7 The Temporal Structure of Experience

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7.1 Overview

This chapter defends a naïve view of the relation between the temporal structure of the objects of experience, and the temporal structure of experience itself. According to the naïve view, when all goes well, your stream of consciousness inherits the temporal structure of the events that are its contents. You "take in" the temporal structure of the events you witness in witnessing them. As a result, the temporal structure of experience matches the temporal structure of its objects. In cases of illusion, it is as if this is so. Thus, in every case, the temporal structure of experience matches the *apparent* temporal structure of the objects of experience.

Such a view faces both philosophical and empirical objections. The most prominent philosophical objection is that the naïve view is incompatible with a principle often labeled the "principle of simultaneous awareness" (Miller, 1984, 109), roughly the claim that if we are aware of a succession or duration, we must be aware of it at some one moment. Elsewhere, I have argued that this principle is false. Here I want to take that for granted. However, this attitude raises a worry. Extant theories of temporal consciousness take the principle of simultaneous awareness as their point of departure. If we discard it, it is unclear why we need a philosophical theory of time consciousness at all.

The answer is that time is special. Temporal properties are the only properties manifestly shared by both the objects of experience and by experience itself. Experience, at least in its subjective aspect, is not colored or shaped; it does, however, manifestly have a temporal structure. As a result, the question arises of the relation between the temporal structure of experience and the temporal structure of its objects. No such question obviously arises for color or shape. The naïve view is the natural answer to this obligatory question. Having fleshed out these opening remarks, I develop the naïve view, show why it is intuitive, and respond to a major empirical objection to it, namely its alleged inability to account for postdictive phenomena.

7.2 The Traditional Problematic

Traditional debates about time consciousness are best understood as competing attempts to make sense of temporal experience constrained by what Miller (1984, 109) labels the "principle of simultaneous awareness" (PSA):

PSA If one is aware of a succession or duration, one is necessarily aware of it at some one moment.[1]

PSA quickly leads to skepticism about the very possibility of temporal experience, as the following two passages testify.[2]

> If we speak strictly and philosophically … no kind of succession can be an object either of 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, which is a successive change of place, could not be observed by the sense alone without the aid of memory. (Reid, 1827, 387)

> Any sound has some duration, however short. If so, how can it ever be true that we really *hear* a sound; for to hear is to hear at a moment, and what we apprehend by way of hearing—or more generally perceiving—can only exist at the moment of hearing, and *ex hypothesi* at least part of the sound said to be heard is over at the moment of hearing, and strictly speaking it is *all* over. … Therefore, it seems, it is impossible to hear a sound. (Prichard, 1950, 47)

Puzzlement, and indeed skepticism, about temporal experience remains rife in the literature. In his recent monograph, Le Poidevin concludes that "order and duration are not in any straightforward sense objects of perceptual states" (2007, 99). Nor are such views confined to philosophers: Gallistel argues (in somewhat Kantian fashion, and citing phenomenological paradox) that, unlike color and shape, "duration is not itself a sensible aspect of events" but "exists only in recollection" (1996, 336).

Puzzlement about temporal experience has prompted two basic non-sceptical responses: memory theories and specious present theories. According to the memory theorist, "What gives rise to the experience of pure succession [in a case where a C and an E are heard successively] … is the conjunction of the perception of E with the very recent memory of C" (Le Poidevin, 2007, 92). On this picture, raw, basic experience lacks temporal content; temporal experience is woven from a combination of this raw material and memory.[3] According to the specious present theorist, in contrast, at any instant we are aware of an extended period of time: our basic experience at a moment literally embraces extended temporal structure (e.g., Tye, 2003; cf. Broad, 1923). For the specious present theorist, the confinement of experience to an instant does not prevent it acquainting us with temporally extended goings-on as such.

Both theories have received a great deal of critical attention, and, correspondingly, increasingly complicated revisions.[4] Elsewhere, I have argued that no form of either theory can successfully account for our experience unless it rejects PSA.[5] Yet to reject PSA is to reject

the puzzle that motivated the construction of these theories in the first place. Thus, once it is recognized that PSA needs to be rejected to account for our temporal experience, we need to reconsider why we want a philosophical theory of temporal consciousness in the first place. If there is no problem, why do we need a solution?

In the next section, I press this question, and argue that the starting points in the literature are inadequate. Instead, I suggest that we should frame our thinking about temporal consciousness in terms of the special question that time raises for us regarding the relationship between the temporal structure of the objects of experience, and the temporal structure of experience itself. The naïve "theory" is the natural answer to this question. The aim of the rest of this chapter is to explore whether we need to depart from it. At least with regard to one very prominent source of contemporary hostility, I argue that we have no reason to do so.

7.3 Starting Again

If we attempt to justify theorizing about temporal experience unmotivated by the strictures of a controversial theoretical assumption such as PSA, it is natural to begin with the appearances. Many have felt that the way our temporal experience seems to us on reflection is somehow paradoxical (cf. Gallistel, 1996, quoted above), and therefore demands a theoretical response. This is one way to read the opening of Kelly's discussion of what he calls the puzzle of temporal experience. "How is it possible," Kelly writes, "for us to have experiences as of continuous, dynamic, temporally structured, unified events given that we start with (what at least seems to be) a sequence of independent and static snapshots of the world at a time" (2005, 210)? It is, however, perplexing why such a starting point would be forced upon us simply by reflecting upon our experiences. It is much more plausible to think that Kelly's puzzle arises because we implicitly or explicitly endorse a philosophical assumption such as PSA.

We might think that Kelly's how-possible question could stand alone, without any need to point to a particular source of puzzlement. Thus, Dainton opens his *Stanford Encyclopedia* entry on temporal consciousness as follows.

> In ordinary conscious experience, consciousness of time seems to be ubiquitous. For example, we seem to be directly aware of change, movement, and succession across brief temporal intervals. How is this possible? (2010)

However, it is not clear why we should accept that a genuine how-possible question arises. Cassam suggests that "to ask a how-possible question is to ask how something which looks impossible given other things that one knows or believes is nevertheless possible" (2007, 1).[6] But as yet we have no grounds for thinking that time consciousness is in any way mysterious, let alone for thinking it impossible. Of course, it is possible to argue that Cassam's conception of how-possible questions is too restrictive. But even if this is right,

the philosopher of time consciousness has more work to do, as is plain if we contrast Dainton's opening with the following passage.

> In ordinary visual experience, consciousness of colour seems to be ubiquitous. For example, we seem to be directly aware of surface colours, film colours, and coloured lights in various locations. How is this possible?

For all that has been said in this passage, it is quite obscure what kind of philosophical response is required, if any at all. The challenge for the philosopher of time consciousness is to show what *special* problem or question arises in the case of temporal experience.

What then is special about time in relation to experience? The obvious answer is that unlike color, shape, and other visible properties, experience itself manifestly has temporal properties. Experience itself, at least in its subjective aspect, is not colored, nor does it have a shape. But it does manifestly have a temporal profile: the stream of consciousness is composed of events, processes, or both, which persist through time and occur before and after one another.[7] This special fact about time raises a special question: what is the relation between the temporal structure of experience and the temporal structure of the objects of experience? This is not a how-possible question. It is simply a how-question: how (in fact) does the flow of experience relate to the flow of what is experienced? This question is an unobjectionable starting point for our inquiry into temporal experience.

7.4 The Naïve Answer

The most natural answer to the question of the relation between the temporal structure of experience and the temporal structure of the objects of experience is that our experience inherits the temporal structure of the events which are its contents. The temporal structure of the world imposes itself on our stream of consciousness.

Natural as it is, the answer just offered is too naïve. Temporal illusions are not only possible but commonplace. Sometimes we misperceive events as occurring in an order different to their actual order. Sometimes we misperceive two events as having relative durations distinct from those they actually have. Nonetheless, an answer in the same spirit survives acknowledgment of illusion. The answer is that in good cases, we "take in" the temporal structure of the events we witness in witnessing them. In bad (i.e., illusory) cases, it is as if this is so. Thus, in general, the temporal structure of experience matches the *apparent* temporal structure of the world presented. It is this claim that I call the naïve view of temporal experience, or naïveté for short.

It is important to note that the precise commitments of the naïve view depend on precisely what the contents of our temporal experience are. The naïve view holds that for any apparently presented temporal property, the corresponding experience itself has that temporal property. Note two consequences. First, just because the objects of experience have certain temporal properties does not mean that experience will inherit those

properties. For inheritance to take place, the objects must be presented *as having those properties*. Thus, for instance, the very fine-grained temporal structure of events will not be inherited insofar as such fine-grained structure is beyond our powers of perceptual discrimination.

Second, insofar as it is controversial whether experience presents us with a certain kind of temporal property, it is controversial which properties are inherited by experience. For instance, many assume that experience can present events as having absolute, metrical durations, for example, as lasting two seconds. In my view, this assumption is mistaken (for discussion see Phillips, 2013). However, we can all agree that the naïve view is committed to the following conditional: if you experience an event as lasting two seconds, your experience of it must itself last two seconds. For present purposes, I focus on naïveté in relation to less controversial temporal properties: successiveness, temporal order, relative duration and simultaneity.[8]

Why is the naïve view so intuitive? The reason is that naïveté reflects how our experience seems to us. We find the idea of the order of perceptions diverging from the perceived order of their objects to be incoherent *when we introspectively reflect upon our experience*. As a result, those who reject the naïve view must think of us as alienated from our own experience in its temporal aspect. On their view, our experience seems to be a way it is not. We are mistaken about our own experience.[9]

Those who reject the naïve view typically try to avoid the unhappy idea that our experience systematically misleads us about its own nature by denying that we have *any* access (apparent or otherwise) to our experience itself. Such theorists claim that experience is wholly diaphanous to introspection, and that we have no access at all to its properties (including its temporal structure), but only to the (apparent) properties of the world. If this view could be sustained, then the relation of act- and object-time would be beyond our introspective ken, and there would indeed be no basis for thinking that there was such a thing as the naïve answer to the special question raised by time.[10] Two challenges confront this picture.

The first challenge is dialectical. As already much emphasized, time is special. Thus, whatever a claim's merits with respect to other aspects of experience, its application to the temporal case demands special consideration. It is no doubt right to resist a move from a claim about perceived redness or squareness to a claim about the redness or squareness of our perceptual experience. But our experiential encounter with time is quite unlike color or shape, since our experience is not just of time, but also manifestly in time. Consequently, just as we should not generalize from the claim that experience inherits the temporal form of its objects to a more general claim about experience, so we should not generalize from a claim about nontemporal aspects of experience to a claim about temporal aspects. This undermines the typical strategy adopted by those defending a general claim of diaphanousness. That strategy begins with examples such as seeing "the intense blue of the Pacific Ocean" (Tye, 1992, 160), claims that the relevant aspects of experience in such cases are

diaphanous, and then generalizes from these cases to all aspects of experience. This will not do if time is special.

The second challenge is that it is part of our ordinary conception of the mental that experience has a temporal structure *of which we are aware*. This awareness may of course go via the event-structure that we are perceptually aware of—and so commit us to naïve matching—but it would be a mistake to think that this was a bar to awareness.[11] We can see this by considering two very simple cases. Next time you see the traffic lights change from amber to red, stop and consider: which experience came first, your experience of the red light, or your experience of the amber light? I predict that you will be able to answer knowledgably and with ease that your experience of the amber light occurred before your experience of the red light. Next time you hear someone knock twice at your door, consider: did your experience of the first knock itself last longer or shorter than your experience of the second knock? Again, I predict that you will be able to answer knowledgably and without difficulty.

It is, in other words, very natural to think that we can straightforwardly make judgments about the temporal features of our experience itself just in virtue of undergoing it. The theorist who denies this must claim that we never understand the above questions as directly asking us about our experience (or answer such questions as if they asked directly about our experience). Moreover, they must explain the difference between time and color or shape in this regard. For we both understand and *reject* questions such as, when you looked at the two patches, which of your experiences was itself redder? Or, when you saw the two shapes presented one after the other, which of your experiences was squarer than the other?

In this light, it is no surprise to find the attractions of the naïve view recognized in the literature. The most notable advocate of naïveté is Helmholtz, who, emphasizing time's specialness, insists that the *only* case in which

> our perceptions can truly correspond with outer reality, is that of the *time-succession* of phenomena. Simultaneity, succession, and the regular return of simultaneity or succession, can obtain as well in sensations as in outer events. Events, like our perceptions of them, take place in time, so that the time-relations of the latter can furnish a true copy of those of the former. (1925, 445)

Helmholtz is famously criticized by James (1890). Yet, although James's objection that "*a succession of feelings, in and of itself, is not a feeling of succession*" (1890, 628), is one of the most commonly quoted slogans in the literature, his immediate reaction is rarely noted.[12] This is what James writes:

> One experiences an almost instinctive impulse, in pursuing such reflections as these, to follow them to a sort of crude speculative conclusion, and to think that he has at last got the mystery of cognition where, to use a vulgar phrase, "the wool is short." What more natural, we say, than that the sequences and durations of things *should* become known? The succession of the outer forces stamps itself as a like succession upon the brain. The brain's successive changes are copied exactly by correspondingly successive pulses of the mental stream. The mental stream, feeling itself, must feel the time-relations of its own states. But as these are copies of the outward time-relations, so must it know them too. That

is to say, these latter time-relations arouse their own cognition; or, in other words, the mere existence of time in those changes out of the mind which affect the mind is a sufficient cause why time is perceived by the mind. (1890, 628)[13]

Here James eloquently testifies to the naturalness of the naïve view, even if he ultimately regards it as "unfortunately too crude."[14] Contemporary orthodoxy follows James.[15] In the rest of this chapter, I defend Helmholtz.

7.5 Hopelessly Naïve?

Lee identifies a "confused tendency in our thinking about temporal experience" (2007, 343) that he labels the *cinematic view* of temporal perception. According to the cinematic view, "experience presents temporal phenomenology in virtue of its own temporal layout," a claim with the consequence that there is "a direct link between the temporal properties of perception, and its temporal content" (ibid.). Lee accuses such a view with "content/vehicle confusion," suggesting that "most would agree that the model is prima facie very dubious" (373).

Lee's cinematic view is not the same as the naïve view. According to the cinematic view, experiential temporal content is possessed in virtue of the intrinsic temporal properties of experience. Naïveté reverses the order of explanation: in the absence of illusion, the temporal structure of experience is (in part) determined by the temporal properties of the objects and events that one confronts. The intrinsic temporal properties of the stream of consciousness are partly taken up from the temporal structure of the world. Nonetheless, both views crucially agree that there is "a direct link between the temporal properties of perception, and its temporal content." And in this regard Lee nicely articulates the current climate of hostility when he suggests that this shared view is widely agreed to be "prima facie very dubious"—the very opposite of naïve.

Lee suggests that the cinematic view exhibits a content/vehicle confusion. Yet neither the cinematic view nor the naïve view confuses contents and vehicles. Rather, both explicitly propose a relation between two temporal structures: that of experience and that of the objects of experience. Nonetheless, what Lee evidently has is mind is the hugely influential critique of a naïve model of temporal experience found in the work of Dennett (especially, Dennett & Kinsbourne, 1992 and Dennett, 1991).[16] Dennett urges us to "distinguish time represented from time of representing" (1991, 161), and contends that the two come apart at short timescales. In Dennett's view, all that matters for determining the order of the apparent objects of experience is the temporal content of experience (ibid., 149ff.). Consequently, he thinks that there is no reason why contents should not be tokened in temporal orders quite distinct from the temporal orders of the events that they represent. On his view, it is, for example, quite possible for one's experience, as of a flash followed by a bang, to be structured in the opposite way to that in which the events are represented as occurring (ibid., chapter 6, passim). To think otherwise is just to confuse time represented with time of representing.

Dennett's suggestion that contents can be tokened in temporal orders quite distinct from the temporal orders of the events that they represent is logically coherent.[17] Nonetheless, if the naïve view is right that the temporal structure of experience is determined by the temporal structure of the apparent objects of experience, then contra Dennett, there *is* a principled reason why contents cannot be tokened in temporal orders distinct from the temporal orders of the events that they represent. Given this constraint, it is not possible for one's experience (as of a flash followed by a bang) to be structured in the opposite way to that in which the events are represented as occurring.

I shall shortly come to Dennett's central and much-discussed argument based on short-timescale "postdictive" phenomena. However, Dennett's critique of the "representing/represented confusion" as applied to the temporal case is almost universally applauded, despite the fact that his central argument is extremely controversial.[18] The reason is that Dennett offers a series of analogies and intuition pumps which have a great deal of suasive force in their own right.[19] As a result, it is worth briefly dwelling on these analogies and pumps before considering Dennett's central argument.

7.6 Analogies and Intuition Pumps

Consider Hurley, who, citing Dennett, urges that we should not "project temporal relations between vehicles of content into the content of temporal representations" (1998, 29). Hurley argues as follows.

> In general representations do not have to resemble what they represent. This is clear enough in some cases: no one thinks the representation of something green must itself be green, or that the representation of something round must itself be round. But it is easy to slip into this confusion for more complex, abstract or relational properties, such as simultaneity. (1998, 29–30; also Tye, 2003, 90, and 2006, 511)

Hurley is, of course, right when she avers that experiences representing green trees do not themselves have to be green. Nor, of course, is Emily Dickinson's reference to Spring—"This whole experiment of green"—itself green! Yet it is hard to see how this bears on the case in point. Temporal structure, unlike color, is a property essentially and manifestly common to experience and its objects. Consequently, there is no analogy between the representation of color in experience (or poetry) and the representation of simultaneity or relative duration in experience.[20]

Similarly, Treisman concurs with Dennett when he writes, "The time represented by an element of phenomenological experience is not the time at which that element is generated—as the naïve realist with respect to time would suppose—but the time to which it refers, just as beige is not the color of a conscious sensation but of my word-processor" (1992, 225; cf. Shepherd, 1992, 223). But to repeat, this last analogy is irrelevant: at least in their subjective aspect, experiences do not have color properties, whereas they do manifestly have temporal properties. The naïve view is entirely unthreatened.

What we see in these passages, and especially in Dennett's own work, are repeated and vivid appeals to the way properties including time are represented in other media—for example, novels (Dennett, 1991, 148), letters (ibid., 146–7), pictures (ibid., 131, 147) and films (ibid., 137, 152)—followed by the implicit suggestion that experiential representation should be expected to operate along similar lines. However, for such appeals to be probative, the ways in which such media represent must be analogous to the experiential representation of time. In many cases a simple point suffices to defeat the analogy. Novels, letters, and pictures are not themselves temporally structured. Thus, although their modes of temporal representation clearly allow for time of representation (whether writing or reading, painting or viewing) to come apart from time represented, it is hard to see what bearing this has on a case where the medium of representation itself has temporal structure.

For these analogies to be probative we need to find a medium that, like experience, has a temporal structure of its own. Cinema is the obvious choice, for film is a paradigmatically temporal art. However, when one considers the case of film, it is far from clear that the analogy tells in Dennett's favor. Indeed, the natural view of cinematic depiction precisely involves a direct link between the temporal structure of the film itself and the temporal structure depicted—hence Lee's name for the allegedly confused "cinematic view" he identifies! Walton, for example, contrasts photographs with films on the grounds that photographs do not represent movement or change by themselves moving or changing, whereas, in contrast, motion pictures can be *defined* as "pictures whose temporal properties do contribute to their representational content" (2008, 164; see also Currie, 1995, Yaffe, 2003). Moreover, it is not just that there is a link between the depicted temporal structure and order of depiction with respect to film. There is, arguably, at least within scenes, a direct *match* between the two structures.[21] Thus the analogy with depiction in film, far from supporting the idea that the temporal ordering of experience itself can come apart from the temporal ordering of events presented, plausibly suggests the opposite: the temporal structure of experience and the temporal structure of its objects must match (at least within unified stretches of experience).

7.7 Postdiction and Naïveté

I now turn to Dennett's central argument against the naïve view. Dennett cites a number of experimental findings he claims are incompatible with our naïve conception of experience in time, and instead motivate (what many take to be) a form of antirealism concerning temporal experience. Subsequent writers offer similar cases in order to reject naïveté and to defend their own theories of time consciousness.[22] My interest in this section is to show how we can account for the relevant experimental data while maintaining the naïve view (i.e., without abandoning the matching thesis). As a result, my focus will be on the data as opposed to Dennett's (or anyone else's) positive proposals.[23]

Dennett's cases—visual masking, apparent motion phenomena (what Dennett calls color "phi" though in fact is "beta") and the cutaneous rabbit—are instances of what Eagleman and Sejnowski (2000) call *postdictive* effects.[24] Postdictive effects are cases where perceptual experience of an initial target stimulus is modulated (sometimes dramatically) by a second stimulus, even though that second *modulator* stimulus is presented sometime after initial target offset. In the cutaneous rabbit illusion (Geldard & Sherrick, 1972), for example, a series of fifteen 2 ms pulses are delivered in rapid succession (gaps must be less than 200 ms with optimal effects occurring with 40–60 ms gaps): the first five at the wrist, the second five 10 cm toward the elbow, and the final five 20 cm toward the elbow. If you experience only the first five pulses, then, *ceteris paribus*, you accurately experience them all as located at the wrist. But in the set-up just described, the pulses "seem to be distributed, with more or less uniform spacing" from wrist up the arm (Geldard & Sherrick, 1972, 178). Thus, it appears, that whether the second pulse, say, is felt (accurately) to be at the wrist or (inaccurately) to be a little way further up the arm depends on the occurrence and location of subsequent taps.

Such cases, and their name is legion, raise an obvious question: what is felt immediately following the second pulse? More generally, in relation to postdictive effects, what is perceived immediately following initial target presentation (i.e., before a modulator potentially occurs)? An apparent dilemma emerges. If no subsequent pulses had occurred, the second pulse would have been felt to be just where it was. So it seems either the second pulse is in fact felt to be where it is even when a modulator does occur, in which case something must be said to explain why subjects do not report it to be there, or there must be a significant delay in conscious experience such that neural processing can take into account whether and where subsequent taps occur before the presented location of the second tap is fixed.

Grush's account—the "trajectory estimation model"—takes the first horn. His trick is to claim that whereas "*at the time of the second impulse* the subject perceives it to be at the wrist, at the time of the fifth impulse, the subject has no recollection of this prior interpretation, and rather has a perceptual state to the effect that there is currently a sequence of impulses, the second of which was just proximal to the wrist" (2007, 39, his emphasis). In other words, Grush proposes that the initial experience is very rapidly forgotten, and is then followed by a second, illusory experience of the target that is remembered. Grush suggests his picture is consistent with the multiple drafts model that Dennett and Kinsbourne (1992) and Dennett (1991) use to explain postdictive effects. But it seems clear that Grush's picture is, in fact, what they call an *Orwellian* account, since it posits conscious experiences that leave no lasting cognitive trace, being overwritten within some tens, at most hundreds, of milliseconds.[25] Orwellian interpretations clearly abandon naïveté. As Grush puts it, "at the time of the fifth impulse, the subject … has a perceptual state to the effect that there is currently a sequence of impulses, the second of which was just proximal to the wrist" (2007, 39).

Dainton (2008b) takes the second horn of the dilemma and defends what Dennett and Kinsbourne call a *Stalinesque* approach to postdiction. On Dainton's account, conscious

experience lags a hundred or so milliseconds behind the stimulus presentation, in such a way that subsequent stimuli can affect the ongoing processing within this window. With such a lag there is only a need for a single, illusory presentation of the world in postdictive cases.[26] This Stalinesque response is quite compatible with the naïve view, which is entirely consistent with *some* delay between events and our experience of them. (Some delay is arguably required by time-lag considerations.) As a result, it is preferable to the Orwellian account.

Nonetheless, once one considers the full range of postdictive effects, the kind of delay such a response is committed to (upward of 300 ms) can start to look problematic. This is a line Dennett pursues on behalf of Orwellian accounts of postdiction, since he takes it to conflict with the "abundant evidence that responses under conscious control … occur with close to the minimum latencies (delays) that are physically possible" (1991, 122). It is not entirely clear what evidence Dennett has in mind, and it is a matter of some controversy whether demonstrative evidence exists in this relation. Nonetheless, in light of this concern, Dainton's response can at most receive a cautious welcome, and the naïve view remains under threat.

In what remains, I argue that a proper understanding of Dainton's own extensionalist view of time consciousness (and, for that matter, a proper understanding of what we have rejected in rejecting PSA) shows how we can avoid both Stalin and Orwell and provide a plausible account of postdiction that safeguards naïveté.

7.8 Extensionalism and Naïveté

According to Dainton's extensionalism, awareness is not "packaged into momentary acts" (2000, 166); rather, consciousness essentially "extends a short distance through time" (2008a, 631), that short distance being the specious present, which Dainton reckons to be on the order of half a second in length.[27] The extensionalist theory is intended as a theory that, at least in part, explains our awareness of succession and change. Yet, in the context of that debate, it is natural to object that, just as a succession of experiences does not in and of itself amount to an experience of succession, we cannot "trace the idea of duration and succession back to the fact of the duration … of the psychical act" either (Husserl, 1964, 31). If stretches of experience are inevitably built up out of shorter (perhaps instantaneous) stretches that are themselves incapable of presenting temporally unfolding objects, it does indeed remain obscure how combining such elements could ever constitute experience of succession.

In order to address this worry, the extensionalist must deny that experience is to be thought of as built up from any such units. When it comes to experience, it is significant stretches, not instants, that are explanatorily and metaphysically fundamental. In other words, the key claim required to make sense of temporal experience 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. Though Dainton does not state this explicitly, this is how we must understand the extensionalist denial that "our consciousness is confined to an instant" (Dainton, 2008a, 626).[28]

The extensionalist, as I have interpreted him, need not thereby deny that there are truths about instants. They can instead think of such truths as holding in virtue of what is true over a surrounding, and explanatorily fundamental, period. The most basic facts about our experiential lives are facts about extended stretches of the stream of consciousness, and what is true at an instant is true only in virtue of that instant being an instant during such a period of experience. As a result, truths that hold at instants need not be of the form: S has an experience *e* of event ε at instant *t* (with the consequence that ε cannot be a succession on pain of rejecting naïveté). Instead, in virtue of having an experience *e* of an event ε *over* some period Δ*t*, S can be *experiencing* ε at *t*. Thus, imagine that, over a half-second period, a batsman experiences a ball's motion from one end of the wicket to the other. It will not be true that, at an *instant* during this period, the batsman has *an experience* of any of the ball's motion. Nonetheless, it may be true that he is *experiencing* the ball's motion at that instant in virtue of that instant being a temporal subpart of a longer experience that has the ball's motion as object. Similarly, over a very short period of time, the batsman does not have an experience of the ball traveling the tiny distance it covers in that time, on pain of pretending to super-human powers of discrimination. Rather, during that brief period the batsman sees the ball *continuing on its way* from crease to crease (or more precisely: traveling from one discriminably different position on that path to another).[29]

We can now return to postdiction with two key facts in mind. According to the extensionalist (as I have developed their view): (i) the metaphysically fundamental units of experience are extended in time; and (ii) these metaphysically fundamental units are of the order of half a second in length. Now, consider again the cutaneous rabbit experience. The orthodox view that there must be a delay in our conscious experience to explain the apparent spatial distribution of taps is driven by the following reasoning. Consider two trials of the experiment. On the first trial, only the five taps at the wrist are presented; subjects report feeling all five at the wrist. On the second trial, the same five taps are presented, followed by a second and third set, 10 and 20 cm up the arm, respectively. Apart from the first, sixth, and final tap, all others are mislocalized, being experienced as spread up the arm from their actual location.

It is extremely natural to think about the situation in the first trial as follows. The second tap is presented at time *t*; the subject then feels the tap at some later instant, $t + \delta t$. On this picture we are led to ask: *what does the subject feel at* $t + \delta t$ *in the second trial?* If we want to resist the answer being, *the tap at the wrist* (as the Orwellian account claims), then we seem forced to claim that δt is a period of at least 240 ms (plus further processing time)—enough time for the tap to be relocalized in the light of information about the subsequent taps.[30] However, this natural way of thinking implicitly assumes that we can legitimately ask what is true of experience at some instant, $t + \delta t$, without taking into account the nature of the

subject's experience at subsequent times. That would be legitimate if experience were analyzable down to instants (or very brief durations). But that is precisely what the extensionalist denies. If extensionalism is correct, then in thinking about postdictive effects such as the cutaneous rabbit, we cannot assume that what is perceived at $t + \delta t$ must be the same across trials. For that instant is part of a different, metaphysically fundamental stretch of experience in each case.

Thinking about things from the metaphysically fundamental perspective, what is true is that, over an extended period of several hundred milliseconds, one is either presented with a series of taps at the wrist and nothing else, or alternatively with a series of taps at the wrist followed by taps further up the arm. These are the stimuli with respect to which the basic experiential facts are determined, and upon which facts about instants are derivative. As a result, there is no reason to assume that the experiential presence of subsequent taps at the wrist is irrelevant to answering the question as to whether the initial taps are mislocalized or not. Certainly, it is true that, if no subsequent taps had occurred, then the wrist taps would have been correctly localized. But this has no bearing on the case where the taps did occur. *Where was the tap felt to occur at* $t + \delta t$*?* is not a question that one can answer without settling facts about one's experience during the surrounding period of time. Thus, there is no reason to assume that a tap will be experienced in the same way when it forms part of a different series. Our extended experiences may be just of wrist taps (correctly localized), or of (largely) mislocalized taps moving up the arm.

Nothing in this account demands a delay. It is not ruled out, but nor is it necessary. As a result, the interpretation of this and other postdictive effects is not hostage to evidence of responses under conscious control being possible at very short latencies. Furthermore, the interpretation shows how we can respond to the puzzle of postdiction without relinquishing the naïve view of temporal experience. Certainly, the extensionalist account of postdiction just outlined is far from naïve. But there is no reason to expect the theoretical underpinnings of naïveté to be naïve.

7.9 Conclusion

Dennett's objection is not the only objection that can be raised against the naïve view. One obvious challenge comes from cases where subjects are inclined to talk of time as slowing down, in particular during situations of life-threatening danger.[31] Another challenge is presented by Watzl (2013), who argues that motion silencing effects (Suchow & Alvarez, 2011) constitute a counter-example to the naïve view.[32] Nonetheless, what I have shown here is that the naïve view is both highly intuitive, and capable of withstanding a central and influential line of criticism. I have also called for a fresh start to debates about time consciousness. If we reject PSA, we need to go back to the beginning and reconsider why we need a philosophical theory of time consciousness in the first place. What I have argued is that we need not so much a theory as an answer to the special question that temporal

experience poses, namely the question of the relation between the temporal structure of the objects of experience and the temporal structure of experience itself. The naïve "theory" is the natural answer. Arguably it is also the right answer.[33]

Notes

1. This is a rough and ready formulation. Compare Dainton's: "to be experienced as unified, contents must be presented simultaneously to a single momentary awareness" (2010, Sec. 3).

2. Arguably, this reasoning is central to Kant's critical project. Throughout the *Analytic of Principles*, Kant asserts, "time cannot be perceived by itself, and what precedes and what follows cannot, therefore, by relation to it, be empirically determined in the object" (2003, B233). In Guyer's view, Kant is "more intelligibly" rendered as claiming "that particular temporal relations are not directly perceived" (1987, 167).

3. This approach is Kantian in spirit; it is also the natural reading of Husserl (1964). Prichard (1950, 47–8) notes, it seems to me decisively, that in audition we can simply make no sense of experience without temporally extended contents: sounds (and, I would add, silences) essentially have duration, and all auditory experience is experience of sound (or silence). Consequently, the constructive memory theorist has no resources with which to get this project started.

4. See Dainton (2000) and (2010) for an excellent introduction and overview.

5. See Phillips (2010). For specious present and memory theories that are committed to rejecting PSA, see Dainton (2000) and Kiverstein (2010), respectively.

6. Cassam cites Dray (1957, 160) as the source of this view and directs us also to Nozick (1981, 8–11) and Stroud (1984, 144).

7. This claim is emphasized by a number of writers. For example, Mellor draws attention to "the striking fact … that perceptions of temporal order need temporally ordered perceptions. No other property or relation has to be thus embodied in perceptions of it: perceptions of shape and color, for example, need not themselves be correspondingly shaped or colored" (1981, 8), and Carnap notes in the *Aufbau* that "the psychological objects have in common with the physical ones that they can be temporally determined. In other respects, a sharp distinction must be drawn between the two types. A psychological object does not have color or any other sensory quality and furthermore, no spatial determination" (1967, §18, 33). It may seem that if identity theories are correct, then time cannot be special in the way proposed. However, the claim here concerns what is common between the objects of experience and the manifest or *experiential* properties of experience. The identity theorist precisely proposes that experience has properties that are nonexperiential. See Phillips (2009, chapter 1) for further discussion and clarification.

8. The naïve answer recalls a principle Miller labels the "principle of presentational concurrence," the principle that "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" (1984,

107). Miller's principle is naturally read as involving commitment to a strict match between time intervals as opposed to the merely structural match on which the present discussion focuses.

9. For more on this theme see Phillips (2009, chapter 3) and Phillips (2010).

10. Indeed, on the picture here presented it is no longer clear that time *is* special.

11. I endorse this claim, and so a form of temporal transparency, in Phillips (2010).

12. James's slogan can be interpreted in different ways. In a weak form it merely claims that not every succession of experiences is an experience of succession. As such the principle is clearly true, but no threat to the naïve view. In a strong form it claims that no succession of experiences ever constitutes an experience of succession. This claim should be rejected—for it amounts, in effect, to a version of PSA, and we should reject PSA (see Phillips, 2010).

13. James treats the naïve view as committed to claims about the timing of neural events (as well as to a claim about the "mental stream"). Naïveté, as I understand it, makes no such commitments (though it recognizes that certain views of the relation between the mental and the physical would generate such commitments).

14. Cf. Dainton (2010, §7.1), who comments that the "picture painted by Helmholtz is plausible and appealing," before noting that there are, "inevitably, complications," not least the objection discussed below.

15. A rare exception is Foster: "we have to take experience to extend over a period of real time in a way which exactly matches the phenomenal period it presents" (1991, 249).

16. For convenience I focus on Dennett (1991). This should not obscure the collaborative nature of the original work.

17. Roache is wrong to claim that "it would be contradictory to assert that the order of perceptions may differ from the perceived order" (1999, 237).

18. Of the twenty-eight original commentators on Dennett and Kinsbourne (1992), Rollins (1992) is alone in questioning the view that time of representing might come apart from time represented. Hardly any of the commentators agree with the proposed multiple drafts model. Block, who in other respects trenchantly criticizes Dennett and Kinsbourne, simply remarks, "[Dennett and Kinsbourne] correctly point out that the temporal order of outside events needn't be represented by the temporal order of inside events. This Kantian point (Kant distinguished apprehension of succession from succession of apprehension) is certainly correct" (1992, 206). Block here gives no indication of why he thinks Dennett and Kinsbourne are "certainly correct." Indeed, as with Tye (1993), he *rejects* their Stalinist/Orwellian arguments; he does not appeal to analogies as they and others do; and the appeal to Kant only establishes a conceptual distinction and not a genuine possibility. See also Clark (1992, 207), Farah (1992, 209), and Lloyd (1992, 215).

19. As Reingold writes: "[Dennett and Kinsbourne] not only expose brilliantly an important confusion between the temporal properties of the process of representing and the temporal content of the representations themselves, but they also provide powerful metaphors that may help one sliding back into this ingrained confusion" (1992, 218).

20. Poetry might be written down in colored ink, but there is nothing essentially colored about written or spoken representation; it is evidently not a case where color is used to represent color.

21. I defend this claim at length in Phillips (2009, chapter 2). In defending the claim it is crucial to distinguish between (among other things) the temporal structure *depicted* by the film and the temporal structure of the narrative *represented*. These can clearly come apart. One obvious example is the use of reversal effects. For instance, in Avary's *The Rules of Attraction*, a piece of film of a plane moving through the sky is played backward within the intended structure of the film to indicate a backward shift in narrative. What is strictly speaking depicted is a plane moving backward through the sky (this despite our knowledge that the scene actually filmed involved a plane moving forward through the sky). The depicted order has the plane first at point B, then at point A; the narrative and scene structure places the plane first at A, then at B. When considering the analogy with experience, we should focus on the relation between depicted structure and order of depiction. It is depiction that is distinctive of cinematic representation.

22. Grush 2007, for example, offers three cases as evidence that the structure of act- and object-time come apart: the cutaneous rabbit, apparent motion, and representational momentum. The first two of these cases are straight from Dennett. Grush's target is Dainton's extensionalism. He apparently takes it as obvious that the extensionalist will want to endorse the naïve view. It is not clear why.

23. It is a nice question how exactly we should understand Dennett and Kinsbourne's precise arguments and position. See Phillips (2009, chapter 5) for one suggested reading.

24. For more on how we should understand postdictive effects and the claim that so-called "iconic memory" is simply a postdictive effect, see Phillips (2011a).

25. Dennett and Kinsbourne argue that both Orwellian and Stalinesque accounts are wedded to a false assumption about experience. For discussion see Phillips (2009, chapter 5).

26. Grush suggests another problem with the naïve view (or rather with this alleged commitment of Dainton's extensionalism), viz. "its inability to say anything about representational momentum" (2007, 41), the illusion that, in certain circumstances, stimulus motion apparently continues beyond its actual termination. He does not say why, and it is puzzling why he thinks this should be so. The existence of temporal illusions itself in no way shows that naïveté (or extensionalism) is false. The naïve view claims a match between the structure of experience itself and its *apparent* objects. Furthermore, in claiming that the extensionalist cannot "say anything" about representational momentum, Grush implies that the extensionalist cannot take advantage of the kind of information-processing account he proposes. But as Dainton (2010) makes clear, the processing level is one thing, the phenomenal level is another. With this distinction in mind, the extensionalist might even endorse Grush's very own account at the processing level, while holding onto extensionalism at the phenomenal level.

27. Dainton attributes the view to Foster (1979, 1982, 1991), who is, as we saw above, a rare contemporary defender of the naïve view. Dainton (2002) contends that the act/object distinction is a false dogma that we should discard; thus, there really is no possibility of act-time coming apart from object-time, because the structures are identical. Though I cannot argue for it here, I think we should resist Dainton's rejection of the distinction.

28. Dainton himself introduces a special relation of diachronic co-consciousness at this juncture, as opposed to appealing to the metaphysical primacy of stretches of experience. There are different ways of understanding this idea. However, insofar as Dainton conceives of the relata of the unity relation as independently specifiable experiential units, I am skeptical that this maneuver goes far enough. The problem is that the nature of experience over short timescales may simply be unspecifiable except by appeal to some longer stretch of experience of which the relevant sub-stretch is a sub-part. If that is right, then even if there are reasons to talk of diachronic co-consciousness, it must not obscure the metaphysical primacy of stretches as developed here. For more on these issues see Phillips (2011b) and below. An important influence on my treatment is Soteriou (2007, esp. 552–4).

29. See Phillips (2011b) for much fuller discussion of this point.

30. If the 2 ms taps are spaced 60 ms apart, then the time between the second tap and the sixth (the first tap not at the wrist) is a period of 240 ms. If more taps are required for the effect to occur, then a longer period is necessary.

31. Dainton (2010, §7.1) cites a more mundane case of this kind as a further reason for giving up the naïve thesis as a general claim about temporal experience. Lee (2009) forcefully presses a form of this objection. For discussion and response see Phillips (2013). See also Arstila (2012) for a helpful discussion of our experience in these cases.

32. See Phillips (forthcoming) for a response.

33. This work grew out of my PhD which was primarily supervised by Mike Martin to whom I owe a large and long-standing intellectual debt. A rather different version of this material was presented at a workshop in Geneva in 2009. My thanks to the participants there for very helpful discussion. Shortly after it had gone to press in 2010, I also presented a version at a workshop in Harvard. I am very grateful to the audience there, and especially to my excellent commentators, Laurie Paul and Geoff Lee. I hope to address the issues they raised more fully in future work. Special thanks also to Barry Dainton for very helpful written comments and, as always, to Hanna Pickard.

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