there is no
element in the temporal content of perceptual experience that presents an event as lasting for some determinate duration $x$. I argue that this is compatible with the claim that we perceive events as unfolding over time. I present the *Mental Processing Account* as an alternative to the Minimal Account. I argue that, unlike the Minimal Account, the Mental Processing Account faces insurmountable problems in attempting to account for experiences of slow time. In part four I develop the Minimal Account of succession, according to which the veridicality of one’s perceptual experience at a time is dependent on what one is *experiencing* over an interval of time. I consider alternative accounts of succession, namely the *Trajectory Estimation Model* and the *Overlap Model*, arguing that these alternative models do not provide an adequate account of succession.

In part five I consider some problems that might arise with regard to belief and justification. In the first half of part five I put forward an account of the cognitive significance of ‘now-experiences’ such that a perceptual experience of an event as happening at $t$ can inform a person’s belief that the event is happening *now*. In the second half of part five I develop an account of justification such that we can be justified in forming beliefs about the temporal properties of events, based on our perceptual experience. I argue that we can be justified in doing so even where the content of the belief does not correspond with the content of the perceptual experience.
1.2. THE PUZZLE OF TEMPORAL EXPERIENCE

The Puzzle of Temporal Experience has stemmed from two intuitive claims about the way in which we are perceptually presented with events. Each claim is phenomenally grounded, highly plausible, and generally speaking, widely accepted. Yet, the truth of each claim seems to rule out the possibility of the other. That is, the claims are seemingly inconsistent. As a method of highlighting the two claims, consider the following example:

As I glance out of my office window on this rainy Manchester day, I notice a particular raindrop at the top of the windowpane slowly gliding down. I watch its journey; I watch as it slides downwards towards the base of the window. Halfway through its trajectory, the raindrop’s movement dwindles and pauses. A larger raindrop moving at a faster speed meets and combines with the first, and together they continue their path to the base.

For simplicity I will pick out three distinct events from the above example: the raindrop at the top of the window, which I will refer to as event A, the pause halfway through, which I will refer to as event B, and the raindrop at the base of the window, which I will refer to as event C. In having the above experience, the perceiver first experiences A, followed by B, followed by C.

3 I will discuss some views which do not accept the two claims below.
From this we can identify the two phenomenologically plausible claims. The first claim involves the fact that, for any of the above events, when that event occurs the subject only perceives that event. For example, when event A occurs the subject perceives only A: when raindrop is at the top of the window what the subject sees is the raindrop at the top of the window and not the pause halfway through, or the raindrop at the base of the window. Likewise, when B occurs, the subject sees only the raindrop pausing halfway. At this time, they do not still perceive the raindrop at the top of the window for this would be to perceive the past. Nor do they perceive the raindrop at the base of the window for this would be to perceive the future. One way of specifying this is to say that perceptual experience is restricted to the present. In perceptual experience the perceiver seems to be aware of perceived events as present, or as happening now. This forms the basis of the first intuitive phenomenally grounded claim, which is that we perceive the present.\footnote{This is intended as a phenomenological claim about the content of perceptual experience, i.e. what is being experienced, rather than a metaphysical claim about the nature of perception or of that which is perceived. I will discuss this further in section 1.2.1. below.} I refer to this as perceptual presence.

The second claim is that, in perceiving the trajectory of the raindrop one perceives a temporally extended event. The movement of the raindrop necessarily unfolds over an extended interval of time: in order for an object to be moving that object must occupy different locations at successive times.
one watches the event unfold one really does see the raindrop move. The movement, which unfolds over time, is something that is perceived. In perceiving the raindrop moving, one is, therefore, perceiving something that unfolds over time. The second intuitive, phenomenally grounded claim is that we perceive events that unfold over a temporally extended interval. I will refer to this as temporal extension.

Perceptual Presence: we perceive the present.

Temporal Extension: we perceive events that unfold over a temporally extended interval.

These two claims, each of which appears to accurately represent our perceptual experience, are seemingly inconsistent. If perceptual experience is restricted to the present, in that everything that is perceived is perceived as present, then it cannot also be true that we perceive events which unfold over time, i.e. events which do not occur entirely in the present. In this section I will explain these claims, Perceptual Presence and Temporal Extension in more detail, showing how they cause the Puzzle of Temporal Experience.

1.2.1. PERCEPTUAL PRESENCE

Event $e$ is the event of a dot (d) moving. The temporal and spatial limits of the movement are from location $l_1$ to location $l_{10}$, across the temporal interval $t_1$ to
The spatial positions match the temporal positions, i.e. the dot is in location \( l_1 \) at \( t_1 \), location \( l_2 \) at \( t_2 \) etc. In perceiving \( e \) then, one has a perceptual experience (P) of the dot moving. In what follows I will use event \( e \) as my paradigm example of a temporally extended event.

Perceptual presence is the claim that, phenomenally speaking, we perceive the present. This means that, at \( t_2 \) when the subject has a perceptual experience of the dot being in \( l_2 \), it seems to the subject that the dot is \textit{now} in location \( l_2 \). It seems to one that what one perceives is happening \textit{now}.

This is a phenomenological claim as opposed to a metaphysical claim. It is a claim about the content of perceptual experience; a claim about how events are perceptually presented in experience. I am stating that the perceived event, event \( e \), is perceptually presented as happening now. This does not entail that event \( e \) must actually be occurring in the present. The latter claim is quite obviously wrong. Due to the time it takes for light to travel between perceived objects and the perceiver, there is always a short delay between the time at which an event occurs and the time at which one has an experience of that event. Thus, metaphysically speaking, we always perceive events that have occurred a short time ago. There is a time-lag between the objective time at which events occur and the objective time at which a subject has an experience.
of that event. This time-lag does not affect perceptual presence. This is because perceptual presence is the claim that the perceived events seem to occur now.

Perceptual presence then, is the claim that one seems to be aware of perceived events as occurring in the present. Event e does not phenomenally seem to have already occurred at some earlier time, nor does e seem yet to occur at some later time. In perceiving e, the dot phenomenally seems to be moving now. In this way we can contrast perceptual experience with recollection and anticipation. Perceptual experience is a now-directed experience: when one perceives an event, the perceived event is presented as occurring now. In contrast, recollection is a past-directed experience: when one recollects an event, the recalled event is presented as occurring at an earlier time or in the past. Anticipation on the other hand is a future directed experience: when one anticipates an event, the anticipated event is presented as not yet having occurred, or as about to occur in the future. Phenomenologically speaking then, we perceive the present, recall the past and anticipate the future.

I will be taking this to be a phenomenological truism. Any model of temporal experience must, therefore, account for the claim that, phenomenologically speaking, we perceive the present, recall the past and anticipate the future.
The second intuitive phenomenally grounded claim about perceptual experience is that we directly perceive events such as movement and change. What is meant by ‘directly’ is that our perceptual experience is not mediated by a secondary non-perceptual process, such as memory. Movement and change unfold over an extended temporal interval. As such, when we perceive movement and change, we perceive an event that unfolds over a temporally extended interval. When we see an event unfold it does not seem that we are only perceptually aware of the current temporal phase of that event. Take the paradigm case of event e: in seeing the dot move I am not only aware of the current temporal phase of the movement; I am not only aware of that which occurs objectively now. If that were the case, at one time I would only ever be perceptually aware of some stage of the dot’s movement and would never be perceptually aware of the event of the dot moving. For example, at t₂ I would only be perceptually aware of the dot in location l₂ and thus, not perceptually aware of the dot as changing locations. This is not how it seems. Alongside my current awareness that the dot is now in l₂, I am also perceptually aware of the movement. I am perceptually aware of the temporally extended event.

In order to assess what this entails, let us consider firstly what events are, and secondly what might be required in order to perceive an event.
I will start by distinguishing between events, objects and properties. Using event $e$ we can identify a member of each of these categories. The dot is an object. This object has a number of properties, for example, the dot has the property of being a certain colour, the property of being a certain size, and the property of being a certain shape. Both objects and properties fill time in the same way, they both continue to exist over time. The dot itself does not happen or unfold, rather it persists. The dot continues to be a dot over an interval of time. Likewise, the dot may have the property of being red, but the property ‘redness’ does not take time or unfold, rather the dot’s being red may continue to obtain over time. Event $e$, alongside having as constituents the dot and the dot’s properties, involves movement. The movement of the dot is an event. Events fill time in a different way to objects and properties, whereas the latter persist or obtain over time events happen or unfold over time.\(^5\)

I take events to be individual unrepeatable things that exist in the world; that is, I take them to be spatiotemporal particulars. This means that, just as we can pick out objects and properties in the world so too can we pick out events. For example, I may refer to event $e$ by saying ‘the event of the dot moving at $t$’ or ‘that movement’ where ‘that’ involves some kind of motioning towards the current movement of the dot. In doing so I am referring to a particular event,

\(^5\) See Soteriou (2013, chapter 4) for a discussion of the different ways in which different aspects of mind fill time.
which occurs over a particular interval and in a particular location. It is for this reason that events are unrepeatable. Although two events may share the majority of their properties, in virtue of being distinct events, they cannot completely share their temporal and spatial location.

When I refer to event $e$ I am referring to an individual occurrence of event $e$; I am referring to a particular movement of the dot that occurs in a spatiotemporal location. This view of events is shared by Davidson,

> Things change; but are there such things as changes? A pebble moves, an eland is born, a land-slides, a star explodes. Are there, in addition to pebbles and stars, movements, births, land-slides, and explosions? Our language encourages us in the thought that there are, by supplying ... all the machinery, it seems, of reference. If we take this grammar literally, if we accept these expressions and sentences as having the logical form they appear to have, then we are committed to an ontology of events as unrepeatable particulars ("concrete individuals"). It is to such events that we refer, or purport to refer, when we use descriptions like 'the death of Monteverdi', 'his second interview after the trial', 'the storm in the hills last night' (Davidson, 1970: 25).

As Maienborn confirms,
The overall conclusion that Davidson invites us to draw ... is that events are things in the real world like objects; they can be counted, they can be anaphorically referred to, they can be located in space and time, they can be ascribed further properties. All this indicates that the world, as we conceive of it and talk about it, is apparently populated by such things as events (Maienborn, 2011: 806, emphasis in original).

Having outlined what I am taking events to be, I will consider what it is to perceive an event. Putting aside the constraints from particular theories of perception, it is commonly accepted that we perceive objects and properties.\(^6\) For example, just as I can see the dot, I also see its colour and its shape.\(^7\) It has been suggested that we perceive events in just the manner that we perceive objects and properties. That is, whatever you take to be the conditions of perceiving objects and properties, the same conditions should apply in the case of perceiving events. For example, on an account of perceptual experience, if it is required that to perceive an object, that object must be a constituent of the representational content then the same applies for

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\(^6\) That is, I am putting aside whether we perceive an object by (i) the object being a constituent of our representational content, (ii) being acquainted with the object, or (iii) having a mental image of it, where these views are Representationalism, Naïve Realism and Sense Data theory, respectively.

\(^7\) There is some controversy surrounding the claim that we perceive colours, see Robinson (1994) for a discussion.
experiencing an event, the event must also be a constituent of the representational content.

In defence of the claim that we perceive events in just the same way as objects and properties, Foster states, “duration and change through time seem to be presented to us with the same phenomenal immediacy as homogeneity and variation of colour through space” (1982: 255). In a similar manner Dainton states, “one constraint is so basic I mention it right at the outset … : our experience of change is just as immediate as our experience of shape and colour”, he refers to this as the phenomenological constraint, which he deems to be an ‘obvious truth’ (Dainton, 2000: 115).

To be in line with the phenomenological constraint then, we must take it to be the case that one’s perceptual experience of events is just as immediate as one’s perceptual experience of objects and properties. It seems that immediate is intended to mean that there are no extra non-perceptual processes required for an experience of an event than would be required for an experience of an object or property. That is, no additional non-perceptual process is required for the perceptual experience of the temporally extended movement of the dot than is required to perceive the shape of the dot. Events, like objects and properties, are part of the content of perceptual experience; they are part of what we perceive.
I will be taking this to be a phenomenological truism. That is, any model of temporal experience should account for the claim that we seem to perceive temporally extended events.

1.2.3. THE PUZZLE

These two claims perceptual presence and temporal extension, each of which I take individually to be a phenomenological truism, seem to be in conflict with one another. If, phenomenologically speaking, perceptual experience is restricted to the present then it cannot also be the case that we perceive events that unfold over an interval of time. In order words, if perception only presents things as present, then we cannot perceive that which does not seem to occur entirely in the present. As events unfold over time, they have temporal sub-parts. These sub-parts are temporally ordered; the temporal sub-parts seem to occur before or after one another. The totality of the event, which is made up of these temporal sub-parts, therefore, does not seem to be entirely present.

I will use an auditory example to highlight the issue at hand. Suppose that a broken G chord is played on an instrument. The broken G chord includes the notes G, B, and D, played in succession. That is, G, B, and D, being played one after another. Let us call the particular sounding of this broken chord event $g$. When note G is played, one hears note G as sounding *now*, at the exclusion of
the other notes. That is, when one hears note G sounding, one does not also hear note B and D as sounding. If one did, then one would be hearing a chord and not a succession of notes. Likewise, when note B is played one hears note B as sounding now and does not hear G and D. When note D is played one hears note D as sounding now and does not hear G and B.

However, hearing event g involves more than hearing the individual notes as presently sounding. One does not hear the individual sounding in isolation but also experiences the relation between the notes. Hearing the broken chord involves experiencing the temporal relations holding between the notes; hearing B not only as sounding now but also as following on from G and perhaps as flowing into D.

If we compare two cases, one in which B is played in isolation, and the other in which B is played after G we can see that there is a phenomenal difference between each case. In the first case one is only phenomenally aware of the sounding of note B. However, in the second case, one does not merely hear B being played but hears B as following G. One has an experience that includes succession. One If one experiences B as following G, then one’s experience must involve G.8

8 See Phillips (2008: 178-179) for a discussion of the phenomenal difference between these two types of cases.
The above example should highlight why it is the case that, to experience succession one must experience the temporal parts of the event so related. To motivate this we can appeal to the similar case of spatial relations. Take the two-place spatial relation \_to the left of\_, to perceive an instance of this relation one must, at the time of perceiving the relation, also perceive the objects so related. For example, to perceive that the dot is to the left of the dash, at a time one must be perceiving both the dot and the dash. If one were only perceiving the dot, then one would not be perceiving the dot as being to the left of the dash. Of course, one could judge that the dot is to the left of the dash without perceiving both relata, but one could not see that the dot is to the left of the dash without at that time also seeing both the dot and the dash. That is, to perceive the relation of \_to the left of\_ one must also perceive the things so related.

In order to be phenomenally aware of a relation at time \( t \), one must at \( t \) be phenomenally aware of the relata. As succession is a relation, to perceive the relation of succession between G and B at time \( t \), it follows that at \( t \) one must perceive both G and B.\(^9\) However, as identified above, when B sounds it is not the case that both temporal parts of the event (i.e. G and B) are both present, neither is it the case that they both seem to be present. When the subject hears

\(^9\) See Lango (2000: 184-185) for a defence of the claim that to perceive the temporal relation between the notes, one must simultaneously perceive the notes.
B sound, they no longer hear G as still sounding. Thus, to experience the temporally extended event of the broken chord, i.e. to experience the temporal relation between the notes, one must be perceptually aware of more than what seems present. This leads to the Puzzle of Temporal Experience: if perception only ever makes us aware of the present then it cannot be the case that we perceive temporally extended events.

Before defending my account of temporal experience, an account which solves the puzzle, I will briefly map out the current approaches to the puzzle.

1.2.4. APPROACHES TO THE PUZZLE

Approaches to solving the puzzle can be divided along two different dimensions. On the first dimension the distinction is between whether the perceptual experience is taken to be a state or a process. On the second dimension the distinction is between whether the experience presents a temporally unextended moment or a temporally extended interval.\(^9\) I will consider each of the available options in turn, before categorising the different kinds of approaches available.

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\(^9\) I use ‘temporally unextended moment’ and ‘instant’ interchangeably, to pick out a point in time.
One way of distinguishing between different ontological categories is in terms of how the entities which make up those categories occupy time.\footnote{See Vendler (1957), Mourelatos (1978) and Soteriou (2013) for a classification of verb categories and how the things to which those verbs refer fill time. I discuss this later in §§2.1.4 and 4.1.2.} We can distinguish between states and processes along this line. States are ways that a thing is at a time. At some arbitrary time, we can consider what state an object is in. For example, at some time $t$ the dot can be in a number of states; for example, at $t$ the dot is in the state of being red, it is also in the state of being circular. These states may persist over time. That is, there may be an extended interval over which the dot is in the state of being red. The state, however, does not \textit{take} time. Whilst the dot might be red for a period of ten seconds, its being red does not \textit{take} ten seconds. Let us say then, that states \textit{obtain} at a time, or \textit{persist} over time.

Processes, on the other hand, are things that happen. Processes \textit{unfold} over time. For any process we can ask how long that process \textit{takes}. The movement of the dot \textit{takes} a number of seconds, likewise the broken chord \textit{takes} a number of seconds to play. Just as it would be incorrect to say that the dot being red takes ten seconds, it would also be incorrect to say that the dot’s movement persists, or that the playing of the broken chord \textit{obtains}.\footnote{See Vendler (1957), Mourelatos (1978) and Soteriou (2013) for a classification of verb categories and how the things to which those verbs refer fill time. I discuss this later in §§2.1.4 and 4.1.2.}
The first dimension along which approaches to the puzzle can be distinguished is in terms of whether perceptual experiences are taken to be states or processes. That is, on whether perceptual experiences are, on the one hand, taken to be the kinds of things that obtain at a time or persist over time, or on the other hand, taken to be the kinds of things that take time or unfold over time. Following the classifications made in Connor and Smith (forthcoming), I will call the view that perceptual experiences are processes, ‘extensionalism’ and the view that perceptual experiences are states, ‘non-extensionalism’.\(^\text{12}\)

The second dimension is a distinction between whether the experience presents a temporally unextended moment or a temporally extended interval. This is a question of whether a perceptual experience presents what is the case at a moment or what is the case over an extended interval. Putting aside any particular theory of perceptual experience, this amounts to whether perceptual content is momentary or itself temporally extended. For example, when listening to the broken chord, we can ask whether a given perceptual experience presents just one of the notes, e.g. B, or more than one, e.g. G, B, and D.\(^\text{13}\) Again, following the classifications made in Connor and Smith

\(^{12}\) In using the terminology ‘extensionalism’ I follow Dainton (2010).

\(^{13}\) As the individual note will itself extended across a brief interval, strictly speaking if the perceptual experience presents an unextended moment the content of that perceptual experience would not contain the whole note but only some temporal part of that note.
(forthcoming), I will call the views that take perceptual experience to present a temporally unextended moment ‘thin’ and those that take perceptual experience to present a temporally extended interval ‘thick’.

By distinguishing along these two dimensions we have four possible views: Thin Non-Extensionalism, Thick Non-Extensionalism, Thin Extensionalism, and Thick Extensionalism. 14 The thin non-extensionalist believes that perceptual experiences are states that present temporally unextended moments in time. The thick non-extensionalist also believes that perceptual experiences are states, but they believe that these states present temporally extended intervals. The thin extensionalist believes that perceptual experiences are processes that present temporally unextended moments in time. The thick extensionalist also believes that perceptual experiences are processes, but they believe that these processes present temporally extended intervals.

Whilst these titles delineate the four possible approaches to the puzzle, it is not clear that anyone has explicitly endorsed thin extensionalism. The other three views have been explicitly defended in the literature. In the remainder of this chapter I will set out some of the key elements of these views, putting

14 What I call ‘Thick Non-Extensionalism’ has elsewhere been called ‘Retentialism’ (Dainton, 2010) or ‘Intentionalism’ (Hoerl, 2012a).
forward some arguments against each view. I do not intend here to provide a knock-down argument for any of the following accounts, rather I intend to highlight that each view faces difficulties in accounting for temporal experience.

A. THIN NON-EXTENSIONALISM

Thin Non-Extensionalism is the view that perceptual experiences are states, and that these perceptual states present temporally unextended moments. A statement of Thin Non-Extensionalism can be found in Thomas Reid’s Essay (1985). With regard to the claim that perceptual experiences are states, although Reid does not make the distinction between states and processes and thus does not explicitly refer to perceptual experiences as states, it is evident that he would endorse this non-extensionalist claim from the following,

if we speak strictly and philosophically, no kind of succession can be an object of either the senses, or of consciousness; because the operations of both are confined to the present point of time, and there can be no succession in a point of time; and on that account the motion of a body,

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15 This view has elsewhere been referred to as Atomism (Chuard, 2011), The Cinematic View (Dainton, 2010, §4) and The Snapshot View (Chuard, 2017).
which is successive change of place, could not be observed by the senses alone without the aid of memory (Reid, 1785, Essay III, Ch.V).

According to Reid, as perceptual experience is a sense it is confined to the present point in time. Consciousness and the senses (which include perceptual experience) are confined to the present, which is an indivisible point in time. Thus, for Reid, perceptual experience is momentary. As processes are things that take time or unfold over time, on Reid’s account perceptual experience cannot be a process. As states are things that obtain at a time, it seems clear that Reid endorses this first claim of Thin Non-Extensionalism.

Evidence of Reid’s support of the second claim, that perceptual experience only presents a temporally unextended moment is also available,

Memory is what gives us immediate knowledge of things past. The senses give us information of things only as they exist in the present moment; and this information if not preserved by memory, would vanish instantly, and leave us as ignorant as if it had never been (Reid, 1785, Essay III, Ch.I).

If we combine this with Reid’s claim that the present is a indivisible point in time, “Philosophers give the name of the present to that indivisible point of time which divides the future from the past” (1785, Essay III, Ch. V), then it is clear that this is an expression of a thin view. According to Reid, perception
presents only things as they exist in the present, which he takes to be an indivisible point in time. Thus, on this view, at a time perception only presents an unextended moment. In other words, the content of perceptual experience is momentary.

An expression of Thin Non-Extensionalism is also found in Chuard (2017). Seemingly in contention with the non-extensionalist claim, however, Chuard also claims that perceptual experiences are processes; particularly, he refers to perceptual experiences as *events*, “The first consideration concerns the ontology of perceptual experiences, which seem best thought of as *events*: particulars happening at or over a time” (2017: 122). Here, when Chuard refers to perceptual experiences as being processes, i.e. things that *happen*, he is talking about something which is made up of shorter more fundamental temporal parts. Chuard claims that the fundamental units of perceptual experience are moments, “insofar as the occurrence of perceptual experiences in time is concerned, all there really is reduces to very short (perhaps even instantaneous) slices, temporal parts or “snapshots” (2017: 121). That is, the fundamental units of experience are these moments, of which the experiential process is made,

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16 Alongside this, Chuard also claims that, “there’s no reason to think the experience itself persists” (2017: 125).
insofar as sensory experiences go, our streams of consciousness are made up essentially of successive short-lived experiential states, each representing a particular temporal part of a perceived event (the one causally responsible for such an experiential state, when things go well) and nothing more (Chuard, 2017: 124, emphasis in original).

Chuard is, therefore, defending the non-extensionalist claim. That he also accepts that perceptual content is thin, is clear from his claim that, “no temporal relation between non-simultaneous perceived events figure in the content of any such short-lived experiential event” (Chuard, 2017: 121). On this view each of the fundamental building blocks of perceptual experience presents only the temporal relations (i.e. the relation of simultaneity) between that which occurs at one moment in time. We do not, therefore, perceive the temporal relations of events that unfold over an interval of time. As a result, we can categorise Chuard’s account as a version of thin non-extensionalism.

The non-extensionalist view of (the first few stages of) our paradigm example, event $e$, can be represented as follows in figure 1:
Here we see three perceptual experiences (E₁, E₂, E₃), each of the experiences constitutes an awareness (as represented by each of the vertical arrows) of a stage of the dot’s movement (Bd₁, Bd₂, and Bd₃) at three times (t₁, t₂, t₃). The horizontal arrow represents the direction of time.

Thin Non-Extensionalism respects the phenomenological truism that we only perceive that which seems to occur in the present. That is, on this view, as each

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17 Bdᵧ here signifies the relation of the dot being in location x.
18 Figure 1, and the diagrams that follow, are of course simplifications. For example, as we have seen above, due to the time it takes for light to travel to the perceiver we are always perceiving events that happened a short time ago. To account for this time-lag the vertical awareness lines should, rather than being vertical, point slightly backwards into time. However, for the purposes of highlighting the different views under discussion, these simplifications are useful.
momentary perceptual experience represents only that which occurs in that moment, it respects perceptual presence. It seems however, that the principles of Thin Non-Extensionalism are in conflict with the second phenomenological truism, that we perceive temporally extended events. If perceptual experience presents only a snapshot, that is, a still image of the perceived environment without representing any non-simultaneous temporal parts, it cannot be the case that temporally extended events are part of the content of perceptual experience.

To solve the Puzzle of Temporal Experience the thin non-extensionalist must accommodate temporal extension. Can this picture of temporal experience accommodate the claim that we perceive not only static images of the dot as occupying different locations at different times but a perception of the dot as moving? For example, can it account for the claim that we hear, not only the individual notes, G, B, and D, but the relation between them?

Chuard, at least, claims to be able to answer affirmatively to this question. He claims that the Thin Non-Extensionalist can account for the perceptual experience of temporal properties and relations,

yet [this view] isn’t so radical as to imply that we can’t perceive temporally extended events: we do, of course, by successively experiencing enough
successive temporal part of those events. Neither does it rule out the seemingly continuous and dynamic phenomenology we can introspect when hearing melodies or seeing changing facial expressions (Chuard, 2017: 121).

According to the Thin Non-Extensionalist, although a single perceptual experience does not present temporally extended durations, one’s awareness of a succession of these momentary still images, combined through perception and memory, can account for the phenomenology of experiencing temporally extended events. It is really this combination of perception and memory that gives us an awareness of temporally extended events. This combination has been easily mistaken for perception for the reason that, as Reid states, “there is no necessity in common life of dividing accurately the provinces of sense and of memory” (Reid, 1975, Essay III, Ch.V).

Much of the discussion, however, has answered the question negatively: claiming that the Thin Extensionalist cannot account for the perception of temporal properties and relations.19 This has been based on two issues. The first can be summarised by a widely accepted and repeated claim stated by William James, that a “succession of feelings, in and of itself, is not a feeling of succession” (James, 1890: 628, Vol. I). In order to experience succession, more

is required than having a succession of experiences; no matter how many successive experiences one has, they can never combine to form an experience of succession. This is because the latter requires an awareness at a time, of more than that which occurs at that time.

As according to the Thin Non-Extensionalist, non-simultaneous temporal relations are not presented in a single perceptual experience, one can never be aware of more than that which occurs at that time. One can, therefore, never perceive temporally extended events such as succession.

Secondly, such a reliance on memory is clearly in conflict with the phenomenal constraint, which requires that temporal properties and relations must be perceived as immediately as shape and colour. Relying on memory, a cognitive non-perceptual process, cannot then account for the phenomenology of perceived temporally extended events.

Thin Non-Extensionalism might be considered, then, an error theory. It holds that our common sense belief that we are perceptually aware of events that unfold over time is false. On this view, whatever awareness we have of such events is necessarily grounded in a combination of perceptual experience and memory.
B. THICK NON-EXTENSIONALISM

Thick Non-Extensionalism is made up of two central claims. The first is that perceptual experiences are states, as such, whilst perceptual experiences might obtain over an interval of time they do not take or unfold over time. The second claim is that these perceptual states present a temporally extended interval. An expression of Thick Non-Extensionalism can be found in William James’ discussion of the *specious present*. James writes,

The practically cognized present is no knife-edge, but a saddle-back, with a certain breadth of its own on which we sit perched, and from which we look in two directions into time. The unit of composition of our perception of time is a duration (1890: 609, Vol. I)

On this view, the ‘practically cognized present’ of which we are currently aware spans a brief interval of time. The specious present can be contrasted with the physical or mathematical present. Whilst the latter is the indivisible dividing point between the past and the future, the former is the *perceived* present. The specious present is the interval over which one is perceptually aware of events, or temporal parts of events, *as* present. According to those who defend a specious present account of temporal experience, what we are perceptually aware of is not restricted to a temporally unextended moment.
Rather, through perceptual experience we are presented with events that unfold over a temporally extended interval of time.

That James endorses a non-extensionalist account of temporal experience is apparent from his claim that there is “a sort of perspective projection of past objects upon present consciousness, similar to that of wide landscapes upon a camera screen” (James, 1890: 630., Vol. I). Thus, according to James, although one is perceptually presented with events that unfold over a temporally extended interval, the perceptual experience itself is not temporally extended. Rather, the perceived interval is projected onto a momentary experience.

This thick non-extensionalist claim that a momentary perceptual state presents a temporally extended interval requires that the perceiver is simultaneously perceptually aware of the successive parts of the event. Miller has referred to this as the Principle of Simultaneous Awareness (hereafter, PSA) (Miller, 1894: 109). PSA states that, to be unified in consciousness the contents of an experience must be simultaneously available to a single momentary unit of consciousness. We can experience the dot moving because different temporal stages of the movement are simultaneously available to a single momentary unit of consciousness. A defender of PSA must hold that at any instant, we are not only aware of what is occurring at the time of the experience, but also that we are aware of what has just occurred, and what is
just about to occur: at a temporally unextended moment we perceive
temporally extended phenomena.\textsuperscript{20}

An expression of Thick Non-Extensionalism, and PSA is clear in Husserl’s
account of the structure of temporal experience (1991, Lectures from the year
1905).\textsuperscript{21} Husserl claims that a perceptual experience has a tripartite temporal
structure. At the present moment we are not only perceptually aware of that
which is occurring now, but we are also perceptually aware of that which has
previously occurred and of that which is about to occur. That is, at a time $t$,
through the three-part structure of perceptual experience, one will be
perceptually presented with more than that which occurs at $t$. At $t$, the
perceiver is perceptually aware of what is happening now through an aspect
of perceptual experience that Husserl calls the ‘primal impression’: he writes,
through the primal impression “I am conscious of the first time-point of the
tone’s duration in the mode of the now. The tone is given; that is, I am
conscious of it as now” (Husserl, 1991: 265-266). At $t$, the perceiver is also
perceptually aware of that which has just happened as just having happened,
through an aspect of perceptual experience that Husserl calls the ‘retention’.

\textsuperscript{20} An expression of this principle is also approved by James, by endorsing Volkmann’s claim,
“if A and B are to be represented as occurring in succession, they must be \textit{simultaneously represented}” (quoted in James, 1890: 630., Vol. I).

\textsuperscript{21} This view known elsewhere as ‘Retentionalism’ (Dainton, 2008, 2010). It is more recently,
a discussion of Husserl’s structure of perceptual experience across time.
The third part of the structure of the perceptual experience presents that which is just about to happen, as just about to happen through an aspect of perceptual experience that Husserl calls the ‘protention’ (Husserl, 1991: 41).

Let us consider an example to explain this tripartite temporal structure more clearly. If we take the experience of the dot’s movement from location $l_1$ to $l_3$. At time $t_2$, the perceiver is aware of the dot as now being in location $l_2$ through the primal impression. The perceiver is also aware at $t_2$ that the dot was just in location $l_1$ through the retentional aspect of perceptual experience, and that the dot is just about to be in location $l_3$ through the protentional aspect of perceptual experience. Thus, at $t_2$ one can see the dot’s present location surrounded by a ‘halo’ of past and future locations: the perceiver might be said to be aware of the movement of the dot.

That this is an expression of non-extensionalism is evident from the fact that this structure of perceptual experience obtains at a time, rather than unfolding over an interval. This perceptual state presents an event that occurs over temporally extended interval, it presents the movement of the dot that objectively overs the interval $t_1$ to $t_3$. The perceptual content is, therefore, temporally extended or in other words it is thick.\(^{22}\)

\(^{22}\) The structure that I have just outlined only details Husserl’s account of the temporal structure of a singular experience. He also claims that that our perceptual awareness recedes
Thick Non-Extensionalism can be represented as follows,

Here again we see three perceptual experiences (E₁, E₂, E₃). Each of the experiences constitutes an awareness of the dot as occupying a series of locations (Bd₁, Bd₂, and Bd₃) at three times (t₁, t₂, t₃). The horizontal arrow represents the direction of time. The vertical lines represent the primal impressions (an awareness of the present as present), the leftwards leaning lines represent retentions (an awareness of the past as past), and the

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into the past, “What is happening in the present is however, continuously changing and that which was previously experienced as a primal impression is now in the past, it ‘‘recedes” into the ever more distant past” (Husserl, 1991: 25), and “this now-apprehension is, as it were, the head attached to the comet’s tail of retentions relating to the earlier now-points of the motion” (Husserl, 1991: 32).
rightwards leaning lines represent the protentions (an awareness of the future as future). Thus at \( t_2 \), the subject has an experience \( E_2 \), which includes, an awareness of the dot as now being in location \( l_2 \) through the primal impression, an awareness of the dot as just having been in location \( l_1 \) through the retention, and an awareness of the dot as about to be in location \( l_3 \) through the protention. This constitutes an awareness of the movement of the dot, which the subject has at a moment in time, \( t_2 \).

Thick Non-Extensionalism seems to be able to account for our perception of temporally extended events. One is simultaneously aware of the successive stages of an event. At that time, one is in a position to be aware of the temporal relation holding between those stages of the event. Thick Non-Extensionalism may seem less able to account for perceptual presence, the claim that we only perceive that which is present. This is because advocates of Thick Non-Extensionalism hold that, at a time \( t \), one is perceptually aware of that which occurs over an interval larger than \( t \). Or, at \( t_2 \), one is perceptually aware of that which occurs at times other than \( t_2 \). Appealing to the sub-section of event \( e \), at \( t_2 \), one is perceptually aware of the part of the event that unfolds over the interval \( t_1 \) to \( t_3 \), i.e. the dot moving from location \( l_1 \) to \( l_3 \). As a result, thick non-extensionalists defend the claim that we are perceptually aware of the past and the future.
A consequence of Thick Non-Extensionalism is that the temporal content of experience has no explanatory role to play in accounting for how we experience events. That is, the order in which an event is experienced, according to thick non-extensionalism, does not depend on a particular order of experiences. This is because a single experience can present the temporal order of events. Likewise, the perceived duration of an event is not explained in terms of the duration of the experience. Assuming that one experiences an event \( e \) as lasting for some interval \( x \), the reason for \( e \) seeming to last \( x \) is not to be explained in terms of the experience itself lasting for interval \( x \). There need not be any correlation between the temporal properties of experience and the temporal properties as experienced. If one accepts the claims of thick non-extensionalism then, the perceived temporal relations cannot be explained by appealing to the temporal structure of experience.\(^{23}\)

Defenders of Thick Non-Extensionalism claim that a person is simultaneously aware of events, which are perceptually presented as successive. That is, if one is at \( t_2 \) simultaneously aware of the dot as in locations \( l_1, l_2 \) and \( l_3 \), how can this amount to an experience of succession? This has been referred to as the Simultaneity Problem (Dainton, 2010). To avoid this problem, those who accept a version of Thick Extensionalism generally appeal to *modes of*

\(^{23}\) See Rashbrook-Cooper (2017) for a similar argument.
presentation (as we have seen in Husserl’s distinction between the way in which the retentional, primal impression and protentional aspects of experience present their objects). At $t_2$, one is only perceptually presented with the dot as in location $l_1$ as past and not as currently happening. Likewise, at $t_2$, one is only perceptually presented with the dot as in location $l_3$ as future and not as currently happening.

It seems however, that to be presented with something as past, one must either claim that we perceive the past, or appeal to a form of memory. Similarly, to be presented with something as future one must claim that we perceive the future, or appeal to expectation. Neither option seems ideal. To claim that we perceive the past or future is to claim that we can perceive things that are no longer or not yet occurring. That is, it conflicts with perceptual presence. However, on the other hand, to appeal to memory or expectation is to deny that the experience of succession really is entirely perceptual.

If one takes the second option, it becomes difficult to see the difference between the thick and thin forms of non-extensionalism. After all, the thin non-extensionalist supplements the perceptual awareness of the present with memory and expectation of the past and future. The thick extensionalist is then faced with a dilemma: either retention and protention are genuinely perceptual or they are not; if they are, then the view conflicts with the claim
that one perceives only what is happening at the time of one's perception (and perceives it as present); if they are not, then the view collapses into Thin Non-Extensionalism.24

C. THIN EXTENSIONALISM

Thin Extensionalism has not been explicitly defended in the literature. It is a particularly unappealing approach to the Puzzle of Temporal Experience. As such I will spend little time on it. I merely wish to point out the key aspects and highlight the issues it would face.

An account of Thin Extensionalism would defend the claim that perceptual experience is a process in that it unfolds over time, but that it presents a temporally unextended moment. It can be represented as follows in figure 3,

24 Chuard (2011), for example, counts Husserl's view as a form of Thin Non-Extensionalism (in his terms, 'atomism').
Here we see one temporally extended perceptual experience (E), which unfolds over a temporal interval \((t_1, t_2, t_3)\), but only constitutes an awareness of the dot as occupying an individual location \((Bd/l)\). The horizontal arrow represents the direction of time.

The reason that this view is so unappealing is that it cannot account for either of the phenomenological truisms. Firstly, it claims that over an interval one perceptually represents only a temporally unextended moment. Such a temporally extended perceptual process would not be able to present temporally extended events. It also fails to account for perceptual presence. One is only perceptually aware of a sub-interval (i.e. that which occurs at \(t_2\)), of the interval over which the experience unfolds (i.e. \(t_1\) to \(t_3\)). The reason Thin
Extensionalism causes a problem here is that it would hold that at \( t_1 \) the subject is undergoing experience E, which presents only that which occurs at \( t_2 \), namely the dot being in location \( l_2 \). The same applies for \( t_3 \). This is in conflict with the intuitive claim that, if one is experiencing at \( t_1 \) then what one is experiencing is taking place, or at least seems to take place, at \( t_1 \).

Due to these issues, and the fact that it is not defended in the literature, I will not be discussing this view further.

**D. THICK EXTENSIONALISM**

Thick Extensionalism is the view that perceptual experiences are temporally extended processes that unfold over time, and that these perceptual processes present a temporally extended interval, rather than an instant.

Thick Extensionalism is widely defended in contemporary literature. 25 Dainton writes that, a single perceptual experience “consists of an experienced expanse of content that presents change […] and extends through time in just the ways it seems to: [it] is a temporally extended stream of consciousness” (Dainton, 2008: 370). According to Dainton then, a single perceptual experience itself unfolds through time and presents temporally extended

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events. This is clearly an endorsement of the two claims that make up Thick Extensionalism, it entails both the claim that the perceptual experience presents temporally extended events, i.e. change, and that the perceptual experience itself unfolds in just the same way.

Phillips also defends a thick extensionalist account of temporal experience. It is clear that he takes perceptual experience to be temporally extended in what follows, “[w]hen it comes to experience, it is significant stretches, not instants, that are explanatorily and metaphysically fundamental” (Phillips, 2014a: 149-150), although this demonstrates that Phillips takes perceptual experiences to occupy a temporally extended duration, it does not yet identify that Phillips also takes experience to be a process. However, that he does hold this view can be seen when he writes, “Experience is a process and, as such, unfolds in time with its parts standing in temporal relations to one another” (Phillips, 2014b: 132). That Phillips is also defending a thick account is clear, “[t]he briefest reflection reveals that temporal properties – simultaneity, succession, order and duration – are manifest throughout perceptual experience” (Phillips, 2014b: 132).

Dainton defends what he calls the Overlap Model, which faces a number of challenges. I will be discussing the Overlap Model in more detail in §4.2.

I will be discussing Phillips’ account of temporal experience in more detail in §3.2.
The thick extensionalist view can be represented as follows in figure 4,

Here we see one temporally extended perceptual experience (E) represented by the thick vertical arrow, which unfolds over a temporal interval \((t_1, t_2, t_3)\), and constitutes an awareness of the dot as occupying a series of locations \((Bd/l_1, Bd/l_2, \text{and } Bd/l_3)\). The thin horizontal arrow represents the direction of time.

The thick extensionalist seems able to account for the first phenomenological truism, that we can only experience that which is present. This is because, on this view, experience unfolds alongside and in just the same way as the perceived events seem to unfold (Phillips, 2014b: 132). As such, as the experience unfolds it can continue to present the perceived events as
happening now. If we consider the paradigm example, event $e$, it follows that at $t_2$ the unfolding perceptual process presents the dot as being in location $l_2$. As the experience continues to unfold in line with the event being perceives, at $t_3$ the dot is perceptually presented as being in location $l_3$.

Although it seems that the thick extensionalist is well placed to account for perceptual presence, in that the current temporal phase of an experience presents the current temporal phase of the perceived event as happening now, this seems to conflict with the phenomenological truism that we can perceive temporally extended events. As seen earlier, to perceive the temporal relation of one temporal part of an event following on from another one must at a time $t$ be perceptually aware of both temporal parts of the event. That is, to perceive the relation at $t$, one must at $t$ perceive the things so related. If, however, perceptual experience only ever presents the current temporal phase of an event as happening now, it cannot accommodate this claim that we perceive temporally extended events.

In response to this, the thick extensionalist claims that as the single perceptual experience $E$ unfolds over the interval during which the two temporal phases of the event occur, one is perceptually aware not only of the current temporal phase but also of the relation holding between them. That is, because $E$ itself unfolds over the temporal interval $t_1$ to $t_3$, over which the dot moves from
location \(l_i\) to \(l_j\), one perceives the movement that occurs across this interval. It seems then, as an initial assessment, that the thick extensionalist might be well placed to account for each of the two phenomenological truisms.

Although it might be able to account for the two phenomenological truisms, the Thick Extensionalist defends the claim that experiences unfold in just the way the events being experienced seem to. That is, there is a correspondence relation between the perceived temporal properties of the event and the temporal properties of the experience. For example, on this view, if the event seems to last for a second, then the experience presenting that event must actually last for a second. Likewise, if an experienced event seems to occur in a particular order, perhaps A, B, C, then according to this view, one must first have an experience of A, followed by an experience of B, which in turn is followed by an experience of C.

Lee (2014a) refers to this Thick Non-Extensionalist claim as Mirroring. He distinguishes two levels, *Metrical Mirroring* and *Topological Mirroring*. The first involves mirroring between the duration that an experienced event seems to have and the duration that the experience itself actually has. I will put this to one side for now, as I present an argument against it in Chapter 3.2., involving experiences of slow time. Topological Mirroring has weaker constraints, requiring only a mirroring between the perceived temporal order of events.
and the temporal order of experiences. There is, however, empirical evidence that conflicts with Topological Mirroring. A person can perceive two events as non-simultaneous, without perceiving their temporal order. Such experiences cause a problem for defenders of Topological Mirroring, as Lee writes,

Suppose I experience two events as non-simultaneous without being presented with their temporal order: how does the Mirroring theorist allow for this? To literally mirror this content, the experiences would have to be themselves non-simultaneous without having some particular temporal order.

If such mirroring does not occur between the temporal properties that events perceptually seem to have and the temporal properties of the perceptions themselves, then it is not the case that experience unfolds in step with, and alongside, the perceived events.

Having outlined the currently available responses, I will briefly state how my thesis and the view that I defend, the Minimal Account, relates to this landscape.

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28 See Hirsch and Sherrick (1961), Mitrani et al. (1985) for the evidence indicating that we can perceive events as non-simultaneous without experiencing their temporal order (this evidence is cited by Lee (2014a)).
Firstly, my aim in this thesis is not to take a definitive side between Thin Non-Extensionalism, Thick Non-Extensionalism and Thick Extensionalism. To ultimately defend one of these accounts would itself take an entire thesis. Rather, my aim is to explain features of perceptual experience that I think are currently unexplained, or inadequately dealt with, by these views. These features, being *perceptual presence* and *temporal extension*, I take to be essential features of perceptual experience. I put forward what I take to be the conditions under which a perceptual experience is accurate. In doing so, I develop an account, the Minimal Account.

The Minimal Account most prominently shares features with Thick Extensionalism. I suggest that through perceptual experience we are presented with a temporally extended interval of time. I argue that we perceive events as unfolding over time $t$, which I claim is best understood as an interval. However, this understanding is not necessary. One could accept the general framework of the Minimal Account but interpret $t$ as an instant. That is, one could accept the general account presented but claim that the experience presents temporally unextended moments; it follows that the Minimal Account could be consistent with a thin view.
The accuracy conditions that I provide are intended to exhaust the temporal content of perceptual experience. I claim that we directly perceive change, which could be best explained by the experience itself being something which can incorporate change. That is, by being a process as opposed to a state. If however, as Thick Non-Extensionalists claim, the content of perceptual experience makes reference to the past and the future (i.e., experience has the tripartite structure of retention, primal impression and protention) then the Minimal Account will not provide a complete specification of the temporal content of perceptual experience but will rather provide a specification of that aspect of perceptual experience that makes reference to the present (that is the primal impression). Thus, the claims of the Minimal Account could be re-stated in line with a Non-Extensionalist Account.

Thus, although I am most sympathetic with a Thick Extensionalist account of temporal experience, my aim is not to specify the temporal structure of experience but to provide the correct temporal content of perceiving a perceptually present, temporally extended event.

In what follows I provide an account of each of the phenomenological truisms, in a manner that solves the Puzzle of Temporal Experience and which avoids problems associated with the current approaches.
PART 2: PRESENCE

The first feature, which I have claimed is a phenomenological truism, is that perceptual experience makes us aware of events that occur in the present, as present. One might say that perceptual experience is ‘restricted to the present’, in that we can only perceive that which occurs ‘now’.

In part two I provide an analysis of this feature of perceptual experience. In the first half I develop my positive account of perceptual presence, the Minimal Account. I argue that perceptual content has no explicitly indexical element, that is, the indexical ‘now’ is not a constituent of the content of perceptual experience. Rather the temporal content of perceptual presence can be expressed in terms of the time denoted $t$. This, however, does not provide a complete account of perceptual presence. It is lacking the fact that the perceived event seems to be happening or unfolding over an interval. I provide an account of the progressive aspect of perceptual experience, according to which we experience events as being in progress over $t$.

In the second half of part two I put forward an alternative account, the Token Reflexive Account. I will argue that it faces two major problems. Firstly, it conflicts with transparency, and secondly it entails that that which is perceived is mind dependent.
2.1. PERCEPTUAL PRESENCE

We perceive the present, I take this to be a phenomenological truism. Any account of temporal experience should, therefore, be in a position to account for the fact that what we perceive seems to be occurring now.

This is a phenomenological, not a metaphysical claim. I am not claiming anything about the actual temporal location of the event. I am not claiming that the perceived objects and events must actually be occurring in the objective now. This claim is quite clearly false. As we have seen above, we always perceive some distance into the past. Consider looking up to the sky at night and seeing a star; depending on the distance between yourself and the star, the light that you currently see may have been emitted hundreds or thousands of light years ago. The light that you are now seeing may be from a star that died many years ago. Whilst your current perception is of something that objectively occurred in the past, what you see seems to be present. This is the phenomenal claim: what we perceive seems to occur in the present.\(^{29}\)

\(^{29}\) This claim of perceptual presence has been endorsed in the literature. Peacocke, for example, writes, “perceptual experience itself has a present-tense content. It represents to the perceiver the event as occurring then – at the time of the experience” (1999: 280).
In this way we can distinguish between perceptual experience, recollection and anticipation. The type of recollection that I am concerned with here is episodic recollection as opposed to semantic recollection. That is, I am concerned with the experience of bringing to mind a previously experienced event in a manner which could be considered ‘re-experiencing’ or ‘re-living’ that event. I could, for example, episodically recall seeing the dot move. On the other hand, semantic recall involves bringing to mind a previously learnt fact, for example, I could recall that Barack Obama was the 44th President of the United States.\(^{30}\) Hereafter, when I use the term ‘recollection’ I will be referring to episodic recollection.

Perceptual experience can be contrasted with recollection and anticipation in that, whilst perceptual experience is now directed, recollection is past directed, and anticipation is future directed. That is, whilst perceived events are presented as occurring now, recollected events are presented as occurring at an earlier time or in the past and anticipated events are presented as occurring at a later time or in the future.

Perceptual presence, as currently specified, commits us to a way that events must seem. That is, it requires that events are presented as occurring now, or

\(^{30}\) See Tulving (1972) for the original statement of the distinction. Episodic memory and anticipation are sometimes collected under the label ‘mental time-travel’, see Michaelian (2016).
in the present. As such, it might be considered a positive claim. Perceptual presence can be rephrased in a more neutral, or negative, way. This negative way does not commit us to a way in which events must phenomenally seem, rather it only specifies how things do not phenomenally seem. In this manner Soteriou writes,

Introspectively, it doesn’t seem to one as though one can mark out the temporal location of one’s perceptual experience as distinct from the temporal location of whatever it is that one seems to be perceptually aware of (Soteriou, 2013: 89).

Miller in a related though distinct manner, puts forward what he calls the Principle of Presentational Concurrence. He writes, “the time interval occupied by a content which is before the mind is the very same time interval which is occupied by the act of presenting that very content before the mind” (1984: 107). This does not say anything about the way in which perceived events or perceptual experience itself, must seem.

The negative specification of perceptual presence requires that one cannot perceptually discriminate between the time of the experience and the time presented in experience. This does not demand that the perceived event be

31 I discuss this principle in considerable detail in chapter 3.1.
perceptually presented as occurring simultaneously with the experience, nor
does it demand that the experience be perceptually presented as occurring
simultaneously with the perceived event. The constraint that this negative
claim does implement is that the perceptual experience and the perceived
events cannot be presented as occurring at distinct times. The positive
specification, on the other hand, requires the additional claim that the event is
presented in a certain way, where this involves the event being presented as
occurring in the present, or now. In what follows, to avoid unwanted
commitments, we can rephrase perceptual presence in this negative way.

We can also rephrase recollection and anticipation in terms of the temporal
location of the experience and the temporal location of the experienced event.
In the case of recollection and anticipation, however, whilst not containing
explicit reference to a tense, the claim cannot be specified in a completely
negative way. Whilst one is unable to perceptually discriminate between the
temporal location of the perceived event and the temporal location of the
experience, in recollection and anticipation one is able to so discriminate. This
is because in recollection the perceived event seems to have occurred at a time
earlier than the experience, and in anticipation the perceived event seems yet
to occur, at a time later than the experience.
Having specified what I take perceptual presence to be, I will consider what this means for my paradigm example, event $e$. To recap, event $e$ is the event of a dot (d) moving. The temporal and spatial limits of the movement are from location $l_1$ to location $l_{10}$, across the temporal interval $t_1$ to $t_{10}$, the spatial positions match the temporal positions, i.e. the dot is in location $l_2$ at $t_2$, location $l_3$ at $t_3$ etc. In perceiving $e$ then, one has a perceptual experience (P) of d moving.

If perceptual experience itself has a present tense content, a claim defended by Peacocke (1999: 280), then one should endorse the claim that perceptual experience $P$ presents the dot as moving now. I aim to provide an account of the temporal content of perceptual presence. This is not intended to be a complete account of the conditions under which the perceptual experience per se is veridical. Neither is it necessarily a complete account of the temporal content of perceptual experience $P$ of event $e$. Rather, here, I am just aiming to account for the positive claim that the dot seems to be moving now. If, as thick non-extensionalists claim, the content of perceptual experience itself makes reference to both past and future aspects (i.e. Husserl’s retention and protention (1991: 41)), then the following will not provide an account of the veridicality

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32 I am taking ‘content’ here to mean how things seem in perceptual experience, or how perceived events are perceptually represented as being. If an object O perceptually seems red, then the content of that experience will, at least in part, present O as red. Likewise if the dot seems to be moving, then part of the content of that experience will, at least in part, present the dot as moving.
conditions for perceptual experience but only the conditions of the aspect that presents the present temporal phase of an event (i.e. Husserl’s *primal impression* (1991: 265-266)).

I am assuming that perceptual contents are accuracy conditions: an account of what is presented (and how it is presented as being) is, at the same time, an account of the conditions under which the experience is accurate. Thus, by providing an account of the temporal content of perceptual presence, I am thereby providing an account of the conditions under which an experience, P, of *e* seeming to occur now, is accurate.33

This assumption is non-trivial, Travis (2004) for example, rejects it on the basis that he takes perception to be a form of *unmediated awareness*, he writes, “*perception*, as such, simply places our surroundings in view; affords us awareness of them. There is no commitment to their *being* one way or another […] Perception cannot present things as being other than they are. It cannot present some way things are *not* as what is so […] So it cannot represent

33 I do not here intend to endorse one account of perceptual experience over another. What I say here should apply equally to a Representationalist or a Naïve Realist account of perception. The claim that perceptual experience has accuracy conditions is consistent with the Representationalist claim that perceptual experience has representational content and the Naïve Realist claim that when we have a veridical perceptual experience we are directly acquainted with the objects of perception. See Soteriou (2013) for the claim that successful experience involves both perceptual acquaintance and representational content. In order to be neutral between theories of perceptual experience, I will use ‘present’ rather than ‘represent’.
anything as so” (2004: 65, emphasis in original). I accept the assumption, however, that experiences can be accurate or inaccurate, i.e. that they can accurately represent the world or misrepresent the world. A disagreement here would not regard whether we can perceive objects and events but whether to call a misrepresentation a perceptual experience. I will continue to talk in terms of the accuracy conditions of perceptual experience, with the intention that what I say can be consistent with different theories of perceptual experience.

Assuming then that perceptual content can be cashed out in terms of accuracy conditions, as a first attempt at specifying the content of a perceptual experience $P$ of event $e$, we might consider the following,

1P: Moves ($d$, now)

1P says that the dot, $d$, is in the relation of ‘moves’ with the time specified by ‘now’. A perceptual experience of event $e$ is not, however, limited to the movement of the dot; it is not the case that one simply sees the dot move, one sees the movement as happening in some particular way. For example, one might see the dot moving slowly. The addition of ‘slowly’ here modifies the way in which the movement happens, it is an adverbial modifier. The content of the perception, $P$, as set out in 1P does not account for the movement being
seen as happening in some particular way. To account for this, it might seem that an additional relatum must be added to 1P. To add that the movement occurs *slowly*, the movement relation would hold between the dot, the time specified by ‘now’ and the way in which the movement happens, *slowly*. By modifying the movement 1P becomes 1P*,

\[1P^*: \text{Moves } (d, \text{now, slowly})\]

There are a number of issues with 1P*. Firstly, as Davidson notes (1967: 81), *slowly* fails to introduce a new entity into the relation, thus, it should not be specified as one of the relata in 1P*. Thus, even when the movement is specified as happening slowly, the relation should only be a two-place relation: the dot and the time specified by ‘now’, are in the relation of moving-slowly.

The second more fundamental issue is that adding an additional relatum, whether an adverbial modifier or not, affects logical entailment. I will consider the logical entailment relation between sentences containing the two-place relation (as specified in 1P), and the three-place relation (as specified in 1P*). The sentence ‘the dot moves slowly now’ entails ‘the dot moves now’. That is, if it is the case that the dot moves slowly at a time \(t\), then it must also be the case that the dot moves at time \(t\). The truth of the first sentence guarantees the
truth of the second. Likewise, the sentence ‘Brutus killed Caesar with a knife’ entails ‘Brutus killed Caesar’. It cannot be the case that Brutus killed Caesar with a knife without it also being the case that Brutus killed Caesar. If the first sentence is true, the second sentence must be true.

We should expect this logical entailment to be reflected in the logical form of the sentences. However, this is not the case; 1P* does not entail 1P. This is because 1P and 1P* do not share the same predicate. As Davidson writes, “If we go on to analyze ['the dot moves now'] as containing a two-place predicate, ['the dot moves slowly now'] as containing a three-place predicate, and so forth, we obliterate the logical relation between these sentences, namely that [the latter entails the former]” (1967: 83). As 1P* is an irreducibly three place relation, it cannot be reduced to the two-placed relation specified in 1P. Or in other words, whilst ‘the dot moves slowly now’ entails ‘the dot moves now’, this entailment is not captured in the proposed formalisation.34

In order to avoid these problems and incorporate adverbial modification, I will follow the style of Davidson (1967) and specify the content of P in such a way as to incorporate explicit quantification over events. This would result in the following for the perceptual experience P of the dot moving.

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34 This is based on Davidson’s arguments set out in (1967: 83) and (1969: 297).
2P: \((\exists e) \ [\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Occurs}(e, \text{now})]\)

This says that, for an event \(e\), \(e\) is a movement, the subject of the movement is the dot and the movement occurs \(\text{now}\). Whilst there is explicit quantification over the event, the dot \(d\), is introduced as a constant (throughout constants will be in bold). 2P can account for the phenomenological datum that what one perceives seems to occur now, or as stated in the negative terms, that one’s perceptual experience and that of which it is an experience do not seem to occupy distinct times. This is because the time at which the experience occurs, i.e. \(P\), is the present. 2P can account for perceptual presence.

This formulation can allow for the entailment facts that hold between ‘the dot moves slowly now’ and ‘the dot moves now’. This is because \(\text{slowly}\) can be introduced in an additional conjunct, as a way of specifying how the movement occurs. The slow movement can be specified as follows,

\[
2P^*: (\exists e) \ [\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Occurs}(e, \text{now}) \land \text{Slow}(e)]
\]

This says that, for an event \(e\), \(e\) is a movement, the subject of the movement is the dot, the movement occurs \(\text{now}\), and the movement is slow. \(2P^*\) entails 2P.

This analysis can be used to distinguish the content of a perceptual experience of \(e, P\), from that of both the episodic recollection of \(e, R\), and the anticipation
of \( e, A \). In line with the above the content of \( R \) and \( A \) might be specified as follows,

\[
2R: (\exists e) [\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Occurs}(e, \text{past})]
\]

\[
2A: (\exists e) [\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Occurs}(e, \text{future})]
\]

The content of the episodic recollection of event \( e \) as set out in 2R states that, for an event \( e \), \( e \) is a movement, the subject of the movement is the dot and the movement occurred in the \textit{past}. In contrast the content of the anticipation of \( e \) as set out in 2A states that, for an event \( e \), \( e \) is a movement, the subject of the movement is the dot and the movement occurs in the \textit{future}. Just as 2P can account for the fact that what one perceives seems to occur now, 2R can account for the fact that what one recollects seems to have happened before one’s recollection of it, and 2A can account for the fact that what one anticipates seems yet to happen, at a time after one’s anticipation of it. This is because, like \( P \), the time at which the experiences \( R \) and \( A \) occur is the present.

These analyses, 2P, 2R and 2A attribute an indexical content to perception, recollection and anticipation, respectively. That is, the indexical ‘now’ is attributed to the content of perceptual experience, ‘past’ to the content of episodic recollection and ‘future’ to the content of anticipation.
The problem with attributing explicitly indexical content to perceptual experience is that indexicals such as ‘now’ do not have constant referents but refer to different times on different occasions of use. A token of ‘now’ refers to the time at which it is tokened.\textsuperscript{35} For example, a token of ‘now’ produced at \( t_1 \) will refer to the time \( t_1 \), whereas a token of ‘now’ produced at \( t_2 \) will refer to the time \( t_2 \). Due to the fact that ‘now’ can denote different times, 2P cannot provide the complete conditions under which a perceptual experience of \( e \) is veridical. This is because 2P is silent on which time is being referred to by the token use of ‘now’. That is, 2P does not provide the complete conditions for the veridicality of perceptual experience \( P \) of \( e \) because it does not specify when the movement of the dot is presented as occurring. Without knowing the time denoted by ‘now’, it cannot be determined whether the perceptual experience is veridical at a time.

The same applies in the case of 2R and 2A: the times referred to by ‘past’ and ‘future’ might change on each occurrence of use. As the specified content is silent on the times denoted by the indexicals it cannot be determined based on 2R or 2A whether the recollective or anticipatory experience is veridical. A further analysis of these temporal indexicals is required.

\textsuperscript{35} By ‘token’ I mean an unrepeatable utterance. This could be a spoken or written utterance. A sentence is a type, an utterance of a sentence is a token.
Before setting out the direct reference account of indexicals I will briefly provide some background on indexicals in general. Terms like, ‘now’, ‘here’ and ‘I’ are indexicals, which objects they refer to depends on the context in which they are uttered. Consider the self-referential indexical, ‘I’. To whom ‘I’ refers is different for each different speaker. If I utter the indexical ‘I’, then I am picking out myself, AC, whereas if you were to utter the same indexical ‘I’ you would be picking out yourself. Let us consider a paradigm sentence type,

*S: ‘I am here’*

If a token utterance of S is produced by AC at 9 am on 4th March 2019, then the token use of the indexical ‘I’ in this utterance refers to the utterer, namely, AC. The token utterance will be true if at the time of utterance, the person who uttered the sentence (i.e. AC) is in the location specified by ‘here’. The object denoted by a token utterance of ‘I’ then, depends on the context in which it is uttered, namely, it depends on who the utterer is. If it is instead AC* who produces an utterance of sentence S, then the token use of the indexical ‘I’ will refer to AC*.

The same applies for the indexicals ‘here’ and ‘now’. A token utterance of ‘here’ refers to whichever location it is uttered in. Thus, if I am in Paris and
say ‘it is sunny here’ then I am saying of a certain location, namely Paris, that it is sunny in that location. A token utterance of ‘now’ refers to the time at which it is uttered. Thus, ‘now’ refers to a different object (namely a different time) each distinct time it is uttered. A token utterance of ‘now’ made at time $t_1$ will denote time $t_1$, likewise, a token utterance of ‘now’ at time $t_2$ will denote time $t_2$.

Demonstratives, including terms such as, ‘this’, ‘that’ and ‘she’, are similar to indexicals in that the objects to which they refer differ depending on the context in which they are used. However, arguably unlike indexicals, to fix the referent demonstratives require a demonstration; they require some kind of motioning towards the referent.36 Picture a room filled with people. In order to identify the object denoted by an utterance of ‘she’, the utterer may need to motion in some manner towards the individual, this may involve pointing at the intended person.

The temporal and spatial indexicals ‘now’ and ‘here’ differ slightly from the self-referential indexical ‘I’ and should perhaps be considered similar to demonstratives. This is due to fact that the boundaries of ‘now’ and ‘here’ may change. Regarding the temporal indexical, the amount of time referred to by

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36 It is controversial exactly what is meant by an accompanying demonstration, for my present purposes of highlighting the apparent distinction between indexicals and demonstratives determining the kind of demonstration required is not essential.
'now’ can differ on different occasions of use. For example, compare an utterance of ‘the time is now exactly 10.11 and 35 seconds’, with an utterance of ‘everyone is on social media now’. In the first, ‘now’ refers to a very short interval, perhaps even a temporally unextended moment, whereas in the second, ‘now’ refers to a number of years. The same applies in the case of ‘here’. On a particular occasion of use, one could use ‘here’ to refer to a very small location such as the location of a word written on a page, or a much larger location such as the entire city of Paris. It might arguably be the case then that, like demonstratives, a referential intention is required to select between different potential referents of an utterance of ‘now’ and ‘here’.

It is less plausible, however, to suppose that the occurrence of ‘now’ in perceptual (recollective, or anticipatory) experience is flexible in this way. In perceiving an event as happening now it does not seem plausible that I can perceive that event as having a long temporal boundary. It is certainly not the case that I can have a perceptual experience of an event as lasting for a number of years. It is just as implausible that an event lasting several minutes can be presented by any singular experience. If perhaps I experience an event that does in fact last for several minutes then what I am perceiving at any one time (and in that manner, what I am perceiving as happening now) is some temporal part of the event. For the case of perceptual experience, I will, therefore, consider ‘now’ (and equally ‘here’) an *indexical* as opposed to a
demonstrative. No additional demonstration is required in order to determine which time is denoted by an occurrence of ‘now’, as it features in experience.

Kaplan (1989) develops an analysis of indexicals on which ‘now’, ‘here’ and ‘I’ are directly referential. Kaplan intends to use ‘directly referential’ as meaning that the content of an utterance containing an indexical in a particular context is just the object referred to in that context. Take context C. Context C has a particular agent, time and location. The agent of C is (loosely) the utterer, in this case I will take it to be AC. The time of C I will take to be \( t \), and the location of C I will take to be location \( l \). According to Kaplan’s account of indexicals when sentence S, ‘I am here’ is uttered in context C, it is the context that determines the referents of each of the indexicals. The referent of ‘now’ when uttered in context C is time \( t \). The referent of ‘I’ when uttered in context C is \( AC \), and the referent of ‘here’ when uttered in context C is \( l \).

Once the referents are determined for a particular context, they remain fixed for all possible circumstances of evaluation. Consequently, one can evaluate what was said by an utterance of sentence S in a given context under different counterfactual situations (see Kaplan, 1989: 513). Kaplan writes, “[t]he actual context of use is used to determine the relevant individual: me – and time: now – and then we query the various circumstances of evaluation with respect to that individual and that time” (1989: 498, emphasis in original). Take
counterfactual situation C*, in which (i) AC is not here at t, (ii) AC is here at t+1, and (iii) AC utters ‘I am here now’ at t+1. We can ask whether what AC actually said would be true in this counterfactual situation C*. The answer is negative because the relevant time for determining the truth in C*, is not the time of context C*, i.e. t+1, but the actual time of the utterance, t.

The above distinction concerns the contribution that an indexical makes to the content of an utterance. The objects specified in the context, i.e. the relevant agent, time and location are constituents of the content. In expressing what an indexical term such as ‘now’ contributes to the content Kaplan writes, “in the case of a singular term which is directly referential, the constituent of the proposition is just the object itself […] the constituent (corresponding to a rigid designator) just is the object” (1989: 494, emphasis in original).

Kaplan also introduces the notion of an indexical’s character (1989: 505-507). Whilst we have seen that an utterance of ‘now’ at t simply contributes the time t to the content, this does not provide a full account of the meaning of the temporal indexical ‘now’. If it did then there would be as many different meanings of ‘now’ as there were times of utterances (or possibly, as many homophonic words). This is because if the complete meaning of ‘now’ is just the time picked out by an utterance of ‘now’, then every distinct time at which ‘now’ is uttered would produce a new meaning of ‘now’. Alongside the
content, the character contributes to the meaning of an indexical. Unlike content, which depends on the context in which an utterance occurs, the character of ‘now’ is something that remains constant. It is something that every token utterance of ‘now’ shares. The character of an expression is a rule which is set by linguistic convention. It is the character of an indexical that determines what the relevant object will be, for every context of use (Kaplan, 1989: 505).

The character of an indexical is a rule which specifies which objects contribute to the content (1989: 505). The rule for ‘now’ is: ‘now’ refers to the time of the utterance.37 The character of a term does not itself contribute to the content (that is, the character is not an element of the content) rather it determines the content. It remains that the content of an utterance of ‘now’ at $t$, will simply be $t$. According to Kaplan, this rule, plus the fact that it is directly referential, gives the meaning of the word ‘now’.

In the following section, I apply Kaplan’s account of the meaning of ‘now’ to the content of perceptual presence.

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37 The rule for ‘I’ is: ‘I’ refers to the speaker of the utterance, and the rule of ‘here’ is: ‘here’ refers to the location of the utterance.
2.1.2. THE MINIMAL ACCOUNT

If the content of perception is to be specified in line with Kaplan’s direct reference model of indexicals then the contribution that ‘now’ would make to the content of a perceptual experience \( P \) of event \( e \) is just the time denoted by that particular use of ‘now’. That is, the perceptual content would contain as an element the time \( t \). As such, the content of a perceptual experience \( P \) of event \( e \) might be articulated as follows,

\[
3P: (\exists e) [\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Occurs}(e, t)]
\]

This says that for an event \( e \), \( e \) is a movement, the subject of \( e \) is the dot and the movement occurs at time \( t \). As with the Kaplan style of analysis, the character, whilst determining which object is referred to by a token use of ‘now’, does not itself make it into the content. Thus, there is no reference to the temporal indexical ‘now’ or the rule that ‘now’ refers to the time of the token utterance in the perceptual content specified in 3P. Note that ‘\( t \)’ is here not a variable, but a constant. That is, once determined the time referred to by ‘now’ remains constant. The time, \( t \), does not therefore, need to be quantified
over. Since movement, like any change, takes longer than an instant, we might consider the value of $t$ to be an interval rather than an instant.\footnote{This might be thought of as a way of representing the specious present; the idea, as James memorably puts it, that ‘the practically cognized present is no knife-edge, but a saddle-back, with a certain breadth of its own’ (James, 1890, Vol. I: 69). I do not, however, rely on this assumption in what follows. If the values of $t$ are, in fact, better thought of as moments (and so the event at $t$ as momentary), then the various formulations I discuss can be interpreted accordingly.}

The temporal content of the perceptual present as specified in 3P is minimal, it is exhausted by the untensed $t$.\footnote{See Cann (1993, §8.31) for a formal treatment of the present tensed $[\text{Pres}(\phi)]$ as equivalent to the untensed $[\phi]$.} Unlike 2P, 3P is not silent on the time referred to by ‘now’. Rather, 3P specifies that the time referred to is $t$. That is, that the movement of the dot is perceptually presented as now occurring, at time $t$. The perceptual content specified in 3P can, therefore, provide a complete veridicality condition of a perceptual experience $P$ of event $e$. The perceptual experience $P$ will be veridical when the conditions are met, that is, when the dot is moving at $t$.\footnote{The Minimal Account, so construed, is compatible with at least one reading of Le Poidevin’s suggestion that there is no ‘interesting difference between perceiving something ”as present” and simply perceiving it’ (Le Poidevin, 2007: 78).}

An initial worry with 3P is that it does not allow for a distinction between perceptual experience, episodic recollection and anticipation. Just as ‘now’ contributes only a time to the content of the perceptual experience, so too will ‘past’ and ‘future’. Thus, a token of ‘past’ if tokened at a relevant time (i.e. a time after $t$), may only contribute the time $t$ to the perceptual content of a
recollection. Likewise, a token of ‘future’, if tokened at a relevant time (i.e. a
time before \( t \)), may only contribute the time \( t \) to the perceptual content of an
anticipation. That is, a recollection that occurs at \( t+1 \) of the dot’s moving would
also give 3P as the recollective content. In just the same way, an anticipation
that occurs at \( t-1 \) of the dot’s moving would also give 3P as the anticipatory
content. It may seem then, that 3P is not an account of perceptual presence at
all. There is nothing in 3P that requires \( t \) to be in the present rather than in the
past or future.

This worry is misguided. Whilst one cannot perceptually distinguish between
the time of the perceptual experience and the time of that which is
perceptually experienced, this is not the case for recollection and anticipation.
That is, whilst the Minimal Account must accept the negative claim of
perceptual presence for perceptual experience, it is not so required for
recollection and anticipation.\(^\text{41}\) In perceptual experience, the events perceived
cannot seem to occur at a time distinct from the time at which the (perceptual)
experience occurs. However, part of the nature of episodic recall is that, in
recalling an event, one seems to be aware of that event as occurring at a time
that seems to be in the past relative to one’s current temporal position. That is,
the event seems to be in the past relative to one’s current recollection. In

\(^{41}\) I discuss this in more detail in chapter 2.2, under the title Pre-Reflective Temporal
Transparency.
anticipation one seems to be aware of something as occurring at a time that
seems to be in the future relative to one’s current temporal position. Or in
other words, the event seems to be in the future relative to one’s current
anticipation.

The temporal content of recollection and anticipation should reflect this; the
temporal content of recollection and anticipation should present the relation
between the time of the dot’s moving, \( t \), and the time of the recollective or
anticipatory experience, say time \( t^* \). Thus, 3P does not reflect the temporal
content of either a recollection \( R \) of \( e \), or an anticipation \( A \) of \( e \). Rather, on this
view for recollection and anticipation the content might be specified as
(reading ‘\(<\)’ as ‘earlier than’),

\[
3R: (\exists e) \left[ \text{Movement}(e) \land \text{Subject}(e, d) \land \text{Occurs}(e, t) \land t < t^* \right]
\]

\[
3A: (\exists e) \left[ \text{Movement}(e) \land \text{Subject}(e, d) \land \text{Occurs}(e, t) \land t^* < t \right]
\]

In these analyses \( t^* \) is introduced as the time of the experience, i.e. the time
that would be denoted by an utterance of ‘now’. 3R says that for an event \( e \), \( e \)
is a movement, the subject of \( e \) is the dot, the movement occurs at time \( t \), and
that \( t \) is a time earlier than \( t^* \) (that is, that the dot’s movement occurs at a time
earlier than the time of the recollection). 3A says that for an event \( e \), \( e \) is a
movement, the subject of \( e \) is the dot, the movement occurs at time \( t \), and that
$t^\ast$ is a time earlier than $t$ (that is, that the dot’s movement occurs at a time later than the time of the anticipation). As with 3P, the characters of ‘now’, ‘past’ and ‘future’ do not themselves enter into the perceptual, recollective or anticipatory content, respectively. Thus, whilst $t^\ast$ is the time of the recollective or anticipatory experience, it is not introduced in the content as being the time of the recollective or anticipatory experience. Thus, it does not follow from 3R or 3A that the experiences themselves are part of their own content. 3R and 3A do not require that recollective or anticipatory experiences are self-reflexive.\[42\]

Accepting 3P, 3R and 3A, the Minimal Account can account for the fact that, phenomenologically speaking, we perceive the present, recall the past, and anticipate the future.\[43\]

2.1.3. PROGRESSIVE ASPECT

As an account of the temporal content of perceptual experience 3P is incomplete. A feature of the content of perceptual experience that 3P fails to make explicit is that experience has progressive aspect. The progressive form

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42 I discuss self-reflexive experiences in more detail in chapter 2.2.
43 Note that these contents are equally acceptable to those who endorse tensed or tenseless theories of time. That is, whilst on this view the temporal content of perceptual presence does not have a tensed element, neither does it rule out the possibility of there being a tensed element in the total temporal content of perceptual experience. Thus, whilst there may be features of perceptual experience that provide evidence in favour of one or other view of time, the perceptual present is not one of them.
in English occurs where a verb, such as ‘moves’ is followed by the suffix ‘ing’. Thus, the progressive form of ‘moves’ is ‘is moving’. Likewise, the progressive form of ‘run’ is, ‘is running’ and the progressive form of ‘builds’ is ‘is building’. We can compare the following pairs of sentences, the first being the non-progressive followed by the progressive version,

a. (i) dot moves
   (ii) dot is moving
b. (i) Pilar runs
   (ii) Pilar is running
c. (i) Tamsin builds a house
   (ii) Tamsin is building a house

Just as in English we would describe event $e$ as the ‘dot is moving’ rather than the ‘dot moves’, in perceptual experience, the perceived event should be presented as the ‘dot is moving’. This is because in perceiving $e$ one perceives the movement of the dot as happening, or in progress. The progressive form of the verb, moving as opposed to moves, (i.e. as stated in a.(ii)) correctly describes the perceptual experience of the event. This is also the case for recollection and anticipation. One does not recall that the dot moved at an earlier time, rather one recalls the past event of the dot moving; an event that was happening at an earlier time. Likewise, when one anticipates $e$ one does
not anticipate that the dot *moves* but anticipates that the dot will be *moving*; an event that will be *happening* in the future. In perception then, one is aware of things that are currently *happening*, in recall one is aware of things that were *happening* at an earlier time, and in anticipation one is aware of things that will be *happening* at a future time. An account of the temporal content of perceptual, recollective and anticipatory experiences should reflect these facts. That is, an account of the temporal content should identify that perception is progressive; the dot is perceived as *moving* rather than as having *moved*.

To see how this might be reflected in the content of perceptual experience consider the relationship between the progressive and the non-progressive sentence pairs. One way in which this relationship might be captured is with regard to the conditions under which they are true. Putting forward such an account, Montague (1974) claims that the progressive may be true at a time $t$ if and only if the corresponding non-progressive is true at an interval which includes $t$. That is, it is true that the dot is moving at $t$ if it is true over an interval of time, $t-1$ to $t+1$, that the dot moves. This idea might be applied to our perceptual experience of event $e$. One’s perceptual experience of, ‘dot is moving’ is veridical at $t$ if, over an interval of time which includes $t$, one has a veridical perceptual experience of, ‘dot moves’.

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44 See Parsons (1989) for a discussion of this view.
Let us consider how this analysis applies to the other sentence pairs. Regarding sentence pair b, according to Montague’s account, it would be true that Pilar is running at \( t \) if there is an interval that includes \( t \) over which it is true that Pilar runs. That is, it is true that Pilar is running at 9 am on 4\(^{th}\) March 2019 if there is an interval of time, starting before 9 am on 4\(^{th}\) March 2019 and finishing after 9 am on 4\(^{th}\) March 2019, over which it is true that Pilar runs.

Regarding sentence pair c, it will be true at \( t \) that Tamsin is building a house if there is an interval that includes \( t \), over which it is true that Tamsin builds a house. On this view then, it is true at 9 am on 4\(^{th}\) March 2019 that Tamsin is building a house if there is an interval of time, starting before 9 am on 4\(^{th}\) March 2019 and finishing after 9 am on 4\(^{th}\) March 2019, over which it is true that Tamsin builds a house.

Both sentence pairs b. and c. face problems. For sentence pair b, a considerable problem is whether there is some minimal movement required for an activity to be considered as running.\(^{45}\) That is, whether it can be true at exactly 9 am on 4\(^{th}\) March 2019 that Pilar is running if, at that temporally unextended moment in time, Pilar is actually static. It might be the case perhaps that for Pilar’s activity to be considered a running activity Pilar must take a couple of strides. If some kind of minimal action is required for an event to be a running

\(^{45}\) See Soteriou (2013: 102-103) and Chapter 4.1. for a discussion of the minimal requirements of an activity.
event, then the running must happen over a brief interval of time: it will not be true at an instant that Pilar is running. This problem would apply to most events. Just as Pilar can’t be running at a moment, the dot can’t be moving at a moment. The problem can be avoided quite simply, however, by accepting that \( t \) must denote an interval of time as opposed to an instant.

Sentence pair c. faces a more serious problem, as it gives rise to the so-called imperfective paradox.\(^{46}\) Whilst the entailment between (i) and (ii) might seem plausible for pairs a. and b., it is implausible for c. That is, whilst it may seem plausible that if Pilar is running at \( t \) then there must be an interval that includes \( t \) over which Pilar runs, and that if the dot is moving at \( t \) then there must be an interval that includes \( t \) over which the dot moves, it is implausible that if Tamsin is building a house at \( t \) then there must be an interval that includes \( t \) over which Tamsin builds a house.

The difference between sentence pairs a. and b. on the one hand and c. on the other hand is that the events they involve fall under different categories. Both moving and running might be considered activities. Whilst, as we have seen, there might be a minimal requirement associated with these activities they do not have a required end point. That is, a moving event, just like a running event, does not have a particular type of completion: the objects that are

\(^{46}\) See Dowty (1979: 133).
moving or running do not have to reach any particular location in order to be considered a moving or a running. Building a house, however, is an accomplishment and does have a required end point. Sentence c. (ii), ‘Tamsin builds a house’ entails that ‘Tamsin built a house’. That is, ‘Tamsin builds a house’ entails that there will be some moment after that interval in which it is true that ‘Tamsin built a house’. Sentence c. (ii) demands a specific termination, namely that a house is built by Tamsin.

In contrast with this, the progressive form of the sentence ‘Tamsin is building a house’ can be true without it ever being true that Tamsin built a house. Perhaps Tamsin got bored at \( t+1 \) and never completed the building of the house. Thus, at \( t \) it can be true that Tamsin is building a house, where it is false at \( t+1 \) (and at every subsequent time) that Tamsin built a house. As the non-progressive version, ‘Tamsin builds a house’ entails the past tense, ‘Tamsin

\[\text{footnote{For the distinction, amongst others, between activities and accomplishments, see Vendler (1957).}}\]
\[\text{footnote{Note that ‘Pilar runs’ can be changed into an accomplishment by adding ‘to the shop’, so that the sentence b.(ii) becomes ‘Pilar runs to the shop’. Like sentence c. (ii) then, it would require a particular termination (namely that Pilar reaches the shop) and would entail the past tense, ‘Pilar ran to the shop’.}}\]
\[\text{footnote{It might be said that the same applies for perceptual experience. Whilst it may be true that, if one perceives the dot moving, then at some later time one will have perceived that the dot has moved, it need not be the case for an accomplishment. It need not be the case that if a person sees that Tamsin is building a house, then at some later time they will have seen that Tamsin built a house. Again, this is because the house may never be built.}}}\]
built a house', whereas the progressive is true independently of this, the proposed relationship between the sentence pairs cannot be accepted.

An alternative way of accounting for the progressive form of perceptual experience may be to require that the interval occupied by the experience is a proper part of the interval occupied by the experienced event. This could be articulated as (where ‘PPxy’ is read as ‘x is a proper part of y’),

\[
4P: (\exists e) [\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Occurs}(P, t_1) \land \text{Occurs}(e, t_2) \land PP_{t_1t_2}]
\]

This says that, there is a movement event, the subject of the movement is \(d\), the perceptual experience \(P\) occurs at time \(t_1\), the movement occurs at time \(t_2\), and \(t_1\) is a proper part of \(t_2\). This ensures that the movement that one perceives is in progress during the interval occupied by one’s experience of it. In this way we can distinguish the progressive from the non-progressive, as the latter would not require such a treatment. The non-progressive, ‘dot moves’ would not be in progress over the interval occupied by the experience.

This analysis is, however, also inadequate. The temporal content as set out in 4P conflicts with the phenomenological truism that we cannot distinguish

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50 See Hamm and Bott (2018) for a discussion of tense and proper parts.
between the temporal location of the experience and the temporal location of 
that of which it is an experience. According to 4P the interval occupied by the 
experience is a proper part of the interval occupied by that which is 
experienced. And, according to 4P, it is experienced as such. If the interval 
occupied by the experience is a proper part of the interval occupied by the 
event, then the two intervals cannot be the same. If the interval occupied by 
the experience seems to be a proper part of the interval occupied by the event, 
then the two intervals cannot seem to be the same. Thus, if one were to accept 
that the progressive can be analysed in terms of proper parts, then one would 
be claiming that we can perceptually discriminate between the temporal 
location of the experience and the temporal location of that which is 
experienced. That is, one would be denying the phenomenological truism.51

A different analysis of the progressive is required. Parsons (1989) offers a 
simple solution which rests on the difference between an event ‘developing’ 
and an event ‘culminating’. He claims that not every event has a culmination, 
that is, not every event has a specific determined end point. For event e to be 
an event of movement there is no determined interval over which the

51 This also causes a problem in that it seems to require that one is perceptually aware of 
temporal properties of the experience. I discuss the transparency of experience below in 
chapter 2.2.
movement must occur (as long as it is not a temporally unextended moment).

In setting out these two technical notions, Parsons writes,

I use the notation ‘Cul(e, t)’ to mean that e is an event that culminates at time t. When I say that an eventuality e holds (at time t), I mean that either e is a state and e’s object is in state e at t, or e is an event which is in development at t. (I use the notation ‘Hold(e, t)’ for ‘e holds at t’.) (Parsons, 1989: 220).

From this we can distinguish between the progressive ‘dot is moving’ and the non-progressive ‘dot moves’. The progressive does not, whereas the non-progressive does, require a culmination. This is because, as we saw more clearly in the example of building a house, the non-progressive entails the past tensed version. The non-progressive ‘dot moves’ entails the past tensed ‘dot moved’. Likewise, the non-progressive ‘Tamsin builds a house’ entails the past tensed ‘Tamsin built a house’. It might be possible to differentiate between the two by appealing to Parsons’ notations. The progressive can be identified by including the notion ‘Hold’ whereas the non-progressive can be identified by including the notion ‘Cul’. It may be suggested then, that the temporal content of the progressive be articulated in 3P by changing the conjunct ‘occurs(e, t)’ for ‘Hold(e, t)’.
In contrast with Parson’s view elaborated above it is not clear that events can be said to ‘Hold’, at least not whilst accounting for the phenomenology of the event seeming to be happening or unfolding over time. The claim that event e of the dot moving is at t both unfolding and holding seems at first sight contradictory. Parsons elaborates a slight variation on his view in which he accepts that it is only states and not events that can be said to hold. Parsons appeals to the notion of an event’s being in progress at a time, written as ‘In Prog(e) t’, and that of the holding of the state of an event’s being in progress, written as ‘Hold(In Prog(e)) t’, which it does if it is in progress but has not (yet) culminated. Thus, ‘Tamsin is building a house’, can be represented as the now holding of the state of the building event’s being in progress. As this does not require a culmination it does not entail the past tense, ‘Tamsin built a house’. This account does not give rise to the imperfective paradox.

The temporal content of the perceptual presence of e can be presented in terms of this analysis. On this view ‘dot is moving’ will be analysed as the now holding of the moving event being in progress. This might be specified as follows,

5P: (∃e) (∃t) [Movement(e) ∧ Subject(e, d) ∧ Hold(In Prog(e) t) ∧ t = now]

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52 This variation is elaborated in (Parsons, 1989: 239, fn.16). It is the view as elaborated here that I am endorsing.
This says that for an event \( e \) and a time \( t \), \( e \) is a movement event, the subject of the movement is the dot and the state of the event’s being in progress is holding at time \( t \), which is now. Parsons does not offer an analysis of the embedded token of ‘now’ in 5P. I appeal to the direct reference picture set out above. On this view, ‘now’ will be replaced with the time denoted by ‘now’ i.e. time \( t \),

\[
6P: (\exists e \, (\exists t)) \ [\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Hold(In Prog}(e) \, t) \land t = t]
\]

It is clear that in 6P the final conjunct, and thus, the quantification over times, is redundant. As such, I suggest that the content of perceptual experience is perfectly well articulated as,

\[
7P: (\exists e) \ [\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Hold(In Prog}(e) \, t)]
\]

This says that for an event \( e \), \( e \) is a movement event, the subject of the movement is the dot, and the state of the event’s being in progress is holding at time \( t \). In a similar manner the contents of episodic recall and anticipation will be, respectively,

\[
7R: (\exists e) \ [\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Hold(In Prog}(e) \, t) \land t < t^*]
\]

\[
7A: (\exists e) \ [\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Hold(In Prog}(e) \, t) \land t^* < t]
\]
7R says that for an event $e$, $e$ is a movement event, the subject of the movement is the dot, the state of the event’s being in progress is holding at time $t$ and time $t$ is earlier than time $t^*$. 7A says that for an event $e$, $e$ is a movement event, the subject of the movement is the dot, the state of the event’s being in progress is holding at time $t$ and time $t^*$ is earlier than time $t$.

These are my final formulations. 7P articulates the temporal content of the perceptual experience $P$ of $e$ seeming to occur now. 7R articulates the temporal content of the recollective experience $R$ of $e$ seeming to occur in the past, and 7A articulates the temporal content of the anticipatory experience $A$ of $e$ seeming to occur in the future. These formulations provide a minimal temporal content, whilst accounting for the phenomenological truism that we perceive the present, recall the past and anticipate the future. In the following chapter I will consider an alternative account of the temporal content of perceptual presence, the Token-Reflexive Account, arguing that the Minimal Account specified here is better placed to account for our perceptual experience of $e$ as happening now.
2.2. THE TOKEN-REFLEXIVE ACCOUNT

In this chapter I outline what I take to be the best alternative way of accounting for perceptual presence, what I call the Token-Reflexive Account (hereafter TRA). I argue that TRA is in conflict with a highly plausible claim, Pre-Reflective Temporal Transparency and with the mind-independence of that which is perceived. As such, the Token-Reflexive Account should not be considered as a better alternative to the Minimal Account.

In the previous chapters I have put forward a negative claim regarding how experiences do not seem in perceptual experience. Namely, that we do not seem to be able to distinguish the temporal location of the perceptual experience from the temporal location of the perceived event. A related, though distinct, positive claim can be made regarding how things do seem in reflection on one’s experience. Phillips, for example, writes,

It seems to us that our experience itself unfolds alongside, and in step with, the temporal phenomena which we find ourselves attending to in reflecting on our experience (Phillips, 2014b: 132).

In a similar manner, Peacocke claims, that perceptual experience, ‘represents to the perceiver the [perceived] event as occurring then – at the time of the experience (1999: 280).
This idea, which I will refer to as ‘reflective simultaneity’, is that when one reflects on one’s experience it seems to one as though the experience occupies the same interval of time as the event being experienced. That is, in reflection, the perceived event and the experience seem to occur at the same time, and last for the same interval. This claim is not equivalent to perceptual presence (i.e. that the perceived event seems to be occurring ‘now’), reflective simultaneity has an additional requirement, it doesn’t only specify the way that the event seems, it also specifies the way that, in reflection the experience seems. According to reflective simultaneity the experience seems to unfold alongside the perceived events; the experience itself contributes to the phenomenology of the experience.

In contrast with the Minimal Account, according to which the temporal content of perceptual presence is exhausted by the direct reference to the time denoted by the indexical ‘now’, one could account for perceptual presence by appealing to the apparent simultaneity between the perceived event and the perceptual experience. In doing so, one could analyse the temporal content of event \( e \) seeming to happen ‘now’ in terms of the temporal location of the experience that presents \( e \). In developing an account of the perceptual ‘now’, the Minimal Account appeals to Kaplan’s direct reference account of indexicals. Defenders of TRA could equally appeal an account of indexicals;
one which analyses the meaning of ‘now’ in terms of the time of its utterance. I will set out this view below.

2.2.1. INDEXICALS AND TOKEN-REFLEXIVITY

Reichenbach defends a token-reflexive account of indexicals. Regarding indexicals such as ‘now’, ‘here’ and ‘I’ he writes, “[t]he words under consideration are words which refer to the corresponding token used in an individual act of speech, or writing; they may therefore be called token-reflexive words” (Reichenbach, 1947: 284). According to Reichenbach, a token utterance of an indexical refers to the token in which it is uttered. A token utterance of ‘now’ refers to that very same token in which it is uttered.

According to Reichenbach the meaning of each indexical type can be given by a rule which specifies the meaning of the indexical type in terms of the phrase ‘this token’. The rule determines, for each token use of an indexical, which object is denoted. There is a rule for the indexical type now, which determines for each token utterance of ‘now’ which object is referred to. This rule is specified in terms of the phrase ‘this token’. The linguistic rule for the indexical type now tells us that a token use of ‘now’ refers to the time at which this token is uttered. That is, a token utterance of ‘now’ refers to the time at which it is tokened. The meaning of ‘now’, according to Reichenbach is the same as ‘the time at which this token is uttered’ (Reichenbach, 1947: 284). The
same applies to the other indexical types, for example, the rule for the indexical type ‘I’ tells us that a token utterance of ‘I’ refers to the utterer of this token. According to Reichenbach, ‘I’ means the same as ‘the utterer of this token’. Likewise, the rule for the indexical type ‘here’ tells us that a token utterance of ‘here’ refers to the location of this token. According to Reichenbach, ‘here’ means the same as ‘the location of this token’ (1947:284).

On this view, the object referred to by an indexical, on each occasion of use, is given in terms of the token utterance itself. The content of an utterance containing a token of the indexical ‘now’ produced at time \( t \), contains more than just the time denoted. The time referred to by ‘now’ uttered at \( t \), is not the time \( t \), it is the time of the utterance, whatever time that may be. As such, the content of the utterance refers back to itself; token utterance is itself a constituent of the content.\(^53\)

To account for the temporal content of perceptual presence one could appeal to the apparent reflective simultaneity between the experience and the perceived event, in a manner similar to that of Reichenbach’s token-reflexive analysis of indexicals. Such a view is endorsed by Kriegel, who applies it to

the content of perceptual experience, episodic recollection and anticipation. He writes,

A perceptual experience P of an object O represents O as simultaneous with P; a mnemonic experience M of an object O represents O as earlier than M; and an anticipatory experience A of O represents O as later than A. In all these experiences, the experience itself shows up in the full specification of its content, and is thus a constituent of its own veridicality conditions (Kriegel, 2009: 588).

On this view the perceived event is presented as occurring simultaneously with the perceptual experience presenting that event. Applying this to a perceptual experience of event e, rather than the movement being perceptually presented as happening ‘now’, the movement is perceptually presented as occurring at the same time as the perception. That is, the temporal location of the movement is perceptually given in terms of the temporal location of experience of the movement. On this view, e seems to occur simultaneously with P.

In English a token-reflexive analysis of the temporal indexical specifies the meaning of ‘now’ in terms of the time of the utterance, likewise then, in perception a token-reflexive analysis of the temporal indexical specifies the
meaning of ‘now’ in terms of the time of the perception. Just as the time denoted by a token utterance of ‘now’ in English is the time at which it is uttered, the time denoted by a token perception of an event as occurring ‘now’ is the time of the perception. I will refer to the view that takes ‘now’ to be analysed in terms of the time of the perceptual experience, the Token Reflexive Account.

This token reflexive view of perceptual experience is able to explain the first phenomenological truism, that one cannot perceptually distinguish between the temporal location of the experience and the temporal location of the event being experienced, in pleasingly direct way. Of course, if the perceptual experience represents the perceived event as simultaneous with itself, then there will not seem to be any difference between the temporal locations of each; if \( P \) and \( e \) seem to occur at the same time, it follows that they do not seem to be occurring at different times.

Applying the token-reflexive analysis of indexicals to perceptual experience provides a way of analysing the temporal indexical ‘now’ in such a way as to provide full veridicality conditions of perceptual presence. This can be articulated as,
8P: \( (\exists e) (\exists t_1) (\exists t_2) \) \([\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Occurs}(e, t_1) \land \text{Occurs}(P, t_2) \land t_1 = t_2]\)

This says that for some event \( e \), some time \( t_1 \) and some time \( t_2 \), the event is one of movement, the subject of the movement is the dot and the movement occurs at \( t_1 \), the perceptual experience occurs at \( t_2 \), and \( t_1 \) and \( t_2 \) are identical. In 8P the occurrence of ‘now’ has been given a token-reflexive analysis: the temporal location of the event of \( d \)’s movement \( (e) \) is given in terms of the temporal location of the perceptual experience of it \( (P) \). This application of the token-reflexive analysis of temporal indexicals requires that a perceptual experience is itself always a constituent of its own content. That is, it requires that perceptual experience is self-reflexive.\(^\text{54}\)

As with perceptual experience, episodic recall and anticipation can also be understood on the token-reflexive model (reading ‘\(<\)’ as ‘earlier than’),

8R: \( (\exists e) (\exists t_1) (\exists t_2) \) \([\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Occurs}(e, t_1) \land \text{Occurs}(R, t_2) \land t_1 < t_2]\)

\(^{\text{54}}\) The Token Reflexive Account need not quantify over times in the manner of 8P. It could instead avail itself of the direct reference to times proposed in §2.1.1. Once this move is made, however, the motivation for the Token Reflexive Account falls away. The following objections to the Token Reflexive Account are independent of the fact that 8P quantifies over times.
8A: \( (\exists e) (\exists t_1) (\exists t_2) [\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Occurs}(e, t_1) \land \text{Occurs}(A, t_2) \land t_2 < t_1] \)

8R says that for some event \( e \), some time \( t_1 \), and some time \( t_2 \), the event is one of movement, the subject of the movement is the dot, and the movement occurs at \( t_1 \), the recollection at \( t_2 \), and \( t_1 \) is earlier than \( t_2 \). 8A says for some event \( e \), some time \( t_1 \), and some time \( t_2 \), the event is one of movement, the subject of the movement is the dot, and the movement occurs at \( t_1 \), the anticipation at \( t_2 \), and \( t_2 \) is earlier than \( t_1 \). I will refer to these three analyses, 8P, 8R and 8A, as the Token-Reflexive Account.

TRA has some significant virtues. As we have seen, it explains the phenomenological truism that we cannot perceptually discriminate between the time of the experience and the time of that which is experienced. TRA is also well placed to explain the positive aspect of this claim, that phenomenally speaking we perceive that which happens at the time of perception, i.e. the present, we recall that which has already happened at a time earlier than the time of perception, i.e. the past, and anticipate that which is yet to happen, i.e. the future. In the following section I will argue, however, that TRA should be rejected.
The first reason for rejecting TRA is that it conflicts with a plausible version of the claim that perceptual experience is transparent, or diaphanous. Those who defend transparency generally claim that the perceiver is not phenomenally aware of any of the qualities of the experience. Rather, when one perceives one sees through the perception and only becomes phenomenally aware of the qualities of the objects as perceptually presented. According to the transparency theorist, in perceiving event $e$ one is only perceptually aware of the dot and of the dot’s properties. For example, one can be perceptually aware of the dot as occupying a certain location, as being in motion and as having certain shape and colour properties. That is, one is perceptually aware of how the object seems to be.

According to defenders of transparency, it is not the case that, alongside this phenomenal awareness of the object and its properties, one is also phenomenally aware of any of the properties of the experience. The perceptual experience does not seem to occupy a particular spatial location, the experience does not seem to be in motion, nor does the experience seem to have particular shape or colour properties. The perceptual experience is not, for example, red and circular. Those who defend the transparency of experience claim that one is not phenomenally aware of how the experience itself seems to be.
In discussing perceptual transparency Moore claims,

The moment we try to fix our attention upon consciousness and to see what, distinctly, it is, it seems to vanish: it seems as if we had before us a mere emptiness. When we try to introspect the sensation of blue, all we can see is the blue: the other element is as if it were diaphanous (Moore, 1903: 450)\(^5\)

In a similar manner, Tye writes, “None of the qualities of which you are directly aware ... look to you to be qualities of your experience” he continues by giving an example of blueness and roundness, claiming that, “you do not experience your experience as blue or round (2000: 46). Our perceptual awareness then, is of the qualities of events perceived and not of the qualities of the experience.

Transparency, as briefly outlined above, can be divided into two distinct claims. One is about introspection, or reflection, and the other about pre-reflective perceptual experience. Regarding the first, I suggest that transparency is the claim that when one reflects on one’s perceptual experience one finds that one is only presented with the features and

\(^5\) Of course, Moore continues, ‘Yet it can be distinguished if we look attentively enough and if we know that there is something to look for’ (1903: 450). Moore, then, does not himself endorse the strong form of transparency that I describe in this section.
properties of the objects of experience but not with the features and properties of the experience itself. In specifying this kind of transparency, Martin writes, introspection of one’s perceptual experience reveals only the mind-independent objects, qualities and relations that one learns about through perception. The claim is that one’s experience is, so to speak, diaphanous or transparent to the objects of perception, at least as revealed to introspection (Martin, 2002: 378).

I will refer to this claim as *reflective transparency*.

Applying reflective transparency specifically to *temporal* experience the claim becomes, in reflection on one’s perceptual experience one only becomes aware of the temporal features of the events presented in experience and not the temporal features of the perceptual experience itself. Reflective temporal transparency can be specified as follows:

**Reflective Temporal Transparency:** when we reflect on the temporal features of perceptual experience, we are presented with the temporal features of that which is experienced but not temporal features of the experience itself.
This claim, with regards to both the general case and the specific temporal case, is not entirely plausible. If on reflection there is any phenomenal awareness of the experience, then the experience is not reflectively transparent. Likewise, for the temporal case, if on reflection the experience seems to have any temporal features, such as being earlier or later than the perceived events, then the experience is not reflectively temporally transparent. Phillips’ claim then, that experience seems to unfold alongside with the objects of experience (2014b: 132) would conflict with reflective temporal transparency. I do not intend to endorse or reject reflective transparency or reflective temporal transparency here; I merely wish to outline the claim and identify that it is somewhat controversial.

A more plausible claim which I do endorse, is pre-reflective transparency. Pre-reflective experience is experience that is not reflected on. Any perceptual experience that is not reflected on whilst the experience is being enjoyed will be considered pre-reflective.\(^5\)

Pre-reflective transparency is the claim that, whilst undergoing a perceptual experience that is not being reflected on, one is only aware of the features and

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\(^5\) Smith gives an example of pre-reflective perceptual experience, ‘I perceive the cloud to be passing at present over the treetops without at the same time reflexively grasping my own perceptual experiencing of the event. I am not attending to my perceiving but to that which I am perceiving: the cloud passing over the treetops’ (Smith, 1988: 147-148).
properties of the objects that one is experiencing and not the features and properties of the experience itself. Applying this to temporal experience, the claim becomes that, whilst experiencing event \( e \), one is perceptually aware of the temporal features of event \( e \) but not the temporal features of the perception \( P \) which presents \( e \). I define pre-reflective temporal transparency in the following way,

**Pre-Reflective Temporal Transparency:** in perceptual experience, we are presented with the temporal features of that which is experienced but not temporal features of the experience itself.

Another way in which pre-reflective temporal transparency could be specified is to say that temporal experience does not offer a temporal perspective from which the temporal features of events are presented. In this way perceptual experience of temporal properties differs radically from perceptual experience of spatial properties. In visual spatial experience we do seem to be able to distinguish between the spatial location of the perceived objects and the spatial location from which those objects are perceived. In seeing the dot as being *in front and slightly to the left of me*, I am distinguishing the perceived event from the viewpoint. I am distinguishing the spatial location that the dot occupies from the spatial location that the experience occupies. The perceived spatial properties of the dot, i.e. seeming to be *over there*, are different from the
from the spatial properties of the experience, which one experiences as being here.

Temporal experience cannot offer such a viewpoint. I am not aware of the dot’s movement as occupying a time different from that of my perceptual experience. Thus, I am not able to distinguish between the temporal features of the event and the temporal features of the experience. As Hoerl states,

There is just no scope within a description of our experience of temporal properties for a distinction between the experienced properties themselves and a point in time from which they are experienced (2018: 143).

If it were possible to perceptually discriminate between the time of the perception and the time of that which is perceived, then the resulting experience should not be considered to be perceptual. That is, if it seems to one that the event is occurring at some time other than that occupied by the experience, then one is not perceiving that event. If the event seems to occur at

57 Time lags do not constitute a counter-example to pre-reflective temporal transparency. Although the perceived object might have occurred objectively earlier, it will not perceptually seem to be occurring at a time which can be distinguished from the time of the perceptual experience. That is, even in the case of time lags there is no temporal perspective from which one sees the world.
a time prior to the experience, then one will be recalling it, or if the event seems to occur at time after the experience, then one will be anticipating it.\textsuperscript{58}

TRA is inconsistent with the phenomenally plausible claim that pre-reflective experience is temporally transparent. As outlined above, by analysing the indexical ‘now’ in line with the token-reflexive analysis, TRA claims that the event \textit{seems} to occur simultaneously with the perceptual experience. According to TRA the temporal content of a perceptual experience of \( e \) involves the temporal features of both the event and the experience. This can be seen in 8P, which includes as an element of the temporal content the perceptual experience \( P \). On this view, the perceptual experience refers to itself; the perceptual experience is an element of its own content. As such, on this view, even during pre-reflective perceptual experience, one is apparently aware of the features and qualities of the experience itself. It should be counted against TRA that it conflicts with the phenomenally plausible claim that pre-reflective experience is temporally transparent.

In contrast with TRA, the full specification of the veridicality conditions of perceptual experience provided by the Minimal Account, as stated in 7P, do

\textsuperscript{58} Of course, one could have been undergoing a visual hallucination, but again, this should not be considered a true perceptual experience.
not contain the perceptual experience as an element. The Minimal Account is not faced with this challenge.

One may argue however, that, although not explicitly containing the experience as an element of the content, the specifications of recall and anticipation provided by the Minimal Account introduce a temporal perspective. That is, both recollection and anticipation seem to involve a distinction between the temporal location of the experience and the temporal location of that which is experienced; they introduce a point in time from which the events are experienced. As such, it may seem that they conflict with the plausible claim that experience is pre-reflectively temporally transparent.

As a version of a direct reference account, however, this perspective is limited to the direct reference to the time at which the experience occurs \( (t^*) \). This time is not picked out as the time at which the experience occurs. The temporal content contains no reference therefore, to the recollective \( R \) or the anticipatory \( A \) experience. And, as the content does not include the rules for determining the content (i.e. the character) neither does it include a reference to the temporal features of the recollective or anticipatory experiences. Whilst recollection and anticipation on the Minimal Account are not strictly transparent, the perspective introduced is somewhat minimal.
TRAIL also conflicts with the view that the objects of perception, recollection and anticipation are mind independent.\textsuperscript{59} Our perceptual experiences are of mind independent objects, what Williams calls, ‘the reality that is there anyway’ (1978: 65). That is, the objects of perceptual experience are things that exist independently of whether anyone is perceiving them; perceived objects exist independently of the perception.\textsuperscript{60} In perceiving the dot’s movement I am perceiving an object, the dot, which exists independently of whether I, or anyone else, perceives it. Likewise, the chair that I am sitting on exists whether or not it is currently being perceived, it does not cease to exist when there are no perceivers. Although it may not be considered an insurmountable problem, if an account of perceptual experience conflicts with the mind-independence of perceived objects, it should certainly be considered to count against that account. In what follows, I will argue that TRA entails that the content of perceptual experience is mind dependent. I will begin by presenting the

\textsuperscript{59}This is a claim about the nature of the objects perceived, as opposed to a claim about how one perceives those mind-independent objects, i.e. it is not a question of whether one is perceptually acquainted with the objects or perceptually represents the objects.

\textsuperscript{60}This claim, that the objects of perception are mind independent, is widely accepted. Those to defend Naïve Realist, or Representationalist accounts of perceptual experience take it that the objects with which one is acquainted in perception, or the objects represented in perceptual experience, respectively, are mind independent physical objects. Those who defend a sense data account of perceptual experience take it that the objects of perception are mind dependent images. I will not argue for the claim that the objects of perceptual experience are mind independent, rather, I appeal to those provided by Strawson (1979).
challenge to the token-reflexive analysis of indexicals, and then adapting it slightly to present a version of the challenge to TRA.

In developing the token-reflexive analysis of indexicals Reichenbach claims that ‘I’ means the same as ‘the person who utters this token’, and that ‘now’ means the same as ‘the time at which this token is uttered’, that is, he claims that indexicals can be defined in terms of the phrase ‘this token’ (1947: 284). According to Reichenbach then, the truth of what is said by an utterance containing an indexical depends on the existence of the token utterance. The token-reflexive analysis of indexicals makes the indexical token dependent. The indexical only has meaning when a particular token of it features in an utterance. For an utterance of ‘dot is moving now’, ‘now’ means the same as ‘the time at which this token is uttered’. Thus, the truth conditions of one’s utterance of ‘dot is moving now’, depends on whether the utterance is produced. What one says can only be true, if one says it.

Kaplan discusses a consequence of this view (1898: 519-520). If ‘I’ means the same as ‘the person who utters this token’ then the following would be true:

\[ i: \text{If no one were to utter this token, there would be no such thing as me} \]

This is because, according to Reichenbach’s analysis, \( i \) is equivalent to \( i^* \),
\(i^*\): If no one were to utter this token, then there would be no thing that is the person who utters this token

On Reichenbach’s analysis, \(i^*\) is plausibly true. As the utterance itself is part of the content of the utterance, what is said can only be true if the utterance occurs. If ‘\(T\)’ just means the utterer and no one uttered ‘\(T\)’, then there would be no person to whom ‘\(T\)’ refers. However, \(i\) is clearly false. My continued existence does not depend on whether I utter sentence (i) If I had not uttered \(i\), I there would still be such a thing as me.

The same argument can be put to the temporal indexical ‘now’. If ‘now’ means the same as ‘the time at which this token is uttered’ then, according to Reichenbach \(ii\) would be true,

\(ii\): If no one were to utter this token, then there would be no such thing as now

This is because, according to Reichenbach’s analysis, \(ii\) is equivalent to \(ii^*\),

\(ii^*\): If no one were to utter this token, then there would be no thing that is the time at which this token is uttered
That is, if ‘now’ just means the time at which this token of ‘now’ is uttered, and there is no utterance, then there would be no time at which \( ii^* \) is uttered. But \( ii \) is false; whether or not a particular utterance occurs surely cannot affect whether there is such a thing as now. This argument, adapted from Kaplan, gives us a reason to doubt the token-reflexive analysis of indexicals.

As TRA appeals to a token-reflexive analysis of indexicals the same challenge can be put to TRA. The challenge must be adapted slightly, for whilst TRA is like Reichenbach’s analysis of indexicals in that it relies on token reflexivity, it is unlike Reichenbach’s analysis in that it does not make a claim about the meaning of ‘now’. TRA is an account of the temporal content of perceptual experience, it is designed to provide an analysis of the perceptual present. That is, rather than being a theory of the semantics of indexicals, TRA is a theory of what is it for a perceived event to seem to be happening now. The Kaplanian style of argument set out above can, however, be adapted into one which can be suitably made against TRA.

Just as the token-reflexive analysis gives a semantic account of indexicals such that what is said by an utterance containing ‘now’ depends on the existence of the utterance itself, TRA gives an account of indexicals which entails that the veridicality of what is perceived depends on the existence of the perceptual
experience itself. Thus, according to TRA the accuracy conditions of a perceptual experience $P$ of $e$, depends on the existence of that experience, $P$.

On this view, what it is that one perceptually experiences can only be the case if one is experiencing it to be so. That is, according to TRA it can only be the case that a dot is moving (simultaneously with one’s experience of it) if one has a perceptual experience of the dot moving. This is because, as the content of the perceptual experience includes the perceptual experience itself as an element, that content can only be the case if one experiences it to be so. The veridicality of $8P$ depends on one having a perceptual experience of the dot moving.

This is not limited to perceptual experience. In line with TRA, what it is that one recalls can only be the case if one is recalling it. As the recollection itself is part of the content of that which is recollected, the veridicality of that which is recalled depends on the existence of the recollection. Likewise, what one anticipates can only be the case if one is anticipating it. As the anticipation itself is part of the content of the anticipation, the veridicality of that which is anticipated depends on the existence of the anticipation. According to TRA then, what one perceives, recalls and anticipates can only be the case if one perceives, recalls, or anticipates it, respectively.
The Minimal Account does not face this problem. The temporal content of the perceptual experience as specified in 7P makes no reference to the experience itself. Thus, the veridicality of the perceptual experience does not depend on the existence of the perceptual experience. That is, it can be true that the dot is moving even where there is no perceptual experience with the content 7P.

The analysis of the perceptual present provided by the Minimal Account does not conflict with mind-independence. That a dot is moving now can be the case even if I do not experience its movement. However, unlike the Minimal Account, the analysis provided by TRA conflicts with mind-independence. That a dot is moving simultaneously with my perceiving it to move, cannot be the case unless I am perceiving it to move.

It is also the case that the temporal content of recollection and anticipation as specified in 7R and 7A do not conflict with the mind independence of that which is recollected and anticipated. Whilst 7R and 7A introduce the time of the recollection or anticipation into the content of the experience, they do not introduce it as the time of the experience. That is, whilst 7R makes reference to the time $t^*$, where $t^*$ is the direct reference of the time of the recollective experience (which occurs ‘now’), $t^*$ is not introduced as the time of the recollection. The recollective experience itself is not part of the content of the
recollection. As a result, that which is recollected does not depend on the recollection for its existence.

In this chapter I have introduced what seems to be the best alternative account of perceptual presence, TRA. I have identified two problems with TRA, both of which the Minimal Account does not face. Although this has not shown that the Minimal Account is the only possible account of perceptual presence, it does show that it is better placed to account for perceptual presence than the best available alternative. In the following chapter I will consider the second phenomenological truism, that we perceive temporally extended events.
PART 3: DURATION

The second feature, which I have claimed is a phenomenological truism, is that we perceive events that unfold over a temporally extended interval. Parts three and four provide an analysis of the experience of duration and succession, respectively.

In part three I provide an analysis of the experience of duration, that is, of an event’s seeming to last for an interval of time. In the first half I develop my positive account of duration, the Minimal Account. I argue that there is no element in the content of perceptual experience that represents an event’s determinate duration.

In the second half of part three I put forward an alternative account, the Mental Processing Account. I argue that the Mental Processing Account conflicts with empirical data provided by slow time experiences.
3.1. PHENOMENAL DURATION

In this section I begin by identifying a puzzle that occurs when we try to account for the perceptual presentation of duration. I will briefly consider and reject some ways in which, in light of this puzzle, one might expect duration to be perceptually presented. Following this I set out what I take to be the correct account of phenomenal duration, the Minimal Account, whereby there is no element in the content of perceptual experience which represents an event’s duration.

My primary concern in this chapter is regarding the temporal property duration and how in perceptual experience one is presented with an event’s duration. Let us, once again, consider event $e$. Event $e$ is the of the dot moving from location $l_1$ to $l_{10}$ over the interval $t_1$ to $t_{10}$. In considering a perceptual experience $P$ of $e$ we can identify some key distinctions with regard to duration. Event $e$ is a temporally extended event. That is, event $e$ is something that unfolds over an interval of time. The duration over which event $e$ unfolds is $e$’s objective duration. In perceiving $e$, it also seems to be the case that the event is happening over an interval of time. The movement seems to take time. Thus, in perceiving $e$ I perceive something that seems to be temporally extended. The duration over which $e$ seems to unfold is $e$’s phenomenal duration.
The perceptual experience itself, $P$, also has temporal properties. Arguably, the perceptual experience $P$ also lasts for some objective amount of time; $P$ has an objective duration. What one accepts regarding the experience’s duration will depend on some background beliefs that one holds. If, for example, one defends a non-extensionalist account of temporal experience (whether thin or thick) then one claims that perceptual experience is a state. Generally speaking, if one defends a non-extensionalist account then one takes the experiential state to obtain at a moment as opposed to over an interval. On this view, the objective duration of the perceptual experience $P$ is a moment.\(^{61}\)

If, however, one defends an extensionalist account of temporal experience then one claims that the perceptual experience is a process. Those who defend an extensionalist account will accept that the perceptual experience $P$ unfolds over a temporally extended interval of time. On this view, the objective duration of the perceptual experience is an interval. The duration over which $P$ occurs, is $P$’s *objective duration*, or in other terms, the *objective duration of the experience*.

\(^{61}\) By ‘moment’ I mean that the experience is itself durationless, it exists only at a temporally unextended instant. This, however, is not a necessary requirement of a non-extensionalist view. Lee for example, would deny it. See Lee (2014a, 2014b) for a non-extensionalist view on which experiences are extended over a temporal interval because they are realized by temporally extended physical processes. Lee writes ‘atomic experiences, although they are not experiential processes, need not be instantaneous. An atomic experience might be a property instantiation enjoyed most fundamentally by a subject as they are over a short interval of time’ (Lee, 2014a: 4, *footnote omitted*). Lee takes it that his account is non-extensionalist because the atomic experiences are not made up of shorter experiences as temporal parts.
Whether or not perceptual experience has a phenomenal duration is controversial. The phrase, the *phenomenal duration of the experience*, if it manages to denote something, would denote the duration over which the experience seems to last. However, if one accepts the phenomenally plausible claim that pre-reflective experience is temporally transparent, as in chapter 2.2. I have suggested we should, then one accepts that in perceptual experience we are presented with the temporal features of that which is experienced but not temporal features of the experience itself. In accepting pre-reflective temporal transparency I am denying that, whilst undergoing the perceptual experience, the experience itself seems to have a phenomenal duration. I deny that in pre-reflective perceptual experience, where this is experience which is not being reflected on, the experience itself seems to have any temporal properties. As such, the perceptual experience does not seem to last for any interval of time.

I have distinguished between the following,

**Objective Duration of the Event:** *how long the event lasts*

**Phenomenal Duration of the Event:** *how long the event seems to last*

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62 Of course, it is consistent with this that the phenomenal duration of the experience be revealed in reflection. That is, if one introspectively attends to their perceptual experience, it may possible that the experience seems lasts for a certain interval.
Objective Duration of the Experience: how long the experience lasts

Phenomenal Duration of the Experience: how long the experience seems to last

Having set out these distinctions, I will consider a puzzle which arises when we attempt to account for the perception of an event’s duration.

3.1.1. THE PUZZLE

Whilst reporting on their perceptual experience of event $e$, the perceiver might claim that $e$ seems to last for a certain determinate interval. For the purpose of this discussion we might accept that this duration is a second. In reporting that $e$ seems to last for a second the subject is reporting the phenomenal duration of the event; their report is silent with regard to the other types of duration specified above. In what follows I will consider what the veridicality conditions might be for a perceptual experience of $e$ as lasting for interval $t$. After briefly considering some potential options for how duration might be perceptually presented, I will defend the claim that in pre-reflective experience the determinate duration of an event is not perceptually presented to the perceiver. That is, I will claim that the phenomenal duration of $e$ is not an element of the temporal content of a perceptual experience $P$ of $e$. 
People often report the phenomenal duration of an event in seconds, i.e. one may report ‘the movement seems to last for one second’ or, ‘the melody seems to last for three seconds’. It would, however, be highly controversial to claim that these metrics are part of the content of perceptual experience. Even in the case of reflective perceptual experience, i.e. when one introspectively attends to one’s experience, one does not find a perceptual awareness of temporal measurements, such as seconds. Rather, perceptual experience is unit-free (see, Peacocke, 1993: 164 and 2004: 69). I will, following Peacocke, accept that the phenomenal duration of an event is never perceptually presented in terms of seconds; just as I do not perceive the width of a table in inches or centimetres, I do not perceive an event as lasting for a certain number of seconds. In what follows I will use $x$ to stand for the phenomenal duration of an event whatever way that duration may turn out to be presented in experience.

If one perceives $e$ as lasting for $x$, as opposed to merely recalling that $e$ seemed to last for $x$, then we can ask at what time or times did $e$ perceptually seem to last for $x$? At first sight there seems to be two ways in which someone could answer this question. One is either aware of $e$ as lasting for $x$ over the interval denoted by $x$, or at the end of the interval denoted by $x$. 
The first option is to claim that one perceives the duration simultaneously with one’s awareness of the event as unfolding; \( e \) seems to last for \( x \) over the interval denoted by \( x \). If \( e \) seems to last for \( x \), and ‘\( x \)’ denotes the interval \( t_1 \) to \( t_{10} \), then \( e \) should seem to last for duration \( x \) over the interval \( t_1 \) to \( t_{10} \). A person who defends option one will have to account for how it is that something can seem to last for an already determined interval, before that interval is complete. This problem occurs because, just as one cannot determine the objective duration of an event until the event is over, surely one cannot determine the phenomenal duration of the event until the perception of the event is over. Consider the following example. One cannot determine how long it took objectively for the dot to move from \( l_1 \) to \( l_{10} \) until the dot reaches \( l_{10} \). Surely it follows that it cannot seem to one that the dot’s movement took any determinate interval, until the dot reaches \( l_{10} \).

The second option is to claim that one perceives the duration after the event finishes; \( e \) seems to last for \( x \) at the end of the interval denoted by \( x \). That is, if ‘\( x \)’ denotes the interval \( t_1 \) to \( t_{10} \), one perceives the duration of \( e \) at \( t_{10} \). A person who defends this option will have to explain why an event’s duration should be considered perceptual at all. If one is only consciously aware of the duration of an event after that event is complete, then it may seem that duration is only something that we experience in reflection on a past event. I will begin by considering each of the options in turn.
The first claim, that $e$ is presented as lasting $x$ over the interval denoted by $x$, can be motivated by appealing to pre-reflective temporal transparency and perceptual presence. As we have seen, accepting the above, entails that we cannot perceptually distinguish between the temporal location of the event and the temporal location of the perceptual experience presenting that event. That is, we cannot perceptually distinguish between the temporal location of $e$ and the temporal location and duration of $P$. This applies both to the time at which $P$ and $e$ occurs, and the duration over which they both unfold. If this is the case, then a person cannot be perceiving $e$ at a time that is distinct from the time over which $e$ seems to unfold. Thus, as $e$ seems to unfold over the interval $t_{1}$ to $t_{10}$, one must be experiencing $e$ over this interval. Note that this does not entail that the experience should *seem* to occur over this interval, nor does it entail that the experience unfolds rather than obtains.

If the experience, $P$, occurs over the interval $t_{1}$ to $t_{10}$ then the temporal content of $P$, should also obtain over this same interval. If $P$ presents $e$, then $P$ should present $e$ over whatever interval $P$ occurs. If the temporal content obtains over the interval $t_{1}$ to $t_{10}$, and the duration of the event is an element of the perceptual content, then it must be the case that the duration of the event is presented over that same interval. That is, $e$ must seem to last for $x$ over the interval the interval $t_{1}$ to $t_{10}$. 


Let us reconsider the temporal content of a perceptual experience $P$ of event $e$, as developed in chapter 2.1,

$$7P: (\exists e) \ [\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Hold(In Prog}(e, t))]$$

A person who defends option one, i.e. that the duration is presented over the interval denoted by $x$, may assume that in 7P the phenomenal duration of $e$ be represented by the interval $t$. If this were the case, then $t$ would not only be the time denoted by the direct reference of the temporal indexical ‘now’, thereby accounting for perceptual presence but would also account for the subject’s experience that $e$ seems to last for $x$. In this case ‘$x$’ would refer to the interval ‘$t$’, which is the time directly referred to by ‘now’.

I will consider two key problems that a person accepting option one would face. The first stems from a puzzle put forward by Soteriou (2013: 98). If $e$ is perceptually presented as lasting for $x$ over the interval $t_1$ to $t_{10}$, then it seems to follow that $e$ must be presented as lasting for $x$ over any interval that is a proper part of the interval $t_1$ to $t_{10}$. To see why this follows consider the perceptual experience of the dot’s seeming to be red. If the dot seems to be red for an interval $t$, then it follows that the dot seems to be red over any interval that is a proper part of the interval $t$. This is plausible. The dot doesn’t seem to be red over $t_1$ to $t_{10}$ if the dot seems to be not red over the interval $t_2$ to $t_3$. 

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If the dot’s movement seeming to last \( x \) is similar in structure to the dot seeming to be red, then it should also follow that the dot’s movement must seem to last \( x \) over any interval that is a proper part of the interval \( t \). That is, if \( e \) is presented as lasting for \( x \) over the interval \( t_1 \) to \( t_{10} \) then \( e \) is presented as lasting for \( x \) over any interval that falls within \( t_1 \) to \( t_{10} \).

However, as Soteriou suggests (2013: 98), it is intuitively plausible to think that over the interval \( t_1 \) to \( t_5 \) one will be perceptually aware of the dot moving from \( l_1 \) to \( l_5 \) but not yet be perceptually aware of the movement from \( l_1 \) to \( l_{10} \). As, in line with option one, it is over the interval \( t_1 \) to \( t_{10} \) that one is perceptually aware of the dot’s moving lasting \( x \), it might be suggested that it is equally plausible to think that over the interval \( t_1 \) to \( t_5 \) the movement does not seem to last \( x \). This is because one would only be aware of the duration of the movement that occurs over this sub-interval, the movement from \( l_1 \) to \( l_5 \). Consequently, if over the interval \( t_1 \) to \( t_5 \) one is not perceptually aware of \( e \) as lasting for \( x \), then it doesn’t seem to be the case that one can perceive \( e \) as lasting for \( x \) over the interval \( l_1 \) to \( l_{10} \).

The second problem a person might face in accepting option one is that it conflicts with the phenomenology. The idea of \( e \) seeming to last for some determinate duration \( x \) whilst also being perceived as currently unfolding is phenomenologically conflicting. If an event \( e \) is presented as lasting for a
duration \( x \), then it implies that it is presented as being completed. If part of the temporal content of \( e \) involves \( e \) seeming to last for \( x \) then it seems that the perceiver is perceptually aware, at \( t \), of the termination point of the event. To be aware of the objective duration of an event the event must be presented as complete. If the perceived event perceptually seems to be over it cannot also seem to be currently unfolding, i.e. still in progress. For something to be in progress at \( t \) that thing cannot also seem to be over at \( t \). As to be perceptually presented with \( e \) as lasting for a determinate duration \( x \) it must seem to one that \( e \) is already complete, the claim that the duration of \( e \) is presented whilst the event seems to unfold, fails.

One may object here on the basis that, although the event cannot be presented as complete and thus as having a determinate duration, temporal sub-parts of the event could be presented as complete (and thus as lasting for some determinate duration \( x \)) whilst the event as a whole is presented as unfolding. In this way, the event’s determinate duration may still be perceptually presented to one whilst accounting for the phenomenology of the event as a whole not yet being complete.

However, we could apply the above argument to each of the temporal sub-parts individually. Take a temporal sub-part of an experience \( P \) of event \( e \), let’s say the temporal part that occurs from \( t_1 \) to \( t_5 \). I will call this part \( SP_1 \). The
problem becomes, how can $SP_i$ be presented as having a determinate duration whilst also seeming to unfold. The part of the dot’s movement that occurs during $SP_i$, namely the movement of the dot from $l_1$ to $l_5$, is in process over this interval and should therefore, be presented as unfolding and not as complete.

It is a mistake to think that one could appeal to even shorter temporal sub-parts of $SP_i$, to claim that the sub-parts of $SP_i$ could be presented as complete whilst the movement that occurs over $SP_i$ be presented as unfolding. Such a proposal would ultimately lead to a regress. One would have to continually appeal to shorter intervals until one reached a temporally unextended moment. Unless one is willing to accept that all perceived motion is built up from a series of ‘snapshot’ style experiences, each of which occurs at an unextended moment, a view which is widely agreed to be unfavorable, I suggest that $e$ is not presented as lasting for $x$ over the interval denoted by $x$.

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63 It might be objected here that a regress would not occur because the shortest interval that could be appealed to is the specious present. One might claim that over the specious present, where this is the interval of which one is immediately perceptually aware (i.e. the duration of the perceptual content), the perceived event is presented as lasting for some determinate duration. A combination of these specious presents over time contributes to an experience of the event as unfolding. This is, however, exactly what I am denying; an experience of an event as unfolding over time is not built up from a combination of multiple experiences. In 7P I have specified the content of a single perceptual experience, which presents an event as unfolding. Thus, to account for the experience of an event as unfolding over an interval, by appealing to shorter intervals which present the event as having a determinate duration, one cannot do so by appealing to a shortest interval, where this is the specious present.

64 See chapter 1.2.
There are, however, accounts of temporal experience according to which perceptual awareness is built up out of temporally unextended moments but where each perceptual experience, at a moment, has dynamic content. If such an account is correct, then one could appeal to these experiential moments with dynamic content to provide the determinate duration of an event, whilst the event seems to unfold over an interval.

One of the main motivations for accepting that perceptual content is temporally extended has been based on our perception of motion. We accept that we can see the movement of the dot and that the perception of the dot as moving is phenomenologically different from an experience where we infer that the dot has moved. As Broad famously writes,

[I]t is a notorious fact that we do not merely notice that something has moved or otherwise changed; we also often see something moving or changing. This happens if we look at the second-hand of a watch or look at a flickering flame. These are experiences of a quite unique kind; we could no more describe what we sense in them to a man who had never had such experiences than we could describe a red colour to a man born blind. It is
also clear that to see a second-hand moving is a quite different thing from ‘seeing’ that an hour-hand has moved (Broad 1923: 351).\textsuperscript{65}

The latter kind of experience, i.e. seeing that the dot has moved, might arise if the movement of the dot occurs too slowly to be perceived. Imagine that the dot was moving very slowly and by time \( t_{10} \) it had only reached location \( l_1 \). In this case we might see the dot as being in a location \( l_1 \) at a time \( t_1 \), followed by seeing the dot as being in location \( l_2 \) at \( t_{10} \) and infer that the dot has moved. But here we do not see the dot moving. In the normal speed case then, in seeing the dot move we see the dot as occupying different locations at different times. We take this movement across time to be part of the content of perceptual experience. As motion, like any change, occurs over a temporally extended interval of time, taken with the fact that we perceive motion, many of us have concluded that the content of perceptual experience must itself be temporally extended.\textsuperscript{66}

In defending his dynamic snapshot account Prosser denies this claim; according to Prosser it is not the case that motion can only be perceptually experienced over a non-momentary interval (2016: 120-125). If Prosser is correct, and motion can be experienced at a moment, then then one could appeal to a

\textsuperscript{65} As quoted in Hoerl (2013, 2014) and Prosser (2017), amongst others. See Kelly (2005).

\textsuperscript{66} See chapter 2.1. for discussion.
momentary experience to provide the determinate duration of an event. This is because at each moment, some part of the event will be complete. A combination of these experiences could then contribute to the awareness of the event as unfolding. In what follows I will consider Prosser’s account, I will, however, argue that it demands too much of perception. This is because his view requires that we experience motion at an instant.

According to Prosser, we can perceptually experience dynamic content at a temporally unextended moment in time. In motivating his view, Prosser appeals to the use of a speedometer in a car, the position of which could be regarded as a representation of the speed of a car at a moment. That is, the position of the needle of the speedometer at a moment in time represents “a rate of motion of the car at an instant” (Prosser, 2016: 121). He takes this to suggest that a representation that objectively occurs at a temporally unextended moment can represent dynamic content. This dynamic content does not itself unfold or obtain over a temporally extended interval.

Prosser applies this claim, that dynamic content can be instantaneously represented, to perceptual experience. According to Prosser, we can perceptually experience motion where this does not involve an experience of
an object changing location over an interval of time. In support of this, he writes,

“Moving” is a state that something can be in at an instant, […] So the motion of an object, including its direction and rate, could be part of the content of an experience, even if the content of that experience concerned only what was the case at one specific time (Prosser, 2017: 149).

If we can experience motion without thereby experiencing an object changing location over time, then there is no requirement for the content of perceptual experience to be temporally extended. That is, there is no requirement that the content be presented across a specious present. Rather, if this is the case then, in line with Prosser’s dynamic snapshot account, perceptual experience can occur at a moment and have momentary content, whilst being dynamic. The problem of the regress would no longer apply; one could appeal to these momentary experiences to account for the determinate duration of an event, without denying the possibility of the perception of change.

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67 Prosser appeals to the waterfall illusion (see Crane 1988b), whereby one perceives motion where there is no moving object. The waterfall illusion occurs when, after seeing a waterfall moving in one direction, if a subject looks at a static scene they then experience motion as occurring in the opposite direction as the waterfall. This, Prosser contends is an experience of motion without an experience of something as changing location over time (2016: 123).
Prosser’s dynamic snapshot account requires that changes, such as motion, can be experienced at an instant, without appeal to a specious present. That is, at a temporally unextended moment in time one can be perceptually aware of change without representing it as unfolding over an interval of time. This, according to Prosser, is the case even when the state of an event at a temporally unextended moment depends on what occurs before and after that moment (2017: 149). According to Prosser, such change is “clearly perceptible, with a corresponding phenomenal character” (2016: 123). We have, then, a phenomenal character of change which does not, according to Prosser, require a temporally extended experience or a specious present.

If, however, this is the case and we can perceive motion at a temporally unextended moment in time and represent that motion through a temporally unextended perceptual content, then our powers of discrimination must be extremely fine grained. We must be able to be aware of motion and change at a temporally unextended moment in time.

As discussed above, some changes are too small to perceive. I will argue that, at some level of dissection all continuous change is too small to perceive. Just as two shades of a colour which are similar enough look to be the same colour, objects (or the same object in motion) similar enough in spatial location look to be in the same location. Take an example of the slowly moving dot, call it
event *slow-e*, which involves the dot moving from \(l_1\) to \(l_2\) over the interval \(t_1\) to \(t_{10}\). For *slow-e*, if we consider just the movement of the dot that occurs over the temporal sub-part \(t_1\) to \(t_2\), the location of the dot at time \(t_1\) and \(t_2\) are similar enough that, at these times the locations of the dot look to be the same. Thus, the movement that occurs over this interval is too small to perceive. Rather than *seeing* the dot move over the interval \(t_1\) to \(t_2\) one infers (after a reasonable amount of change has occurred) that the dot has moved. Thus, unless enough movement occurs over a temporal interval, we will not be able to perceptually discriminate the change.

Potentially in contrast with the claim that some change is too small to perceive, it seems phenomenally intuitive that we perceive constant motion. As Phillips writes, “to perceive something as constantly moving requires there be no period over which it does not look to be changing its position” (2011: 811). When we perceive event *e*, i.e. the dot moving at a non-slow speed, it seems to the perceiver as though the movement of the dot is constant; there is no period over which the dot does not look to be changing location. The perceived movement does not seem to be made up of a series of discrete parts.

However, if there is some change that is too small to perceive it cannot also be the case that we perceive continuous change.\(^{68}\) This is because all continuous

\(^{68}\) See Graff (2001) for a version of this argument, and Phillips (2011) for a reply.
change, even the change that occurs at the right speed for perceptual discrimination, will be made up of change that is too small to perceive.

We perceive the motion of the dot from \( l_1 \) to \( l_{10} \) across the interval \( t_1 \) to \( t_{10} \), but this motion is made up of many smaller stages of change, stages of change that are too small to be perceived. Take event \( e \), the movement of the dot from \( l_1 \) to \( l_2 \) across the interval \( t_1 \) to \( t_2 \), occurring at the normal speed. We can divide the movement that occurs over this interval into shorter moving events that occur over a series of smaller intervals. We can continue this until we reach a point at which a perceiver is not able to perceptually detect the change. Notice that, although the perceiver cannot perceptually detect the change over this interval, that change still occurs. Take this point to be a sub-interval of the interval \( t_1 \) to \( t_2 \): over any sub-interval of the interval \( t_1 \) to \( t_2 \) the dot looks to be in the same position. Over this sub-interval the dot continues to move but the subject cannot perceive the motion. If we can identify intervals of time over which a perceiver cannot perceive the motion, it is implausible that the subject can perceive motion at a temporally unextended moment in time.

As Prosser’s dynamic snapshot account claims that at a temporally unextended moment perceptual experience can present change (without appealing to temporally extended perceptual content, like thick non-
extensionalists), he attributes implausibly fine-grained powers of discrimination to perceptual experience.

If we cannot appeal to moments in time, which can represent the determinate duration of a temporal sub-part of the event, then we are left with a problem. We either have to accept that duration experience is built up of momentary experiences with static content, or we are unable to explain an experience of \( e \) as unfolding whilst also being presenting having a determinate duration \( x \), over the interval denoted by \( x \).

The second option for when the duration of \( e \) may be perceptually presented as lasting for \( x \) is at the end of the interval denoted by \( x \). That is, once the event has ended, i.e. when the dot reaches location \( l_{10} \), one is able to determine the phenomenal duration of the movement. At this time, one is perceptually presented with \( e \) as lasting for \( x \). I will briefly mention two issues that someone defending option two will face.

If it is the case that one is only perceptually presented with the duration of \( e \) once \( e \) has finished, then the resulting presentation of duration does not seem to be a perceptual presentation at all. Rather, if one is only aware of the phenomenal duration of \( e \) at the end of an interval then it seems that one is only aware of the duration of an event in reflection. In reflecting on the
perceptual experience of e one seems to be aware of the movement as lasting for some determinate duration x. Thus, if one is only aware of the duration of e when the interval is over one is not perceptually aware of the duration of the event but only represents e as lasting for x in recollection.

If, in contrast with this, one wants to maintain that it is a perceptual experience of duration rather than a recollection of duration, then one will face the following problem. For any perceptual experience of an event there must be a perceptual presentation of the event as unfolding, the perceptual content of which will not include as an element the phenomenal duration of the event. There must also be a perceptual presentation of the event as having finished, which does include an element that represents the phenomenal duration of the event. Thus, there must be a phenomenological difference between the dot’s movement from l₁ to l₁₀ experienced over the interval t₁ to t₁₀, and the dot’s movement from l₁ to l₁₀ experienced at t₁₀. This implies that, at t₁₀, one is perceptually aware of a temporally extended event, which unfolds over the interval t₁ to t₁₀. This clearly conflicts with perceptual presence: it requires that one is perceptually aware of an interval greater than the time of the experience.

Neither of these options are adequate responses to the question at what time or times is e presented as lasting for x. I suggest that this is because the wrong
question is being asked. The relevant question is not a question of when \( e \) is presented as lasting for \( x \) but rather, whether there is an element of the content of perceptual experience that represents the phenomenal duration of the perceived event. In the following section I develop what I take to be the correct view, the Minimal Account of phenomenal duration.

3.1.2 THE MINIMAL ACCOUNT

In the previous section I have argued that the phenomenal duration of an event, i.e. \( e \)’s seeming to last for \( x \), cannot be an element of the content of perceptual experience which is presented as the experience unfolds. I have also argued that the phenomenal duration of \( e \) cannot be perceptually presented at the end of the event, i.e. at \( t_{10} \). In this section I will argue that we do not perceptually represent \( e \) as lasting for any determinate duration. Rather, the temporal content of perceiving \( e \) involves only a presentation of \( e \) as in progress over an interval. Subject’s reports on the phenomenal duration of an event, that is reports of the kind ‘\( e \) seems to last for \( x \)’, aren’t simply a matter of taking the content of perceptual experience at face value.

In order to specify my claim more clearly, I will first consider the distinction between conceptual and non-conceptual perceptual content.\(^{69}\) If perceptual

\(^{69}\) See Byrne (2005) for this distinction. There are different accounts of what concepts are. See Byrne, (2005) and Peacocke (2009) for a three-way distinction between (i) concepts as abstract objects, (ii) concepts as mental representations and (iii) pleonastic concepts. I am neutral on
experience is conceptually structured then, for everything that a person perceptually experiences, the perceiver possesses the concept for that thing. If a perceiver has a perceptual experience of \( e \) in which they conceptually present \( e \) as lasting for \( x \), then not only would the perceiver possess the concept ‘\( x \)’ but the concept ‘\( x \)’ would also be an element of the content of the perceptual experience.\(^7\) I am using ‘\( x \)’ here to stand for however the duration of a perceived event may be presented in experience. If we were to briefly ignore the complication with using temporal metrics, this could be specified as follows. If perceptual experience is conceptual, and \( e \) seems to last for a second, then the content of perceptual experience would contain as an element the concept ‘one second’.

By defending a conceptual account of the perceptual presentation of duration, one does not need to claim that we represent events as lasting a certain number of seconds. Rather, there are other ways in which the duration ‘one second’ could be conceptually represented. One option could be to claim that event \( e \) is conceptually represented as lasting for a certain amount of neural

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\(^7\) See McDowell (1994) and Brewer (1999) for a defense the claim that perceptual experience has conceptual content.
processing, or a certain number of ticks on our internal clock. I am using ‘x’ to stand for the different ways that the duration of e could be presented.

In claiming that the duration of an event is not part of the content of the perceptual experience, I am thereby denying that there is an element of the content of perceptual experience that conceptually represents the event’s phenomenal duration. I am claiming that e is not perceptually presented as lasting for x.

If perceptual experience is non-conceptually structured this means that there may be some element of our experience that is not represented conceptually. This does not mean that the entire perceptual content must be represented non-conceptually but that at least sometimes perceptual experience represents things in a non-conceptual manner. To identify what might be considered non-conceptual representation I will appeal to an example. Consider a specific

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71 See Zakay and Block (1997) for a defence of the internal clock. In discussing a version of the internal clock model, Wearden writes,

A basic idea [...] is that the raw material for time judgements in animals and humans comes from a pacemaker-accumulator internal clock. This involves a pacemaker that emits pulses (the ‘ticks’ of the internal clock) at some averagely constant rate, connected to an accumulator, which stores the pulses, via a switch. When a stimulus to be timed is presented, the switch closes, allowing pulses to flow to the accumulator, and when the stimulus terminates, the switch opens again cutting the connection. The accumulator then contains the number of pulses corresponding to the stimulus duration, and this number enters into a number of further processes (Wearden, 2015: 224).

fine-grained shade of the colour red. One may perceive this shade and the specific fine-grained shade may feature in the content of a perceptual experience. Yet, one may not possess the concept for this specific shade of red. One may not, for example, be in a position to form a belief about this particular shade. Similarly, one may not be able to pick out this shade of red from many other shades and re-identify it at a later time.\(^7\) It might be considered then, that one non-conceptually represents this shade of red. As such, it might be considered that one has non-conceptual perceptual experience.

Applying this to the perception of duration then, one might suggest that the duration of an event is somehow perceptually presented non-conceptually. That is, the way that an event’s duration perceptually seems to a perceiver is a way in which the perceiver possesses no concept for. If one were to accept this, then one would be claiming that the duration of the event is part of the content of the perceptual experience but that the duration is represented non-conceptually. Thus, in claiming that we do not perceive the duration of an event, I am thereby denying that there is an element of the content of

\(^7\) McDowell appeals to demonstrative concepts, such as ‘that shade’ in order to account for the conceptual representation of these kinds of experiences (1994). My aim here isn’t to argue for or against the claim that experience is conceptually structured but to specify the boundary of my claim that an event’s duration is not perceptually presented.
perceptual experience that non-conceptually represents the event’s phenomenal duration.

I have set out the negative aspects of my claim; there is no element of the content of perceptual experience that represents an event as lasting for a certain duration, whether conceptually or non-conceptually. Rather, as developed in chapter 2.1, I take it that a perceptual experience $P$ of $e$ has the minimal temporal content,

$$7P: (\exists e) [\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Hold} (\text{In Prog}(e, t))]$$

This states that for some event $e$, $e$ is a movement event, the subject of the movement is the dot, and the event is in the state of being in progress (i.e. $e$ is happening) at time $t$. The final conjunct accounts for the fact that the event is perceptually presented as presently continuing to unfold. In chapter 2.1, I provided a direct reference analysis of the temporal indexical ‘now’, whereby the content of perceptual experience contains as an element the time denoted by ‘now’, $t$, as opposed to having explicitly indexical content.

There is no reference in $7P$ as to how long $e$ is presented as lasting. That is, there is no element in the content of perceptual experience, as specified in $7P$, which represents the phenomenal duration of $e$, either conceptually or non-
conceptually. Our awareness of an event’s determinate duration, an awareness that ‘e seems to last for x’, is not perceptual.\footnote{In chapter 5.2, I develop an account of justification which explains how one’s judgement ‘e lasts for n seconds’ can be justified. I have used the notion ‘n seconds’ as opposed to ‘x’ here because I am talking about the content of verbal reports or beliefs as opposed to perceptual content.}

It seems that one may immediately object to this claim on two bases. The first basis is that there is an element of the content of perceptual experience, as specified in 7P that seems to be in the position to represent the duration of e.

One might think that the referent of ‘now’ i.e. the time \(t\), being an interval of time over which e seems to be in progress can surely represent the duration of e. The second basis is that we can appeal to an experience in which two perceived events seem to have different durations. That is, one event can phenomenally seem to last longer than another event. This suggests that we do perceive each event’s duration. I will consider each of these objections in turn.

Regarding the first, there is an element of the temporal content of a perceptual experience of e, as specified in 7P, which could be considered to be a representation of e’s duration. That is, by appealing to a direct reference account of indexicals the Minimal Account claims that the perceptual presence of e can be exhausted by reference to the time denoted by ‘now’, namely \(t\).
Using the rule that ‘now’ refers to the time of the experience (where this rule does not itself make it into the content), the temporal content of the ‘dot’s seeming to move now’ contains as an element only the time referred to, \( t \). I have accepted above that, as movement like any change occurs over an interval, we might accept that \( t \) refers to an interval as opposed to an instant. As such, it is not clear why \( t \) does not present the interval over which \( e \) seems to last. That is, why \( t \) does not represent both perceptual presence and the phenomenal duration of \( e \).

The final conjunct of 7P, ‘Hold(In Prog(\( e \)) \( t \))’ represents the holding of the state of \( e \)’s being in progress at time \( t \), where ‘\( t \)’ is a constant and not a variable. An event can be represented as unfolding by including the conjunct, ‘Hold(In Prog(\( e \)) \( t \))’ if that event is in progress but has not (yet) culminated. The time ‘\( t \)’ is embedded and cannot be taken in isolation. Thus, the time ‘\( t \)’ specified in 7P does not pick out a determinate interval over which event \( e \) has lasted (or seems to last), rather, it picks out a time (the current time) over which the event \( e \) seems to be in progress. That is, the dot’s movement does not seem to have been completed over \( t \), the movement seems to be continuing to unfold over the interval \( t \). Consequently, the dot’s movement does not seem to last for some determinate interval \( t \). Thus, although \( t \) may represent an interval of time it does not represent that interval as being the duration of \( e \). The time \( t \), as it features in 7P cannot, therefore, represent the phenomenal duration of \( e \).
Regarding the second objection, it is evident that perceived events can phenomenally seem to last for differing durations. That is, if we take two events, $e_1$ and $e_2$, where event $e_1$ is a beep and event $e_2$ is a buzz, it can seem to a perceiver that $e_1$ and $e_2$ last for different intervals. One event can perceptually seem to last longer than the other. If both $e_1$ and $e_2$ begin at the same time but $e_1$ continues to sound after $e_2$ has finished sounding, then $e_1$ seems longer. That is, the beep phenomenally seems to last longer than the buzz. Accepting this seems to imply that the perceiver is perceptually aware of the duration of $e_1$ as being longer than the duration of $e_2$. If one perceives the duration of event $e_1$ then there should be an element of the temporal content which presents $e_1$'s duration, whether conceptually or non-conceptually.

However, the Minimal Account is able to account for this perceptual experience of $e_1$ seeming longer than $e_2$, without needing to claim that the duration of either event, $e_1$ or $e_2$, is perceptually presented. The minimal temporal content of the beep seeming to last longer than the buzz, where ‘$\text{PP}_xy$’ is read as ‘$x$ is a proper part of $y$’, can be articulated as follows,

$$9P: (\exists e_1)(\exists e_2)[(\text{Beep}(e_1) \land \text{Hold}(\text{In Prog}(e) t_1)) \land ((\text{Buzz}(e_2) \land \text{Hold}(\text{In Prog}(e_2) t_2)) \land \text{PP}_t t_1)]$$
This states that there is some event which is a beep, and some event that is a buzz, the beep is continuing to unfold at $t_1$, the buzz is continuing to unfold at $t_2$, and time $t_2$ is a proper part of time $t_1$. As beeps and buzzes are sounds, the events do not have subjects. If $t_2$ is a proper part of $t_1$ then $t_2$ must be contained within $t_1$, as such it must be shorter. Consequently, it will seem to one that the beep is longer than the buzz. The experience of the beep seeming to last longer than the buzz can be accounted for without requiring that there is an explicit representation of either event’s duration.

Having set out my positive view and considered some objections against that view, for the remainder of this chapter I will briefly show how the Minimal Account of phenomenal duration is consistent with the phenomenological constraint.

3.1.3. THE PHENOMENOLOGICAL CONSTRAINT

In chapter 1.2. I outlined what I take to be truisms about temporal experience, one of which is based on what Dainton has referred to as the phenomenological constraint (hereafter, PC). To recap, Dainton states that, “our experience of change is just as immediate as our experience of shape or colour. I take this to be an obvious truth, and will refer to it as the phenomenological constraint” (Dainton, 2000: 116). Similarly, Foster writes, “duration and change through time seem to be presented to us with the same phenomenal immediacy as
homogeneity and variation of colour through space” (Foster, 1982: 225). The claim here is that our perceptual experience of change is not different in kind from our perceptual experience of shape and colour. Just as we perceive shape and colour, we perceive duration and change. As change unfolds over time, to perceive change one must perceive something that unfolds over time. Or in other words, we must perceive something that has a temporally extended duration. One might take this to require that the duration of the event must be an element of the content of perceptual experience.

By accepting PC and taking it to inform a phenomenological truism, I am accepting that, just as we perceive spatial properties and features, i.e. we perceive objects that extend across space, we also perceive temporal properties and features, i.e. we perceive events that extend across time. Thus, in accepting PC, which I have suggested in chapter 1.2, any adequate theory of temporal experience should accept, the view I defend, the Minimal Account, must be in a position to account for this experience of temporal features and properties.

By claiming that an event’s duration not only is not but cannot be an element of the content of perceptual experience, the Minimal Account is seemingly in conflict with PC. To determine whether there is a conflict occurring between PC and the Minimal Account of phenomenal duration, the minimum
sufficient conditions for an experience of duration must be established. A starting point might be to claim that to perceptually experience an event’s duration one must perceptually represent that event’s duration. In order words, the event’s duration must be an element of the perceptual content. The Minimal Account clearly conflicts with this claim.

There are, however, weaker conditions under which an experience could be considered an experience of duration. If we take ‘duration’ to be an event being temporally extended, as opposed to an event lasting some exact amount of time then, in the perceptual case, we can consider that to perceive duration is just to perceive an event’s being temporally extended. That is, if we accept that an event has a temporally extended duration whenever it unfolds over time then we can also accept that one perceives an event as having a temporally extended duration whenever one experiences an event as unfolding over time. Even where there is no perceptual presentation of the event’s determinate duration there can still be a perceptual experience of an event unfolding; where there is no perceptual presentation of the form ‘e seems to last for x’, there can still be an experience of e as temporally extended.

We may accept then that the conditions for perceiving duration, in a manner that is consistent with the phenomenological truism PC, is to experience e as unfolding over a temporally extended interval. This requirement does not
demand that the event perceptually seem to last for some specific temporal interval; on this reading of PC it is possible to perceive duration without perceiving how long some event takes. If one perceives $e$ as lasting for a temporarily extended interval, then one perceives $e$ to have duration.

In order to be consistent with this reading of PC, the Minimal Account just needs to show that the minimal temporal content of $e$, as set out in 7P, represents $e$ as being temporally extended. In accounting for the progressive aspect of perceptual experience, that is, in accounting for the fact that it seems that the ‘dot is moving’ as opposed to the ‘dot moves’, I have appealed to the notion of an event’s being in progress at a time. This is specified in the final conjunct of 7P, ‘Hold(In Prog(e) t)’. Event $e$ is, therefore, perceptually presented as continuing, or unfolding. For an event to unfold is for it to take time. Consequently, to perceive something as unfolding is to perceive it as taking time. That is, as $e$ is presented as being in progress at $t$, it is presented as taking time, and thus, as having duration. The Minimal Account is, therefore, not in conflict with PC.

In this section I have developed the Minimal Account of phenomenal duration, according to which an event’s duration is not an element of the temporal content of perceptual experience. Subject’s reports on the phenomenal duration of an event, that is reports of the kind ‘$e$ seems to last
for $x'$, are not simply a matter of taking the content of perceptual experience at face value. Whilst one perceives $e$ as unfolding it does not seem to one as though $e$ lasts for any determinate interval of time.

In the following section I put forward what is currently the best alternative account of phenomenal duration, arguing that it faces challenges regarding slow time experiences.
3.2. THE MENTAL PROCESSING ACCOUNT

As we have seen in 3.1., a perceptual experience of an event as temporally extended does not represent that event as lasting for any number of seconds. That is, whilst one perceives \( e \), it does not seem to one that \( e \) lasts for \( n \) seconds, where \( n \) represents any number. This is for the reason that, as Peacocke states, perceptual experience is ‘unit-free’ (Peacocke, 1993: 164 and 2004: 69). Just as the table in front of me does not perceptually seem to be a meter away, or even 3.28 feet away, an event does not perceptually seem to last for a second (or any other temporal metric equivalent to a second). Units of measurement are not elements in the content of perceptual experience.

I have argued in the previous chapter that the content of perceptual experience does not include an event’s determinate duration. There are, however, alternative ways in which one could attempt to account for the phenomenal duration of an event, which measure phenomenal duration not in seconds but relative to a different type of event. I will refer to these types of view as Relative Accounts of phenomenal duration. It may be suggested that such relative views offer the best analysis of phenomenal duration as they account for duration as a perceptual phenomenon. Thus, if successful, the relative accounts should be considered a better alternative to the Minimal Account. In this section I will consider one such relative account, the Mental Processing
Account, in which phenomenal duration is measured relative to concurrent mental processing. I will argue, however, that the Mental Processing Account cannot account for experiences of slow time, consequently, it should not be favoured over the Minimal Account.

The Mental Processing Account has been developed as a solution for a challenge against a widely accepted principle, the Principle of Presentational Concurrence. I will begin by explaining the Principle of Presentational Concurrence and presenting to it the challenge of slow time experiences. I will set out the Mental Processing Account as a solution to the challenge, arguing that the account is inconsistent with the empirical data of slow time in skilled sporting activities. I will finish by demonstrating how the Minimal Account can account for experiences of slow time.

3.2.1. THE PRINCIPLE OF PRESENTATIONAL CONCURRENCE

The Mental Processing Account, a view according to which the phenomenal duration of an event is presented in terms of the perceiver’s concurrent thoughts, is developed in line with what Phillips has called the ‘Naïve View’ (2013). According to the Naïve View, the temporal structure of experience matches the temporal structure of the events perceived. As Phillips states, “whenever our experience apparently presents us with an event with a certain duration, our experience itself persists for a matching amount of time” (2013:
Note that this does not require that one has a perceptual awareness of the duration of the experience. That is, the experience itself does not need to seem to last for any duration. Thus, the Naïve View does not entail that the experience has a *phenomenal duration*. Rather, the claim regards the experience’s objective duration: the experience must actually last for however long the event seems to last.

This claim has elsewhere been referred to as the *Principle of Presentational Concurrence* (hereafter, PPC) and is widely accepted in the literature. Miller introduces PPC in the following passage:

The duration of a content being presented is concurrent with the duration of the act of presenting it. That is, the time interval occupied by a content which is before the mind is the very same time interval which is occupied by the act of presenting that very content before the mind (Miller, 1984: 107).

Depending on how some of these concepts are defined, PPC could be interpreted in a number of different ways. I will, therefore, specify what I take to be the correct definitions and in doing so, develop a more precise

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75 Those who accept some version of PPC are Thick Extensionalists, as they think of the experiences of events as themselves things that take time. See Dainton (2000, 2008, 2010) and Phillips (2010) for a defense of Thick Extensionalism. See Chuard (2011, 2017) and Lee (2014a, 2014b) for a critical discussion of Thick Extensionalism.
formulation of PPC. Firstly, we can see that PPC posits a relation of concurrency holding between the temporal features of two entities: the ‘content being presented’ and the ‘act of presenting’. In defining each of these I will appeal to my paradigm example of a perceptual experience $P$ of event $e$, an event of a dot moving.

With regard to the latter, ‘act of presenting’, we can begin by distinguishing between three types of entity: the experience ($P$), the event ($e$), and the event as presented. The experience is the mental state or process which presents the external world. This may be by representing or by being acquainted with those external world objects. I remain neutral between these accounts of perception. The event is the thing happening in the external world, for example, event $e$ is the movement of the dot over a certain temporal and spatial interval. The event as presented is how that external event seems to the perceiver, that is how the experience presents the event as being. The phrase ‘act of presenting’ refers to the entity that is doing the presenting. Thus, it is referring to the experience. There is no indication that Miller means to be referring to the phenomenal duration of the experience and, as it is controversial whether there is such a thing, I will take it to be the case that the duration being referred to is the objective interval over which the experience occurs: the objective duration of the experience.
Regarding the former, the term ‘content’ can be interpreted in a number of differing ways. Three interpretations of content in this case are: (i) the objective event \( (e) \), (ii) the abstract representational content, such as a proposition, and (iii) the event as experienced. Concerning the first interpretation, PPC would require that the event occupy the very same time interval as an experience of that event. As we have seen from time-lags, this is obviously false. Regarding the second interpretation, as abstract objects are not spatially or temporally located, they do not occupy time intervals. Consequently, they do not last or seem to last for any period of time. As it would not be possible for the duration of the content to be concurrent with the duration of the experience this cannot be the intended interpretation. The remaining option is to take ‘content’ to refer to the event as experienced. Concerning this final interpretation, PPC would require the event as presented in experience to occupy the very same time interval as an experience of that event. This is the only plausible interpretation. As we are talking about the way that the event is presented as being, that is, how it seems, the duration being referred to is however long the event seems to last, in other words it’s phenomenal duration.

I take it then, that the relata of PPC are the phenomenal duration of the event and the objective duration of the experience. Based on this, I formulate the principle as follows:
**PPC:** If an experience presents an event as lasting for a certain duration, then the experience itself must last for that very same duration.

PPC requires that, if $e$ seems to last for an interval $t$, then the experience that presents $e$ must actually last for the same interval $t$.\(^7^6\) Again, this is not the same as saying that one must be aware of the duration of $e$ as being the same as the duration of the experience presenting $e$, namely $P$. That is, PPC does not require that the duration of the experience be itself perceptually presented.

It is a consequence of PPC that the phenomenal temporal location of the event must match the objective temporal location of the experience. That is, not only must their duration be the same in that if one lasts for $n$ seconds then the other must also last for $n$ seconds, but also that $P$ and $e$ as presented must both occupy the very same interval of time. Those who defend PPC then, also defend perceptual presence: perceptual experience only presents that which seems to occur at the time of the experience.

It is not my aim to either defend or reject this principle independently of the Mental Processing Account (hereafter, MPA). Rather, my claim is that, if one

\(^7^6\) Some have claimed that there is an explanatory priority, that the duration of one relata is explanatorily fundamental and determines the duration of the other relata. Phillips, for example, claims that the phenomenal duration of the event is explanatorily prior, “our experience itself inherits the properties apparently presented in experience” (2014: 131). Such a priority, however, is not necessary for PPC.
is to defend MPA and thus, accept PPC, one must overcome the challenge of slow time experiences. I will discuss such experiences of slow time in the following section.

3.2.2. EXPERIENCING SLOW TIME

We often report that events seem to last for a longer or shorter period of time than they in fact do. Our reports are replete with claims that, for example, the lecture seemed to drag, or the time spent at the pub seemed to fly by. Before discussing this phenomenon in more detail and considering the challenge it poses to MPA, I want to distinguish between two different types of slow time experience. The first kind most prominently occurs during experiences of boredom. When bored, a person may report that time seems to drag. This kind of slow time experience usually occurs over a significant time interval, such as several minutes. During such experiences of slow time subjects do not usually attend to any particular events and their reports do not concern any kind of slow motion experience where things in the world seem to be moving at a slower rate.

The second kind of slow time experience involves perceived events appearing to happen in slow motion. In contrast with experiences of boredom, slow time experiences that involve slow motion have a relatively short duration, usually only lasting for a couple of seconds. During the experience the subject attends
to a particular event and reports that the event being attended to appears to be happening slowly. It does not seem possible that a person can perceive an event as occurring in slow motion without also experiencing the event as taking longer. This claim certainly applies to the objective occurrence of slow motion; for an event to occur in slow motion, it must unfold over an objectively longer interval of time. Consider event $e$, and a slow motion version $e^*$ during which the dot’s movement from $l_1$ to $l_{10}$ occurs in slow motion. The slow motion version of the event, $e^*$, must have an objectively longer duration than $e$. This is because it takes the ball longer to reach $l_{10}$. In the same way, if an event is experienced as occurring in slow motion that event must be experienced as taking longer.\footnote{\textit{Although he claims that the experience of slow motion and the experience of an event’s seeming to take longer should be dealt with independently, Arstila agrees that during experiences of slow motion one often also has an experience of altered duration, “[t]here is often an altered sense of the duration of the event lasting longer than it actually does” (Arstila, 2012: 2).}} For the remainder of this paper, by ‘slow time’ I mean the experiences of slow time that involve slow motion, unless explicitly stated otherwise.

The survivors of traumatic experiences, such as those involved in serious car accidents or falls, often report having slow motion experiences. In a series of papers Noyes and Kletti collate reports from the survivors of traumatic experiences (1972, 1976, 1977), confirming that in conditions of danger the most frequently reported feature of perceptual experience is an apparent
slowing down of time. The following report of slow motion comes from a subject who narrowly avoided being hit by a train: “as the train went by I saw the engineer’s face. It was like a movie run slowly so the frames progress with a jerky motion. That was how I saw his face” (Noyes and Kletti, 1977: 377). In summary of their results Noyes and Kletti write that in experiences of trauma, “[n]ot only did elapsed time seem drawn out, but events seemed to happen in slow motion” (Noyes and Kletti, 1976: 23, my emphasis). This suggests that subjects are not just experiencing the first kind of slow time that occurs during boredom but are actually experiencing the second kind, where events seem to occur in slow motion.

Slow motion experiences pose a challenge to the advocate of PPC. When one has a slow motion experience, one experiences the perceived event as occupying a longer interval of time than one would otherwise experience it as occupying. Let us consider a particular traumatic experience of a fall, call that fall event $f$. We can stipulate that event $f$ has an objective duration of one second and that one’s perceptual experience of $f$, which I will call $P_f$, has an objective duration of one second. If one experiences $f$ as occurring in slow motion, then one experiences event $f$ as taking a longer amount of time: perhaps what under normal conditions would seem to take $t$, under slow time conditions seems to take $t+1$. This is $f$’s phenomenal duration. To recall, PPC requires that whatever duration $f$ is presented as having, the experience $P_f$
must actually have. It follows that, if $f$ is presented as lasting $t+1$, then $Pf$ must actually last $t+1$. However, it is only the phenomenal duration of the event that is altered by the slow time experience. Consequently, the objective duration of $Pf$, which is unaltered by the phenomenon of slow motion, remains the objective interval of one second.

For the sake of argument, we can grant the defender of PPC that $t$ (i.e. however the duration is perceptually represented) equates to one second. Thus, under non-slow time conditions, we can accept that the phenomenal duration of the event and the objective duration of the experience match. That is, $f$ seems to last for $t$, $Pf$ actually lasts for one second, and as $t = one second the matching requirement is upheld. However, this is not the case for experiences that involve slow time. Under slow time conditions, $f$ seems to last for $t+1$, $Pf$ actually lasts for one second, but $t+1$ does not equate to one second. As a result, the duration of $Pf$ is not the very same duration that it presents $f$ as having; slow time experiences conflict with PPC.78

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78 The defender of PPC could initially reject the claim that slow time experiences raise a challenge by claiming that there are no slow time experiences. That is, they could claim that there are no experiences of slow motion that involve a phenomenal change in how the event is experienced. Rather, all there is to slow motion experiences are errors in judgments made when one attempts to judge the duration of an event. However, this discussion presupposes a realist position, that subjects do experience a phenomenological change and the reports of subjects undergoing traumatic experiences should be taken at face value.
3.2.3. PHENOMENAL DURATION AND CONSCIOUS MENTAL PROCESSING

The Mental Processing Account of Phenomenal Duration as defended by Phillips (2010, 2013), claims that there is a correlation between the phenomenal duration of an event and the amount of mental processing that occurs during one’s perception of that event. MPA can be seen as a way of defending PPC against the problem of slow motion experiences. In doing so, it provides an account of how duration may be perceptually presented. Appealing to the anecdotal reports of subjects who have experienced a life-threatening event, Phillips claims,

a striking and evidently subjectively central aspect of the subject’s overall experience is the connection between the perceived rates and durations of environmental events, and the rate of internal conscious processes of thought, imagination and recollection (Phillips, 2013: 233).

Due to this correlation, the perceiver perceptually presents the duration of that event in terms of the concurrent mental processing. One’s conscious mental processing “provides an ever-present reference stream”, against which one experiences the duration of perceived events (Phillips, 2013, p.232). On this view, how long an event seems to last is a matter of how much mental processing has occurred during the interval over which one experiences that
event: “our sense of how long a time has elapsed...is importantly a matter of how much mental activity has occurred in the stream of non-perceptual consciousness” (Phillips, 2013: 289). As such, the perceiver presents the duration of the event, not in seconds, but in mental activity.

The terms ‘mental processing’ and ‘mental activity’ are being used to refer to all aspects of non-perceptual consciousness. This includes thoughts, mental imagery and episodic memory (Phillips, 2013: 289). In what follows I will use the generic term ‘thinking’ to cover all of these specified non-perceptual conscious processes. The claim then, is that one’s awareness of how long an event seems to last is relative to how much thinking one does over that interval. Or in other words, that e perceptually seems to last for x amount of thinking.79

That is, according to MPA, not only is there a correlation between phenomenal duration and mental processing, but the former is perceptually given in terms of the latter. On this view the perceptual presentation of phenomenal duration is relative; an event does not seem to last for any absolute measurement of time but seems to last for the amount of mental processing, or thinking, that occurs during the perception of that event.

79 I use ‘x’ here as opposed to ‘n’ as the latter implies a numerical metric.
MPA can account for slow time experiences by appealing to the correlation between perceived duration and mental processing. The claim is that during slow time experiences the perceiver also experiences an increase in mental processing; whilst experiencing slow time, the perceiver does more thinking. There are anecdotal reports of slow time experiences which seem to support this claim for experiences of traumatic events. Alongside their reports of things in the world moving slowly, the subjects report an increased level of mental activity:

My mind speeded up. Time seemed drawn out. It seemed like five minutes before the car came to a stop when, in reality, it was only a matter of a few seconds (Noyes and Kletti, 1977: 376).

The following comes from the Yearbook of the Swiss Alpine club, where it is reported that climbers who fell, had experiences that included:

a dominant mental quickness [...] Mental activity became enormous, rising to a 100-fold velocity or intensity [...] Time became greatly expanded (Noyes and Kletti, 1972: 46-47).

These reports lead Noyes and Kletti to conclude that,
in contrast to the outward slowing, individuals described their thoughts as speeded up and expressed amazement at the number of thoughts or mental images that passed through their minds in a matter of seconds. These two aspects of the experience of time were generally described together and were clearly related to one another (Noyes and Kletti, 1976: 23).

According to MPA then, slow time experiences are to be explained in terms of the increase in concurrent mental activity. That is, the subject experiences f as occurring slowly because of the increased level of mental activity. If under non-slow time conditions f seems to last for $x$ amount of thinking, then under slow time conditions f must seem to last for an amount of thinking that is larger than $x$. One must experience f as lasting for more thinking than one would usually have during a non-slow time experience of the same objective length. As the experience of slow time is explained in terms of the increased level of mental activity, it follows that to have an experience of slow motion one must also experience an increase in mental activity; there cannot be a situation in which one experiences slow motion but does not experience an increase in mental activity.

In summary, MPA defends the following three claims:
i. There is a correlation between the experienced duration of an event and the experienced amount of thinking.

ii. The former is explained in terms of the latter.

iii. An experience of slow time occurs because of the increased amount of thinking.

MPA is designed to solve the problem of slow time for advocates of PPC. According to MPA, in slow time conditions the phenomenal duration of \( f \) is \( x^* \) amount of mental activity, where \( x^* \) represents a greater amount of mental activity than would normally occur during a non-slow time experience with the same objective length. The experience \( Pf \) has an objective duration of one second. PPC demands that the phenomenal duration of \( f \) (being \( x^* \) thoughts) match the objective duration of the experience (being one second). MPA suggests that the phenomenal duration of \( f \) and the objective duration of \( Pf \) match because they both last for the same amount of time as \( x^* \) amount of mental activity, which in this case just so happens to be one second (Phillips, 2013: 326). That is, as long as the objective interval over which \( Pf \) occurs is an interval during which the increased \( x^* \) amount of mental activity occurs, then PPC is maintained. The phenomenal duration of the slow time experience, \( f \), and the objective duration of the \( Pf \) are identical because both last for however long a certain amount of thinking (so long as this is an increased amount of
thinking) happens to take. It just so happens to be that, for event \( f \), \( x^* \) mental activity takes an objective period of one second.

It may seem, then, that by measuring phenomenal duration relative to the concurrent non-perceptual mental processing one can account for the perceptual presentation of phenomenal duration and overcome the problem of slow time that challenges PPC. What is required on such a view is that a correlation holds between phenomenal duration and mental processing, such that when subjects experience slow time they also experience an increase in conscious mental processing.

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3.2.4. SLOW TIME AND ELITE ATHLETES

In this section I argue that the reports of slow time experiences provided by elite athletes conflict with MPA. In order for a conflict to occur the elite athletes must: (i) have a slow time experience that includes slow motion phenomenology, and (ii) not experience an increase in mental activity. For experiences where (i) and (ii) hold, the slow time phenomenon cannot be explained by, or perceptually presented in terms of, an increase in mental processing; in such circumstances the slow event is not presented as lasting for an increased level of mental processing, \( x^* \).
Elite athletes, particularly those who are required to react to high speed events, including, baseball players, surfers and Formula 1 drivers, have reported having experiences of time slowing down whilst preparing to react to their high speed sporting events. Their reports of slow time are akin to those reported during experiences of traumatic events. Anecdotal reports of slow time experiences had by elite athletes, which can be found in popular media sources, are characteristic of the slow motion type of slow time experience: the temporal intervals usually only last for a few seconds, the athlete attends to the slow passage of external events, reporting that these events seem to happen slowly. These are the features associated with slow motion experiences, as opposed to the slow time that occurs during experiences of boredom. For example, professional baseball players who are preparing themselves to strike an oncoming ball often report that the ball seems to move towards them as if in slow motion, making it seem to them as though they have more time to respond to the situation. Just like the reports of slow time during traumatic events, the elite athletes experience a phenomenal change in the speed at which perceived events seem to be unfolding. Just as I claimed for the survivors of traumatic events, it would follow that the elite athletes experience the events as taking a longer interval of time.

Hagura et al. ran a series of experiments on elite athletes who have reported experiences of slow motion whilst preparing to perform their skill (2012). The
experiments were performed when elite athletes performed motor preparation, similar to the kind of action preparation they would perform during their sporting activities. Hagura et al. claim that, the kind of motor preparation they required the athletes to perform during the experiments are actions that would be critical in achieving the kinds of expert performances that occur during their sporting activities (2012: 4399). They take the results of their experiments to extend to situations in which the athletes are performing their skill.

An initial experiment tested the hypothesis that the phenomenal duration of a stimulus is perceived as longer during motor preparation. A white disk was presented at the centre of a monitor for a duration ranging between 700 and 1600 msecs. This white disk was then removed and replaced by a black ring. Participants were asked to judge whether the white disk was presented for a long or short duration, under two conditions, one that involves the kind of motor preparation essential for sporting activities, and a static control condition. The results show that the participants perceived the white disk stimulus as having a longer duration during the motor preparation condition. That is, subjects experienced a stimulus as lasting for a longer interval if it was presented to them whilst they were performing motor preparation, the kind of activity that would be essential for performing their sporting activity (2012: 4400-4401). To indicate that this altered perceptual experience was caused by
the motor preparation and not just due to the participant’s increased interest in the task, a second experiment was conducted which demonstrated that the same effects were not found when a subject had an increased level of interest but no motor preparation (2012: 4401). This indicates that the experiences of altered duration occur because of the motor preparation task, just the kind of task that skilled athletes would be engaged in during their experiences of slow time.

Although these experiments indicate that participants engaged in motor preparation report that a perceived event seems to last longer than it in fact does, this does not yet amount to the required experience of slow time. Such a result could potentially also apply to experiences of boredom. In order to satisfy condition (i) it must be the case that the experienced slow time includes slow motion, a perceived slowing down of external events.

In a further experiment, Hagura et al. tested whether the motor preparation affected the phenomenology of perceived events. In this experiment participants were presented with a flicker rate and were asked whether the frequency of the flicker was slow or fast, again under the two conditions. During motor preparation subjects reported that flicker frequencies were lower than they actually were, which indicates that the subjects perceived the
external events as occurring more slowly.\textsuperscript{80} These experiments support the anecdotal reports of skilled athletes: whilst preparing for their sporting activity they perceptually experience external events as occurring in slow motion.

Accepting that skilled athletes experience the same kind of slow time perception as the survivors of traumatic experiences, and so fulfilling condition (i) we should expect MPA to apply. MPA states that experiences of slow time are explained in terms of a concurrent increase in thinking. That is, during their experiences of slow time, subjects must experience an increase in thinking, such that they engage in more thinking that they normally would experience during the same objective time interval in which events are not experienced as occurring slowly. Thus, to account for the experiences of slow time that skilled athletes experience during motor preparation, these athletes must also be experiencing an increase in mental activity.

In contrast with the survivors of traumatic experiences this is not the case for elite athletes. Rather, in line with the classic theories of skill learning, elite athletes have a reduced level of cognitive activity whilst performing their skill.

\textsuperscript{80} The claim that a change in the perceived rate of flicker frequency indicates an experience of slow time does not entail that these experiences of slow time must have a higher resolution, i.e. that aspects of the event be perceived more clearly (see Stetson et al. 2007 for an argument that slow motion experiences require a higher perceptual resolution).
According to the classic theories of learning there are three stages of learning a skill: the cognitive state, the associative stage, and the autonomous stage (Fitts, 1964; Wulf, 2007). During the initial cognitive stage the subject acquires the basic movement pattern of their desired activity. They use a high level of cognitive activity as they are consciously controlling their movements. Once they have learnt the basic movements for their skill, the subject enters the associative stage where they develop their skill by making subtle adjustments. Although many of the movements are still controlled consciously at this stage, the activities are becoming more reflexive and automatic, thus, less cognitive activity is required.

During the final autonomous stage, the subject’s movements are accurate, controlled and expert. The subject’s movement is largely controlled automatically, requiring little or no cognitive activity:

After extensive practice, the performer reaches the autonomous phase…, which is characterized by fluent and seemingly effortless motions. Movements are not only accurate, with few or no errors, but also very consistent…The skill is performed largely automatically at this state, and movement execution requires little or no attention (Wulf, 2007: 4).
In support of this, consider the difference between a novice and an elite football player. Whilst the novice needs to focus on their movement, when an elite football player kicks a ball “they do not think consciously about every component involved in kicking, they ‘just do it’” (Beilock and Carr, 2004: 310).

It has been suggested that it is disruptive for the elite athlete to move away from this automatic movement and to attend more to their actions. To see why this might be the case consider a simple task such as typing. Once we have learnt to type well, we are usually able to do so with little error. However, if we attend to the task of typing or if we are being observed whilst performing the task, the error margin increases drastically. In support of this, Beilock et al. conducted an experiment where elite and novice athletes were, in one case, allowed to take as much time as they wanted to perform their skill and, in the second case, had to perform their skill under time pressure. The elite athletes performed better under time pressure suggesting that thinking more about their movements was detrimental to the performance of their activity (2004: 376-378). It seems that elite athletes, once their skill is mastered, are not thinking more but are actually acting in an automated sense. Consequently, whilst engaged in their sporting activity in which they experience slow time, elite athletes do not have an increase in thoughts.
In response to this one may claim that, although there is low cognitive activity required for the specific motor activity performed by the elite athlete, the athlete may still be attending to other aspects of the environment, such as the overall game strategy and elements of the game such as ball spin/speed. That is, although their specific motor actions are being produced automatically, their overall situation demands an increase in thinking.

However, neuro-cognitive evidence suggests that during action preparation elite athletes do not have an overall increase in cognitive activity. Electroencephalography (EEG) results demonstrate that elite athletes have reduced cortical activation both whilst performing hand movements in response to visual stimuli depicting sports situations, and whilst actually performing their skill.\(^81\) In an experiment, skilled shooters aiming at a target showed similar cortical activity to people who are in deeply relaxed flow states, such as meditation.\(^82\) The results also indicate that the athletes experience a reduction of covert verbal-analytical behaviour, such as self-evaluative thoughts and self-talk.\(^83\) During their activity, elite athletes inhibit non-essential cognitive processes; they experience a decreased level of mental activity. As a result, condition (ii) is not satisfied. Whilst elite athletes have slow motion experiences, they do not experience an increase in non-

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\(^{81}\) See Del Percio et al. (2008: 1552) and Haufler et al. (2000: 154) respectively.

\(^{82}\) See Haufler et al. (2000: 113, 154) and Kerick et al. (2001: 264).

\(^{83}\) See Haufler et al. (2000: 133) and Kerick et al. (2001: 264).
perceptual mental activity. The slow time experiences cannot, therefore, be explained in terms of an increase level of thinking. Not only is MPA unable to account for these experiences of slow time in sporting activities, these experiences conflict with the basis of the view. MPA cannot be appealed to in order to reconcile the phenomenal duration of the perceived slow motion event and the perceptual experience.

In contrast to what MPA requires, the experiences of slow time that skilled athletes experience cannot be accounted for by a concurrent increase in mental activity. As a result, the phenomenal duration of the slow time event during skilled sporting activities cannot be perceptually presented in terms of mental activity.

3.2.5. A MINIMAL ACCOUNT OF SLOW TIME EXPERIENCES

The Minimal Account is consistent with PPC, which is the claim that, if an experience presents an event as lasting for a certain duration then the experience itself must last for that very same duration. The Minimal Account provides a solution to the challenge of slow time by denying the antecedent of the conditional claim. That is, as the event is not presented as lasting for any particular interval there can be no requirement following from PPC regarding the duration of the experience itself.
Having set out the Minimal Account of phenomenal duration in chapter 3.1.,
we can see how it can apply to experiences of slow motion. During slow
motion experiences the perceived events are presented as occurring slowly.
As it stands, the temporal content of a perceptual experience of e (i.e. as set out
in 7P) does not account for this phenomenal experience of slow motion, it is
however, able to accommodate such a phenomenal change. In the case of slow
motion experiences, the perceived event is experienced as unfolding in some
particular way, namely, slowly. Just as we can use an adverbial modifier in
English to specify the way in which some event occurs, we can apply the same
principle in perception. That is, we can modify the perceptual presentation of
the event such that the event is presented as occurring slowly. I suggest that
the minimal temporal content for a slow motion experience of f, is that there
is an event of a fall, the subject of the event is me, and the event is in progress
now (the direct reference of which is, t), and the event is unfolding slowly.
This can be formulated as follows:

\[
\text{PF: } (\exists f) \ [\text{fall}(f) \land \text{Subject}(f, \text{me}) \land \text{Hold(InProg}(f, t) \land \text{Slow}(f)]
\]

In this way the Minimal Account can deal with slow motion experiences, the
event is simply presented as occurring slowly.
PF provides the temporal content of a perceptual experience of a falling event. It states that event $f$, is perceptually presented in a particular way. Event $f$ is presented as being a falling event, as being *my* falling event, as being in progress presently, and *as occurring slowly*. By adding the conjunct ‘Slow($f$)’, the Minimal Account is specifying the way in which the event seems. To include that the event seems to be slow identifies that there is an altered phenomenology associated with the event.

In this way we can distinguish between slow motion experiences and other slow time experiences such as boredom. As discussed in chapter 3.1., slow motion experiences and boredom have different phenomenal characteristics. It is only slow motion experiences for example, that cause the events to seem to be occurring at a slower rate. As such, the temporal content of experiences involving slow motion and the temporal content of experiences involving boredom should be different. Experiences of slow motion are, whereas experiences of boredom are not, a perceptual phenomenon. As it is only the former that include a change in the phenomenology, it is only the former which require the conjunct ‘Slow($f$)’ to be a constituent of the perceptual content.

Accepting that experiences of boredom do not require a modification of the event to feature in the perceptual content, it can still be questioned how the
defender of the Minimal Account can differentiate between a slow time event and an event occurring slowly. Consider for example the difference between a fall that objectively occurs slowly, perhaps due to increased resistance, and a fall that does not occur objectively slowly but seems to occur slowly. It seems that PF cannot differentiate between the two scenarios.

This is not, however, a problem for the Minimal Account. In both situations the fall seems to occur slowly. It would be correct in both situations then, for the falls to be perceptually represented as slow. The differentiation between the objectively slow fall and the objectively non-slow but phenomenally slow fall is whether or not PF accurately presents the event. That is, regarding the objectively slow fall PF will accurately present the fall, whereas regarding the phenomenally slow fall, in which one experiences slow motion, PF will be an inaccurate presentation of the fall. In both cases however, PF reflects the phenomenology of a slow event.

I have put forward a challenge for those who accept PPC, namely that of slow time experiences. To defend PPC against this challenge one must demonstrate that, for all experience, the phenomenal duration of an event matches the objective duration of the experience. However, in experiences of slow time the two come apart. A solution was put forward by advocates of MPA, where phenomenal duration was accounted for and presented in terms of mental
processing. To account for experiences of slow time, it was required that
during such experiences, subjects had a concurrent increase in thinking.
Although this may be the case in experiences of trauma, the evidence suggests
that it is not the case in skilled sporting activities. The reports of slow time in
skilled sporting activities thus conflict with MPA: slow time cannot be
accounted for by an increase in mental activity. The Minimal Account is
compatible with PPC and avoids the problem of slow time by denying that
the duration of an event is perceptually presented.
PART 4: SUCCESSION

In part four I provide an analysis of the temporal content of a perceptual experience of succession. That is, what it is for one event to seem to follow on from another event. In the first half I develop my positive account of succession, the Minimal Account. I argue that the accuracy conditions of perceptual experience should be analysed with respect to an interval of time as opposed to a temporally extended moment in time.

In the second half of part four I put forward two alternative accounts, the Trajectory Estimation Model and the Overlap Model, comparing them to a distinction made by Dennett (1991) between an Orwellian Approach and a Stalinesque Approach, respectively. I argue that both accounts fail to accommodate the experience of succession.
Succession is a temporal relation that holds between two events, or two temporal parts of a singular event, such that one follows on from the other. I will set out some considerations by appealing to my paradigm example of the dot’s movement, what I have called event $e$. Such a moving event involves the dot being in different locations at different times; it involves the dot being in a series of successive locations, over a series of successive times. For it to be an event of movement, the dot must occupy one spatio-temporal location, followed by another proximate spatio-temporal location. These temporal stages of the event are related through succession.

We can distinguish between the objective and phenomenal properties of successive events. We can distinguish between, on the one hand, the objective relations of succession actually holding between events and, on the other hand, the phenomenal relations of succession that seem to be holding between events. Regarding the objective relations of succession, there is an actual temporal order in which events actually unfold. This is the objective temporal order. The objective temporal order of $e$, is that the dot is in location $l_1$, followed by $l_2$, then $l_3$, and so on. The phenomenal temporal order of events is the order in which the temporal parts of the event seem to occur. That is, the order in which the temporal parts seem to follow on from one another. The
objective and phenomenal temporal order of events can come apart. Consider for example an occurrence of thunder and lightning. Objectively, these two events occur simultaneously. However, due to the difference between the speed at which sound and light travel, a perceiver will see the lightning before they hear the thunder. For an occurrence of thunder and lightning then, the objective order of events (i.e. that they occur simultaneously) is not reflected in the phenomenal order of events, whereby the thunder seems to follow on from the seemingly earlier event of lightning. Here we have an experience of succession, where there is no objective relation of succession holding between the events.\textsuperscript{84}

We can also distinguish between the order of events on the one hand and the order of experiences on the other. It may be suggested that, in pre-reflective experience (i.e. experiences that are not being attended to) there is an objective order of experiences, such that a perceiver first has an experience with a particular perceptual content, followed by another experience with different perceptual content. For example, a subject might firstly have an experience with the content ‘lightning’ followed by an experience with the content ‘thunder’. If this is the case, then it may be possible to identify an objective order of experiences. There is a question of how we might determine the

\textsuperscript{84} I will discuss below, in §4.1.3, some more problematic situations in which the objective and phenomenal temporal order of events come apart.
objective order or experiences. As suggested above, one way could be by identifying the objective order in which the content of the experiences become conscious. Another way of ordering experiences could be by identifying the order in which a person’s experiences are processed. It is, however, controversial whether we can determine such an objective order of experiences.\textsuperscript{85}

The claim that there is a phenomenal order of experiences in pre-reflective perceptual experience, an order in which one’s experiences seem to one to occur, is also controversial. The claim that there is a phenomenal order of experience requires that a subject is phenomenally aware of the features and properties of their experiences. This is in conflict with the phenomenally plausible claim that experiences are pre-reflexively temporally transparent.\textsuperscript{86}

Of course, in reflective experience, i.e. experience that is being introspectively reflected on, there might be a phenomenal order of experiences. In recollecting an earlier experience of an event, for example, we might be aware that the recollective experience (that is occurring now) is objectively later than the original experience (i.e. the experience of the event being recollected). The following discussion does not depend on there being an objective or

\textsuperscript{85} See Dennett (1991) for an argument against the possibility of an objective order of experiences.

\textsuperscript{86} See §2.2.2 for a development and discussion of pre-reflective temporal transparency.
phenomenal order of experiences, whether in reflective or pre-reflective experience.

In this chapter I begin by setting out some requirements for an account of perceiving succession, in response to these I develop the Minimal Account. I pose a challenge to the account, that of postdictive phenomena. Postdictive experiences are those in which objectively later events seem to influence a person’s perceptual experience of objectively earlier events.

4.1.1. PERCEIVING SUCCESSION

I will, following Husserl (1991), appeal to an auditory example of hearing a melody. Imagine hearing a short melody. You don’t merely hear a series of independent notes, rather you hear one note as flowing into the next, combining to form a complete event, the melody. It seems that you perceive the melody as a whole; your perceptual awareness at a time is not limited to an individual note but extends over a temporal interval. It is this that enables you to hear the unfolding melody.

For simplicity, rather than appealing to a complete melody, I will consider just the G chord. This consists of the notes G, B and D. I will contrast two cases, one in which the notes are sounded simultaneously. In this case, notes G, B, and D, are played at the same time and a subject is aware of them as occurring
at the same time. For the second contrasting case, I will consider the event of a broken G chord, where the G, B and D notes are played in succession. I will take it that, G occurs first, followed by B, which in turn is followed by D. The subject experiences the notes of the broken G chord as occurring in this order.

By contrasting these two cases, we have a way of identifying the difference in phenomenology between experiences which involve a perceptual awareness of succession and those which do not. In both cases one experiences not only the individual notes but also the relation holding between them. So, in hearing the chord, one experiences the relation of simultaneity holding between the notes. In hearing the broken chord one experiences the succession as each note flows into the next. There is a particular phenomenology associated with experiencing succession; we hear B as following on from G. Hearing B in isolation after an interval of silence is different from hearing B as following G. In the latter, one is perceptually aware not only of the current sounding of B, but also that it follows a just prior sounding of G.

It is not enough for an experience of succession that one be successively aware of independent parts of an event. A series of perceptual experiences cannot ever amount to an experience of one thing as following on from another. At one moment, one must be aware of what is happening now, but also what has just happened. That is, one must be aware of more than that which occurs in
an instant. The claim is then, that at the time when B is sounding, the perceiver is not only perceptually aware of the current sounding of B but is also perceptually aware that G has just sounded (and perhaps that D is about to sound). In perceiving a succession, one is perceptually aware of an event that unfolds over a temporally extended interval of time.

To motivate this we can consider an experience of a spatial relation. To perceive an object as being to the left of another object, you must, at that moment, perceive both objects so related. To see the dot being to the left of the dash, one must perceive both the dot and the dash. To perceive the relation then, one must perceive both relata. In this case, this means that to perceive the relation of succession, one must, at a time, perceive the two successive events. However, due to the nature of succession, these two events occur at distinct times. Thus, in order to perceive the succession of the two events, one must at a time be perceptually aware of events that occur at distinct times. One might question then, at what time this awareness of the succession between G and B is perceived. It seems that, to experience the relation between the two notes there must be a point in time in which one is perceptually aware of: note G, note B and the relation of succession. There is no point in time, however, when both G and B are sounding.

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87 See Lango (2000) for a defence of this claim.
It seems then, that if we take into account only that what a person perceives at a moment, i.e. that a person only hears G when G is sounding, and only hears B when B is sounding, we will not be able to account for an experience of succession. This is because, to perceive succession one must be aware of not only the current temporal part of the event but must be aware of it as following on from the previous part. To hear B as following on from G, the perceiver must be perceptually aware not only of B but also of G.

An experience of succession must occur at a moment at which one is aware of the events so related. Thus, at a moment, the perceiver must be perceptually aware of the note that is currently sounding, B, and of the note that has just sounded, G, and thereby one can be aware, at that moment, of the succession of B to G. As the succession unfolds over time, in perceiving the succession one must be perceptually aware of events that unfold over a brief interval of time.

A problem occurs then. It seems that there must be a moment at which one perceives the relation of succession. However, if perception is restricted to moments, in that we only perceive that which occurs at the time of the perception, i.e. only hear G when G is played, and only hear B when B is

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88 Of course, there are those who disagree with this claim, see Chuard’s snapshot model (2011), and Prosser’s dynamic snapshot account (2016). See §1.2.4 for an argument against the snapshot model, and §3.1.1 for an argument against the dynamic snapshot account.
played, we cannot have an experience of the successive relation holding between the temporally distinct events. If however, one is to claim that the perceiver is still perceptually aware of G when B is sounding one can account for the experience of succession but it seems that one is in conflict with the phenomenological truism that we cannot distinguish between the temporal location of the perceptual experience and the temporal location of that of which it is a perceptual experience. As when B is sounding G is no longer sounding (i.e. G is now past) it seems that G cannot be part of the perceptual content of the current experience, which presents B as now sounding. But, if G is not part of the perceptual content of the current experience, one cannot perceive the temporal relation between G and B. In the following section I will develop an account of succession, which provides a solution to this problem.

4.1.2. THE MINIMAL ACCOUNT OF SUCCESSION

As we have seen, an account of succession needs to be able to explain how one can be perceptually aware of the temporal relation of succession holding between two events if, at the time that the latter event occurs, the earlier event has already finished. That is, how can one hear the succession of G to B if, when B is sounding, G is already over? This apparent problem results from a background assumption that we consider the accuracy of perceptual
experience at a moment. It comes from the assumption that we determine whether one is aware of the succession of G to B, at a moment in time.

The Minimal Account, as developed in chapters 2.1 and 3.1, which provides the veridicality conditions of the temporal content of perceptual experience, has been developed in line with accounts of the truth conditions of utterances containing temporal indexicals, particularly Kaplan’s account of direct reference. In accounting for succession then, I will begin by appealing to approaches that have been used in linguistics. In their discussion of the truth conditions of tensed sentences, Bennett and Partee (2008) suggest that in order to give an adequate account of tensed sentences the truth conditions of an utterance cannot be assessed at a temporally unextended moment. They claim rather, that the truth conditions of tensed sentences should be considered with respect to temporally extended intervals of time (Bennett and Partee, 2008: 69).

Take the following sentence, ‘the dot is moving’, according to Bennett and Partee’s analysis of tensed sentences, one should not analyse whether a particular utterance of ‘the dot is moving’ is true at a temporally unextended moment but rather one should assess whether it is true with respect to a temporally extended interval of time.

Applying their claim to the case of a perceptual experience of the dot moving (i.e. a perceptual experience P of event e), the claim becomes that we should
not assess the accuracy of \( P \) at a moment but rather with respect to a temporally extended interval of time. In chapter 2.1 I developed an account of the temporal content of perceptual presence, such that the temporal content of a perceptual experience of event \( e \) can be represented as follows,

\[
7P: (\exists e) [\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Hold(In Prog}(e, t))]
\]

This says that, for some event \( e \), \( e \) is a movement event, the subject of the movement is the dot, and the state of the event’s being in progress is holding at time \( t \) (constants are being represented by \textbf{bold} text). Due to the movement event unfolding over an interval of time, it might be accepted that time \( t \) represents an interval rather than a moment. By suggesting that we apply Bennett and Partee’s claim to perceptual experience I am claiming that the accuracy of one’s experience of \( e \) at a moment, as set out in 7P, should be assessed relative to an interval of time and not an instant. The accuracy of one’s perceptual experience at a moment will depend on what happens before and after that moment.

I will provide some independent motivation for this claim. Considering event \( e \), it cannot be the case that the dot is moving at a temporally unextended moment. For an object to be moving it must be the case that it is changing locations over an interval of time. As the event takes an interval of time to
unfold it cannot be true at a moment that the dot is moving. It seems plausible to accept then, that it cannot be true that the dot seems to move at a moment. At any one time, whether a person experiences the dot moving will only be accurate with respect to an interval of time.\(^9\)

As the dot seems to be moving over an interval, we should assess the accuracy of a perceptual experience presenting the dot as moving at a time with respect to an interval. Consequently, the temporal content of a perceptual experience of \(e\), as set out in 7P should be assessed relative to an interval of time, as opposed to a moment.

We can extend this claim to other events. Consider an event of walking. As Soteriou discusses (2013: 102-103), Taylor (1977) and Dowty (1979) claim that for it to be true that a subject was walking, there must have occurred some ‘minimal’ walking event. For example, as Soteriou writes, “the fact that a subject moved his foot from the ground does not in itself make it true that the subject walked. Perhaps two steps are required for it to be true that walking occurred” (Soteriou, 2013: 103). For it to be the case that a walking event occurred, some minimal event must be satisfied. This minimal event cannot itself occur in a temporally unextended moment. That is, there is no activity

\(^9\) This does not entail that the perceptual experience is temporally extended, but that the event seems to be.
that a subject could perform in an instant that would satisfy the condition of being a walking event.\textsuperscript{90} We may then apply this to the content of perceptual experience; for it to be the case that one perceives a walking event one must perceive some minimal event relevant to the walking activity. As this minimal event cannot be satisfied in a moment, the subject cannot perceive this minimal event at a moment. Thus, the truth of whether one is perceiving an event of walking (at a moment) should be assessed relative to an interval, not a temporally unextended moment.

We can apply this to all activities.\textsuperscript{91} It can only be the case that \textit{\textsc{f}-ing} occurs if there occurs some minimal event relevant to that activity, this minimal event occurs over an interval. As \textit{\textsc{f}-ing} is an activity, it will not be true purely at a moment in time, when considered in isolation, that something is \textit{\textsc{f}-ing}. Whether \textit{\textsc{f}-ing} occurs should be assessed in virtue of a temporally extended interval of time. Thus, to perceive \textit{\textsc{f}-ing}, one must perceive something that

\textsuperscript{90} Soteriou’s discussion occurs in the context of homogeneity rather than the priority of the interval over the instant. Homogeneity is the claim that if an object is in a state over an interval, then it is in that state at every moment that falls within that interval. For example, if Jack loves Jill over an interval, it must be the case the Jack loves Jill at every instant that falls within that interval. They claim that walking is not homogenous, because for a subject to be walking some minimal event must occur. I can appeal to this in support of my claim because, just as whether or not a person is walking depends on the surrounding interval, whether or not a perceptual experience which presents a person walking is true depends on the surrounding interval.

\textsuperscript{91} As we have seen in §2.1.4. activities are processes, in that they usually take the progressive form and are open ended, ‘running’ and ‘building’ are examples of activities. Activities can be contrasted with states and achievements. States are non-progressive. ‘Believes’, ‘judges’, and ‘loves’ are all examples of states; a person might, for example, be in the state of ‘believing that the world is flat’. Achievements, whilst progressive, have an endpoint, ‘running to the shops’ and ‘building a house’ are examples of achievements. See Rothstein (2004) Vendler (2004: 6) and Soteriou (2013: 102) for a discussion.
occurs over an interval. The veridicality conditions of a perceptual experience involving \( \Phi \)-ing should be assessed with respect to an interval and not a temporally unextended moment.

I will consider two potential counter-examples to this claim. The first is provided by Prosser’s Dynamic Snapshot Theory (Prosser, 2016: 123-125).\(^92\) According to Prosser, motion can be detected and thus, represented at an instant. That is, an instantaneous representation can represent dynamic content, just as we use velocity to represent the speed of an object at a time. If such change can be represented at a moment in time, then it seems that we can assess the truth of the representation with respect to that moment; according to Prosser’s account, an interval of time is not required to determine the truth value for a presentation of an activity such as moving.

In contrast however, the speed at which an object is moving at a time, which can be represented in terms of velocity, depends itself on the surrounding interval of time. That is, the dot can only be moving at velocity \( V \) at moment \( M \) if the dot is moving before and after \( M \). Thus, the truth of the representation of the dot moving at velocity \( V \) depends on an interval surrounding \( M \).

\(^92\) See §3.1.1. for further discussion of Prosser’s Dynamic Snapshot Theory and an argument against it.
The second potential counter-example appeals to instantaneous events. An instantaneous event is one that does not either unfold or obtain over an interval of time. Rather such an event is fully complete in an instant. An example of an instantaneous event might be that of an object’s disappearance. Consider seeing the dot in front of you. The dot might remain in place for an interval of time. However, if the dot disappears the event of the dot’s disappearance happens at an instant. It does not take time for the dot to disappear. One moment the dot is there and the next moment it is not. The disappearing event occurs on the boundary of these moments.93

If this event does not have a temporally extended duration, then it can surely be the case that the truth of whether an object disappears at a moment can be determined by what happens at that moment. Likewise, the truth of an utterance of ‘the dot disappears at M’ where M is a moment, can be determined by the moment denoted by M. If this is the case, then it does not seem like the veridicality conditions of a perceptual experience presenting the disappearance of the object needs to be assessed with respect to a temporal interval.

However, whilst it might be the case that we can determine whether the object disappears with respect to a moment, it is not the case that we can determine

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93 See Soteriou (2013: 95-97) for a discussion of instantaneous events.
whether it seems to one that the object disappears with respect to a moment. This is because to perceive an instantaneous event, one must perceive that which happens over the interval surrounding than instant. Considering the disappearance of an object, Soteriou writes,

The perception of the event of the instantaneous disappearance of an object appears to entail the perception of both the object, and its absence – one’s perception of the object prior to its disappearance, and the scene after the object’s disappearance. For if you don’t see the object, then you can’t see it disappear; and if you don’t see the scene without the object, then you won’t yet have seen it disappear. If you perceive the instantaneous disappearance of the object, then your perception of that event must also have been a perception of the object and its absence, […]it requires the perception of something that isn’t instantaneous (Soteriou, 2013: 96, emphasis in original).

Thus, although the objective event of the disappearance of the dot occurs at a moment, a perception of that moment in isolation will not be a perceptual experience of the disappearance of the dot. The veridicality conditions of a perceptual experience of the instantaneous event of the dot’s disappearance will need to be determined relative to an interval of time. This is because whether one sees the dot disappear depends on whether one first sees the dot’s presence, followed by the dot’s absence. Instantaneous events do not
therefore, form a counter-example to my claim that the truth conditions of a perceptual experience of an event should be considered relative to an interval, not an instant.

Having made and motivated this claim, we must consider the conditions for which we can determine the accuracy of one’s perceptual experience of the dot moving at a moment (with respect to an interval). In their analysis of tensed sentences, Bennett and Partee provide the following account (2008: 71): an utterance of ‘the dot is moving’ can only be true at an unextended moment M in virtue of the corresponding sentence ‘dot moves’ being true over an interval of time that includes M. If one were to apply this particular account to perceptual experience, the resulting claim would be that a perceptual experience of the dot moving at a moment M is only accurate in virtue of the perceiver having an experience of ‘dot moves’ over an interval which contains M. The accuracy of one’s perceptual experience at a moment M depends on what one perceives over an interval of time that includes M.

Of course, this type of analysis will give rise to the so-called imperfective paradox. If ‘dot is moving’ is true over an interval surrounding M, then there are times before M at which it is true that ‘dot moves’. And, ‘dot moves’ entails that at some later moment, ‘dot has moved’.94 Whilst this entailment is fine for

94 See Parsons (1989: 214-215) for a version of this argument.
activities such a moving, for accomplishments it is not. Thus, whilst Bennett and Partee's account might seem plausible in the case of movement, i.e. that it can only be true at a temporally unextended moment that the dot is moving, if it is true over a temporally extended interval that the dot moves, it is not plausible in other cases.95

The claim that the content of perceptual experience should be assessed with respect to an interval as opposed to an instant must be presented in a way that does not give rise to the imperfective paradox.96 That is, how can the accuracy of a perceptual experience $P$ at a moment $M$, not entail that at $M$, it must be the case that one has experienced that the dot has moved? Bennett proposes a distinction between intervals of time that represent occurrences of activities and intervals of time that represent occurrences of accomplishments (Bennett, 1977: 505).97 His distinction appeals to what he calls, open and closed intervals. According to Bennett, open intervals are those which have no endpoints; there is no determined time at which the open interval representing the event must end. Thus, there is no required termination of the event so represented. Closed intervals on the other hand have an endpoint, there is a time at which the closed

95 For example, the entailment of ‘Tamsin is building a house’ to ‘Tamsin built a house’ causes a problem. This is because it can be true that Tamsin is building a house without it ever being true that Tamsin has built a house. Perhaps Tamsin got bored half-way through and never finished building the house.

96 I have discussed the imperfective paradox in more details in §2.1.4. Additionally, see Parsons (1989: 214-215) and Dowty (1979: 133).

97 I use ‘accomplishment’ where Bennett uses ‘performance’.
interval representing the event must end. As the interval is closed, it is more accurate to say that it has two endpoints. The interval is closed both at its starting point and its finishing point. A closed interval requires that the event being perceptually presented terminates.

Bennett claims that activities, which includes events such as moving and running which do not require a particular culmination, are represented by open intervals. The interval over which an activity is represented has no endpoint. On the other hand, achievements such as running to the shops, drawing a circle and building a house which do require a particular culmination, are represented by closed intervals. Thus, the interval over which an achievement is represented has an endpoint (Bennett, 1977: 505).

So far, however, this does not solve the problem. If an achievement is represented by a closed interval then the truth of an utterance of ‘Tamsin is building a house’ at a time $t$ still seems to entail that at some moment after $t$, ‘Tamsin built a house’. But as we have seen, it may well be true of Tamsin that she is building a house at $t$, where it is never true at a time later than $t$ that Tamsin built a house. However, in addition to this, Bennett adds that both the progressive activity verb phrases and progressive accomplishment verb phrases can be true of both open and closed intervals (1977: 505-506). Thus, although the event of building a house is an accomplishment, it may be true
of an open interval that ‘Tamsin is building a house’. This, according to Bennett, neither implies that ‘Tamsin built a house’ or that ‘Tamsin will have built a house’ (1977: 506). That is, the progressive version of the accomplishment, ‘building a house’ can be represented by an open interval. Being so represented does not guarantee the non-progressive, i.e. that Tamsin will be in the extension of ‘builds’ with respect to a closed interval. The truth of ‘Tamsin is building a house’ does not entail or guarantee that the accomplishment of the house being built has, or will have, taken place.

By distinguishing between open and closed intervals Bennett can avoid the imperfective paradox. All events in the progressive, whether activities or accomplishments, can be represented by an open interval. If represented by an open interval, there is no guarantee that the non-progressive will be true with respect to a closed interval. Thus, there is no requirement that Tamsin actually builds a house.

The same can be applied to perceptual experience. I can have a veridical perceptual experience of an accomplishment unfolding over time without it being required that I have a perceptual experience of the completion of that accomplishment. It can be true, for example, that I see that Chris is drawing a circle, without it ever being true that I see that Chris drew a circle, or even it being true that Chris drew a circle. This is because ‘drawing a circle’ is
represented by an open interval, which does not entail that the accomplishment, drew a circle, has, or will have, taken place.

Parsons suggests that Bennett’s distinction between open and closed intervals is equivalent to his distinction between events which do not culminate and events which do culminate (Parsons, 1989: 232). Parsons writes,

Now Bennett’s activities seem to be the same as my events which do not culminate, and his [accomplishments] seem to be the same as my events which actually culminate. And so we can see that the distinction between open and closed intervals is simply a way of coding whether or not an event eventually culminates (Parsons, 1989: 232).

Parsons’ account rests on the difference between an event ‘developing’ and an event ‘culminating’ (Parsons, 1989: 232). He claims that not every event has a culmination. That is, not every event has a specific determined end point. For event $e$ to be an event of movement, there is no determined interval over which the movement must occur (as long as it is not a moment).

According to Parsons, events which culminate are those which are considered complete at the end of the interval. Thus, if Tamsin is building a house over the interval $t$, and Tamsin completes the building of the house at the end of the interval $t$, then the event can be said to have culminated. The
representation of this event as having culminated allows for the entailment from ‘Tamsin is building a house’ to ‘Tamsin built a house’. If, however, Tamsin does not complete the building of the house, then the event is in progress. And, if this event of building a house is represented by being in progress, then there is no requirement that the event ever culminate. Thus, there is no entailment from ‘Tamsin is building a house’ to ‘Tamsin built a house’.

Perceptually speaking, we present events as being in progress, i.e. as unfolding. In virtue of this, one can see an event unfold without seeing it culminate. I see, for example, the process of the dot moving, or the circle being drawn, both of which are processes that are in progress, and are not required to culminate. I may see Chris drawing a circle without ever seeing Chris draw a circle. My experience at a moment $M$, of Chris drawing a circle can be accurate (with regards to an interval of time) where Chris never completes his drawing of the circle.

If we analyse the accuracy of a perceptual experience at a temporally unextended moment in time, with respect to an interval of time which includes that moment, then it can be true at a time $M$ that a person is experiencing movement. This can be true at a moment even though no

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98 I have discussed Parsons’ view in more detail in §2.1.4.
movement actually occurs in a temporally unextended moment. A subject perceptually experiences the dot moving at a moment $M$ in virtue of the fact that she is experiencing the dot moving over a temporally extended interval, which includes $M$. And, because the relevant interval is an open interval, there is no requirement that the movement stops at any specified time, or that the event culminates. This is represented in 7P by the conjunct, ‘Hold(In Prog(e) $t$)’.

With regards to perceiving an achievement such as building a house, the argument can be specified as follows. If we analyse the truth conditions of a perceptual experience of Tamsin building a house at a temporally unextended moment $M$ with respect to an interval $t$ that includes moment $M$, then it can be true at moment $M$ that a person is perceptually experiencing Tamsin building a house. This can be true at $M$ even though no building occurs in a temporally unextended moment. A subject perceptually experiences the building at $M$ in virtue of the fact that she is experiencing the building over a temporally extended interval, which includes $M$. And, because the relevant interval is an open interval, there is no requirement that the building event culminates. That is, there is no requirement that Tamsin built a house. This is represented in 7P by the conjunct, ‘Hold(In Prog(e) $t$)’. The temporal content of perceptual experience, as stated in 7P is not subject to the imperfective paradox.
This account can explain our experience of succession. If I perceive one thing as following on from another, then it can be true at a temporally unextended moment \( M \) that I perceive the relation of succession in virtue of the fact that over an interval of time that includes that instant, I perceive one thing followed by the other.\(^9\) I will apply this to each of my examples in turn.

Firstly, I will consider my paradigm example, event \( e \), of the dot moving. The movement of the dot involves the dot being in a series of successive locations over a series of successive times. The dot is in location \( l_1 \) at time \( t_1 \) followed by location \( l_2 \) at time \( t_2 \). As we have seen above, to perceive a relation one must, at a time, perceive the things so related. To see the dot as being to the left of the dash at a time \( M \), one must, at \( M \), have a perceptual experience that presents both the dot and the dash. Likewise, to perceive the relation of succession between dot being in \( l_1 \) and being in \( l_2 \), one must, at a time, perceive the things so related, i.e. the dot being in \( l_1 \) and the dot being in \( l_2 \), at a

\(^9\) Both Phillips (2014) and Soteriou (2013) also argue that we should not analyse the content of perceptual experience with respect to a temporally unextended moment in time. Rather, they also take it to be the case that we should be analysing what a subject is experiencing over an interval of time, which contains that moment. Both Phillips and Soteriou argue that the interval is ontologically prior to the instant, “it is not merely that experience is extended through time, but rather that there are certain durations of experience that are explanatorily or metaphysically prior to their temporal subparts” (2014: 149-150). Hoerl (2009) argues that it is a mistake to ask what a person experiences at a temporally unextended moment because (i) the experience is a process, and (ii) that of which one is aware is itself something which takes time. As such, how can we expect the content of an experience at an instant to “show us, all by itself, how we can be aware of a sequence of event” (Hoerl, 2009: 8).
temporally unextended moment. At $M$, one must have a perceptual experience that presents both the dot in $l_1$ and in $l_2$. Of course, as these temporal parts occur at different times (and the dot is never in both $l_1$ and $l_2$ at one time) it may be difficult to see how we can perceive the relation between them at a time.

The account I have developed above can account for one’s perceptual experience of the successive movement of the dot. That is, it can be true at a temporally unextended moment that one perceives the succession of the dot’s movement from $l_1$ to $l_2$ in virtue of the fact that it is true over an interval of time that includes that moment, that one perceives the succession of the dot’s movement from $l_1$ to $l_2$. The minimal temporal content of the experience of the successive stages of moment can be as articulated in 7P.

The same can be applied to the auditory experience of hearing the broken chord. One can hear the succession from note G to note B at a moment $M$, in virtue of the fact that over an interval of time, one hears the note G followed by the note B. A perceptual experience that presents G and B as occurring successively can be accurate at a moment $M$ in virtue of that fact that over an interval of time that includes $M$, the subject experiences G followed by B.
Having set out an account of the perceptual experience of succession, I will put forward a potential problem, this problem arises for any account of experiences of succession.

4.1.3. POSTDICTIVE PHENOMENA

A particular challenge that faces accounts of experiences of succession are postdictive phenomena. Postdictive phenomena occur where an initial event, or temporal part of an event, is modified by a second objectively later event, or temporal part of an event. That is, an objectively later event affects the way that an objectively earlier event is perceived as being. I will explain two postdictive phenomena, the colour phi phenomenon and the cutaneous rabbit. In doing so, I will highlight the problems that these illusions cause for accounts of perceptual experience of temporal properties, particularly succession.

The colour phi phenomenon is an illusion of motion that takes place when a subject is presented with two successive differently coloured flashes (Kolers and Von Grünau, 1976). The first flash, which in this example I will take to be red, is illuminated for 150 msec. After a pause of 50 msec, a second green flash is illuminated at a nearby location. Rather than experiencing two distinct

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100 See Eagleman and Sejnowski (2000) for a discussion of postdictive effects.
101 Steinman, Pizlo, and Pizlo (2000) argue that it is actually a beta, rather than a phi, phenomenon.
flashes of colour, one red and one green, subjects report experiencing the red spot moving to the location of the green spot, with an abrupt change of colour midway. See figure 5 for an illustration of the colour phi phenomenon, whereby the first flash occurs at time \( t_1 \), the abrupt change occurs at time \( t_3 \), and the second flash occurs at time \( t_5 \).

![Figure 5: Colour phi phenomenon](image)

The illusion holds across a number of scenarios. The duration of the pause between the two flashes can be altered up to 400 msec with the appearance of motion still remaining (Choi and Scholl, 2013: 393). This illusion does not just occur because of the subject’s expectation from previous trials; the phenomenon can be experienced on the first trial, or when the colours, shapes and direction of motion are altered. The illusion can also occur where the two
flashes differ, for example, where the first stimulus is red and circular and the second stimulus is blue and square.

The subject’s reports from the colour phi phenomenon seem to suggest that, under the original conditions that I have set out, at a time midway between the two stimuli, let’s call it $t_3$, the subject experiences an abrupt change from red to green. The red flash takes place at $t_1$, the green flash at $t_5$, and the transition at $t_3$. It thus appears that an event occurring at $t_5$ influences what the subject experiences to be occurring at $t_3$. Had the flash at $t_5$ not been coloured and located as it was, then the subject’s experience of what was taking place at $t_3$ would have differed accordingly. That is, had the second flash, which occurs at $t_5$ been blue and square shaped, then the transition experienced earlier at $t_3$ would have been different. Thus, the later event affects the way that the earlier event is experienced as being.

A related illusion is the so-called ‘cutaneous rabbit’ (Geldard and Sherrick, 1972). In the cutaneous rabbit illusion, objectively later events seem to determine what it is like to experience events that occurred at an objectively earlier time. In this case subjects experience a series of fifteen taps that are delivered in succession. The first five taps are located at the subject’s wrist, the next five taps are located 10 cm towards the elbow and the final five taps are located 20 cm towards the elbow (Geldard and Sherrick, 1972; Phillips, 2014).
Consider two separate trials, in the first trial the subject only receives the first five taps, in the second trial, the subject receives all fifteen taps. If, as in the first trial, the subject only experiences the first five taps, then they correctly report experiencing all five taps at the wrist. However, when the complete series is delivered in the second trial, the subject reports experiencing the taps as being equally distributed from the wrist towards the elbow. In both trials the first tap is experienced as the wrist, however, it is only in the first trial and not in the second trial that the second tap is experienced as being located at the wrist. In the second trial, because the full sequence was produced, the second tap was experienced as being further up the arm, towards the elbow. The latter events of the subsequent taps affected where the earlier taps were felt to be located.

Say that the first tap occurred at time \( t_1 \) and the second tap at time \( t_3 \), we can ask the subject what they felt at time \( t_3 \), what answer they will give depends on what happens after \( t_3 \). That is, where the subject feels the second tap to be located, will depend on whether they only experience the first five taps, or whether they experience the full series of fifteen taps. Just as in the case of the colour phi phenomenon, the cutaneous rabbit illusion provides an example where objectively later events seem to influence the subject’s objectively earlier experience.
In what follows I will use the colour phi phenomenon as my paradigm example of postdictive experience. What I say regarding the colour phi extends to other examples of postdictive experiences.

To highlight some of the issues with postdictive phenomena, compare an additional trial of the colour phi phenomenon on which there is no subsequent flash. That is, at time $t_1$, a red flash appears, but there is no subsequent green flash at $t_5$. It would seem, prima facie, that across both trials at $t_3$ the subject would have a perceptual experience with the same temporal content. This is because, across both trials at $t_3$, the same events have occurred and been perceived, where this is the event of a sole red flash followed by a pause.

Postdiction generates a puzzle for accounts of the perception of motion and, more generally, of the perception of temporally extended phenomena. This can be stated in the form of a dilemma. For both examples of postdictive phenomena just set out, one may ask, what is the subject experiencing at $t_3$? Consider the colour phi phenomenon, we may want to say that at $t_3$ the subject experiences a transition from red to green. After all, this is what the subject reports. But if we take this option, then we need to explain how the green flash which occurs objectively later makes it into the content of perceptual experience at $t_3$. If, at $t_3$, the subject experiences a transition from red to green, then it seems that at $t_3$ the visual system is already aware that there will be a
flash of a particular colour and shape occurring at the objectively later time, \( t_5 \). But this is surely impossible. The other option then is to deny that, at \( t_5 \), the subject is experiencing a transition. But, if so, it seems that the subject’s own reports are being ignored, since they certainly claim to experience the change of colour occurring abruptly before experiencing the green spot at its final resting place, \( l_5 \) (which it reaches at time \( t_5 \)).

It seems that we must accept exactly one of these options: at \( t_5 \) the subject does not perceptually experience a transition, or at \( t_5 \) the subject does perceptually experience a transition. If we take the first option then we are ignoring the subject’s reports, however, if we take the second option, then we are accepting that the subject’s perceptual system somehow ‘knows’ that the second flash will occur, and that it will have the properties of being round and green, before it actually occurs.

The same dilemma applies to the cutaneous rabbit illusion. On the second trial, where the subject experiences the full series of taps, one can either accept that at \( t_3 \) the subject experiences the taps as being mislocalised up the arm, where this involves the subsequent taps affecting the perceived location, or one can ignore the subject’s reports and accept that at \( t_3 \) the tap is felt in its actual location, at the wrist.
In the following section, I will show how the Minimal Account, as developed in §4.1.2. can account for experiences that include postdictive effects.
In postdictive experiences, events that occur objectively later seem to influence how objectively earlier events are perceptually experienced. For the particular case of the colour phi phenomenon we can ask what the subject experiences at a particular instant, $t_3$. I pose the following question. At $t_3$, before it is determined what will happen at the later time $t_5$, i.e. whether or not there will be a subsequent green flash, what does the subject experience?

The Minimal Account, as set out above, is in a position to explain such postdictive experiences. Let’s begin by first considering the temporal content of the perceptual experience had by a subject experiencing the colour phi phenomenon (CP), at time $t_3$. Accepting the subject’s reports, that is, taking the first horn of the dilemma, we might consider the temporal content of the experience of the dot changing from red to green to be:

$$CP1: (\exists e) \left[\text{Transition}(e) \land \text{Subject}(e, I) \land \text{Hold(InProg}(e) \land t_3)\right]$$

CP1 states that, there is a transition event, the subject of this transition is the light (I use light here to refer to the constant light, as opposed to two distinct flashes), and the transition is unfolding, or in progress, at time $t_3$. I use bold to represent constants. Note that this is not an attempt to provide the complete
conditions of perceptual experience, but only the temporal content. There can be other aspects which account for the full content of perceptual experience.

As we have seen, in line with the Minimal Account it is only true at a time $t_3$, that a person has a perceptual experience with the temporal content $CP1$ in virtue of there being an interval of time $t$, which includes $t_3$, over which a person experiences the transition. That is, even with what might be considered an instantaneous transitional event occurring at $t_3$, this event depends on what happens before and after $t_3$. The transition from red to green depends on there being an event of the dot being red at an earlier time, and an event of the dot being green at a later time. Whether a person experiences a transition at time $t_3$ then, depends on what they experience over an interval of time that includes $t_3$. Consequently, the accuracy of the subject’s experience at $t_3$ should be considered with respect to a temporally extended interval, that includes $t_3$.

It is the case that the subject experiences the transition at $t_3$, because they are experiencing the transition over an interval that includes $t_3$. The subject is experiencing the transition as being in progress over the open interval $t$. I suggest then, that the temporal content should be represented as follows:

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102 This is structurally similar to the perceptual experience of an object disappearing. Although the disappearance might occur in an instant, it depends on what happens objectively earlier and later. For a person to see an object disappear, they must first see the object’s presence, followed by its absence.
The reason that one experiences the transition at \( t_3 \), and thus has a perceptual experience with the temporal content CP2, depends on what happens before and after \( t_3 \). That is, one’s experience of the transition at \( t_3 \) depends on whether there is a second flash at \( t_5 \). This is accounted for by, (i) analysing the truth conditions of the temporal content with regard to an interval, and (ii) the fact that the interval specified in CP2 is an open interval. The temporal content specified at \( t_3 \) by CP2 is of an event which has not yet culminated, and which is not required to culminate. This means that the open interval which can determine the truth of the temporal content at \( t_3 \) can be the interval \( t_1 \) to \( t_5 \). That is, the time at which the second flash occurs can contribute to determining the truth of what one experiences at \( t_3 \). As a consequence, it is the case that one experiences a transition at \( t_3 \), in virtue of experiencing a transition over an interval, \( t_1 \) to \( t_5 \).

Having set out the minimal response to experiences of postdictive phenomena I will set out a potential problem for my view.

4.1.5. THE PROBLEM OF CONTRADICTORY CONTENTS

A problem that occurs for the Minimal Account is that it seems ad hoc to demand that the relevant interval for determining whether a subject
experiences the transition at $t_5$ is the interval $t_1$ to $t_5$. There are many intervals that could have equally been appealed to in determining whether or not the subject experiences a transition from red to green at $t_5$. It is not the case that the only available interval that has $t_5$ as an instant is the interval $t_1$ to $t_5$, over which one experiences the two flashes of light and the transition. Rather, there are a number of intervals that can be specified, each of which $t_5$ falls within. If we were to specify a different interval, then this could affect what the subject experiences at $t_5$. As Soteriou states,

> there will be many different periods of time that any instant will be part of, it may be true to say that S was in state P from $t_1$ to $t_4$, but also true to say that S was in state Q from $t_2$ to $t_6$, and state R from $t_3$ to $t_7$, and so on (Soteriou, 2013: 144 – 145).

That is, whilst it may be true that the subject was having a perceptual experience with the temporal content $CP_2$ at $t_5$ in virtue of an interval of time $t$ (which represents $t_1$ to $t_5$), it may be the case that if a different interval is specified the subject reports having a perceptual experience with a different temporal content.

For example, if we focus on the interval $t_1$ to $t_4$, then the subject will have a perceptual experience which involves consciously experiencing a lone red
flash, I will call this perceptual experience $P_1$. During the interval $t_1$ to $t_4$, the subject does not experience the green flash, and consequently they do not experience the transition at $t_3$. We can say that at $t_3$, in virtue of $t_3$ falling within the interval $t_1$ to $t_4$, the subject is experiencing a lone red flash.

However, if we take the relevant interval to be $t_2$ to $t_5$, then as the subject does not experience a red flash or the transition from red to green, the subject will have a perceptual experience which involves consciously experiencing a lone green flash. I will call this perceptual experience $P_2$. The final option is to consider the interval $t_1$ to $t_5$. During this interval the subject has a perceptual experience which involves an awareness of a red flash, a green flash and a transition from red to green, I will call this perceptual experience $P_3$.

At $t_3$ then, in virtue of being an instant that falls within the intervals, $t_1$ to $t_4$, $t_2$ to $t_5$, and $t_1$ to $t_5$, the subject has the following perceptual experiences. They have perceptual experience $P_1$, which involves being aware of a lone red flash with no transition of red to green, perceptual experience $P_2$, which involves being aware of a lone green flash with no transition of red to green. The subject also has perceptual experience $P_3$, which involves being aware of a red flash, a green flash and the transition of red to green. That is, at the instant $t_3$, that subject has experiences that both do represent a transition and do not represent a transition. This is equivalent to having an experience that both
represents P and represents not-P at an instant. That is, at t₁, the subject has experiences with contradictory content.

A possible response here would be to deny that a subject can, at one time, have experiences with different perceptual content. That is, deny that at t₁ a subject can be in P₁, P₂ and P₃ at the same time. One could claim that this is the case by arguing that experience is holistic; thus, a person is only undergoing one experience at any time.⁴³ As, at any time, a person has multiple sensory inputs, this singular experience would have to involve the content of all modalities. Everything that one is seeing, hearing, touching, tasting, etc., at any time would all have to be elements of the content of this singular experience. Whilst this may be the case, the Minimal Account is clearly not attempting to provide a complete account of one’s total experience at a time, moreover, the Minimal Account is not even attempting to provide a complete account of one’s perceptual experience at a time. Rather, the Minimal Account is specifying the veridicality conditions for the temporal aspect of an individual perceived event.⁴⁴ If one were to pursue this line of response, one would not avoid the problem but merely create a single experience with

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¹⁰³ See Tye (1995) for the claim that a person is in a singular perceptual state for each period of wakeful awareness.

¹⁰⁴ I refer to an individual event here, because simultaneously with the experience of the dot moving, the subject could be perceptually experiencing other background events.
contradictory contents. To deny that a subject can have different perceptual content at one time is not then, a possibility for the Minimal Account.

To avoid this potential confusion the objection could be adapted to refer not to multiple experiences but to differences in temporal content. That is, at $t_3$, in virtue of being an instant that falls within the intervals, $t_1$ to $t_4$, and $t_2$ to $t_5$, the temporal content of the experience involves no transition. However, in virtue of being an instant that falls within the interval $t_1$ to $t_5$, the temporal content of the experience contains as an element, a transition. Thus, at the instant $t_3$, the subject has an experience that both does represent a transition and does not represent a transition. They have an experience with contradictory temporal contents.

In response to this, however, the Minimal Account can appeal to the fact that the interval over which one experiences the transition, is an open interval. Or in other words, that the perceived event is in progress. That is, we cannot specify the limits of the interval that is relevant to determining what the subject perceives at $t_3$ because the event is in progress at this time. The perceived event has not yet culminated, thus the relevant interval indicated by $t$ is open: in CP2 $t$ does not represent the closed interval $t_1$ to $t_5$. There is no requirement that the event culminates at any particular time, beyond that, there is no requirement that the event ever culminates at all. Thus, we cannot
specify that any of the intervals \( t_1 \) to \( t_4 \), \( t_2 \) to \( t_5 \), or even \( t_1 \) to \( t_5 \), are the relevant intervals for determining what the subject is experiencing at \( t_3 \). It is only when the event culminates that the relevant interval can be determined.

This does not however, deny the possibility of experiencing succession, nor does it deny that over the open interval \( t \), one experiences a transition from red to green. It just means that the relevant limits are not necessarily determined at that time. As a result, it does not follow that the subject has an experience with contradictory temporal contents, and the Minimal Account can, not only explain one’s experience of succession, but can also overcome the problem that postdictive experiences pose.

There is a fact of the matter about what one is experiencing. That is, at \( t_3 \) one is having a perceptual experience with the temporal content CP2. That fact that one has this experience at \( t_3 \) depends on what happens over an interval which includes \( t_3 \). As the relevant interval is an open interval, the limits of the interval cannot be specified at \( t_3 \).

The Minimal Account is not merely cherry picking the relevant interval. Rather, just as one can be experiencing the dot moving at a moment in virtue of an open interval of time over which the dot moves, one can be experiencing a transition at \( t_3 \) in virtue of an open interval of time over which there is a
transition. Because this interval is open, it cannot be determined until after the fact what the relevant interval is. It happens to be, in this case, that there seems to be a transition.105

In this section I have developed a positive account of succession, according to which the truth conditions of a person’s perceptual experience at a temporally unextended moment in time depends on an interval of time that includes the moment. In the following I will set out two alternative accounts of succession, the *Trajectory Estimation Model*, and the *Overlap Model*, arguing that they are unable to adequately account for the temporal properties of perceptual experience and the problems that postdictive experiences propose.

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105 This response is also available to Soteriou and Phillips. I have agreed that the subject is experiencing a transition over an interval, and that what one can state as the temporal content at a moment in time depends on an interval of time. This is consistent with their claims that the interval is metaphysically and explanatorily prior to the instant.
4.2. EXPERIENTIAL REVISIONS

To recap briefly, to perceive a relation, one must at a time perceive the things so related. Considering the spatial relation _to the left of_: to see the dot as being to the left of the dash one must at a time be perceptually aware of both the dot and the dash. That is, at a time one must have a perceptual experience that presents both the dot and the dash. In order to account for a perceptual experience of the temporal relation of succession, one must perceive both events so related. To perceive the succession between the two notes G and B (i.e. experience B as following on from G) one must, at a time, be perceptually aware of both G and B. The nature of succession, however, is that the two events, or temporal parts of an event, that are so related occur at distinct times. To perceive succession then, one must be perceptually aware of events that occur over an interval of time. One must be aware not only of the current temporal phase of an event but also of the previous temporal phase of the event.

Postdictive experiences are experiences where objectively later events seem to influence how objectively earlier events are experienced. The paradigm example that I have used is the colour phi phenomenon. The colour phi phenomenon involves a perceptual experience as of motion, where no motion actually occurs. If two different coloured flashes of light occur at the correct
spatial and temporal distance from one another, rather than reporting seeing two independent flashes of light the subject reports seeing a movement of light from the location of the first flash to the location of the second flash, with an abrupt change of colour occurring in the middle of the trajectory. In discussing the phenomenon I have specified the example as follows: a red flash occurs at time $t_1$, a green flash occurs at time $t_5$, the subject experiences a constant light travelling from the location of the red flash to the location of the green flash, with an abrupt transition from red to green at $t_3$ (see figure 5). The problem is that if the green flash does not occur then the subject will not experience a transition at $t_3$. But, as $t_3$ occurs before $t_5$, surely before the second flash occurs it should already be determined what the subject experiences at $t_3$. In the colour phi phenomenon, the perception of a transition at $t_3$ depends on a subsequent event that occurs at $t_5$. How then, does the perceptual system represent the correct transition from red to green and the correct direction of travel, before either property is determined.

What does the subject experience at $t_3$? We can either, (i) accept the subject’s reports and claim that the subject has an experience of a transition of red to green, or (ii) deny the subject’s reports and claim that the subject experiences no transition. Neither option is ideal. The first requires accepting that perceptual system somehow ‘knows’ future events before they occur and the second involves denying the subject’s reports. In the first half of this section I
will set out the Trajectory Estimation Model which takes the first option. In the second half I will set out the Overlap Model which takes the second option.

4.2.1. EXPERIENTIAL REVISIONS: ORWELL OR STALIN?

These two alternative accounts of succession, the Trajectory Estimation Model and the Overlap Model, each provide a solution to postdictive experiences by appealing to one of two approaches put forward by Dennett (1991: 115-126). I will briefly explain Dennett’s distinction between pre-experiential revision and post-experiential revision before setting out each of the views and identifying to which style of revision they appeal.

Dennett’s distinction is between two ways in which perceptual content might be revised in order to account for postdictive experiences. For the case of the colour phi phenomenon the suggestion is that one’s perceptual experience of a red flash on the left followed by a green flash on the right might be ‘revised’, such that one recalls perceiving a constant light changing colour half-way. By questioning when this revision might occur, we are led to a distinction: whether or not a subject becomes consciously aware of the event before it is
‘revised’. That is, we can ask whether the revision of perceptual content is pre-experiential, or post-experiential.\textsuperscript{106} I will explain each of these in turn.

Focussing on a perceptual experience of the colour phi phenomenon the two approaches differ on the point at which the perceptual content is revised, when it changes from two independent flashes of light to a constant stream of light. They differ on whether or not the subject is first consciously aware of the two independent flashes of light.

The first option is that any revision of perceptual content occurs post-experientially. This means that if a revision of content occurs, the subject is consciously aware of the unrevised content first. In the event of a conflict, the new representation, which contains updated perceptual information, supersedes the initial unrevised content. As this new representation includes updated perceptual information it is taken to be more likely. The initial unrevised content is replaced by the more likely, updated, perceptual information.

A person defending post-experiential revision will claim that in experiencing the colour phi phenomenon the subject is first consciously aware of two

\textsuperscript{106} See Dennett (1991: 115-126) and Dennett and Kinsbourne (1992: 190).
independent flashes of light. The revision of perceptual content occurs after
the onset of conscious awareness. The subject subsequently forgets having this
conscious experience of two independent flashes of light and remembers only
what is taken to be a more likely event, the movement of a singular light which
changes colour abruptly at $t_3$. Dennett refers to these post-experiential
revisions as ‘Orwellian’ after the contamination of memory in George Orwell’s
novel, 1984 (Dennett, 1991: 116). On this view the reports provided by the
subject will not reflect their initial veridical conscious experience. The subject
reports their revised illusory experience – they report that at $t_3$ they
experienced a transition. According to an Orwellian account the answer to
what the subject actually experiences at $t_3$ will be no transition. The Trajectory
Estimation Model that I outline below defends an Orwellian approach.

The second view as distinguished by Dennett is that the revision of content
occurs before conscious awareness. On this view, the subject never
consciously experiences the initial unrevised content of two independent
flashes of light but only ever becomes consciously aware of the revised
content. That is, the subject is only ever perceptually aware of the constant
light with an abrupt change of colour halfway. This is a pre-experiential
revision because the revision of content occurs before the subject becomes
consciously aware of the event. Dennett has referred to these pre-experiential
revisions as ‘Stalinesque’ after Stalin’s staged show trials (1991: 117). The
reports provided by the subject will accurately reflect their conscious experience; they will correctly report their illusory conscious experience of the transition of red to green. This is all that the subject will have been consciously aware of. According to a Stalinesque account the answer to what the subject experiences at \( t_3 \) will be a transition from red to green. The Overlap Model that I consider below defends a Stalinesque approach.\(^{107}\)

The Minimal Account that I have defended in the previous chapter does not fit into either of these categories. This is because the Minimal Account does not claim that there is a revision of content, either pre-experientially or post-experientially. According to the Minimal Account, is not the case that the subject first has an experience which represents two independent flashes, (whether conscious or not) which is revised into an experience which represents a transition. Rather, the Minimal Account that I have defended claims that in the case of the colour phi phenomenon one perceptually presents a transition of red to green at \( t_3 \) but that this depends on the fact that

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\(^{107}\) Dennett claims that the distinction between the Orwellian and Stalinist revisions is merely a verbal distinction. According to Dennett it is a difference that makes no difference (Dennett, 1991: 125). Both the subject of the Orwellian revision and the subject of the Stalinist revision both recall and report having an experience of a transition at \( t_3 \). As this is the entirety of the information that can be gained Dennett claims that there is no way to distinguish between the two types of revision (1991: 145 – 125). Dennett claims that such a distinction between the Orwellian and the Stalinist assumes a Cartesian Theatre. That is, it assumes that there is a point at which content changes from being unconscious to being conscious (Dennett, 1991: 119 and 124-125). For the present purposes Dennett’s distinction is useful to highlight the difference between the two views being considered. I will not argue against them on this basis.
over the surrounding open interval one experiences the red flash, the green flash and the transition.

In the remainder of this section I will set out the two alternative accounts of succession. I will consider each of these in turn.

4.2.2. THE TRAJECTORY ESTIMATION MODEL

In this section I begin by setting out the Trajectory Estimation Model (hereafter, TEM) showing how it attempts to account for the perceptual experience of succession. After doing so I will explain how TEM might be used to account for experiences of postdictive phenomena such as the colour phi phenomenon. I argue TEM requires that we experience succession in an instant.

TEM, as developed by Grush (2005a, 2005b, 2007) attempts to account for experiences of successive events by claiming that, at a time, a person perceptually represents more than what is happening at that time. This is a thick non-extensionalist view (see §1.2.4.b). Thick non-extensionalism is made up of two key claims. The first claim is that perceptual experiences are states. Perceptual experiences might obtain at a time or over time but do not take time or unfold over time. The second claim is that these perceptual states present a temporally extended interval of time. That is, the perceptual content of a
singular perceptual experience is temporally extended. On this view, what one perceives is an event that unfolds over time.

In setting out such a view of perceptual experience Grush distinguishes between the temporal structure of the experiences and the temporal structure of the events as represented (2005b). According to TEM the temporal properties and relations presented in perceptual experience do not mirror, or in any way depend on, the temporal properties and relations of the perceptual experiences themselves. To perceive the succession of notes G and B it is not required that the perceiver has a succession of experiences. On this view, for note B to seem to follow on from note G, it is not required that the perceiver first has an experience that presents G followed by an experience that presents B. Grush writes, “time is not being used to represent time. It is possible to represent a succession without a succession of representations” (2005b: 212).

What is required for an experience of succession according to Grush, is that, at a time, one has a perceptual experience that presents a temporally extended interval. That is, at a moment in time one is perceptually aware of more than what is happening at that moment in time. Grush appeals to what he calls, *Trajectory Estimates*. Each estimate is objectively produced at a moment in time. Each estimate is itself durationless. But, each of these objectively durationless estimates provide an estimate as to what is happening over an
interval of time. As Grush writes, “A single trajectory estimate, produced at one time, is capable of representing temporal relations of various sorts, e.g. succession, simultaneity, duration, without needed to use time to represent these relations” (Grush, 2005a: 212). A single trajectory provides an estimate of a temporally extended interval, from a point in time.

Through these perceptual trajectories a person is perceptually aware of more than the current temporal phase of an event. The content of perceptual experience at a moment is not limited to a moment. This is because “the perceptual system infers a model of the environment over a period of time from a model of the environments at a particular instant” (Kiverstein and Arstila, 2013: 460). Based on this model one’s perceptual states produce an estimate of how the world was at earlier times and how it will be in the immediate future. One is aware of these earlier and later states of the world, at the moment in which the estimate is produced.108

According to TEM, at every moment the perceptual system produces an estimate of what it takes to be happening over an interval of time.109 An estimate produced at time \( t_2 \) has as its content not only that which occurs at \( t_2 \), but also that which is estimated as just having happened and that which is

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108 See Grush (2005b: 211) for a technical account of the estimation process.
estimated as just about to happen.\footnote{TEM might be considered to be similar in nature to Husserl’s account of time consciousness (1991), in that at one time, a perceiver represents not only that which is occurring at that time but also that which has just occurred and that which is about to occur.} An estimate produced at \( t_2 \) represents an interval. The estimate produced at \( t_3 \) includes a representation of what state the subject was in at \( t_1 \), and a representation of what state the subject will be in at \( t_3 \). That is, it includes a representation of what the subject was perceiving at \( t_1 \) and a representation of what the subject will be perceiving at \( t_3 \). TEM claims that the perceptual content of the perceptual experience is temporally extended.

According to TEM our perceptual system is continually producing new estimates of this kind. As such experience is made up of a series of estimates, each of which is produced at a moment and presents a temporally extended interval, “at each time \( t \), the perceptual system is producing an estimate of what was/is/will be happening over [an] interval” (Grush, 2007: 12). The claim is that through this series of estimates one represents an ongoing environmental process; that is, one perceives temporally extended events.

Once an estimate is produced which represents the events that occur over a certain interval of time, the perceiver’s conscious awareness of ongoing events over that interval is not taken as fixed. Rather, what the subject is consciously
aware of can be updated corresponding to new incoming information. One’s estimate of one’s environment can be updated based on new information provided by new estimates, produced at subsequent times. The estimate of what is happening at \( t_2 \) which is produced at \( t_2 \) does not need to match the estimate of what was happening at \( t_2 \) which is produced at \( t_3 \). According to TEM, as new estimates are produced the perceptual system continually updates its trajectory in line with new information (Grush, 2005b: 212). Due to new information the estimate produced at \( t_2 \) of what it takes to be about to happen (at \( t_3 \)) might conflict with the estimate produced at \( t_3 \) which provides an estimate of what it takes to be now happening (at \( t_3 \)). Likewise, the estimate produced at \( t_4 \) of what it takes to have just happened (at \( t_3 \)), might conflict with those produced at \( t_3 \) (of what is now happening at \( t_3 \)) and \( t_2 \) (of what is about to happen at \( t_3 \)). This conflict, which occurs due to newly incoming information, causes the estimates to be updated. The estimate that was produced at \( t_2 \) is revised in order to correspond with the information presented at \( t_3 \). This revision ‘retroactively alters its estimate of what the process’s states was’ at \( t_2 \) (Grush, 2005a: 27).

TEM seems able to account for the experience of succession. It allows that at a moment in time one is perceptually aware of more than the current temporal phase of an event. At a moment in time one is perceptually aware of that which has just happened and that which is about to happen. If one were to
accept this view, it follows that one can experience the succession of notes from G to B because at the time one experiences the succession one also experiences both G and B. Likewise, one can perceive the continuous movement of the dot because one is aware of the successive stages of the movement (which unfolds over an interval of time) at a moment.

TEM respects the requirements of the Principle of Simultaneous Awareness (see §1.2.4. b), according to which to be aware of a succession of events one must be aware of those successive events simultaneously (Miller, 1894: 109). That is, to be unified in consciousness the contents of an experience must be simultaneously available to a single momentary unit of consciousness.

TEM may also seem capable of accounting for postdictive experiences. That is, it may seem to be able to not only give an account of what it is that the subject experiences at $t_3$ (i.e. whether one experiences a transition or not) but also explain how it is that objectively later events influence how earlier events are perceived as being. Regarding what one experiences at $t_3$ whilst undergoing an experience of the colour phi phenomenon, TEM would require that the subject does not experience a transition. This is because the estimate which is produced at $t_3$ does not represent a transition from red to green. The estimate produced at $t_3$ accurately represents no transition; it accurately represents a pause between two independent flashes of light. However, the
estimate produced when the second flash occurs at $t_5$ takes into account the new information of the occurrence of the second flash. The perceptual system, by considering this new information that occurs at $t_5$, retroactively estimates that a transition did happen at $t_3$. This new estimate replaces the perceptual content of the earlier estimate produced at $t_3$ which presented no transition as occurring at $t_3$. As a result, TEM states that, at $t_5$, the subject does not experience a transition from red to green, however, at $t_5$, due to an updated estimate, the subject now perceives that there was a transition from red to green which occurred at $t_3$ (Grush, 2005b, 213-214). It is the content of this estimate produced at $t_5$ that the subject reports. That is, the subject reports experiencing a transition at $t_3$.

But why would the new information cause the initial perceptual content to be overwritten? According to Grush, the perceptual system has a model of how the world works and of what is likely to happen (2005b: 213). When perceptual input conflicts with these models, our perceptual estimates are updated with the ‘more likely’ results. They are overwritten by the new perceptual input. Regarding the colour phi phenomenon, the reason for the updated estimate is that the perceptual system assumes that a single stimulus moving locations and changing colour halfway is more likely than the occurrence of two independent different colour flashes of light. The perceptual system supposes that it must have missed something in the estimate produced at $t_5$, which
represents no transition, and the new estimate produced at $t_5$ ‘fills in’ what it takes to be the most likely details. Thus, the trajectory estimate produced at $t_5$ is of a single moving stimulus. The perceptual system takes it that at $t_5$ the object was changing from red to green at $t_3$, before landing in its current location. Thus, the later estimate produced at $t_5$ represents a transition as having occurred at $t_3$. It is this estimate that is remembered, whilst the previous one is forgotten.

The same applies for the cutaneous rabbit illusion. At $t_3$ the subject correctly experiences the first five taps at the wrist. The perceiver is consciously aware of the correct location of the five taps at this time. Then, due to new perceptual information (i.e. subsequent taps at $t_5$), there is a prediction of a ‘more likely’ occurrence. In this case the perceptual system incorrectly predicts a series of taps occurring up the arm. Consequently, the initial estimate produced at $t_3$ is forgotten and there is a retroactive alteration in favour of what it takes to be the more likely situation. Grush’s view is that we perceptually experience the event as it actually occurs at $t_3$, (i.e. motion for the colour phi and taps at the wrist for the cutaneous rabbit illusion) but due to the subsequent conflict between that perception and an objectively later ‘more likely’ estimate, it is forgotten.
It is clear how this can be categorised as a Dennettian post-experiential Orwellian revision. Grush claims that the subject is first consciously aware of the event as it actually occurs. This is then subsequently forgotten in favour of what the perceptual system takes to be the more likely perceptual event. In the following section I will pose a challenge to advocates of TEM.

4.2.3. PERCEIVING DURATION IN AN INSTANT

As we have seen above, TEM defends the claim that the structure of temporal experience is not reflected in the structure of the events perceived. That is, Grush claims that the temporal properties and relations presented in perceptual experience do not mirror or depend on the temporal properties and relations of the perceptual experiences themselves. On this view a succession of experiences is not required for an experience of succession. Rather, according to TEM, at a temporally unextended moment a perceiver represents a temporal interval.

Grush’s TEM is a version of thick non-extensionalism. It takes experiences to be states that obtain at a time and present events that occur over a temporally extended interval. On this view then, at a time one represents more than what is happening at that time. This clearly conflicts with the claim that we only perceive that which is present, as present. By claiming that a momentary experience presents a temporally extended interval, TEM is imposing a
distinction between the temporal location of the experience and the temporal location of that which is experienced. For example, TEM maintains that an experience which might occur objectively at a moment, $t_2$, can present events that occur over the temporally extended interval $t_1$ to $t_3$. It can also present those events, at $t_2$, as occurring over the temporally extended interval $t_1$ to $t_3$. As such, the temporal locations of the experience and the temporal locations of that which is experienced clearly come apart.

Although I clearly take this to be a reason for rejecting TEM and preferring the Minimal Account, it does not show that TEM is incorrect unless one is already willing to accept what I have taken to be truisms. I will, therefore, consider another line of argument.

A consequence of TEM is that according to such a view, temporally extended events such as the succession of notes G and B, are experienced as successive at a temporally unextended moment. That is, the temporal parts of the succession which unfold over a temporally extended interval are objectively experienced simultaneously. The reason that this is a consequence of TEM is not just based on the temporal structure of an experience at a moment but on the fact that, on this view, a singular experience can be considered in isolation.
Every perceptual experience, each of which occurs at a temporally unextended moment and represents an interval of time, can occur entirely independently from the other experiences that make up the stream of conscious experience.\textsuperscript{111} The reason why such an independence between perceptual experiences is possible, on this view, is that one experience is able to revise another, in light of new incoming perceptual information. As TEM does not require an interdependence between experiences it is possible to consider each experience in isolation. It is not that a series of experiences each of which represents an interval of time, when combined in the right way, can produce a perceptual awareness of temporally extended events. Rather, according to Grush, each momentary experience taken in isolation can produce such an awareness.\textsuperscript{112}

If each perceptual experience can be considered separately, then according to TEM, one must be aware of the temporally extended perceptual content at the

\textsuperscript{111} See Phillips (forthcoming).
\textsuperscript{112} Husserl’s retentional model, which shares some similarities with TEM in that perceptual experiences are momentary states which present that which is occurring now, that which has just previously occurred and that which is about to occur, does not face the same problem. This is because, according to Husserl, the momentary experiences are interdependent and cannot be considered in isolation. The content of perceptual experiences, according to Husserl, are interdependent. To show that the individual experiences are interdependent Husserl relies on a law of continuous annexation. He claims that it is clearly evident that retention is only possible in continuous annexation to a preceding primal impression (Husserl, 1991: 34–35). As such, we can only have as retention that which was previously a primal impression in the prior instance; “even a completely finished series of retentions would not be conceivable without a corresponding perception preceding it” (Husserl, 1991: 35).
time of the experience. We must represent the temporally extended interval at a temporally unextended moment in time. According to TEM, at a moment $M$, one must perceptually represent the past, the present and the future. There are two problems here, one is to explain how we can perceive the past (as opposed to recall the past), and the second is to explain how events which are presented simultaneously, can phenomenally seem successive.

Grush attempts to avoid the first problem by claiming that we do not perceive the past. Rather, the temporal content of a singular trajectory estimate is all part of the perceptual ‘now’. That is, a single experience does not represent different temporal parts of an event as: past, present or future. In doing so Grush distinguishes between $A$-ish perceptual content and $B$-ish perceptual content (Grush, 2016: 7). According to Grush, $A$-ish perceptual content involves the temporal properties past, present and future, whereas $B$-ish perceptual content involves earlier than, simultaneous with and later than. He claims that at larger scales temporal experience is $A$-ish,

At a macro scale our experiential contact with the evolving world appears to be A-ish. When I am watching a sprint in the Olympics, there is a point in the middle of a hundred meter race when I am perceiving the runners on the track, but am no longer perceiving their push off the blocks, nor yet perceiving their crossing the finish line. I may remember the former, and
anticipate the latter, but there is a clear sense in which neither of those is part of my current perceptual experience of the runners at that time. In this way, my perceptual state at this scale marks out a now that I am perceiving as distinct from a past that I have perceived but am no longer perceiving, and a future that I will perceive, but am not now perceiving (Grush, 2016: 7, emphasis in original).

According to Grush, on smaller scales, i.e. the temporal content of a singular trajectory estimate, is B-ish. That is, in scales of up to 200 msecs perceived events are presented as earlier than, simultaneous with or later than, as opposed to past, present or future. As such the content of a singular perceptual experience does not present some temporal parts of an event as past. Grush writes,

at that scale [under 200 msec] temporal content is presented in B-ish terms. No point in this interval is singled out as a now bracketed by a past and future. Rather, within this interval events are represented as standing in relations of earlier than, simultaneous with, and later than (Grush, 2016: 8, emphasis in original).

On such a view, at the under 200 msec scale there is no definitive perceptual ‘now’, thus the content of a singular experience can all be presented as present
whilst also not being presented as all occurring *simultaneously*. At the larger scale the *B-ish* temporal structure of the 200 msec experience becomes the ‘bulky now of A-ish experience’ (Grush, 2016: 8). This may seem to avoid the problem: on the larger scale the entire temporal content of the 200 msec experience contributes to the ‘bulky now’. That is, as everything presented within the 200 msec experience might be considered perceptually present TEM does not entail that we *perceive* the past. According to Grush, consistent with this temporal structure of experience, at the under 200 msec range, we can perceptually distinguish between the order of events. Thus, it can be presented in a singular experience that some temporal parts of an event are *earlier than, simultaneous with or later than* other temporal parts of an event.

Let us consider how this applies first to experiences of successive events and then to experiences that involve postdiction. According to TEM, whereby at small time scales temporal content is B-ish, we can perceive succession because at a moment a perceptual experience represents one temporal part of the event as being *earlier than* another. On this view then, at moment *M*, one is aware of the succession of notes G, B, D because, at *M*, one perceptually presents G as being *earlier than* B, and D as being *later than* B. A perceiver can be perceptually aware of the temporal relation because at one time the perceiver is perceptually aware of the temporal parts of the event so related. At this temporal scale neither G, B or D is perceptually presented as *past,*
present, or future. Rather, G, B and D although presented as temporally structured, all contribute to the larger scale perceptual now.

The account has difficulty accounting for postdictive effects. In the colour phi phenomenon a red flash at $t_1$ is followed by a green flash at $t_5$, with a subject reporting experiencing a singular movement of light with an abrupt change of colour at $t_3$. Applying Grush’s altered TEM, at $t_3$ the subject has an experience that represents the untensed relations of an earlier red flash, no transition and a later green flash. This untensed temporally structured perceptual content of an estimation all contributes to the perceptual now. Due to new incoming information this interpretation created at $t_3$ is revised. At $t_5$ a new estimate is produced which represents an earlier transition from red to green, and simultaneous green light. It is this latter estimate that is taken to be more likely and thus remembered.

However, the revision of content becomes difficult. Grush requires that in the case of the colour phi phenomenon the later estimate that occurs at $t_5$, which provides new information as to what was happening at $t_3$, be able alter one’s perceptual awareness of the representation which occurred at $t_3$. It updates what was happening at $t_3$, but presents it as happening now. However, for this to be the case, the temporal structure of the experience produced at $t_5$ must not only contain B-series properties (earlier than, later than and simultaneous
with) but must be structured in line with the A-series (past, present and future). That is, for the perception at \( t_5 \) to alter what it takes the person’s perceptual state to have been at \( t_3 \) it must represent the content as what was then perceived as present. Without this distinction between the untensed presentation of events under 200 msec and the tensed presentation of events over 200 msec, Grush cannot explain how we perceive the past.

The solution that TEM applies to postdictive experiences introduces a seems/is distinction for experience. Grush is claiming that at \( t_3 \) the subject experiences two independent flashes; she experiences no transition from red to green. However, as this is rapidly forgotten in favour of the revised awareness of a transition, what the subject experiences and what it seems to the subject that they experience is different. As Phillips suggests, it is not clear how we can make sense of experience having a particular content but it seeming to the subject as though she experienced something different. We cannot make sense of how it is that the experience presents two independent flashes of different colours but it seeming to the subject as if there has been one light with a transition of colour.\textsuperscript{113}

Although these might not be considered knockdown arguments against Grush’s TEM, the inadequacies associated with it certainly invite an

\textsuperscript{113} See Phillips (2009) and Kiverstein and Arstila (2013) for a discussion of this argument.
investigation into a better account of succession. As such, it might be considered that the Minimal Account developed in chapter 4.1 is better placed to account for experiences of succession and postdiction. In the following section I will set out the Overlap Model, arguing that, like TEM, it cannot adequately explain experiences of succession.

4.2.4. THE OVERLAP MODEL

In contrast to TEM the Overlap Model, as defended by Dainton (2000, 2008), attempts to account for our experience of succession by appealing to experiences which themselves unfold over a temporally extended interval of time. The Overlap Model is an account of temporal experience which aims to explain experiences of succession and account for postdictive phenomena.

Regarding the former the main claim is that we can perceive temporal relations and properties that unfold over time, such as succession, because our perceptual experiences themselves unfold in just the same way. In terms of the latter, the Overlap Model claims to account for postdictive experiences by taking the first horn of the dilemma, that is, by accepting the subject’s report that, at time $t_3$, a transition of red to green is experienced. The Overlap Model provides an interesting comparison to TEM because it does not claim that the subject first has a conscious of experience of two independent flashes before becoming aware of the transition. Rather, according to the Overlap Model,
whilst undergoing an experience of the colour phi phenomenon the subject is only ever consciously aware of the apparent transition from red to green. In what follows I will set out the account of succession and demonstrate how it attempts to account for postdiction. I will argue that the Overlap Model fails as an account of succession and that, as account of postdictive experiences, it is empirically implausible.

The Overlap Model is a Thick Extensionalist view. It maintains that perceptual experiences are processes that unfold over time, they *take time or happen*. These perceptual processes present a temporally extended interval of time; we perceive events that unfold over a temporally extended interval of time. Extensionalists, according to Dainton, are committed to temporal realism, which is the view that “change, succession and persistence can be directly perceived or apprehended” (Dainton, 2010). The Overlap Model is, according to Dainton, fully extensionalist, “our episodes of experiencing are themselves temporally extended, and are thus able to incorporate change and persistence in a quite straightforward way” (Dainton, 2010). Our episodes of experiences can incorporate change by themselves extending over time, and unfolding in just the way they seem to (2008: 370).\(^{114}\)

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\(^{114}\) This seems to assume that we can perceive the temporal properties of experiences.
According to the Overlap Model conscious experience is built up from a series of discrete blocks of experience. Each of these blocks itself extends for a short interval of time. I will focus on the content of an individual experiential block first before considering how, according to Dainton, these blocks combine to form the stream of conscious experience.

An individual experiential block, which I will refer to as an *experience*,\(^\text{115}\) extends for a short interval of time and presents a temporally extended event. Dainton maintains that to be experienced as successive, the perceived events must be experienced within a single perceptual experience. Any event that is presented in a single experience is, according to Dainton, *sensed as whole* (2008: 370). Although the contents of a single experience “are experienced as successive, there is a sense in which they are also all experienced as belonging to the sensory present: all parts of the movement (in this brief interval) are equally and vividly *there* in the manner typical of directly perceived phenomena” (Dainton, 2008: 370-371). That is, whilst a single experience is temporally extended and presents a temporally extended interval, all the events that occur within this interval, although objectively successive, are presented as *equally present*.

\(^{115}\) At various times Dainton refers to these experiential blocks as a *single specious present* (2010).
For events to be *phenomenally present*, or *diachronically co-conscious*, according to Dainton, means that they seem the way that things do when those things are being experienced (Dainton, 2008: 371). The individual experience then, extends over a brief interval of time and presents successive events that occur over a temporally extended interval of time as equally phenomenally present. If we consider the experience of hearing the succession of notes G and B, according to this view, to be perceptually presented as successive G and B must be presented by the same experience and be presented as equally present.

According to the Overlap Model these individual perceptual experiences combine to form a continuous stream of conscious awareness. According to Dainton, two experiences can be connected by sharing perceptual content. If we take a longer series of notes, G, B, D, F, say, then we can see how the perceptual experience might be unified over time. According to Dainton, G and B are presented by an individual experience, \( P_1 \), so they are phenomenally unified; G and B are presented as *equally present*. Likewise, B and D are presented by an individual experience, \( P_2 \), so they are phenomenally unified and presented as *equally present*. Finally, D and F are presented by an individual experience, \( P_3 \), so they are phenomenally unified and presented as *equally present*. That is, we have the following perceptual experiences, where square brackets represent the perceptual content:
\( P_1: \{G, B\} \)

\( P_2: \{B, D\} \)

\( P_3: \{D, F\} \)

It seems to follow from this, however, that each event is being perceptually presented more than once. There is a repetition of perceptual content. Note B is presented in both perceptual experience \( P_1 \) and perceptual experience \( P_2 \). It would seem then, that according to the Overlap Model note B is heard twice. Firstly, it is experienced as co-conscious with note G, in perceptual experience \( P_1 \), then it is perceived as co-conscious with D, in perceptual experience \( P_2 \). This clearly conflicts with the phenomenology. In reality each note is only experienced once.\(^{116}\)

To avoid this problem of repeated contents the Overlap Model maintains that it is not only the perceptual content that overlaps but also the perceptual experiences themselves. On this view, the perceptual experiences overlap by sharing temporal parts. The temporal part of \( P_1 \) that presents note B is shared by the temporal part of \( P_2 \) that presents note B. Note B is not experienced twice,\(^{116}\)

\(^{116}\) Things seem to get more difficult for the Overlap Model when you consider that, according to the view, there is a new perceptual experience for each phenomenal change. That is, for each perceptually noticeable change, there is a new experience, with multiple layers of overlapping. It follows that each temporal phase of an event will be repeated in numerous different perceptual experiences.
rather the shared temporal parts have numerically identical contents. B is not
presented first by \( P_1 \) and then by \( P_2 \) but the shared temporal parts present the
numerically identical note B. It is in this way that, according to the Overlap
Model, our perceptual experience can be unified over time.

Dainton claims to have a solution for experiences of postdiction. Dainton
claims that one’s experience of a stimuli only becomes available to conscious
experience after a good deal of unconscious processing, he writes,

> It is arguably more plausible to construe perceptual contents as
representations that are generated in the brain after a good deal of
processing. This processing makes for a delay – 50-100 msec, say – but our
brains put this to good use: they try to work out a single, coherent version

> It takes some time for our perceptual systems to produce an experience in
response to a stimuli; perhaps our perceptual systems make use of this time
to work out (as it were) a single coherent response to ambiguous or
conflicting stimuli (Dainton, 2010).

This unconscious processing imposes a delay between the time at which an
event is perceived and the time at which one becomes consciously aware of
the perceived event. During this time the perceptual system is working out a
single phenomenal order of perceived events: it is only this worked out version of events that reaches consciousness. As any inconsistencies are removed before the subject becomes consciously aware of the ongoing events, the perceiver does not become aware of any conflicting perceptual information fed into the perceptual system.

Applying this to the colour phi example then, the claim is that there is a delay between the time at which one perceives the two distinct flashes of light and the time at which one is consciously aware of the apparent motion event. During this time the perceptual system develops a coherent version of events and takes it to be the case that there is a single movement of light which changes colour halfway. This worked out coherent version of events is what the subject becomes perceptually aware of. Dainton claims,

although the initial stationary flash is registered at a pre-conscious level, it never actually reaches consciousness: as soon as the second flash registers, our visual systems reach the conclusion that the likely source is a moving light, and this is what we experience. It is thus only to be expected that subjects deliver the reports they do (Dainton, 2010: Supplement: Interpreting Temporal Illusions).
The delay, which Dainton claims to be around 50-100 msec, allows for the processing of the second flash (which occurs at $t_3$) to occur, before the perceiver becomes consciously aware of the transition from red to green at the earlier time $t_5$. Due to this, the events that one perceives at an objectively later time can influence the conscious awareness of a seemingly earlier event.

Dainton is presenting an account of postdiction that can be categorised as Stalinesque. The revisions of perceptual content are made before the subject becomes consciously aware of the perceived event. In the following section I will consider whether this adequately accounts for experiences of succession and postdiction.

4.2.5. THE COST OF DELAY

I will first consider whether the method provided by Dainton provides an adequate way in which one can account for experiences of postdiction, after arguing that the delay imposed is empirically implausible, I will consider the Overlap Model as a general account of perceptual experience.

Dainton claims that a small delay between the time at which one unconsciously experiences an event and the time at which a final version of the perceptual content becomes conscious allows for the perceptual system to rule out any conflicting perceptual information. This means that, for the colour
phi phenomenon, the subject never becomes consciously aware of two independent flashes of light. All that the subject consciously experiences is a single light which changes from red to green half-way. The subject correctly reports this false experience. The answer to our question, on this view the subject experiences a transition as occurring at $t_3$.

How plausible is it to impose such a delay for conscious processing? There are seemingly two issues here. Firstly, Dainton claims that the delay is of around 50-100 msec. A delay of this length is not long enough to account for the colour phi. This is because the delay that Dainton assumes is imposed (a close to minimal delay) needs to be attached not only to the processing of the first stimuli but also to the second. That is, whatever delay is required for the red flash to be processed, let’s call it delay $d$, is also required for the green flash to be processed. The perceptual information of the second flash gained at $t_5$ can only contribute to the overall experience after the delay $d$. The second green flash can only influence the overall experience at $t_5+d$. This means that what one perceives at $t_3$ is determined by something processed around 100 msec (if Dainton is correct about the close to minimal delay) after the second green flash occurs at $t_5$. This is clearly not a minimal delay.\(^{117}\)

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\(^{117}\) See Grush (2016: 17-18) for an argument of this kind. Phillips claims that, “The kind of delay required to accommodate the full range of postdictive effects is at least several times the 50–
The problem of imposing this delay gets considerably worse if you consider the duration over which these postdictive effects can be perceived. The postdictive effects can occur where there is a temporal interval of up to 400 msec occurring between the first and second flash (Choi and Scholl, 2013: 393).

If we assume that the subject experiences the apparent transition from red to green halfway between the two flashes, then there is still an interval of up to 200 msec between the experience of the transition and the second flash that influences the experience of the transition. We must add to this the delay $d$, that must occur after the second flash at $t_5$ before the event that occurs at $t_5$ can contribute to the overall experience. The delay attributed to this experience then, involves the 200 msec between the experienced transition and the second flash, plus whatever time it takes for the second flash to be processed, $d$. This is an interval much larger than a minimal delay. I will put forward two reasons why such a delay is implausible.

Dainton cannot argue that the delay only occurs in experiences of postdiction. If he were to do so then he must provide an account of how the perceptual system ‘knows’ that some later event is going to affect one’s current experience and to ‘know’ to implement a delay. As this requires knowledge of the future, it is implausible. Consequently, Dainton must claim that this delay

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100 msec which Dainton commits to” (2014b: 136). He claims Dainton’s account of postdiction is committed to a delay upward of 300 msec (Phillips, 2014a: 149).
of up 200 msec + d applies to all experience. As Grush writes, applying this delay to all perceptual experience is too much of a cost, “any view that posts a delay to address temporal illusions, the perceptual system must be continually maintaining a perceptual delay, in every modality, every waking moment, just for those relatively few situations in which a delay will afford a better interpretation” (2016: 17).

Beyond this, perceptual experience influences our bodily actions. Dainton would be committed to the claim that, as we are able to interact with our environment more quickly than the delay he imposes, interaction with the environment is not based on processed vision.118 One’s interaction with the world, for example catching a ball, would have to be influenced by unconscious processing (i.e. perceptual information before it has been processed). If Dainton did not appeal to such unconscious processing, he could not account for how perceptual experience influences our actions. That is, how one’s hands are guided to the right location in order to catch the oncoming ball. If all that Dainton appeals to is conscious awareness, then the delay that he imposes would completely affect our ability to interact with our

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118 There is some evidence in support of this claim, see Matthen (2010) for a discussion of two visual systems. Matthen suggests that one visual system represents the state of the world and the other visual system guides our interaction with the world.
environment. Due to this, and the above, imposing such a delay to account for experiences of postdiction is unsatisfactory.

Although Dainton does not adequately provide a solution for the colour phi phenomenon, or postdiction in general, his Overlap Model could still be right as an account of perceptual experience. At the level of an individual experience it may seem that the Overlap Model is able to account for experiences of succession. An individual experience presents the successive parts of a temporally extended event. These successive parts are ‘sensed as whole’, thus one can be aware of the relation of succession because one is aware of the things so related. Consider the example of the broken G chord consisting of the order of notes G, then B, then D. According to Dainton, a single temporally extended experience \( P \), may present the notes G and B. Each of these notes presented by \( P \) will be presented as equally present. Over the interval occupied by \( P \), one can be aware of the succession from G to B because one is aware of the things so related, namely G and B.

Although this may seem to straightforwardly account for experiences of succession, Dainton’s account conflicts with the phenomenology. The reason that it seems that G is followed by B is that at the time at which B is perceived G no longer seems present. This is a problem even on Dainton’s account of phenomenal presence, which is that events are phenomenally present if they
seem the way that things seem when they are being experienced. To hear the succession of G by B, it cannot be the case that both G and B are phenomenally present. If it seems that B follows on from G, then it cannot, at that time at which one hears B as currently sounding, also be the case that G seems to be the way that things seem when they are being experienced. To hear B as following G, surely it must seem that G is no longer currently being experienced. In contrast to Dainton’s view then, it does not seem that the extended experience is able to straightforwardly account for experiences of succession.

Dainton might appeal to the overlapping structure of the flow of conscious experience then, in order to account for experiences of succession. However, as Dainton himself claims, the perceived events must be experienced within a single perceptual experience. He writes, if “[G] and [B] do not fall within a single [perceptual experience] they are not diachronically co-conscious, and so are not experienced as successive” (2008: 371). It might seem then that no two events can be perceived as successive. However, he continues, “that [the] simple overlapping structures are responsible for the moment-to-moment phenomenal continuity that we find in our ordinary streams of consciousness” (2008: 372). That is, through sharing content the series of overlapping experiences might be able to account for the experience of succession.
There is, however, a serious problem that faces this unified structure of experience. By claiming that there is no differentiation in mode of presentation of events that are presented within a singular perceptual experience, combined with the overlapping structure sharing not only temporal phases themselves but also temporal phases of perceptual content, Dainton commits himself to the claim that events are perceived as present for a longer interval than a singular experience. This is because every perceptual experience presents its content as present where this means in the way that things are presented when they are being experienced. Each event is presented by many overlapping experiences, and according to Dainton, in each perceptual experience a particular event features in, the event will be presented as present. Thus, if we take the times $t_1$ to $t_5$, and consider an experience that occurs over $t_1$ to $t_3$ and another experience that occurs over $t_3$ to $t_5$, we might get the following picture. Whatever occurs at $t_3$ is presented as present over the interval $t_1$ to $t_3$ and the interval $t_3$ to $t_5$. Thus, that which occurs at $t_3$ must seem to be presently occurring for the whole interval $t_1$ to $t_5$. Perceived events would not seem to unfold over this interval but continue to seem as though they are currently happening, that is, as though they are present. This does not correspond with how things seem. As such, the Overlap Model does not provide an adequate account of succession.
I have argued that the Overlap Model is not only unable to account for experiences of postdiction but also that it is unable to account for our experience of succession. Neither TEM nor the Overlap Model is able to provide an adequate account of succession or postdiction. They do not therefore, stand as a viable alternative to the Minimal Account.
PART 5: BELIEF AND JUSTIFICATION

In part five I explore the connection between perceptual experience and our temporal beliefs and judgements. In the first half I put forward the problem of cognitive significance for indexical beliefs. The problem occurs because, it seems that an indexical element of a belief cannot be substituted for a non-indexical co-referring element, whilst still portraying the same information and explaining the believer’s behaviour. I argue that this problem also applies to the Minimal Account’s view of perceptual experience. I argue that the problem can be solved by appealing to a distinctive feature of perceptual experience: that it is now-informative.

In the second half of part five, I develop an account of justification, such that we can be justified in making perceptually based temporal reports. I argue that a person can be justified in believing that the dot is moving now, based on their perceptual experience of event $e$, where the perceptual content contains no reference to *nowness*. Likewise, a person can be justified in judging ‘$e$ lasts a second’ based on their experience, where the perceptual content contains no reference to *a second*. In doing so, I appeal to a Reliabilist account of justification.
5.1. COGNITIVE SIGNIFICANCE

In this chapter I set out the problem of cognitive significance as it applies to now-beliefs. The problem comes about because of the apparent difference between a belief containing an indexical and a belief containing a non-indexical co-referring term. It seems to be the case that a belief containing an indexical has more significance, in that it seems to provide the believer with more information, than a belief containing only a non-indexical co-referring term. This is a problem for direct reference accounts, which claim that beliefs with an indexical element have the same content as beliefs with a corresponding non-indexical element. That is, they both contain only the object denoted. I will suggest that this is a problem not only for now-beliefs but also for perceptual presence. I will set out the minimal response to the problem, arguing that the Minimal Account, whilst endorsing a direct reference account, can provide a solution not only for perceptual experience but also for recollection and anticipation.

Terms like, ‘now’, ‘here’ and ‘I’ are indexicals; the objects to which these expressions refer change depending on the context in which they are used. For example, consider the self-referential indexical, ‘I’. For any belief containing the indexical ‘I’, the object being referred to by a token of ‘I’ will depend on who the believer is. That is, to whom a token expression of ‘I’ refers changes
in different contexts. Due to this, if uttered in different contexts two utterances containing the same words can have different meanings. For example, if I utter a sentence containing the indexical ‘I’ then the object being referred to by my utterance is myself, whereas if you were to utter the same sentence, using the same indexical, the object you are referring to is yourself. The beliefs that a person may form on the basis of these utterances will differ in cognitive significance.

Consider the following example. Two distinct people Adam and Natasha, believe of themselves that they are in San Francisco. These beliefs are I-beliefs. In expressing their beliefs, Adam and Natasha might both utter the sentence ‘I believe that I am in San Francisco’. The indexical ‘I’ refers to the believer: for Adam’s expression ‘I’ refers to Adam and for Natasha’s expression ‘I’ refers to Natasha. To highlight the difference between the two beliefs, consider a situation where they differ in truth value. Take it to be the case that both Adam and Natasha produce their token utterances at the same time, \( t \). At time \( t \), Adam is in San Francisco, but Natasha is not. It is true at \( t \) that Adam is in San Francisco, but it is false at \( t \) that Natasha is in San Francisco. Adam has a true belief and by expressing his belief he says something true, whereas Natasha has a false belief and by expressing her belief – using the exact same expression as Adam – she says something false. Here we have a situation where two I-beliefs, which can be expressed through utterances with the exact
same phrasing, namely a token utterance of ‘I am in San Francisco’, have different truth conditions.

The same applies for the indexicals ‘here’ and ‘now’, and the resulting here-beliefs and now-beliefs. A token utterance of ‘here’ refers to whichever location it is uttered in. If I believe that I am in San Francisco and say ‘it is sunny here’ then I believe of a certain location, namely San Francisco, that it is sunny in that location. A token utterance of ‘now’ refers to the time at which it is uttered. Thus, ‘now’ refers to a different object (namely, a different time) each distinct time it is uttered. A token utterance of ‘now’ made at time $t_1$ will refer to the time $t_1$, likewise, a token utterance of ‘now’ at time $t_2$ will refer to the time $t_2$. If I believe at time $t_1$ that the meeting starts now, then I am believing of a certain time, namely $t_1$, that the meeting starts then. Consider my now-belief $B$, held at 9 am on 4th March 2019, of:

$$B: \text{the meeting starts now.}$$

The temporal indexical ‘now’ in belief $B$ refers to the time 9 am on 4th March 2019. Just as we have seen is the case for I-beliefs, two now-beliefs which might be expressed using the same words can differ in truth value. If, perhaps, the clock I am looking at is faulty and I incorrectly believe, at 10 am on 4th March 2019 that it is in fact 9 am on 4th March 2019, I may at that later time falsely
believe \( B \) and utter ‘the meeting starts now’. At the two times, 9 am and 10 am, the subject has the belief \( B \), but at 9 am their belief is true whereas at 10 am their belief is false.\(^{119}\) In what follows, I will explain a difficulty that this poses.

5.1.1. THE PROBLEM OF COGNITIVE SIGNIFICANCE

It is claimed that ‘now’, like ‘I’ and ‘here’ is an essential indexical (Perry, 1979). What this amounts to seems to involve the claim that if we were to replace an indexical with a non-indexical designation for the same object in a belief, then “we would no longer have an explanation of … behavior and so, it seems, no longer an attribution of the same belief” (Perry, 1979: 3). Consider the now-belief, \( B \), that the meeting starts now. If ‘now’ is replaced for the non-indexical designation for the same time, 9 am on 4\(^{th}\) March 2019, so that the belief becomes that the meeting starts at 9 am on 4\(^{th}\) March then, according to Perry, we would be attributing a different belief to the subject and would no longer be able to explain the believer’s behavior. That is, if one believes that the meeting starts at 9 am on 4\(^{th}\) March, according to Perry we cannot attribute to the subject the belief that the meeting starts now, nor can we explain why the subject moves to the location of the meeting at that time. What makes ‘now’ an essential indexical, then, can be summarised in the following central claims: (i) the indexical term is irreducible to non-indexical terms, and (ii) beliefs

\(^{119}\) See chapter 2.1. for a discussion of indexicals and demonstratives.
containing an indexical term play a special role in the explanation of action and attribution of belief.

The first claim, claim (i), can be motivated by appealing to ‘Frege Puzzles’ (Frege, 1948). A Frege puzzle occurs when, for co-referring terms, a person can rationally believe something to be the case with regard to one of the terms but rationally disbelieve it to be the case with regard to the other term. That is, the puzzle occurs where, if $\alpha = \phi$, it is possible at time $t$ to rationally believe that $\alpha$ is $x$ whilst disbelieving that $\phi$ is $x$. A common example of this is that although Superman = Clark Kent, Lois believes that Superman flies but does not believe that Clark Kent flies.

We can apply the same puzzle to the temporal indexical ‘now’ and the non-indexical co-referring term. If we accept that, now = 9 am on 4th March 2019, a person may rationally believe at 9 am on 4th March 2019 that the meeting starts at 9 am on 4th March 2019, whilst failing to believe that the meeting starts now. Likewise, one might believe that the meeting starts now whilst failing to believe that the meeting starts at 9 am on 4th March 2019. This may occur when some other event informs the believer of the start of the meeting, perhaps the ringing of a bell.
Let us call ‘9 am on 4th March 2019’ just ‘9 am’. The puzzle can be stated as follows: one may rationally believe, at 9 am, that 9 am = 9 am without believing that 9 am = now. One can learn or come to believe that 9 am = now but the fact that one learns/comes to believe this shows that it should be considered new information. Thus, the two pairs of identity statements have different cognitive significance; the identity statement ‘9 am = now’ provides more information than the trivial identity statement ‘9 am = 9 am’. The former tells us something special about the time ‘9 am’, namely that it is now. The second identity statement does not provide this information, even if it happened to be 9 am. It seems that the indexical term ‘now’ cannot, therefore, be replaced by a non-indexical term with the same referent whilst conveying the same information. The belief the meeting starts at 9 am does not have the same significance as the belief that the meeting starts now.

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120 For the remainder of this chapter, where I say ‘9 am’ I mean to pick out the time ‘9 am on 4th March 2019’.

121 As Perry says, these two ways of specifying the time provide different ‘modes of presentation of the same time’. If you are told that the meeting starts at 9 am, (where 9 am is now), it seems as though some information is being missed out. The different specifications of the time, thus, have relevance to what is being said (2013: 490-491).

122 The same applies for the other essential indexicals. For the case of ‘I’ consider John Perry’s (1979) example of the shopper, who, after walking around a supermarket looking for the person who is spilling sugar, learns that this person is himself. We can take, ‘the person making a mess’ to be a description picking out one individual. Perry’s shopper learns that ‘the person making a mess’ is himself, or, put another way, he learns, I am the person making the mess. By coming to believe something new Perry has gained new information, which shows that the second identity statement (I = the person making a mess) has different cognitive significance than the first (the person making the mess = the person making a mess, or, even John Perry = the person making the mess). As the two sides of the identity relation differ in cognitive significance, Perry claims that the indexical cannot be reduced to the co-referring non-indexical term.
The second claim, claim (ii), is that beliefs containing an indexical have a special role to play in the explanation of action and attribution of belief. If one desires to $\phi$ at $t$ and believes that $t$ is now, then one will, other things being equal, be motivated to $\phi$. However, if the temporal indexical ‘now’ is replaced with a non-indexical with the same referent, $t$, then the motivation to $\phi$ disappears. That is, if one desires to $\phi$ at $t$ but one merely believes that $t$ is $t$, then one will not be so motivated to $\phi$. In order for the motivation to arise one must have the additional belief that $t$ is now. This can be stated more clearly with an example: if one wants to go to the meeting at 9 am and believes that it is 9 am now, then, other things being equal, one will be motivated to go to the meeting. However, if one merely believes that it is 9 am when the bell rings then one will only be motivated to go to the meeting if one has the additional belief that the bell rings now. That is, the non-indexical term ‘9 am’ cannot explain one’s motivation for the going to the meeting. This action is only explained by the attribution of the now-belief, namely, that one believes that the meeting starts now.\textsuperscript{123}

\textsuperscript{123} Likewise, for the case of the self-referential indexical, if John Perry has the belief that John Perry is making a mess, this does not motivate his action of stopping and looking at his own cart. It is only if John Perry has the belief that ‘I am making a mess’, that this action is so motivated. As Perry states, Suppose I had said [...] “I came to believe that John Perry is making a mess.” I would no longer have explained why I stopped and looked in my own cart. To explain that I would have to add, “and I believe that I am John Perry,” bringing in the indexical again. (Perry, 1979: 5)
My discussion so far in this chapter has focused on the difference in cognitive significance between two beliefs, one containing an indexical and the other containing a co-referring non-indexical. The account that I have been developing, the Minimal Account, however, applies not to beliefs or utterances but to the content of perceptual experience. I will briefly recap some of the key aspects of the account and explain how the problem of cognitive significance applies to perceptual experience.

In chapter 2.1. I developed the Minimal Account of perceptual presence. I argued that the temporal content of perceptual presence, i.e. a perceived event seeming to occur now, contains no indexical element but only the time referred to. Take event $e$, of a dot moving. For a perceptual experience $P$ which occurs at time $t$ of event $e$ seeming to occur now, the temporal content is:

$$7P: \exists e \left[ \text{Movement}(e) \land \text{Subject}(e, d) \land \text{Hold(In Prog}(e, t)) \right]^{124}$$

Thus, according to the Minimal Account the content of $P$ does not contain the indexical ‘now’ but instead contains the time referred to by ‘now’, namely $t$. However, as we have seen above, beliefs containing the indexical ‘now’ have

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124 The final conjunct to ‘Hold(In Prog(e) t)’ captures the progressive aspect, that the event seems to be happening or unfolding.
special cognitive significance not had by beliefs containing only the non-indexical ways of referring to the present time. That is, a belief that the movement happens now has a different significance to a belief that the movement happens at 9 am. Applying this to perceptual experience then, it might be suggested that an experience which presents the movement as happening now, has a difference in cognitive significance than an experience which presents the movement as happening at 9 am. Or at least that these two ways of presenting the event contribute to different beliefs and motivate different behaviour.

The argument is that a perceptual experience of the movement as happening at 9 am is: (a) unable to account for the fact that the movement of the dot seems to be happening now, (b) unable to explain why the perceiver believes that the movement is happening now, and (c) incapable of explaining the believer’s motivation for action.

If, as I have argued in chapter 2.1., the content of P contains no explicitly indexical element then the seeming presence of e does not seem to have been accounted for. If it is merely the case that the dot seems to move at t, it doesn’t seem to be accounted for that the dot seems to move now. To defend the Minimal Account, it must be explained how the non-indexical perceptual content accounts for the presence of the event and how this content of
perceptual experience, which contains no indexical element, can inform one’s now-beliefs.

5.1.3. DIRECT REFERENCE

Kaplan claims that the content of a belief or utterance containing an indexical does not itself have an indexical element. Rather, as, according to Kaplan, indexicals are devices of direct reference, the content of an expression containing an indexical has only the object denoted by the token use of that indexical as a constituent. For example, for Adam’s belief, I am in San Francisco, the content of the belief contains only the object referred to by Adam’s use of ‘I’, namely Adam. There is no additional indexical element. I will represent the content of Adam’s belief as: Located in (Adam, San Francisco). This can be contrasted with Natasha’s belief, which would have the content: Located in (Natasha, San Francisco). As we can see, the indexical ‘I’ itself is not part of the content of the belief, rather the content has as a constituent only the object referred to by the indexical, namely, Adam or Natasha.

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125 See chapter 2.1., for an explanation of Kaplan’s account of direct reference.
126 This notation states that Adam is in the relation of being located in San Francisco. This could be rephrased in terms of Davidsonian event semantics, to allow for adverbial modification (see chapter 2.1.), this would result in the following analysis: (∃e) [Located in(e) ∧ Subject(e, Adam) ∧ Object(e, San Francisco)]. I have omitted the unarticulated constituent, that Adam is in that location at a particular time, namely, ‘now’. I have done this so that I can provide the direct reference analysis of the temporal indexical independently below.
The same style of analysis is applied to the temporal indexical, ‘now’. Take a belief that the meeting starts now. In line with the Kaplanian direct reference analysis, the content can be specified as: Meeting (starts, $t$).\textsuperscript{127} This can be compared with the belief that the meeting starts at 9 am, which, according to the Kaplanian analysis will also have the content: Meeting (starts, $t$). The contribution that the temporal indexical makes to the content of the belief just is the time denoted by the indexical, i.e. the time of the belief, $t$.\textsuperscript{128}

But as we have seen in §5.1.1., to account for cognitive significance a theory must be able to account for the two conditions, (i) and (ii). To recap, it must be able to account for the facts that (i) ‘now’ is irreducible to ‘$t$’, and (ii) that beliefs containing an indexical have a special role to play in the explanation of action and attribution of belief. But as we have just seen, according to Kaplan’s direct reference account, a belief that the meeting starts now, held at 9am, has the same content as a belief that the meeting starts at 9am. Yet, as we have seen above, unless the subject has an additional belief, it is now 9am, only the former will motivate the subject to go to the meeting. Thus, on this view the content alone cannot account for cognitive significance.

\textsuperscript{127} This analysis can also be rephrased in terms of Davidsonian event semantics, to state: $(\exists e) \left[ \text{Meeting}(e) \land \text{Starts}(e, t) \right]$. The time $t$ is bold to represent that it is a constant.

\textsuperscript{128} This is not intended to be another name for the same object, i.e. a co-referring term, rather the content contains as an element the time referred to.
Kaplan claims to avoid the problem of the cognitive significance of now-beliefs by his notion character.\textsuperscript{129} According to Kaplan two utterances can express the same content but each of those contents is presented differently (Kaplan, 1989: 530).\textsuperscript{130} In discussing Frege’s well-known claim that, ‘everyone is presented to himself in a particular and primitive way, in which he is presented to no-one else’ (Frege, 1918: 298), Kaplan claims that, whilst the content of a belief containing an indexical will itself only have as an element the object referred to by that indexical, that content is presented ‘under the character’ of that indexical. Thus, when one holds an I-belief, one is presented to oneself, ‘under the character of “I”’ (Kaplan, 1989: 533). As Kaplan states:

If I see reflected in a window, the image of a man whose pants appear to be on fire, my behaviour is sensitive to whether I think, ‘His pants are on fire’, or ‘My pants are on fire’, though the object of thought may be the same (Kaplan, 1989: 533).

That is, although the content of these two beliefs (the belief that his pants are on fire, and the belief that my pants are on fire) may be the same,\textsuperscript{131} how one acts depends on how that content is presented. If the content is presented

\textsuperscript{129} See chapter 2.1., for a discussion of Kaplan’s notion of character.

\textsuperscript{130} Perry uses the terminology ‘belief state’ (1979), which is close to the Kaplanian notion of character.

\textsuperscript{131} In both cases the, for a person A, the content might be: Fire (pants, A).
under the character of ‘him’ then it might motivate one to run for help, however, if the content is presented under the character of the indexical ‘I’ it might motivate one to douse oneself in water.

In the case of the temporal indexical ‘now’, although a belief had at 9 am that the meeting starts now has the same content as a belief had at 9 am that the meeting starts at 9 am, because the character of ‘now’ is different to the character of ‘9 am’, the contents of each belief will be presented differently. Here we have two beliefs, the belief that the meeting starts now, and the belief that the meeting starts a 9 am, each with the content: Meeting (starts, 9 am). However, the beliefs have a different character; the former will whereas the latter will not be presented under the character of ‘now’. It is this difference in character that accounts for the difference in cognitive significance of now-beliefs. What one believes when one believes at time $t$ that the meeting starts now, is the same as what one believes when one believes that the meeting starts at $t$. In both situations one believes ‘the meeting starts at $t$’. However, for now-beliefs one believes that content in a particular way: when one holds a now-belief the content is presented to one under the character of ‘now’. It is because of this that one is motivated to go to the meeting without requiring any additional now-beliefs. Character then, on Kaplan’s view, accounts for the cognitive significance of utterances containing the temporal indexical ‘now’.
As such, the same content, if determined by a different character, can result in different motivation for action and the attribution of a different belief.132

In attempt to explain the significance of perceptual presence, the Minimal Account could appeal to Kaplan’s strategy. Just as on Kaplan’s direct reference account, a belief at 9 am that the meeting starts now has the same content as a belief at 9 am that the meeting starts at 9 am, the Minimal Account claims that a perceptual experience $P$ at $t$ of ‘the dot moving now’ has the same temporal content as a perceptual experience $P^*$ at $t$ of ‘the dot moving at $t’$. The temporal content of $P$ has no indexical element but contains only the time denoted by the indexical ‘now’, namely, $t$. To avoid the problem that arises due to the difference in cognitive significance between $P$ and $P^*$, the Minimal Account

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132 Frege also provides a solution for the puzzle of cognitive significance by appealing to an apparent distinction between what he calls sense and reference (Frege, 1948). The sense, according to Frege, is the way in which terms denote their references (Frege, 1948: 210). Each different way of denoting a reference, i.e. a different mode of presentation, is a different sense. In line with Frege’s view, ‘now’ is a way of denoting an object, where the object denoted is a time. The object denoted by ‘now’ will, however, on each new occasion denote a different object – i.e. a new time (Frege, 1918: 296). Frege claims that what accounts for the differing cognitive significance between ‘now’ and ‘$t$’ is not the referent but is rather a difference in the way in which those objects are being referred to, namely a differing sense (Frege, 1948: 210).

Something is missing on Frege’s account of indexicals; Frege’s account only ever gets us to an object in a context, and the object alone cannot account for the complete meaning of an indexical. There is a constant meaning associated with an indexical that Frege’s account of sense and reference cannot explain. Stalnaker claims that we need information not just about the referent of the indexical (i.e. the particular time referred to) and the way in which that referent is presented (i.e. it’s sense) but we also need information about the facts that connect the indexicals to their referent (Stalnaker, 1976). That is, the meaning of an indexical is more than the object referred to, it involves some rule that determines that reference. Frege’s account does not provide such a rule, and cannot, therefore, account for this constant meaning of indexicals. It does not provide a rule that determines on each use of an indexical which object is referred to in each context.
could appeal the difference in character between ‘now’ and ‘t’. That is, for experiences that involve *perceptual presence*, i.e. the dot seeming to move now, the Minimal Account could appeal to the way in which the denoted time, t, is presented in perceptual experience. The Minimal Account could claim that for experiences of perceptual presence, the time t is presented under the character of ‘now’.

However, such an analysis demands the possibility of a phenomenal contrast between t perceptually presented under the character of ‘now’, and t not perceptually presented under the character of ‘now’. If a perceptual experience of ‘dot moving now’ has the same temporal content as a perceptual experience of ‘dot moving at t’, then to distinguish between t perceptually presented under the character of ‘now’ and t not perceptually presented under the character of ‘now’, there must be a phenomenal difference between the two. That is, it must be possible to have a perceptual experience as of the dot moving at t where this is not a perceptual experience of the dot moving now.

In line with the Minimal Account such a phenomenal contrast is not possible. I have taken it to be a phenomenological truism that when one has a perceptual experience of e one perceives e as occurring in the present. This is what I have referred to as *perceptual presence*. In this way, perceptual experience can be contrasted with recollection and anticipation. When one has
a recollection of $e$, one recollects $e$ as having occurred in the *past*. When one has an anticipation of $e$, one anticipates $e$ as yet to occur in the *future*. It is, therefore, a distinctive feature of perceptual experience that it presents the perceived events not just as happening at some time $t$ but as happening *now*.

The Minimal Account states that for something to be perceptually experienced at $t$, and presented as happening at $t$, just is for it to be perceptually presented as happening *now*. Thus, there is no possibility of having a perceptual experience of the dot moving at $t$ where this falls short of being a perceptual experience of the dot moving *now*. It is not possible to have a perceptual experience as of an event seeming to happen at some time other than now; one cannot *perceive* an event as having occurred in the past, or as not yet having occurred.\(^{133}\) If one has an experience of an event as having occurred in the past then, necessarily, one is not be *perceiving* that event. Rather, one will be recollecting it. Likewise, to experience an event as not yet having occurred, necessarily, one is not *perceiving* that event. Rather one will be anticipating it. To perceive something, just is to perceive it as occurring *now*.

If a defining feature of perceptual experience is that it presents that which occurs in the present, then it will always be the case that perceived events are

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\(^{133}\) I have claimed that one cannot perceive an event as having occurred in the past, as opposed to claiming that one cannot perceive a past event, as the former avoids problems of time lags.
perceived as occurring now. Even where the content of the perceptual experience contains as an element only the time at which the event occurs, $t$, and not an explicitly indexical element.

Although this explains why perceived events seem to occur now where there is no explicitly indexical content, the Minimal Account must still account for the difference in one's motivation for action and the cognitive significance of the beliefs that one makes on the basis of perceptual experience. That is, why does the temporal content as stated in 7P, namely ‘$(\exists e) \ (\text{Moving}(e) \wedge (\text{Subject}(e, d) \wedge \text{Occurs}(e, t)))$’ combined with a desire to press the button when the dot moves, motivate one to press the button without an additional belief that $t$ is now?

This question assumes that experience motivates action. The claim that a perceptual experience $P$ of $e$ with the temporal content 7P, motivates one to press the button wrongly asserts that the perceptual experience of the dot moving now is sufficient, other things being equal and in the presence of an appropriate desire, to motivate one to act. This assumption seems highly doubtful. What is also required is that the subject accept or believe the content of their perceptual experience. Just as one would not be motivated to go to the meeting at 9 am if one did not accept or believe that the clock was presenting the actual time, one would not be motivated to press the button upon seeing the
dot move if one did not accept or believe that one’s perception was presenting the actual state of affairs. It is the belief that the dot is moving now that motivates one to press the button, not the perceptual experience $P$ of $e$. That is, as practical reasoning takes beliefs and not perceptual experiences as inputs, the dot’s moving now must be, not only perceptually experienced, but noted and thereby taken up into one’s cognitive system.

The question might be revised as follows. If the content of a perceptual experience of the dot moving is as stated in 7P, then accepting the content of this experience and thereby taking it up into one’s cognitive system will mean coming to believe that the dot is moving at $t$. Why does the belief that the dot is moving at $t$, combined with the desire to press the button when the dot moves, motivate one to press the button at $t$? In providing a response to this I will appeal to Evans’ account of indexical belief (1981).

According to Evans, in order to be credited with an indexical belief, a subject must possess certain relevant connections to the objects of the belief (1982). As the object denoted by an indexical is different across contexts, these relevant connections concern how the subject knows which object is being referred to, on a particular occasion (Evans, 1982: 303).
Take the belief $B$ that the meeting starts now had at 9 am. In having this belief, the believer is aware of which time is denoted by the indexical ‘now’, namely whatever time they have that now-belief. According to Evans, for the case of now-beliefs, what makes it the case that someone is thinking of the time in the right way is whether or not they are disposed to judge the content of a now-belief as true or false, according to how things observably are at that time (Evans, 1982: 304). If one is disposed to judge the content of a belief, namely the proposition $<$that the meeting starts now$>$ to be true based on how things seem, i.e. seeing people entering the meeting room or seeing the time on a clock, it indicates that one is thinking of the referent of ‘now’, namely 9 am, in the right way. This way of thinking about the time i.e. being disposed to judge that which is believed as true or false according to how things seem at that time, is irreducible. No other way of knowing which object is in question can guarantee the existence of these dispositions.

Let us apply this to a direct reference account of indexicals, which claims that the content of the belief contains not the explicitly indexical content ‘now’ but rather the time referred to 9 am. A person is thinking of time 9 am in the right way (i.e. in that they are thinking of it as being the referent of ‘now’) if they are disposed to judge $<$the meeting starts at 9 am$>$ as being true based on how

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134 I will use the symbols ‘<' and '>' to mark the beginning and end of a proposition.
things seem to be at that time. There is no requirement here for the content to contain an indexical element.

We can also apply this account to the perceptual experience of event $e$, where this involves perceiving the movement of the dot as happening ‘now’. According to the Minimal Account, the temporal content of this perceptual experience contains no indexical element but only the time referred to $t$. The time $t$ can be considered as being perceived in ‘the right way’, according to Evans’ account, if one is disposed to judge the content of one’s now-beliefs as true according to how things seem at that time. For example, if the dot seems to move at $t$ then one will be disposed to judge a now-belief about the current movement of the dot as true. These now-beliefs can provide motivation for action; if one desires to press the button when the dot moves then, because one believes (based on one’s perceptual experience) that the dot is moving now, other things being equal, one will be motivated to press the button.

The important point for the present purposes is that a perceptual experience will feed information into one’s now-beliefs because of its role and not because the perceptual experience has explicitly indexical content. In Perry’s later account, (2002) which shares much with that provided by Evans, he explains how perceptual experience feeds information into one’s now-beliefs in terms
of the fact that one’s perceptual experiences are (normally) informative about what is happening now.

According to Perry, there are special ways of thinking about oneself, one’s current location, and the current time; these special ways do not have explicitly indexical content (2002). We can specify the special way of thinking about these indexical notions in terms of their informational role. Information gained from perception normally informs one about what is happening in the location that one is in. For example, if I look out the window and see that it is raining, then based on the content of this experience I may choose to take an umbrella with me. This is because my perceptual experience is normally ‘here’ informative.\footnote{It only \textit{normally} informs me of what is happening around a person because a person could be watching the television and see that it is raining in location \textit{l}. Although this is a perceptual experience, it does not inform the perceiver of what is happening in their surroundings. Rather, but through the television they are being informed about what is happening in different locations to their current location.}

There is a relation between the perceiver and the location, i.e. the relation of \textit{being in}, such that the perceiver is in the location that their perception presents. When a person has a perceptual experience, their perception is normally informative with regards to this relation. As such, when a person perceives...
the rain their perception is normally here informative. They are informed that
is it is raining in the location they are in.

If we take $R$ to be an epistemic/pragmatic relation (such as *being in*), we may
specify ways of perceiving that are ‘normally R-informative’ (Perry, 2002: 201).
That is, we may specify ways of perceiving that (normally) provide the
perceiver with certain kinds of information and which (normally) direct or
effect one’s ways of acting. Perry provides examples of $R$-informative ways of
gaining information, here is what he says in the structurally similar case of
‘here’,

The informational role of an $R$-notion is to serve as the normal repository
for information gained in normally $R$-informative ways and as the normal
motivator for normally $R$-effecting and $R$-dependent actions. The
information I pick up by looking around me will, normally, become
associated with my here-notions. The beliefs involving these notions will
motivate actions such as taking an umbrella, whose success depends on the
weather around me (Perry, 2002: 201).

The Minimal Account can appeal to normally $R$-informative ways of
perceiving in order to explain the cognitive significance of one’s now-beliefs.
Perceptual experience is (normally) now-informative: it (normally) presents
that which is occurring now. The information gained from perceptual experience can inform the perceiver’s now-beliefs, even where the perceptual content itself involves no indexical aspect. That is, being now-informative the perceptual experience $P$ of $e$, with the temporal content set out in $7P$, informs the perceiver that the dot is moving now. As the perceptual experience informs the perceiver of what is happening now, the perceiver can form a belief based on the non-indexical perceptual content, that the dot is moving now.

Accepting the temporal content of perceptual experience $P$, as set out in $7P$, will mean coming to believe that the dot is moving now. To form a belief on the basis of perceptual experience as to what is happening now, it is not required that that perceptual experience has explicitly indexical content. Since perceptual experience is of the present, it will automatically inform one’s now-beliefs (in Perry’s terminology, one’s ‘now-notion’). Consequently, the argument from the cognitive significance of now-beliefs to the falsity of the Minimal Account fails.

5.1.4. THE COGNITIVE SIGNIFICANCE OF ANTICIPATION AND RECOLLECTION

I have provided a response for the Minimal Account regarding the cognitive significance of the perceptual present. However, the same argument can be applied to recollection and anticipation.
As I have stated earlier, we can distinguish between perceptual experience, recollection and anticipation, in that when one perceives $e$, $e$ is presented as occurring in the present, whereas when one recollects $e$, $e$ is presented as having occurred in the past, and when one anticipates $e$, $e$ is presented as occurring in the future.

As ‘past’ and ‘future’ do not pick out particular times, there is no direct reference to past or future times. Rather, there is only direct reference to the present time. When we say, ‘in the past’, we are picking out a time earlier than now. The perceptual pastness of an event is achieved by the ‘earlier than’ relation’. Likewise, when we say, ‘in the future’ we are picking out a time later than now. The perceptual futureness of an event is achieved by the ‘later than relation’. As developed in chapter 2.1., according to the Minimal Account, the temporal content of recollection and anticipation, respectively are:

$$7R: (\exists e) \ [\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Hold(In Prog}(e) t) \land t < t^*]$$

$$7A: (\exists e) \ [\text{Movement}(e) \land \text{Subject}(e, d) \land \text{Hold(In Prog}(e) t) \land t^* < t]$$

As such, the Minimal Account of recall and anticipation can be explained in a similar manner as perceptual presence.
In accounting for the cognitive significance of past beliefs based on episodic recall, the Minimal Account can, just like in the case of now-beliefs based on perceptual experience, appeal to Perry’s R-informative ways of gaining information. That is, just as perceptual experience is a way of gaining information that is (normally) now-informative, episodic recall is a way of gaining information that is (normally) past-informative. Episodic recall provides the perceiver with information about what has already happened. If I recall my experience of seeing a dot moving, then this recollection will be past-informative, it will inform me of what was happening in the past. As such, to form a belief on the basis of recall as to what happened then, it is not required that that recollective experience has explicitly indexical content. Since recall is of the past it will automatically inform the subject’s then-beliefs.

Prior’s famous, ‘Thank goodness that’s over example’ makes this vivid,

Half the time I personally have forgotten what the date is, and have to look it up or ask somebody when I need it for writing cheques, etc.; yet even in this perpetual dateless haze one somehow communicates, one makes oneself understood, and with time references too. One says, e.g. “Thank goodness that’s over!”, and not only is this, when said, quite clear without any date appended, but it says something which it is impossible that any use of a tenseless copula with a date should convey (Prior, 1959: 17).
On recalling the unpleasant experience at the dentist, (and accepting the content of the recollection) one will naturally believe that event to have already happened. One can thereby think ‘Thank goodness that’s over’, without having to know anything about the date, $t$, on which it occurred beyond the fact that it is past.

Similarly, anticipation is a mode of representing the future. Anticipation is a way of gaining information that is (normally) future-informative. As such, to form a belief on the basis of anticipation as to what is likely to happen, it is not necessary that that anticipatory experience has explicitly indexical content. Since anticipation is of the future it will automatically inform one’s future-beliefs.

In this chapter I have considered a potential problem for the Minimal Account, that of the difference in cognitive significance between an indexical and its non-indexical referent. I have provided a response for the case of perceptual experience, and that of episodic recall and anticipation, which appeals to the distinctive role that the type of experience plays in our role for action.
5.2. PERCEPTUAL JUSTIFICATION

In chapter 5.1, I have argued that we have perceptually based now-beliefs and that these beliefs come about by accepting the content of perceptual experience. We often report on the temporal content of perceptual experience. For example, a person might report that, ‘the dot is moving now’ or ‘the event lasts a second’. The Minimal Account that I have defended, however, claims that neither the temporal property of *nowness* nor the measurement of *a second* feature in the content of perceptual experience. In this chapter, I present an account of justification for perceptually based beliefs and judgements, in line with the Minimal Account.

I begin by briefly setting out the view that a person’s temporal beliefs and judgements are representationally dependent. That is, that they are formed by simply taking the content of perceptual experience ‘at face value’. I will show that this is not an option for the defender of the Minimal Account. I develop a suitable account, of representationally independent judgements, according to which a person is justified in their temporal judgements if they are formed by following a reliable process. Our perceptually based temporal beliefs and

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136 My aim in this chapter is not to show that representationally dependent accounts of belief and judgement are wrong in general. I am rather, attempting to provide an account of justification for the Minimal Account.
judgements can, therefore, be justified even when the relevant experience does not involve the temporal properties.

5.2.1. REPRESENTATIONALLY DEPENDENT

Perceptual experience is often appealed to as a reason for making a judgement or holding a belief. If, for example, a person believes that the sky is blue, their reason for holding such a belief might be that the sky looks blue. Put more carefully, their reason for believing that the sky is blue is that they have a perceptual experience which, in some way, represents the sky as being blue. In a similar manner one might suggest that a person’s reason for believing that the dot moves now is that they are currently having a perceptual experience that presents the dot as moving now. Likewise, a person’s reason for judging that ‘e lasts a second’ is that they have a perceptual experience that presents the movement of the dot as lasting for a second.137

It might be suggested that the person’s reason for having these now-beliefs or making the duration judgements is that they have a perceptual experience with corresponding content. In support of such a claim, McDowell writes, “If

137 The exact relationship between judging and believing is not clear. Peacocke and Crane both take it that judging is the way in which one forms a belief. Peacocke writes, “to make a judgement is the fundamental way to form a belief” (1998: 88) similarly Crane writes, “judgement is the formation of belief” (2001: 104). There are of course people who deny this, for example Cassam (2010: 80-82). For the purposes of my discussion I will take it that if one judges that x, one also believes that x. I will generally be talking in terms of perceptual judgements but what I say about judgements applies to perceptually based beliefs.
someone has a perceptually based belief, she believes something because her experience reveals to her, or at least seems to reveal to her, that things are as she believes them to be” (McDowell, 2006: 1065). If one were to apply this to perceptually based judgements, then one might claim that a person judges something to be the case because their experience reveals to them that things are as they judge them to be. The temporal content of the perceptual experience directly informs the content of the belief or judgement. The subject takes the perceptual content at face value and uses it as a justifying reason.138

Judgements that are made by endorsing the content of a perceptual representation are, according to Peacocke (1999: 265), representationally dependent. In line with his account, one may say that a judgement, that ‘such-and-such’, is representationally dependent if it results from:

(i) ‘such-and-such’ is the content of one of the subject current perceptual experiences,

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138 I take it that for a belief or judgement to be justified, it must be based on reasons and evidence. I will set out these preliminaries in reference to belief, but what I say applies equally to judgements. If a belief is justified, then there is a reason (whether known to the believer or not) for holding that belief. This reason, whilst it may not guarantee truth, should help to avoid the belief being accidentally true. Being based on reasons alone, however, is not sufficient for a belief to be justified. The reasons for holding a belief might be weak or bad reasons. A theory of justification needs to provide an account of what distinguishes the weak reasons from the strong ones.
(ii) the subject forms the judgement ‘such-and-such’ by taking the content of this perceptual experience at face value.

A judgement will be representationally dependent if the content of the judgement is represented by the perceiver’s current perceptual experience. For the judgement to be representationally dependent it is also required that the perceiver forms the judgement by taking the content of the perceptual experience at face value. When this occurs, the perceptual content stands in an implicational relation to the judgement content. Due to this implicational relation, that which is judged is representationally dependent on that which is perceptually presented. If this is so, then according to the view outlined by Peacocke, one can form a justified judgement on the basis of the content of one’s perceptual experience. That is, if it adheres to (i) and (ii). One’s judgement that ‘e lasts a second’ might be justified in virtue of one taking the content of one’s perceptual experience at face value.

There are two ways in which a judgement might be representationally dependent, one in which the content of the perceptual experience directly matches the content of the judgement and one in which there is not a direct match. I will consider each in turn.
5.2.1.A. CONCEPTUAL STRUCTURE

The first type of representationally dependent judgement requires that there is a direct match between the content of the experience and the content of the judgement. If this direct match occurs, then one can form a perceptual judgement by merely affirming the content of the perceptual experience. If a person judges ‘e lasts a second’ and there is a direct match between the judgement and the experience that is being taken at face value, then the perception must also have the content ‘e lasts a second’. Likewise, for a person to form the belief that the dot is moving now, by simply endorsing the content of their perceptual experience, then their experience must have the content ‘dot is moving now’. Such a view might be considered a conceptualist account of perceptual judgement.

The claim that there is a direct match between the content of the judgement and the content of the perceptual experience on which the judgement is based, requires that perceptual experience has a specific structure. To consider how the structure of perceptual experience needs to be in order for there to be such common content I will first consider how judgements are structured. When making a judgement a person judges ‘such-and-such’ to be the case. For example, a person might judge ‘the dot moving now’ or ‘e lasts a second’. In doing so, they are standing in a certain relation to a conceptually structured proposition. This conceptually structured proposition is the content of the
belief or judgement. Take the proposition <that Q>. One can have different attitudes towards this proposition. One can, for example, believe that Q, judge that Q, desire, fear or be surprised, that Q. In order to have any of these attitudes towards the proposition <that Q>, however, the subject must possess the concept Q. One cannot judge that Q if one does not possess the concept Q. That is, when one judges ‘such-and-such’, ‘such-and-such’ must stand for concepts possessed by the judger. For example, for one to judge that the ‘dot is moving now’ one must possess the concept of DOT, the concept of MOVEMENT, and the concept of NOW.

For there to be a direct match between the content of the judgement and the content of the perceptual experience, then the perceptual experience must be structured in the same way. That is, perceptual experience must also be conceptually structured. This means, not only that the content of perception must be propositional, but also that the perceiver must possesses all the concepts for the constituents of that proposition.

Assuming that the content of perceptual experience is conceptually structured, then the content of perceptual experience, just like the content of judgements and beliefs, must only contain things for which the perceiver

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139 See footnote 69 for a discussion of concepts.
140 See McDowell (1994) and Brewer (1999) for a defense of the claim that perceptual experience is conceptually structured.
possesses concepts. That is, one can only perceive something if one possesses the concept for that thing. If this is the case, then one can only perceive that the dot is moving if one possesses the concepts of DOT and MOVEMENT.

If this is so, then a simple answer can be provided for the way in which perceptual experience justifies judgements and beliefs: there is a direct match between the content of the perception and the content of the judgment. If a perceiver sees that ‘the dot is moving’ and their perception is conceptually structured, then in judging ‘the dot is moving’ they are simply taking the content of their perceptual experience at face value. Their reason for so judging is that they have a perceptual experience with the same content. That is, their conceptually structured perception justifies their judgement.

I have argued in chapter 2.1. that the content of perceptual experience does not contain the temporal indexical ‘now’, and in chapter 3.1. that the content of perceptual experience does not contain a determinate duration. This does not mean, however, that the conceptual analysis is necessarily wrong, just that it is inconsistent with the Minimal Account that I endorse. Anyonedefending a conceptual view of perceptual experience would need to be able to explain how measurements such as ‘a second’ or an alternative conceptual

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141 There are of course arguments against conceptualism, for example see Evans (1982: 229) for the fineness of grain argument.
way of representing a second, can feature in the content of perceptual experience, such that the movement can seem to last a second.¹⁴²

As my aim here is to provide an account of perceptual justification for the Minimal Account, as opposed to considering accounts of perceptual justification in general, I will not consider the conceptual analysis in any more detail. I will move on to consider whether one can appeal to non-conceptual perceptual content to justify perceptual judgements.

5.2.1.B. NON-CONCEPTUAL STRUCTURE

In order for a belief or judgement to be representationally dependent, there need not be a direct match between the content of the perceptual experience and the propositional content being believed or judged. Even if the perceptual content is distinct in kind from the judgement content, the judgement might be representationally dependent.

Those who deny that perceptual experience is conceptually structured appeal to non-conceptual content. Non-conceptual content is anything that is presented

¹⁴² In chapter 2.2 I presented an alternative way in which duration could be perceptually presented conceptually, in terms of mental activity. An alternative could be by appealing to an internal clock, see Block and Zakay (1996), whereby the duration of an event is represented non-conceptually in terms of the number of ticks of the internal clock.
in perceptual experience for which the perceiver does not possess a concept. A typical formulation of non-conceptual content is given by Tye,

To say that a mental content is non-conceptual is to say that its subject need not possess any of the concepts that we, as theorists, exercise when we state the correctness condition for that content (Tye, 2000: 62).

To claim that perceptual experience has non-conceptual content is not to claim that all of experience is non-conceptual but that the subject does not need to possess the concepts for at least some of the things that feature in the content of perceptual experience.143

If perceptual experience has non-conceptual content the perceptual experience on which the judgement ‘the dot is moving now’ is made need not itself conceptually represent the concept NOW. The nowness of the movement could be presented non-conceptually. Likewise, the concept of A SECOND need not be part of the content of the experience that justifies the judgement ‘e lasts a second’. This measurement could be presented non-conceptually.

According to Peacocke, non-conceptual perceptual content could justify conceptually structured judgements. He writes,

the thinker’s reason for making his judgement ‘I am F’ is his being in some state, other than a belief state, which represents a certain content C as correct … the content C may, but need not, be the same as the content ‘I am F’ (Peacocke, 1999: 264).

Peacocke claims that even in cases of non-conceptual perceptual representation the subjective features of perceptual experience, that is, the way in which things seem, can entitle a thinker to make a particular judgement by simply taking that experience at face value. He writes,

A thinker can be rational in making a transition from an experience with a certain nonconceptual representational content to a judgment with a certain conceptual content … Such a transition is rational when the thinker is entitled to take her experience at face value, and when the observational concept is individuated in part at least as one that the thinker must be willing to judge when experience has a certain kind of nonconceptual content (Peacocke, 2001: 254).

In discussing what it is to take a perceptual experience at face value, Peacocke claims that it is our default practice to take perceptual experience and memory at face value. This occurs automatically, without ‘impractically, stopping to
endorse them in judgement case by case’ (2001: 20). Taking non-conceptual experience at face value then, is just to automatically endorse that experience.

To claim that duration judgements such as ‘e lasts a second’ can be justified by taking one’s perceptual experience at face value there must be some kind of non-conceptual perceptual representation of duration. This is not the case, however, for experiences of duration according to the Minimal Account. In chapter 3.1., I argued that the perceptual content of $P$ does not include a representation of an event’s duration. That is, not only is the duration of a perceived event not conceptually represented, neither is the duration non-conceptually represented. The subject cannot, therefore, take their experience at face value in making the duration judgement. Thus, such an account does not explain how our duration judgements are justified. Regarding our now-beliefs, I have argued that the temporal content of a perceptual experience $P$ of event $e$, does not represent nowness (either conceptually or non-conceptually). The temporal content of $P$ contains only the time referred to, $t$. As such, the defender of the Minimal Account cannot appeal to an experience’s non-conceptual representational content in order to explain how now-beliefs are justified.

Again, this does not mean that the non-conceptual analysis is necessarily wrong, just that it is inconsistent with the Minimal Account that I endorse. As
my aim here is to provide an account of perceptual justification for the Minimal Account, as opposed to considering accounts of perceptual justification in general, I will not consider the non-conceptual analysis or the representationally dependent analysis in any more detail.

5.2.2 REPRESENTATIONAL INDEPENDENCE

If our temporal judgements are not justified by simply endorsing the content of our perceptual experience then the advocate of the Minimal Account must either, deny that temporal judgements are justified or provide an alternative account of justification. In what follows I develop a representationally independent account of justification for temporal judgements.

In contrast to his definition of representational dependence Peacocke introduces the notion of representational independence (2001: 263). The content of a judgement is representationally independent if the content does not meet the conditions (i) and (ii) in the above definition of representational dependence. That is, if the content of a person’s judgement is not also the content of the perceptual experience on which the judgement is based, either conceptually or non-conceptually.

The temporal judgements that one makes on the basis of perceptual experience are, according to the Minimal Account at least, representationally
independent. One believes that the dot moves now on the basis of a perceptual experience where ‘now’ is not part of the perceptual content. Likewise, one judges ‘e lasts a second’ on the basis of a perceptual experience where ‘a second’ is not part of the perceptual content. Peacocke claims that “to say such uses are representationally independent is not to say that the beliefs in question are not held for reasons” (2001: 267). That is, just because the belief that the dot is moving now and the judgement that ‘e lasts a second’ are representationally independent, it does not mean that they are not held for reasons or, in other words, that they cannot be justified.

Although such judgements can be justified the content of the perceptual experience cannot fully explain what makes the judgement justified (Peacocke, 2001: 272). We must look for an account of justification that goes beyond the content of the perceptual experience

A common distinction is between internalist accounts and externalist accounts of justification.\footnote{144 See Alston (1989, Chapter 8) for a discussion of Internalism and Externalism.} According to internalist accounts, in order for a belief or judgement to be justified the subject must have access of all to the justifiers for their judgement. In discussing Internalism, Bach writes,
Internalism … treats justification as a purely internal matter: if $p$ is justified for $S$, then $S$ must be aware (or at least be immediately capable of being aware) of what makes it justified and why (Bach, 1985: 250; quoted in Alston, 1989: 212).

On an internalist account then, for a person to be justified in judging ‘such-and-such’ the person must be aware of what makes their judgement justified or at least be in a position to become aware of what makes their judgement justified. Internalists claim that justification is ‘internal’ to the scope of one’s awareness. If a justifier is not accessible by the judger, then the resulting judgement will not be justified.\textsuperscript{145}

In attempting to account for how one’s perceptual beliefs and judgements are justified the defender of the Minimal Account cannot appeal to an internalist account of justification. According to the Minimal Account the perceiver is not perceptually presented with nowness or the measurement of a second (or as lasting for any non-conceptual way of representing a second). Consequently,\footnote{\textsuperscript{145} It may turn out that we only have this kind of immediate access to internal things, i.e. our own mental states, but this is a further claim. All that is required for an account to be internalist is that we have access to all of our justifiers.}
it seems that on the Minimal Account a person does not have access to the justifiers for their judgement.146

Externalist accounts of justification, on the other hand, do not require that the subject have access to all of the justifiers for their judgement. That is, according to externalist accounts a person can be justified in judging ‘such-and-such’ even where the reasons for making that judgement are ‘external’ to their scope of awareness. Externalist accounts of justification do not require that, in every situation, a person be unable to access the justifiers for their judgement but claims rather that a person is not always in a position to accesses all their justifiers. Even when a person cannot access any of their justifiers, their judgement may still be justified. On an externalist account then, there are at least some cases where the subject is justified in judging ‘such-and-such’, whilst not having access to any reasons for making that judgement.

An Externalist account of justification seems like the best route for the defender of the Minimal Account. In what follows I will consider a particular type of externalist account of justification, Reliabilism.

146 In line with the Minimal Account, one might have access to the justifiers in reflection. However, what I am trying to account for here, is how (pre-reflective) perceptual experience can justify temporal judgements and beliefs.
5.2.3. RELIABILISM

In order to provide a method of justifying judgements, a group of externalists appeal to the process through which the justification is made. I will focus on a version of this called Reliabilism, according to which, the determining factor is whether or not the process through which one makes a judgement is reliable.

Whether a judgement of ‘such-and-such’ is justified, according to Reliabilism, depends on whether the judgement was generated in a suitable way, where suitable ways of generating a judgement are the ones that are reliable. It is generally considered that the reliable ways of making a judgement are the ways which produce the most correct judgements. Goldman categorises the reliable processes as, “standard perceptual processes, remembering, good reasoning, and introspection” claiming that what they “seem to have in common is reliability: the beliefs they produce are generally true” (Goldman, 2012: 38). By following one of these reliable processes, the judgements that one makes might be justified.

The unreliable processes on the other hand, include “confused reasoning, wishful thinking, reliance on emotional attachment, mere hunch or guesswork, and hasty generalization”, Goldman claims that these processes “share the feature of unreliability: they tend to produce error a large proportion
of the time” (Goldman, 2012: 38, *emphasis in original*). According to Reliabilism, whether or not a judgement is justified depends on the reliability of the causal processes through which they are made.

According to Goldman, ‘standard perceptual processes’ count as a being a reliable process through which to make a judgement. Whilst perception might be considered generally reliable there are, however, degrees of reliability. It might be useful to consider the difference between a justified and an unjustified judgement, both determined by the generally reliable process of perceptual experience. One may get a brief glance at an analogue clock in dimly lit conditions and judge that it is 11.30 pm. We may accept that under these conditions the process through which the judgement was made is not particularly reliable. At least it is less reliable than judging that it is 11.30 pm after getting a good look at the clock in good lighting conditions. Visual judgements based on perceptual experiences that occur from a long distance, through a brief glance, or in poor conditions tend to produce fewer true judgements than visual judgements made at a reasonable proximity, in leisurely timing, in good conditions. Thus, we may accept that the judgements
made based on the later kinds of visual processes are more reliable than the ones made based on the former ones.\textsuperscript{147}

Accepting this distinction between reliable processes and unreliable processes as a way of making judgements, one may consider the following to be a condition of justification:

(J) If a subject’s judgement ‘such-and-such’ at $t$ results from a reliable cognitive judgement-forming process then the subject’s judgement ‘such-and-such’ at $t$ is justified.\textsuperscript{148}

By accepting J, we seem to be in a position to determine whether one’s belief that the dot is moving now, and judgement ‘$e$ lasts a second’ is justified. I will begin with the now-belief, followed by the duration judgement.

If we take it that one has good viewing conditions of the dot’s movement in that, one perceives the dot move from a reasonable proximity, in good lighting conditions and in a leisurely manner, then, according to Goldman’s account of Reliabilism, one’s belief that the dot is moving now is justified. One forms

\textsuperscript{147} See Goldman (2012: 38) for a similar example using a perceptual experience of a mountain-goat.

\textsuperscript{148} See Goldman (2012: 41).
the belief through a reliable process: a causal process which tends to produce true beliefs.

Likewise, if we take it that one has good viewing conditions of event $e$ in that, one perceives the dot move from a reasonable proximity, etc., then, as it is made through a reliable process, one’s judgement ‘$e$ lasts a second’ is justified. As this is an externalist account, it does not cause a problem that the subject does not have access to their reasons for making this judgement; the judgement is justified because the process through which one makes one’s judgement is a reliable one.

This account does not seem satisfying. By relying on a purely causal process Goldman’s account of perceptual justification seems to leave something important out. This kind of basic process Reliabilism that Goldman defends gives no role to the phenomenal character of the experience. Rather, it just points to the underlying causal mechanism. This seems wrong as an account of justification for perceptually based judgements and beliefs. It is natural to think that one’s perceptual judgement ‘the dot is red’ seems to be justified, at least in part, because of the way that the dot looks. My perceptual judgement should be justified, at least in part, by how the events that I perceive seem to me. An account of justification for perceptually based temporal beliefs and judgements should then, at least in part, appeal to the way that the perceived
events seems. The phenomenology plays no role in Goldman’s account and, as such, is unsatisfactory as an account of justification for perceptually based beliefs and judgements.

An alternative Reliabilist account of justification is defended by Millar (2000), according to which the way that perceived events look contributes to whether or not the perceptual judgements are justified.\footnote{\textsuperscript{149} Millar is providing an account of perceptual knowledge, as the conditions for what counts as knowledge are stricter than those for judgement, I take it that Millar’s account will also apply to perceptually based judgements.} According to Millar, we can make justified judgements as to how things seem, which go beyond that which is perceptually manifest to one (Millar, 2000: 74). What is meant by ‘going beyond that which is perceptually manifest to one’ is that a person can make justified perceptual judgements on more than that which is an element of the content of the perceptual experience. This seems like exactly what a defender of the Minimal Account requires in order for a person to be perceptually justified in their now-beliefs and duration judgements on the basis of the minimal temporal content of experience \(P\). To recap, the temporal content of a perceptual experience of event \(e\), i.e. of the dot moving, is according to the Minimal Account that I have defended, is represented by \(7P\),

\[
7P: (\exists e) \left[ \text{Movement}(e) \land \text{Subject}(e, d) \land \text{Hold(In Prog}(e) t) \right]
\]

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Our temporal beliefs and judgements are based on how $e$ seems but are not limited to that which is perceptually manifest to one, whilst experiencing $e$. An example of a perceptual judgement which involves more than that which is perceptually manifest to one is judging of an object that looks a certain way that that object be a member of a particular category. For example, an object that looks to be a certain way, i.e. round and red, might be judged (based on the perception of it) to be an apple. Although the object is judged to be an apple, ‘apple’ itself does not feature in the perceptual content. As Millar states, “We can [judge] by sight that something we are looking at is an apple, though the fact that the thing is an apple is not visually manifest in the strict sense” (Millar, 2000: 83).

The first thing to note is that on Millar’s view the perceptual judgement is based on how things perceptually seem. Our judgements, based on how things seem are not, however, restricted to that which is an element of the perceptual content. Rather, we are able to make judgements based on appearances which do not require an implicational relation between the content of the judgement and the content of the perceptual experience. In order to make such a perceptually based judgement no additional inference or prior assumptions are required; in this way, the perceptual judgement is *phenomenologically immediate* (Millar, 2000: 73).
Millar’s account depends on what he calls the ‘looks’ or ‘appearances’ of perceived objects (2000: 78). According to Millar the way something looks is an objective feature of the object, not unlike the object’s colour or shape. The look of an object is mind-independent, that is, the look of an object exists whether or not it is being perceived. The look of an object is publicly available – it can be discriminated by any suitable subject (Millar, 2000: 78). Take an object $o$. According to Millar, something has the appearance of an $o$ if it appears the way that an $o$ typically does (2000: 78). There are ways in which most things that are $o$’s appear. These ways in which most things of a certain type appear are distinctive appearances. A distinctive appearance of object $o$ is not itself an $o$, although most things that are $o$’s have that appearance. Let us consider an easy example before moving onto the difficult case of duration. I will consider how Millar’s account might apply to perceptually judging a perceived brown liquid to be coffee (where ‘coffee’ is not part of the perceptual content, thus, not perceptually manifest).

Firstly, Millar appeals to appearances relative to a particular sense (2000: 78). The brown liquid has different appearances relative to different senses. Relative to visual perception it has the distinctive appearance ‘$C$’ say. This appearance is not ‘coffee’, as ‘coffee’ does not feature in the content of the perceptual experience. Most things that have the visual distinctive appearance ‘$C$’, however, are coffee. When something looks ‘$C$’, we judge that that thing
is ‘coffee’. In considering what is it to visually look ‘C’ we might appeal to certain characteristics such as the colour, the viscosity, that it is giving off steam etc. When something looks this way, we judge that thing to be coffee.

Relative to taste the brown liquid has a different distinctive appearance. The distinctive way in which coffee tastes is, in one way easier to specify but in another way, more difficult. Assume that relative to taste coffee has a distinctive appearance of ‘C*’. As a coffee drinker, if I am tasting some instance of ‘C*’ I am able to immediately judge that the thing I am experiencing is coffee. There is a distinctive taste associated with coffee, what I have called C*, and when things taste like C* one can perceptually judge that it is coffee.\(^{150}\) Specifying the character of this specific taste, i.e. what C* is, is challenging. Depending on where the coffee beans are from and the roasting process, there will a particular bitterness and acidity, texture on the tongue, floral characteristics, etc. These distinctive appearances contribute to what Millar calls worldly tastes (2000: 78). Worldly tastes apply to types rather than tokens. That is to the appearances of things in general rather than about how things seem on a particular occasion. By having an understanding of the worldly taste of coffee, one can differentiate the taste on a particular instance.

\(^{150}\) The same applies to smell, there is a distinctive appearance to the smell of the brown liquid such that most things that smell that way are coffee.
We can be wrong in our perceptual judgements; a theory of justification should be able to accommodate this. On Millar’s account, it can be the case that something might have the distinctive look of ‘C’ such that we judge it to be coffee but really that thing is not coffee. Something might have the distinctive smell associated with coffee such that we judge it to be coffee, but it is in fact a coffee scented candle. We can be wrong in our judgement because ‘coffee’ is not part of the content of the perceptual experience. If it were an element of the perceptual content, there could be no situation in which we could be wrong about whether something was coffee. This is because the concept COFFEE would be part of the perceptual content.

I will apply this account to our perceptually based now-beliefs. In line with the Minimal Account that I have defended, nowness is not part of the content of the perceptual experience. According to Millar, there must be a distinctive appearance for events that occur in the perceptual now, such that, when events look that way, the perceiver can reliably form the belief that the event is happening now. In 5.1., I deny that there is any such thing as the perceptual experience of the dot moving at $t$ where this is taken to fall short of the perceptual experience of the dot moving now. For the Minimal Account states that (i) the temporal content of perceptual experience is determined by the rule that gives the time at which the token experience occurs, and that (ii) for
something to be perceptually experienced, at $t$, to be happening at $t$ just is for it to be perceptually experienced as happening now.

As such, perceptual experience is now-informative. That is, perceptual experience informs the perceiver as to that which is occurring in the present. Perceptual experience can be distinguished from recollection and anticipation in this way; it is a datum that, phenomenologically speaking, we perceive the present, recall the past and anticipate the future. As perception informs one as to what is the case now, every perceived event has the distinctive appearance of happening now. When an event looks this way, i.e. the way that perceived events look, then the perceiver can reliably form the belief that the event is happening now. We are then, according to Millar’s account, justified in believing that the dot is moving now.

Let us apply Millar’s account to the more challenging case of perceptually judging an event’s duration. According to the Minimal Account, the duration of an event is not part of the content of perceptual experience, in Millar’s words, the duration is not perceptually manifest. For one to make a justified judgement, in line with Millar’s account, there must be a distinctive appearance for events that last a second. That is, there must be a way that events that last a second look, such that when an event looks that way, the perceiver can judge that it seemed to last a second. But the way that it looks
cannot be ‘a second’ or any non-conceptual way of representing a second. This is because the duration of an event does not feature in the perceptual content.

So, how do events that last a second look? What distinctive appearance do all events that look to last a second have? To provide an answer to this question, it is necessary to consider Millar’s account in a little more detail.

Having considered what it is for a perceived object to have a distinctive appearance, we must consider what is required in order to be justified in making a judgement based on that appearance. Millar appeals to the notion of a discriminative capacity (2000: 85). One can be said to discriminate some object o by a particular sense if one has the capacity to respond to objects that are o’s in a distinctive way. That is, one may discriminate coffee by responding to an object with the distinctive look ‘C’ in a particular way. One may, for example, respond to the object that has the look of ‘C’ by drinking it.151

We can perceptually discriminate and respond to objects with distinctive looks without having the concept for that look. As Millar suggests, it is plausible that someone might learn to discriminate object o by sight without having acquired the concept of the look of an o (Millar, 2000: 85). Although the

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151 Millar writes, “Suppose that the differential response is believing (non-inferentially) that the thing perceived is an apple. Then the discriminative capacity in question is a capacity to believe of perceived things having the look of an apple, that they are apples” (2000: 86).
discriminative capacity is a conceptual one, in that it involves judging that things have the look of being an o are o’s, it does not require that one have the concept of ‘looking o’. As Millar writes,

it is possible for someone to be able visually to discriminate things having the look of apple […] without bringing these things under the concept of things having the look of an apple, or of any other concept which might be used to specify how apples look. All that is required is that the person should respond differentially to perceived things which have the look of apples (Millar, 2000: 86).

One need not have the concept of the distinctive characteristic for a particular type of thing, in order to be able to respond to it in the right way. Thus, one need not have the concept of how coffee looks when it is tasted, in order to be able to judge of things with that distinctive characteristic that they are coffee.

Applying this to experiences of duration, to make judgements as to the duration of an event, we must be able to visually discriminate events that have the look of lasting for a second. However, in order to do so, it is not required that we have the concept of how events that have the look of lasting a second look. All that is required is that the perceiver be able to respond differentially to the events that have this look.
Although we do not have the concept for ‘events having the look of lasting a second’ we do have the capacity to discriminate between events with differing durations. Likewise, we can respond differentially to these events. We have, for example, the capacity to physically respond to and interact with events which have the duration of a second. Thus, we might say that we have the capacity to physically respond to and interact with events having the look of lasting a second. If we did not have such a capacity, then navigating the world would be extremely difficult.

We might make the judgement ‘\(e\) lasts a second’ by responding to event \(e\) in the way that we respond to events that have a look of lasting a second. And, we can do this even where we do not have the concept of ‘having the look of lasting a second’. As such, we might make this perceptually based, temporal judgement, where ‘a second’ or ‘having the look of lasting a second’ are not elements of the temporal content of the perceptual experience. We can judge that ‘\(e\) lasts a second’ where ‘a second’ is not perceptually represented, either conceptually or non-conceptually.

In line with this view then, we can make perceptual judgements as to the duration of a perceived event, without the duration being perceptually represented. This is a representationally independent judgement. By appealing to this, the Minimal Account explain how a person’s post
perceptual judgement ‘e lasts a second’ is justified, where there is no perceptual representation of the duration of the movement. That is, one can be justified in judging ‘e lasts a second’ where the temporal content of e is as stated in 7P.

The discriminative capacity that one uses to identify and respond to events having the look of lasting a second is a reliable one. It is reliable because it (more often than not) produces the correct results. It (more often than not) produces true beliefs. We use this perceptual discriminative capacity all the time. And, when we do so, we (more often than not) respond to objects in the right way. When we respond to an object having the look C by drinking it, we have formed a belief that that object is coffee. In doing so, we have followed our reliable discriminative capacity. We have discriminated an object as having the look C (even where we might not possess the concept of ‘looking C’) and categorised the object as being, coffee. That the object is coffee is not something that is perceptually manifest.

In the same way, when we judge of an event having the look of lasting a second that it lasts for a second, we have followed our reliable discriminative capacity. By doing so, the temporal judgements we make are justified. These judgements are based on how events seem, but do not require that (i) the perceiver have the concept of looking like e lasts a second, or (ii) the experience
has the duration of $e$ as an element of the perceptual content. By following this reliable process one can make a justified perceptual judgement based on how things look. One can be justified in judging that ‘$e$ lasts a second’, on the basis of one’s perceptual experience.

By appealing to Millar’s account, the Minimal Account can explain how we can be justified in making perceptually based temporal beliefs and judgements, whilst the temporal content of perceiving $e$ is as stated in 7P. We can be justified in making perceptual judgements as to the duration of an event, whilst not perceptually representing the event as lasting for any determinate duration. Likewise, we can be justified in believing, on the basis of perception, that an event occurs now, where nowness is not perceptually represented.
CONCLUSION

I have developed an account of the temporal content of perceptual experience, the Minimal Account, which is able to account for two essential, yet seemingly inconsistent features of perceptual experience. It does so in a manner which provides a solution to the Puzzle of Temporal Experience. The view that I have developed provides the conditions under which events can be perceptually presented as *presently unfolding*.

In part two I put forward an argument for the claim that the content of perceptual experience contains as an element only the time referred to by the temporal indexical ‘now’. That is, rather than being perceptually presented as happening ‘now’, an event is presented as happening at $t$. I distinguished between the temporal content of perceptual experience, recollection and anticipation by arguing that, whilst there is no temporal viewpoint in perception, in that one cannot perceptually distinguish between the temporal location of a perceptual experience and the temporal location of that which is perceived, such a temporal viewpoint, albeit a minimal one, is available in recollection and anticipation.

In parts three and four I present an account of perceiving temporally extended events by focussing on experiences of duration and experiences of succession. With regard to duration, I argued that the duration of an event is not an
element of the content of perceptual experience. As we present events as *unfolding*, the Minimal Account of duration is consistent with the claim that we perceive temporally extended events. Regarding succession, I argued that the accuracy of a person’s perceptual experience at a time should be assessed in virtue of what one experiences over an interval of time.

The analysis that I provide of experiencing a temporally extended event is consistent with that of perceptual presence. As a result, the Minimal Account is able to solve the Puzzle of Temporal Experience: it can account for the fact that we only perceive that which is present, whilst also accounting for the fact that we perceive events that unfold over time.

In part five I consider wider issues, regarding belief and justification. I have provided a solution to the problem of the difference in cognitive signification between indexical and co-referring but non-indexical perceptual experience. I have also developed an account of justification, such that the minimal temporal content of perceptual experience can informs our temporal beliefs and judgements.

In my thesis I have developed an original account of perceptual experience which solves the Puzzle of Temporal Experience, provides the conditions
under which the temporal content of our perceptual experience is veridical, and justifies our perceptually based temporal beliefs and judgements.
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