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The Specious Present in English Philosophy 1749–1785:

On David Hartley, Joseph Priestley, Abraham Tucker, and William Watson

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1. Introduction

William James famously wrote that the "specious present" is "the short duration of which we are immediately and incessantly sensible" (1886, 397). He drew on the 1870s–1880s work of Shadworth Hodgson and Robert Kelly, who have been described as the "independent inventors"[1] of the specious present theory. Literature on the pre-history of these late-nineteenth-century theories clusters around John Locke, whose work on temporal experience provided the context for subsequent debates; and Thomas Reid, who rejected the specious present but provided important discussion. I argue this pre-history is incomplete. It is missing the 1749–1785 writings of an inter-connected group of English philosophers: David Hartley, Joseph Priestley, Abraham Tucker, and William Watson. These thinkers do not appear in either the specious present literature or broader historical surveys of temporal consciousness.[2] Yet this paper will show that Hartley, Priestley, Tucker, and Watson all produced important work on our experience of the present, variously defending theses that can be found in subsequent specious present theories. Further, I argue Tucker held a full-blown specious present theory, and there is reason to think that Hartley, Priestley and Watson held proto-specious present theories. This paper explores their respective views and places them within each figure's system.

This study should be of interest to three groups of scholars. First, historians of eighteenth-century English philosophy. The four figures mentioned above are under-studied: Hartley is the only one who boasts a *Stanford Encyclopaedia of Philosophy* entry, and there is no scholarship on Watson. Uncovering their views on temporal consciousness should help rectify this general neglect. Second, historians and philosophers of the specious present. Scholars working on this topic frequently refer to James, and this study helps contextualize his work. Finally, historians of experimental psychology. As we will see, Watson and the astronomer William Herschel recorded psychological

1. See Andersen (2014, 30).
2. Such as the surveys found in Ian Phillips' (2017) handbook or Barry Dainton's (2018a) encyclopaedia article.

experiments on temporal consciousness in 1785 — over half a century before well-researched 1850s experiments.

The structure of this paper is as follows. Section 2 introduces specious present theories and their pre-history. Section 3 chronologically investigates the work of Hartley, Priestley, Tucker, and Watson, detailing connections between them. Section 3.1 argues that Hartley's 1749 work introduces a distinction that is central to specious present theories: between the 'practical' present we experience and the 'metaphysical' present. I also argue that Hartley can be read as offering a proto-specious present theory that follows naturally from his doctrine of vibrations. Section 3.2 explores the possibility that, from at least 1768, Priestley adopted Hartley's theory. I show that Priestley subtly modified Locke's account of how we obtain the idea of duration. Section 3.3 shows that Tucker developed a fully-fledged specious present theory in 1768, utilizing arguments from motion, and argues his theory is located within a broader pattern of reasoning from human temporal experience to the nature of God. This pattern of reasoning allows Tucker to take a different approach to Hartley on the free will debate. Section 3.4 outlines Watson's 1785 theory of time and excavates its unusual account of temporal experience, arguing it has affinities with a non-mainstream account of the specious present. I also show that the Watson-Herschel experiments prefigure those used by James, and were likely spurred by developments in astronomy and electricity. They push back the 'standard history' of micro-time by decades. Section 4 considers routes by which the above mid-eighteenth-century theories of the present could have made their way into later ones, especially focusing on philosophical connections between Hartley and Hodgson.

Section 5 concludes. The pre-history of specious present theories is more complex than currently appreciated. Arguably Hartley, Tucker, Watson — and even Priestley — deserve credit as inventors.

2. Specious Present Theories and Their Pre-History

2.1. Conceptions of the Specious Present

The 'specious present' has been characterized in many ways, giving rise to many specious present theories. A comprehensive survey of these theories is beyond the scope of this paper.[3] It will however prove helpful to sketch some of the complex terrain, with an eye to identifying elements and versions of specious present theories in historical texts.

Let us begin with some terminology. I distinguish two notions of the present. By the *metaphysical present*, I mean the mind-independent, objective present moment. This is also known as the 'strict' or 'mathematical' present because theorists usually conceive of it as lacking temporal extension, as a punctate, mathematical point. As Robin Le Poidevin (2019, §4) puts it, the "objective" present is "durationless". By the *experiential present*, I mean the present we perceive or experience; this may or may not have duration or temporal extension. I will use the term 'specious present' to refer to the experiential present.[4] The term 'specious present', first coined by Kelly (1882, 168), carries two connotations. As the word 'present' suggests, specious present theories are often (but not always) concerned with our experience of *presentness* — with, as James wrote, that of which are 'immediately' aware.[5] In this vein, some theorists hold that we perceive the present as a kind of divider between past and future. James, for example, states that from the specious present "we look in two directions into time" (1886, 378). Meanwhile, the word 'specious' is used to flag that there is something false or deceptive about our experience of the present.

3. I refer readers to Power (2012, 122–126), Dainton (2018a), and Le Poidevin (2019, §4).

4. Here, I follow Dainton (2018a, §1.1) in distinguishing "the *strict* (or mathematical) present from the *experiential* (or *specious*) present". See also Phillips (2010, 182) and Prosser (2016, 119).

5. See Prosser (2016, 118–119) for a discussion of specious present theories that are not concerned with presentness.

With this terminology in place, I set out two conceptions of the specious present, both drawn from Le Poidevin's *Stanford Encyclopaedia* discussion 'The Specious Present'. On one characterization, the specious present is "the duration which is perceived both as present and as extended in time" (Le Poidevin 2019, §4). The core thesis of this conception — that our experiential present has duration — can be found in many recent characterizations of the specious present.[6] I label this the 'mainstream' conception. Assuming that the metaphysical present is durationless, it means that the experiential present cannot be identified with the metaphysical present. As Le Poidevin explains, on this conception, "[t]his present of experience is 'specious' in that, unlike the objective present … it is an interval and not a durationless instant" (2019, §4).

A common reason to think that our experiential present has duration concerns motion. As Barry Dainton explains in his *Stanford Encyclopaedia* article 'Temporal Consciousness':

> When we see a friend waving goodbye … what we see is simply an arm *in motion* … When listening to a melody, we hear each note giving way to its successor … If temporally extended occurrences such as these can feature in our immediate experience, it is natural to conclude that our awareness must be capable of embracing a temporal interval. (2018a, §1.1)

We see the arm in motion, and this motion is temporally ordered: the arm moves from left to right through time. If we can perceive a durational motion as present, it is reasonable to suppose that our experiential present is durational.

6. Phillips, for example, states: "According to the specious present theory … at any instant we are aware of an extended period of time" (2010, 182). Sean Power describes this conception of the specious present as one on which our experiential present "seems to have duration and temporal order" (2012, 124). Simon Prosser writes that "the 'present' of experience has a temporally extended content" (2016, 119). Jack Shardlow characterizes the specious present as "the limited temporal extent presented in experience" (2020, 79).

Dainton categorizes the most common accounts of temporal consciousness into three main categories:

> Cinematic Model: our immediate awareness lacks any (or any significant) temporal extension, and the same applies to the contents of which we are directly aware — they are akin to static, motion-free 'snapshots' or 'stills'. Our streams of consciousness are … analogous to movies, which (as displayed) consist of rapid sequences of still images.
>
> Retentional Model: our experiencing of change and succession occurs within episodes of consciousness which themselves lack temporal extension, but whose contents present (or represent) temporally extended intervals and phenomena …
>
> Extensional Model: our episodes of experiencing are themselves temporally extended, and are thus able to incorporate change and persistence in a quite straightforward way (2018a, §1.1).

Cinematic theorists hold that our *episodes of experiencing* and the *contents* of those episodes lack temporal extension. Retentionalists hold that our episodes lack, yet their contents have, temporal extension. Extensionalists hold that our episodes and their contents have temporal extension. Because defenders of the mainstream conception hold that our experiential present has duration (i.e. that the contents of our episodes of experiencing have duration), they usually fall into retentionalist or extensionalist camps.

Let us turn to an alternative conception of the specious present, also described by Le Poidevin:

> we could define the specious present as … the duration which is perceived, not as duration, but as instantaneous … [This] is illustrated by the familiar fact that some movements are so fast that we see them as a blur … What is in

> fact taking place at different times is presented as happening in an instant. (2019, §4)

Referencing an earlier version of Le Poidevin's article, Power characterizes this conception "as duration perceived as a punctal present": "Our experience is said to be a false present because what we seem to experience … appears to be but is not instantaneous" (2012, 122–123). For brevity, I label this the 'Falsely Punctal' conception. Drawing on Le Poidevin, Power motivates it as follows:

> Television pictures … are built up from the different positions occupied by a moving electron beam over time … At no single instant is the whole screen illuminated; instead, different points on the screen are illuminated in rapid succession. Thus, events that we seem to experience as being simultaneous are actually a temporally extended series. (2012, 124)

On this theory, our experiential present presents a group of events as simultaneous and instantaneous (i.e. as lacking duration) when those events are successive and temporally extended (i.e. have duration). As this view denies that the *contents* of our experiencing episodes present temporal extension, it seems to offer a cinematic model. What arguably renders it a specious present theory is the further claim that there is something false about the durationless snapshots or stills that comprise our temporal consciousness. I say "arguably" because — as both Le Poidevin (2019, §4) and Power (2012, 124) note — this conception is not what is 'standardly' meant by the specious present. Nonetheless, the falsity it points to suggests some kind of commonality with mainstream specious present theories.

2.2. 1870s–1880s Anglo-American Specious Present Theories and Their Pre-History

Temporal consciousness and the specious present have been explored in many national contexts[7] but late-nineteenth-century American-British philosophy is notable for its raft of specious present theories. Key texts include Hodgson's 1878 *Philosophy of Reflection;* Robert Kelly's (aka E. R. Clay) anonymous 1882 *The Alternative: A Study in Psychology*;[8] James Ward's 1886 *Encyclopaedia Britannica* article 'Psychology'; and, of course, James' 1886 'The Perception of Time' (which cites Hodgson, Kelly, and Ward).

It will be helpful to briefly characterize their theories.[9] Ward contrasts "time conceived as physical" with "time psychically experienced". He argues that we can perceive successive presentations in one *simultaneous* present: a succession of presentations *A, B, C, D* can involve "the simultaneous presence" of two or more of its members (1886, 64–65). His claim that we perceive successive events as simultaneous is incompatible with the mainstream conception of the specious present, and it suggests that Ward may hold to a Falsely Punctal conception. In contrast, Hodgson, Kelly, and James all seem to think that our experiential present has duration, as on the mainstream conception. For Hodgson, a minimum (i.e. smallest part) of present consciousness always involves at least two sub-feelings: a sense that part is "former" and the other "later" (1878, I, 249–250). Kelly describes perceiving motions that seem "contained in a larger present", such as dimming lights or flying birds (1882, 151). James distinguishes the "strict" or "knife-edge" present, which "can never be a fact of our immediate experience", from the "specious" or "practically cognized" present. This is "a saddle-back, with a certain breadth of its own on which we sit perched, and

7. Dainton (2018a, §2.4–5), for example, surveys the work of Franz Brentano, Alexius Meinong, and Louis William Stern.

8. For unknown reasons, James refers to Kelly as "Clay". Andersen and Grush (2009, 295) determined Clay's true identity.

9. See Andersen and Grush (2009), Andersen (2014), Dainton (2018a, §2.6), and Shardlow (2020) for more on Hodgson, Kelly, and James' theories. I am not aware of any scholarship on Ward's theory.

from which we look in two directions into time" (James 1886, 377–378). James' description of the specious present as a saddle illustrates its felt duration, and its felt dissimilitude from the past and future. A distinctive element of James' work is that it incorporates experimental psychology. Having described the specious present, James proceeds to discuss "the facts of time-perception", including experiments to determine the maximum and minimum "amount of duration which we can distinctly feel" (1886, 379–381). Drawing on these experiments, James concludes that "we are constantly conscious of a certain duration — the specious present — varying in length" (1886, 406). James incorporated his 1886 article into his 1890 *Principles of Psychology*, further popularising his theory of the specious present.

Turning to the pre-history of these nineteenth-century theories, James references Locke and Reid. As Locke looms large in the background of our eighteenth-century thinkers, I will explicate his pertinent views at some length. Locke's 1690 *Essay Concerning Human Understanding* argues that our ideas ultimately derive from experience, including those of duration and succession. In a person's mind:

> there is a train of *Ideas,* which constantly succeed one another … *Reflection* on these appearances of several *Ideas* one after another in our Minds, is that which furnishes us with the *Idea* of *Succession*: And the distance between any parts of that Succession, or between the appearance of any two *Ideas* in our Minds, is that we call *Duration*. (Locke, 1690, 84; II.xiv.3)

Locke goes on to note that we cannot perceive very swift motions. Given this, he argues it "probable" that our train of ideas has a certain speed, proceeding "sometimes faster, and sometimes slower", akin to images inside a moving lantern (1690, 84; II.xiv.8–9). He conjectures there seem to be "*certain Bounds to the quickness and slowness of the Succession of* those *Ideas*":

> from observing that in the Impressions made upon any of our Senses … if exceeding quick, the Sense of Succession is lost … Let a Cannon-Bullet pass through a Room … 'tis as clear as any Demonstration can be, that it must strike successively the two sides of the Room … And yet I believe, no Body who … heard the blow against the two distant Walls, could perceive any Succession … Such a part of Duration as this, wherein we perceive no Succession, is that which we may call an *Instant*, and is *that which takes up the time of only one Idea* in our Minds. (Locke, 1690, 84; II.xiv.10)

One idea takes up one instant of time and we cannot perceive succession in an instant. Locke seems to be saying that we cannot perceive a bullet's motion through a room because its 'real Succession' is quicker than that instant. He goes on to claim that, having obtained the idea of duration, the mind measures duration by, for example, using the motion of the sun. "This Consideration of Duration, as set out by certain Periods, and marked by certain Measures or *Epochs*, is that … which most properly we call *Time*" (Locke 1690, 84; II.xiv.9).

Although Locke does not consider the issue, we can enquire into his latent views on the specious present. There is some reason to think that Locke would reject the theory, such as his claim we get our idea of duration by reflecting on distances *between* our ideas. Perhaps Locke reasoned that reflecting on a single idea would not produce the idea of duration because a single idea is durationless. In his 1785 essay 'Memory', Reid (1785, 328) attributed this view to Locke. James (1886, 378) approvingly quoted Reid, implying he read Locke the same way. Yet there is also reason to think Locke would welcome some kind of specious present theory. His claim that motions can be swifter than ideas, and that the "instant" taken up by one idea comprises "a part of duration", implies that a single idea has duration. By itself this is not a specious present theory, but it suggests Locke might have been inclined towards one.

Regardless of how best to read Locke on this issue,[10] his *Essay* became a backdrop for subsequent Anglophone debates around temporal experience. Roads lead from Locke's early musings to the fully-fledged specious present theories we find expressed by Hodgson and James. How exactly do they run?

In their invaluable study of historical precursors to James and other specious present theorists, Holly Andersen and Rick Grush argue that Reid's work constitutes an important milestone on the journey:

> There is a clearly discernible line of philosophical debate about the temporality of experience which began with Thomas Reid, ran through a number of nineteenth-century Anglophone philosophers, and culminated in two independent termini: 'E. R. Clay' … [and] Hodgson …
>
> The catalyst of the philosophical movement whose eventual product was the SP [specious present] doctrine … was Thomas Reid's essay 'Memory' … not because he endorsed anything like the SP doctrine … But Reid was the first to explicitly isolate and problematize the topic of the temporal content of single perceptual acts and thus to introduce a topic that would be developed by his successors. (2009, 278–281)

Their study shows persuasively that Reid's work found its way into Scottish philosophers such as Dugald Stewart and William Hamilton.[11] However, this paper argues the road is missing an earlier milestone: the interconnected work of Hartley, Priestley, Tucker, and Watson.

10. Douglas Odegard (1978) argues that Locke's *Essay* implies a specious present theory; Jacovides (2016, 187–189) rejects this. Christof Hoerl (2017) explores Locke's views on temporal experience using Reid. Dainton (2018a, §2.2) places Locke within the history of temporal consciousness more generally.

11. Andersen (2014, 30–35) explores this tradition in even more detail.

3. The Specious Present and Hartley, Priestley, Tucker, and Watson

3.1. Hartley's 1749 Observations: The Durational 'Practical Present'

David Hartley (1705–1757) was a practicing physician whose 1749 *Observations on Man, his Frame, his Duty, and his Expectations* (reprint 1834) contains a painstaking study of mind and brain.[12] In his intellectual biography of Hartley, Richard Allen discerns a "profound affinity" and "deep connection" between Hartley and James, describing James' *Principles* as a "restatement" of the psychology in Hartley's *Observations* (1999, xiii). My reading of Hartley as a proto-specious present theorist lends further weight to this affinity. Before setting out Hartley's views on the present, it will be helpful to describe his broader account of the mind.

Hartley's *Observations* (1834, 4) opens by acknowledging a debt to Newton and Locke. Hartley accepts the Lockean thesis that all human ideas ultimately derive from sensation, but goes beyond Locke in detailing how bodily sensations lead to ideas. As Allen puts it, Hartley effectively offered "a proposal for neuroscience" (2020, §3). For Hartley, "internal feelings of the mind" include *sensations*, arising from "impressions made by external objects upon the several parts of our bodies"; and *ideas*, comprising "ideas of sensation" and "intellectual ideas". Pains and pleasures include sensations, arising from the impressions of external objects; and ideas, such as sympathy for our fellow creatures. Our ideas of sensation are described as "simple", in that they are uncompounded; they are the elements of all other "complex" intellectual ideas (1834, 1–2). However, as Hartley later notes, "the ideas of sensation are not entirely simple, since they must consist of parts both co-existent and successive, as the generating sensations themselves do" (1834, 36). *Observations* offers many examples of sensations. For example, Hartley describes the sensations of "agreeable warmth", "friction", "light", "sounds", a "bitter and acrimonious taste" (1834, 22–23).

On Hartley's account of the mind, external objects produce "exceedingly short and small" vibrations in the sensory nerves that travel

12. Allen (2020) provides a recent introduction to Hartley's philosophy.

to the medulla (the lowest part of the brain). Vibrations are caused by "motions backwards and forwards" of infinitesimally tiny particles, and they travel through a Newtonian aether, "a very subtle and elastic fluid" (1834, 8). They are speedy: Hartley describes a "vibratory motion, which recurs *t* times in a second". Each sensation excites "some motion" in the "medullary substance", and "the presence of each idea" also excites motion (1834, 36–38). In summary, a Hartleyian sensation comprises vibrations travelling through our nervous system to the brain, where they excite further vibrations comprising ideas of sensation. Because a sensation and an idea of sensation consist of successive parts, they *must* have duration.

With this account in hand, I turn to Hartley's discussion of happiness. Hartley claims that a person who experiences some misery can still be considered "infinitely happy" across infinite time as long as their misery is, on balance, outweighed by happiness (1834, 336–338). He claims that when reflecting on past events, we often find small pains "coalescing" with subsequent greater pleasures. We achieve this by uniting sensations, a process that works as follows:

> this power of uniting different and opposite sensations [i.e. pains and pleasures] into one increases as we advance in life, and in our intellectual capacities; and that, strictly speaking, no sensation can be a monad, inasmuch as the most simple are infinitely divisible in respect of time, and extent of impression. Those, therefore, which are esteemed the purest pleasures, may contain some parts which afford pain; and, conversely, were our capacities sufficiently enlarged, any sensations, connected to each other in the way of cause and effect, would be esteemed one sensation, and be denominated a pure pleasure, if pleasure prevailed upon the whole.
>
> As the enlargement of our capacities enables us thus to take off the edge of our pains, by uniting them with the subsequent superior pleasures, so it confers upon us more and more the power of enjoying our future pleasures by anticipation, by extending the limits of the present time, *i.e.* of that time in which we have an interest. For the present time, in a metaphysical sense, is an indivisible moment; but the present time, in a practical sense, is a finite quantity of various magnitudes, according to our capacities, and, beginning from an indivisible moment in all, seems to grow on indefinitely in beings who are ever progressive in their passage through an eternal life … all time, whether past, present, or future, is present time in the eye of God, and all ideas coalesce into one to him; and this one is infinite happiness … by the infinite prepollence [i.e. prevalence] of happiness above misery. (Hartley 1834, 339–340)

Other scholars have discussed this passage, but have not connected it with specious present theories.[13]

I do connect it, in virtue of Hartley's innovative and crucial distinction between the *metaphysical present,* an 'indivisible' point; and the *practical present*, which has 'quantity and magnitude' — duration. This distinction is foundational to specious present theories and, as I will argue, is echoed in Hodgson's work. Distinguishing between the metaphysical and experiential present is a critical step on the road from Locke to James.

Further, I argue Hartley can be read as offering a proto-specious present theory. This reading depends on how we understand Hartley's practical present. Does Hartley mean (to borrow James' term) that which we are aware of as the immediate present? Or, does he mean a 'broader' present, such as the more loosely present minute or hour that encompasses, say, the recent past and immediate future? On the one

13. Whilst explaining how Hartley's ideas can be temporally associated, Allen (1999, 368–369) does describe Hartley's 'practical' present as a 'psychological' one that can shrink or expand. Rée (2020, 221) mentions this passage whilst describing Hartley and Priestley's view that civil societies progress; I agree with Rée that Priestley echoes Hartley.

hand, there are indications that Hartley's practical present refers to a broader present. His description of the practical present as "that time in which we have an interest" could refer to practical, day-to-day concerns, rather than the immediate present; and the notion that we can extend the limits of our present time by anticipating future pleasures again arguably implies a broader temporal concern. On the other hand, there are reasons to read Hartley's practical present as the immediate present, and hence as offering a specious present theory.

To make this case, I turn to the claims explicitly made in the passage above. It states that even the "most simple" sensation is divisible in time. This accords with Hartley's earlier statement that simple sensations are successive because all sensations have duration. Our power to unite sensations allows us to "extend" our practical present. Our power to unite sensations increases as we age, and enlarge our "intellectual capacities". If our capacities were "sufficiently enlarged", we could conceive of any sensations connected by "cause and effect" as one; and, as long as pleasure generally prevailed over misery, we would experience "pure pleasure". This is why everything is present to God, and he is perfectly happy.

Using these explicit claims as a starting point, I offer the following reading of Hartley. A practical present can encompass one simple sensation, such as warmth or a bitter taste. This sensation has a relatively short duration, say *t* times a second. By uniting simpler sensations into more complex sensations, we can extend the duration of our practical present. A practical present encompassing a more complex sensation obviously has a longer duration: perhaps a whole second. As Hartley's practical present is one in which we experience sensations, and we know that sensations such as warmth or bitterness are "immediate", by the 'practical present' Hartley could be referring to our immediate present. Hartley's explicit claim that the practical present is durational could be grounded in his view that sensations as durational. On this reading, Hartley is offering a proto, extensional specious present theory. I describe it as 'proto' because, while it is plausible to attribute this theory to Hartley, it is not well developed.

Although not decisive, I contend this reading makes good sense of the passage's explicit claims. On this reading, Hartley's specious present theory flows naturally from his vibrational neuroscience: our sensations and our ideas of sensation have duration, so it follows that our experienced present has duration too.

3.2. Priestley's 1768 and 1775 Essays: The Present and Our Idea of Duration

Joseph Priestley (1733–1804) is perhaps best known for co-discovering oxygen, but he also wrote on science, education, theology, and philosophy.[14] Priestley's neglected writings on the present clearly reflect the influence of Hartley, and he seems to have personally affected Watson.

Within Priestley's corpus, I find two texts suggestive of a specious present theory. The first is his 1768 *Essay on the First Principles of Government*. The opening chapter explains that when people live in well-governed societies, their intellectual powers improve. This allows people to become happier:

> an individual … possesses a certain comprehension of mind, whereby he contemplates and enjoys the past and the future, as well as the present. By this means his happiness is less dependent on temporary circumstances and sensations. Ideas collected from a certain limited space, on each side of the present moment, are always ready to … temper, and exalt his feelings.
>
> This space, which is the sphere of a man's comprehension, of which he has the enjoyment, and which may be called the extent of his *present time*, is greater or less, in proportion to the progress he has made in intellect … it is generally growing larger during the course of our lives … whereby some men, of great and superior minds, enjoy a state of permanent and equitable Felicity … In such minds the idea of things, that are seen to be the cause and

14. Robert Schofield (2013) offers a broad intellectual biography of Priestley. Elizabeth Kingston (2019) surveys Priestley's philosophy.

> effect of one another, perfectly coalesce into one. (Priestley 1768, 1–3)

Human happiness helps us to understand divine happiness:

> This train of thought may … enable us to conceive wherein consists the superiority of angelic beings, whose sphere of comprehension, that is, whose *present time*, may be of proportionably greater extent than ours, owing to the greater extent of their recollection and foresight; and even give us some faint idea of the incomprehensible excellence and happiness of the Divine Being, in whose view nothing is past or future, but to whom the whole compass of duration is, to every real purpose, without distinction present. (Priestley 1768, 4)

There are deep philosophic and linguistic similarities between Priestley's remarks and the passage from Hartley discussed in the previous section. Both hold that in some sense the present varies between individuals. The more improved your intellect, the longer is your present, and the greater your happiness. And, generally, our intellects improve with age. When we understand that ideas are connected by "cause and effect", they "coalesce" into one. To God's perfect intellect, all time is present, and he is perfectly happy.

It would not be surprising if Priestly drew on Hartley's *Observations*. Having encountered the book between 1752 and 1755, Priestley writes in his 1806 *Memoirs* (reprint 2010) that it "immediately engaged my closest attention, and produced the greatest … effect on my general turn of thinking thro' life" (2010, 18–19). Priestley even published an abridged edition of Hartley's *Observations* in 1775, titled *Hartley's Theory of the Human Mind*. Given these similarities, Priestley *may* share the specious present theory I attribute to Hartley. He might even share it for similar reasons, as Priestley wholeheartedly accepts Hartley's doctrine of vibrations (Priestley 1775, x–xii).

However, unlike in Hartley's case, there are compelling reasons to doubt that Priestley's "present time" refers to our immediate present. Like Hartley's practical present, Priestley's "present time" has "extent" or duration. Yet unlike Hartley, Priestley describes his present time as a state of "comprehension" or understanding, whereby a person contemplates "the past and the future, as well as the present". The greater present time of angelic beings is due to their greater "recollection and foresight". These dissimilarities suggest that Priestley's present time refers, not to the immediate present, but a broader one. Perhaps he is saying that the greater our cognitive powers, the better we can *understand* the broadly present minute or hour by bringing past and future considerations to bear. This reading does not preclude Priestley holding a specious present theory, but neither does it provide evidence that he did so.

There is one other Priestleyian text suggestive of a specious present theory. Seven years after making the above remarks on the present, Priestly intervened in the post-Lockean debate over how we obtain our idea of duration (an issue not addressed by Hartley). In an essay titled 'Of Complex and Abstract Ideas' (appended to Hartley's *Theory of the Human Mind*), Priestley writes:

> impressions made by external objects remain a certain space of time in the mind … If I look upon a house, and then shut my eyes, the impression it has made upon my mind does not immediately vanish …
>
> Now do not these facts … necessarily give the ideas of *duration* and *succession*, which are the elements of our idea of *time*. If all our sensations and ideas where wholly obliterated the moment that an external object was withdrawn, there could be no ideas of duration and succession … but upon the contrary supposition (which is well known to be the truth) the ideas of *succession*, *duration*, and *time*, are necessarily generated; that is, states of mind

> are produced to which those names … may be applied. (1775, xxxix)

This account is broadly Lockean: our ideas of duration and succession lead to our idea of time. Yet, Locke held that we acquire our idea of duration by reflecting on the distances *between* our ideas. Priestley makes no mention of this. Instead, he implies that we obtain our idea of duration from the way impressions "remain a certain space of time in the mind". Presumably, this is why there are states of mind to which the idea of "duration" can be "applied".

Again, this passage borrows from Hartley's *Observations*. As we saw, Hartley characterized "sensations" as "impressions made by external objects". He further claims:

> Sensations remain in the Mind for a short time after the sensible Objects are removed … when a person has had a candle, a window … before his eyes for a considerable time, he may perceive a very clear and precise image thereof to be left in the … mind … for some time after he has closed his eyes. (Hartley 1834, 6–7)

There are philosophical and linguistic similarities here: Priestley is advancing the same thesis, uses precisely Hartley's characterisation of sensations, and even refers to seeing sensations after closing his eyes. By itself, the claim that our sensations have duration does not comprise a specious present theory, for there is no explicit mention of our present experience. Yet it seems likely that someone who accepts that our sensations have duration would be open to accepting that our experienced present has duration. Priestley *may* share Hartley's specious present theory.

3.3. Tucker's 1768 Light of Nature: Reasoning from Human Temporal Experience

Gentleman scholar Abraham Tucker (1705–1774) began writing his three-volume magnum opus, *The Light of Nature Pursued*, in 1756.[15] We will focus on the first two volumes, published in 1768. The work is heavily sourced in Locke. Tucker aims to "advance one little step further" in the way Locke led (1768a, I.xvii–xix).[16] Although Tucker was familiar with Hartley's work, their theories of the present arise in very different contexts: happiness for Hartley and eternity for Tucker. I suspect that Tucker's theory emerged independently from Hartley's, via reflecting on Locke[17]. In 'Abraham Tucker as an 18th-century William James' (2011), Michael Billig argues that Tucker anticipated various aspects of James' work, including using the language of flow, flux and stream to describe conscious experience. (I have not found any such descriptions in the work of Hartley or Priestley.) In arguing that Tucker developed a specious present theory, I am offering another way that Tucker anticipated James.

In the chapter 'Eternity', Tucker states that our "present moment may contain an interval of time though extremely short" (1768b, I, 189). He continues:

> does [this view] not stand confirmed by the evidence of our senses in their discernment of motion … to see a body move I apprehend, we must have an actual perception of it at once in two distinguishable places though it cannot actually be in those two places at once, from whence it seems to follow that our acts of immediate perception have a certain duration containing a beginning and end both present to us together. (Tucker, 1768b, I, 190–191)

15. See James Harris (2003, vi), who also surveys Tucker's life and work.

16. Because the volumes are split into individually paginated parts, I reference by part and page number, such that 'I.25' refers to part I, page 25.

17. Perhaps Tucker even takes a subtle dig at Hartley. Whilst considering "satisfaction", Tucker (1768a, I.111) writes that "presentiment of the future" can lengthen our pleasures *or* torment us via "unavoidable evils".

I read Tucker as offering a straightforward, extensional theory of the specious present. Motion requires duration so, if we can "see a body move", the contents of our episodes of experiencing have duration. Thus "our acts of immediate perception have a certain duration", even though they are all "present to us". Andersen and Grush claim that Kelly "was the first to make the apparent perception of motion its central motivation" (2009, 296). Given Tucker's remarks on "our discernment of motion", I say he made it even earlier. Tucker's claim that a present perception contains a "beginning and end" also anticipates Hodgson's remark that present consciousness involves former and later sub-feelings. Further, as we saw above, Andersen and Grush also claim that Reid was the "first to explicitly isolate and problematize the topic of the temporal content of single perceptual acts". With respect, I find that Tucker was problematizing exactly this topic — seventeen years before Reid's 'Memory'.

Having set out Tucker's theory of the specious present, I ask how it is embedded in his wider thought. 'Eternity' concerns divine eternity, but it discusses two topics not obviously related to this theme: the metaphysical present and the specious present. Tucker clearly believes that these topics are connected to eternity, but he does not explain how. On my reading, Tucker uses these topics to support his temporal account of divine eternity. To make this case, I explicate the chapter in more detail.

'Eternity' is divided into five sections. §1–2 introduce divine eternity. Traditionally, this is understood in one of two ways. Eternity can be *timeless*, in that God is outside time, perhaps existing in a metaphorical present; or *temporal*, in that God exists at every moment in time. The debate over how best to understand eternity is briefly mentioned in Locke's *Essay*, which writes of the timeless view that some thinkers "avoid Succession in eternal Existence" by using "the *Punctum Stans* [i.e. standing point] of the Schools" (1690, 107; II.xvii.16). Tucker's description of the timeless view goes beyond Locke in ascribing it to "schoolmen" who conceive eternity as a "standing point with God or a perpetual Now, so that all past and future ages are as actually present before him as this instant moment is with us". Tucker thinks that schoolmen hold this view because they conceive succession as a "continual perishing and renewing of things". Things that existed yesterday are "lost and gone", so a successive, temporal existence would be "unworthy" of God (1768b, I, 187–188).

Having introduced the timeless view of eternity, but not affirmed or rejected it, Tucker discusses the metaphysical present in §3. He refers to earlier discussions within *The Light of Nature Pursued*. The chapter 'Causes and Effects' asks:

> Another question may arise concerning Time, why such a particular point of it must be the present. Today must follow yesterday and precede tomorrow, this I know very well, but how know I that yesterday today and tomorrow might not have been long since past, or that they might not have been yet to come? Can we fix the beginning of eternity and compute how many ages have lapsed since then, so that the year 1761 must necessarily be the present year? … why might not the whole course of time have been anticipated or retarded, so that it might now have been the reign of Henry I. or George X. instead of George III? (Tucker, 1768b, I, 143–144)

This passage is asking what makes *this* moment present. If time could conceivably be sped up or slowed down, what makes it the case that it is now *now*? A later chapter, 'The First Cause', briefly answers this question.[18] "We have seen that time requires a cause to determine what particular point of it shall be the present", Tucker writes, and explains that time receives its "reality" from the "First Cause" (1768b, I, 167). In other words, God causes a particular moment of time to be present.

From the metaphysical present, §3 moves seamlessly to the specious present:

18. Tucker's question is reminiscent of an objection Craig Bourne (2002, 359) poses to non-presentists: if the past or future are real, "how we can know that we are present"?

> [§]3. We have already remarked there is no visible repugnancy against supposing the course of time might have been accelerated or retarded … In which case the efflux of time would require some cause to fix it where it is: and therefore must depend upon the Will of God to determine that no more or less of it should be expired. Nor are there no grounds to suspect that even with ourselves the present moment may contain an interval of time though extremely short. (Tucker, 1768b, I, 188–189)

This passage shows that divine eternity, the metaphysical present, and the specious present are all somehow connected in Tucker's thought. Having claimed that God fixes the flux of time, this passage introduces the specious present when Tucker says "Nor are there no grounds to suspect …". The connecting phrase "Nor are …" shows that the two topics are linked. Further, in the same sentence, Tucker claims that "even within ourselves" the present moment contains an interval of time. This implies that God's present moment *also* contains an interval of time — Tucker is still considering the nature of divine eternity.

§3–4 sets out the specious present theory given above. §5 returns to eternity. Tucker rejects the timeless account as "scarce worth the while" of study, and instead offers a temporal one:

> we do not find the conception of a continual perishing and removal of time by an uninterrupted succession of moments debases our idea of God … so as we apprehend the succession to have had no beginning and to meet with no stop … eternity is an inexhaustible fund, therefore time may go on continually perishing without being ever totally destroyed, so that though we should imagine God existing by moments he will never want moments to exist in. (Tucker, 1768b, I, 192–193)

For Tucker, God exists at every successive moment of time. Presentism is the view that only the present is real, whilst past and future are unreal. I find presentism implicit in Tucker's claims that the moments of time are "continually perishing". And that although God exists by "moments", this does not "debase" our idea of God, so long as he never lacks "moments to exist in". Tucker may have taken his presentism from Locke[19], and passed it on to William Hazlitt[20].

Although 'Eternity' evidently connects Tucker's discussions of the metaphysical and specious present with divine eternity, it is unclear why. On my reading, the unspoken reasoning is this: Tucker is using the metaphysical and specious present as *objections* to the timeless view of eternity. Regarding the metaphysical present, how does God fix or cause which moment of time is present? Plausibly, by *existing* at that moment in time. Whatever moment God exists at is the present moment. And his existence from moment to moment ensures the onwards flux of time, such that the course of time is not sped or slowed. Regarding the specious present, this theory gives Tucker reason to deny that God's eternity comprises a *punctum stans* or "standing point". God's eternity is not a point because his present moment has duration, just like ours does. Tucker's discussions of the metaphysical and specious present both support his temporal account of eternity: God fixes which moment is present by existing in time, and God's present moment has duration rather than comprising a point. This reading explains the structure of the chapter. 'Eternity' opens by describing the timeless view of eternity, invokes the metaphysical and specious present as objections to this view, and concludes by advancing an alternative temporal account.

19. Locke arguably implies that only the present moment exists: "*Duration* and Time, which is a part of it, *is the Idea* we have *of perishing distance, of which no two parts exist together* … nor can [we] put it together in our Thoughts, that any Being does … possess at once more than the present moment of Duration" (1690, 97; II.xv.12).

20. In 1807, Hazlitt published an abridged version of *The Light of Nature Pursued*. In several places, including this 1821 essay, Hazlitt (1825, 45) appears to defend presentism: the "past has ceased to be", "the future is yet to come", "the present only … has a real existence".

On my reading of 'Eternity', Tucker describes some feature of human temporal experience (that some point of time is present, that our present moment has duration) and reasons from there to the nature of God (that God fixes the flux of time, that God's eternity is temporal). If this reading is correct, it forms part of a wider pattern of reasoning, for the chapter 'Freewill' makes the same move. I will briefly explain how for this broader pattern is of intrinsic interest: reasoning from human temporal experience to the nature of God is an extremely unusual (if not unique) philosophical strategy. It reveals a subtle but significant difference between Tucker and Hartley on free will.[21]

Libertarians hold that humans have free will; necessitarians deny this. Necessitarians can argue from divine prescience: as God's knowledge of the future is certain, our actions are necessitated and not free. Such an argument is found in Hartley:

> free-will is inconsistent with … [God's] infinite knowledge … [which] must include the knowledge of all future things … Besides, past, present, and future, are all present with respect to God. Infinite knowledge must therefore include prescience. But free-will does not allow of prescience. Knowledge of all kinds presupposes the certainty of the thing known … *i.e.* presupposes it to be necessary. (1834, 364)

Against Hartley and others, Tucker seeks to show that human free will is compatible with divine prescience.

In 'Omniscience', Tucker claims that, since it does not denigrate God "to suppose him existing by perpetual duration", we can "without hurt" imagine God "to remember as we remember and to foresee as we foresee events within our own power by knowing our own intention" (1768b, I, 214). 'Freewill' expands on this. Tucker argues that in daily life we have prescience *and* feel ourselves to be free: we often "foreknow our own actions, and those of other people, yet feel ourselves and perceive them free in the performance" (1768b, II, 205–207). For example, if Tucker tells a "poor fellow" he can keep any coins he finds in a barn, he knows the fellow will search the barn and "get the money". For Tucker, there is no distinction "between human Prescience and divine". Unlike us, God knows *all* the causes underlying events, including "freedom" and "the motives inclining us to use it" (Tucker 1768b, II, 214). In other words, God knows all the motives inclining our free actions. God's perfect knowledge of causes means that, unlike ours, his prescience is perfect. But this is a difference of degree, not of kind. Tucker is arguing by analogy: humans have limited prescience and feel free, and this allows us to grasp how God has unlimited prescience compatible with free will. Crucially, this analogy only works if God exists at the present moment, as we do. Our prescience of the future works by knowing intentions and causes *in the present*. If past and future were all present to God, as Hartley claims, divine prescience would not work the same way as ours. It is because Tucker holds God to exist in time, just as we do, that his analogy between human and divine prescience works. Tucker's temporal understanding of divine eternity allows him to make a move in the free will debate that is not open to the likes of Hartley.

Once again, Tucker has described a feature of human temporal experience (imperfect prescience), and reasoned from it to the nature of God (perfect prescience). Like his theory of the specious present, Tucker's broader emphasis on the importance of temporal experience is very much in the spirit of James.

3.4 Watson's 1785 Treatise*: Imperceptible Times and Experiments*

Physician and natural philosopher William Watson (1744–1824) was the son of physician and natural philosopher William Watson (1715–1787)—hereafter "Watson Senior". Aside from a few brief mentions,[22] I have not found any scholarship on Watson. It is indicative of his stature that the *Oxford Dictionary of National Biography* surveys his

21. See Harris (2005, 155–168) for more on the free will debate in Hartley and Tucker's writings.

22. The *Treatise* is mentioned in passing by Schofield (2004, 247) and briefly discussed by Rée (2020, 252).

life under Watson Senior's entry (see Schaffer 2004). From 1771, Watson practiced medicine in Bath, while maintaining research interests in botany, mineralogy, and astronomy; he would ultimately become Mayor of Bath. In 1779, he joined the new Bath Philosophical Society. The same year, Watson began a lifelong friendship with Bath-based astronomer William Herschel (1738–1822), whom he introduced to the Society. The two men collaborated and corresponded on all kinds of projects, from measuring hills to understanding nebulae[23]. For example, in a 1780 paper (reprint 1912) Herschel writes of some electrical experiments, "Dr Watson, ever ready in the cause of Philosophical pursuits, assisted at the execution" (1912, c).

Priestley belonged to roughly the same generation as Watson and Herschel, and their work is also connected. From 1773 to 1780, Priestley lived nineteen miles away from Bath at Bowood House; he was also a member of the Bath Philosophical Society.[24] Priestley wrote to Herschel about telescopes in 1780 but if other letters existed, they are not extant.[25] Herschel's papers are riddled with references to Priestley's work.[26] In 1760s London, Priestley (2010, 50–2) records meeting "Dr. Watson, (the Physician)"; later, Watson recommended his fellowship to the Royal Society. Priestley is likely referring to Watson, rather than Watson Senior, for in the Preface to his *Treatise*, Watson (1785, vi) states that without "the appropriation of that eminent Philosopher Dr. Priestley (who thought it not unworthy of the public eye)" he would not have ventured to publish it. The *Treatise* mentions our other thinkers too: Watson aims to build on the "successful labours" of men such as Locke and Tucker, and later references Hartley (1785, 2; 38).

Watson dedicates *A Treatise on Time* — his only book — to his "dear Friend" Herschel, noting that its subject is "so nearly connected with your favourite study, Astronomy" (1785, v). An anonymous review of Watson's *Treatise* states that the book treats time "with an uncommon degree of acuteness and precision" (Anonymous 1785 ,415). I agree, and will discuss two aspects of it. First, I set out Watson's account of time, and pick out the unusual views on temporal consciousness embedded within it. Second, I detail Watson's experiments on temporal consciousness, showing how they prefigure the experiments James uses in his specious present theory.

Watson's theory of time and temporal consciousness is complex but precise. *Treatise* begins with a definition of terms (Watson 1785, 3–9). *Perceptions* are "all objects of our knowledge". *Sensations* are a kind of perception arising "from the immediate operation of the senses". *Ideas* are every "subject of thought", including "simple copies of sensations". *Notions* are a kind of idea obtained when we apprehend a perception that "agrees" with, or is common to, other perceptions: "Thus the colour white is a notion, for it is to be found in a great variety of visible sensations". It is impossible to conceive "white" without conceiving a white thing such as paper or snow, yet we can "reason upon it, just as if it could be apprehended alone". Given the example of whiteness, Watson's 'notion' is clearly akin to Locke's 'abstract idea'. Locke arguedwe receive ideas of particulars from particular objects, but via "abstraction" the mind can make particular ideas "become general" (1690, 70; II.xi.9). To create abstract ideas, we abstract away from our ideas of particulars their circumstances of time and place. To illustrate, Locke writes that having observed the same color in chalk, snow, and milk, the mind forms an abstract idea of 'whiteness'.

Watson's discussion proper starts by describing two kinds of sensations (1785, 11–14). "Durable" sensations — like "thunder rolling" — "continue for a time". A durable sensation comprises successive parts, and our observation of this "constitutes its duration". In contrast, "instantaneous" sensations — like a "flash of lightning" — are "indivisible", "fugacious" (i.e. fleeting), vanishing "as soon as they appear". Watson continues:

23. See Herschel's papers (1912, lxvi; 45; 99). On their friendship, see Dreyer (1912, lvii) and Schaffer (2004).

24. On Priestley's membership, see Schaffer (2004). On Bowood House, see Schofield (2013).

25. Dreyer (1912, xxxi).

26. For example, see Herschel (1912, lxxii–lxxviii; xcii).

> That instantaneous perception, which is the immediate object of our attention, can alone, in the strictest sense of the word, be considered as present. For this has no beginning, middle, or end, and the whole presents itself at once. (1785, 81)

Only an instantaneous perception can be present: preceding perceptions are past, while subsequent perceptions are future. Reminiscent of Locke, Watson claims that we get the idea of duration from reflecting on a succession of perceptions, not from one perception only (1785, 44). Unlike Locke, Watson explicitly argues that although a present perception seems instantaneous, it really has duration. To illuminate this unusual claim, we must explore the *Treatise*'s three species of time.

"Perceptible time" is grounded in our perceptions:

> Duration … signifies the observation of the successive mode of existence, which things are found to possess. Whereas Time denotes the observation of the successive parts themselves of durable things, independent of the subjects to which they belong. It is simply *the observation of successive instants*. When we repeat any sentence, for example, the observation of the successive instantaneous perceptions … constitutes its duration. But when that very succession is attended to, without considering it as annexed to the sentence itself; then Time more properly becomes the object of our notice. (Watson 1785, 45)

Durable sensations, such as hearing thunder roll or a spoken sentence, have something in common: they are composed of successive parts or instants. When we focus on this commonality, we obtain the notion of perceptible time. In effect, perceptible time is a Lockean abstract idea.

"Universal time" goes beyond our perceptions, as a way of publicly measuring time:

> our own experience and the testimony of others … obliges [us] not to confine Duration to the small number of things only which fall under our immediate notice … [for example] things existed ages and ages before we were born, and will exist the same after our deaths. The same train of reasoning … must lead us likewise to adopt a Time corresponding to this Duration: a Time not bounded by the chain of our own immediate perceptions, but considered as represented by a flux of perceptions common to all in general … Universal-Time. (Watson 1785, 91–92)

To achieve this "public standard" or "universal measure" of time, Watson states that people use the regular motions of stars or clocks (1785, 96–97, 100–101). Universal time is similar to Locke's idea of time. A person takes their perceptions of time as a starting point, and then employs reason to apply them more broadly to the world. Watson claims that by adding "years to years", we can "conceive" universal-time to be "indefinite": "the only Eternity which we can comprehend" (1785, 108–109).[27]

"Imperceptible time" also goes beyond our perceptions. Watson agrees with Locke that we cannot perceive very swift motions, such as a moving "cannon-ball" (1785, 23). However, Watson's discussion of astronomy goes beyond Locke. Astronomers claim that the moon travels at around four thousand feet per second, so we can infer that the moon covers a foot in the four thousandth part of a second. Watson writes that this inference "evidently supposes" that a second is divisible into at least four thousand parts, yet we cannot entertain "four thousand successive instantaneous perceptions within that portion of time" (1785, 114). Watson argues that just as there are motions too swift for us to perceive, there are *times* too short for us to perceive — such as 1/4,000th of a second (1785, 121). He states that even though "imperceptible Time is the mere creature of reason, and not directly dependent on objects of sense", its tiny fractions cannot be neglected by natural philosophers, especially astronomers (1785, 123). Watson was

27. Like Locke and Tucker, Watson goes on to defend a temporal account of divine eternity.

familiar with these fractions, for he frequently communicated Herschel's astronomical findings to the Royal Society. To illustrate, in one paper, Herschel (1912, 59) describes measuring times with an accuracy 'to about one-tenth of a second'.

The *Treatise* builds to a grand concluding chapter, 'Of the Kind of Existence belonging to Time'. Unlike the other eighteenth-century works we have been discussing, it offers a metaphysic of time.[28] Watson opens the chapter by summarizing his three species of time. Perceptible time is a notion we acquire by observing the flux of our instantaneous perceptions. Universal time is a notion derived from perceptible time, denoting a flux of perceptions or instants as represented by the motions of heavenly bodies or machines. Imperceptible time is a notion acquired by considering any portion of universal time as divisible into parts "that represent a quicker flow of perceptions than any we ever experience" (1785, 137–139). All three species of time are 'notions' in Watson's particular sense — a kind of Lockean abstract idea. This leads Watson to argue that time has no existence "when not the subject of our consciousness":

> it is evident, that Time, whether perceptible, universal, or imperceptible, being nothing more than notions and creations of our own brain, cannot be said to have any existence when not conceived. And to say, that Time exists independent of any percipient being, is to assert, that … a notion be conceived without a person to conceive it. (1785, 138–139)

For Watson, time is *only* a creature of our understanding. This metaphysic is reminiscent of a position advanced by another eighteenth-century English philosopher, Edmund Law.[29] There is some evidence Watson draws on Law: his *Treatise* (1785, 2) names Law as a successful labourer on time.

Having set out Watson's account of time, let's dig into his account of temporal consciousness. Unlike the other thinkers we have been discussing, Watson is more focused on temporal consciousness in general, than on the present in particular. Nonetheless, I find a fascinating account of the present implicit in Watson's notion of imperceptible time: if there are times too short for us to perceive, then even the shortest, seemingly "instantaneous" present must really have duration. This view emerges whilst Watson discusses imperceptible time, and asks whether time has "elements" or atoms:

> no natural phenomenon can assist us in this research: for, as but few instants, as represented by perceptions, are found to succeed each other in a small portion of universal-time, such as a second, whilst this species of it [i.e. imperceptible time] is made to contain an indefinite number of them; it evidently follows, that each perception, however instantaneous it may be to the conceiver of it, is commensurate with ever so great a number of inconceivably small portions of imperceptible time. (Watson 1785, 124).

Humans experience "just a few" perceptible, seemingly instantaneous times within a second. Yet our experience is specious, for reason forces us to posit indefinitely many imperceptible times within a second. As a perception is "commensurate with" many "small portions of

28. Hartley and Priestley do not advance a metaphysic, and Tucker does not elaborate on his claim that God is the cause of time. That said, Rée claims that "Priestley persuaded his colleagues [Watson and Herschel] that time is only a *'notion* … a creature of the imagination'" (2020, 252). Rée does not explain why he attributes this metaphysic to Priestley nor why he believes Priestley persuaded Watson and Herschel of it. I am not aware that Herschel advanced any metaphysic of time. Rée kindly entered into private correspondence with me on this issue, and explained that he could not currently locate the sources for this statement, and it may be speculation on his part.

29. Law holds a view that he attributes to Locke, that abstract ideas such as whiteness or triangularity cannot exist outside the mind. Locke writes of our abstract idea of a triangle that "it is something imperfect, that cannot exist" (1690, 301; IV.vii.9). However, Law goes further in arguing that duration and time are Lockean abstract ideas, and therefore only exist in the mind (1731, 7). See Thomas (2018, 190–192) for more on Law's metaphysics of time.

imperceptible time", Watson seems to be suggesting that our episodes of experiencing are temporally extended — an extensional account of temporal consciousness. If this is indeed what Watson is suggesting, it might be thought peculiar to claim that the *contents* of an episode of experiencing appear instantaneous (i.e. lack duration) yet the *episode* itself is not instantaneous (i.e. has duration). Nonetheless, I find this has affinity with Falsely Punctal conception, which claims that a duration can be falsely perceived as instantaneous. Regardless of how best to locate Watson's view within the twenty-first-century landscape, there is no doubt that he is — like Tucker and Reid — problematising the temporal content of single perceptual acts. And, as we shall now see, Watson goes far beyond all his peers in undertaking *experiments* on those temporal acts.

Hartley and Priestley do not discuss measuring the experienced present. Tucker states that our experienced present is measurable, writing that "if any curious person" could ascertain precisely what the slowest visible motion is, then they "may compute how many of our moments or present times there are in a minute" (1768b, I, 191–192). Although he "never tried the experiment", Tucker suggests measuring how long our sensations last by wheeling a live coal so fast that its burning trail becomes a circle of flame (1768b, I, 58). The experiments of the *Treatise* are streaks ahead of this, and anticipate the experiments James made use of in his specious present theory.

Experimental psychology usually locates the earliest historical experiments to determine the minimum limits of temporal perception in the mid-nineteenth century[30]. Recall how Locke described our train of ideas as a moving lantern. In her history of micro-time, *A Tenth of a Second*, Jimena Canales states: "What became distinctive during the nineteenth century was the desire to measure the precise *pace* of the brain as magic [i.e. moving] lantern" (2009, 10). This was partly spurred by astronomical research, which required increasingly precise temporal measurements. This requirement was highlighted by a 1796 event at the Royal Observatory in Greenwich: Royal astronomer Nevil Maskelyne (1799, 339) parted with his assistant because their telescope observations of transiting stars differed by as much as 8/10ths of a second. On the 'standard history' of micro-time, described by Canales (2009, 21–28), Maskelyne's report triggered German astronomer Friedrich Bessel to study observational differences from 1815. More sustained work on temporal perception was undertaken by German and Dutch scientists in the 1850s. Canales undermines the "standard history" in various ways, such as by stressing contributions from disciplines beyond astronomy and psychology. By pushing back the history of its earliest experiments, Watson's *Treatise* can also be used to undermine the standard history.

The experiments were recorded by Watson and Herschel. As Watson describes it, Herschel aimed to count the number of instantaneous sensations a person can experience in a second. Watson reasons that as our ideas cannot run faster than an instantaneous-seeming sensation, these experiments would also show "the greatest rate of going … of our thoughts" (Watson 1785, 31–33). Herschel described speeding up a clicking clock until the clicks reached "a confusion" at which they could "no longer be distinguished", running into a continuous sound. Audibly, Herschel could distinguish clicks at 160 clicks a second. Including intervals between clocks that amounts to 320 sensations a second. Visually, Herschel could distinguish 320 teeth and spaces on a spinning wheel "equal to 320 sensations" per second (Herschel in Watson 1785, 34–37). Herschel's results come surprisingly close to those that James would cite. James recounts Sigmund Exner's 1870s experiments on the "minimum amount of duration" we can feel (James 1886, 382). Exner heard distinct clicks on a wheel at one five-hundredth of a second (2 milliseconds) and saw distinct falling sparks at 0.044 seconds (44 milliseconds). In Herschel's auditory and visual experiments, the minimum amount of duration people felt was 3.1 milliseconds, close at least to Exner's auditory experiments. Dainton (2018b, §3) compares Exner's results to twenty-first-century results, and finds that they "have largely survived the test of time".

30. In addition to Canales, see Roeckelein (2008, 1), and Elliott and Giersch (2016).

Given Watson and Herschel's astronomical interests, and Watson's remarks on the importance of fractional times to this discipline, astronomy must have fuelled their concern with temporal perception. In their own work with telescopes, Watson and Herschel may have encountered the same observational difficulties that Maskelyne described. Watson, Herschel, and Maskelyne were colleagues. In a 1780 letter to Maskelyne, Herschel notes his debt to Watson "for introducing me to the honour of your correspondence" (1912, xci). However, in an effort to broaden the 'standard history' of experimental psychology yet further, I note that Watson may also have been aware of parallel difficulties in the new science of electricity. Priestley's *History and Present State of Electricity* describes experiments undertaken by Watson Senior and others that aimed to measure the speed of electricity. Ultimately, the lengths of times involved "appeared to be too small to be ascertained by them" (Priestley 1767, 107–110). Plausibly, Watson was familiar with his father's work, so he (and Priestley) would have known that there are times too short for human perception. Whatever their motivation, Watson and Herschel should be recognized as experimenting on temporal perception, anticipating James' commitment to "the facts of time-perception", decades before the 1850s.

4. Potential Lines of Influence to Later Specious Present Theorists

This section considers potential lines of influence from Hartley, Priestley, Tucker, and Watson to later theorists. There are many broad avenues by which their work could have been picked up. As Allen (1999, 1–5) details, Hartley was considered the most influential psychologist of the eighteenth century, his *Observations* read by the likes of John Stuart Mill and James. Albeit outside the context of temporal perception, I have found references to Hartley in Hodgson (1878, I.59), who describes him as a 'thorough-going physiological psychologist'; Kelly (1882, 226); and Ward (1886, 43). The prolific Priestley was widely read but I haven't found evidence that his pertinent remarks were read by later specious present theorists. Hodgson owned the requisite volumes of Tucker's *Light of Nature Pursued*[31], and Billig (2011, 125–126) notes that Hodgson critiques Tucker's account of emotions at length. Billig speculates that Hodgson does not cite Tucker on issues around time because Hodgson took on board these aspects of Tucker's work — there was no need to criticise them. As for Watson's *Treatise*, Rée (2020, 252–253) notes that its experiments were cited by philosopher William Godwin. I have found that the *Treatise* features prominently in George Gleig's (1797, 563) article "Metaphysics", published in the third edition of the *Encyclopedia Britannica*. This article was reprinted verbatim in the fourth, fifth, sixth and seventh editions, so must have been widely read. I note that Watson arguably offers a Falsely Punctal conception, and so seemingly did Ward — in the *ninth* edition of the *Encyclopedia Britannica*.

More narrowly, I contend that two specific elements of Hartley's specious present theory can be found in Hodgson, giving weight to the possibility that the former influenced the latter.[32] One element concerns a distinction Hodgson makes between two kinds of present:

> Crudely and popularly we divide the course of time into Past, Present, and Future; but, strictly speaking, there is no Present; it is composed of Past and Future divided by an indivisible point or instant. That instant, or time-point, is the strict present. What we loosely call the Present is an empirical portion of the course of time, containing at least the minimum of consciousness. (Hodgson, 1878, I, 253)

The "strict" present is an indivisible point or instant, whereas the "empirical" present has a duration that contains the minimum (i.e. smallest part) of consciousness. Andersen and Grush argue that Hodgson's distinction strongly echoes one found in Reid (2009, 294). Reid writes:

31. Hodgson Collection (XII.52–53), Corpus Christi College Library, Oxford.

32. Scholarship on Hodgson's specious present includes Andersen and Grush (2009, 293–306), Andersen (2014, 35–37), and Dainton (2018a, §2.6). None of these works consider Hartley as an influence.

> Philosophers give the name of the *present* to that indivisible point of time, which divides the future from the past: but the vulgar find it more convenient in the affairs of life, to give the name of *present* to a portion of time, which extends more or less, according to circumstances, into the past or the future. Hence we say, the present hour, the present year, the present century, though one point only of these periods can be present in the philosophical sense. (1785, 326).

I agree with Andersen and Grush that the Reid-Hodgson resemblance is strong. However, there is also a powerful resemblance with Hartley's distinction between presents:

> For the present time, in a metaphysical sense, is an indivisible moment; but the present time, in a practical sense, is a finite quantity of various magnitudes (Hartley, 1834, 339)

The Hartley-Hodgson resemblance lies in the content of the distinction. Reid is distinguishing between the *metaphysical* present (an indivisible point) and *a way of speaking* about the present (where we refer to the 'present year', and so on). In contrast, Hartley and Hodgson are distinguishing between the metaphysical present, and the empirical or practical present that *we experience*. And they are both doing so in the context of defending the specious present whereas — as Andersen and Grush (2009, 283) note — Reid is rejecting it. As we know Hodgson had at least some familiarity with Hartley's work, it is possible he is drawing on Hartley here as well as Reid.

Another element concerns Hartley's use of our specious present to understand how God is present to all events. As we saw above, Hartley claims that if humans could expand the length of our specious present 'indefinitely', it would be akin to the present experienced by God, such that:

> all time, whether past, present, or future, is present time in the eye of God … and this merely by considering time as it ought to be considered in strictness, i.e. as a relative thing, belonging to beings of finite capacities, and varying with them. (Hartley 1834, 339–340).

This same thesis can be found in Hodgson:

> Suppose now that, in place of me and my capacities, or those of any finite human being, there was introduced a conscious being of indefinitely keener sensibilities and indefinitely more powerful cognitive energies of every kind, the whole content experienced by him in any one of his successively existing empirical present moments of consciousness would also be indefinitely increased, in point of expanse, duration, richness and complexity. And there is no contradiction in supposing that the sensibilities and cognitive energies of such a being should be heightened to as great a degree … [that] the whole real world-process, in what is to our apprehension past and future as well as present time, would be to such a being the immediate object of a present experience. (1897, 234–235)

Like Hartley, Hodgson is suggesting that the experiential or specious present of a divine-like being encompasses all of time, and this is how all events are present to that being. Hartley and Hodgson's theses are similar in content, and both use the language of "finite" and "capacities". Later thinkers applied the specious present in similar ways, including American idealists Josiah Royce and Mary Calkins; Henri Bergson; and recent philosophers of religion.[33] As Royce corresponded

33. Royce (1901, 141–142) and Calkins (1907, 442) model the Absolute's eternal consciousness on our specious present; Calkins draws on Royce. In 1934, Bergson (2007, 127) hypothesised a similar model for a 'sufficiently powerful' divine-like attention. Moravec (2019, 211–217) discusses Bergson's hypothesis, and details more recent uses of the specious present to characterise divine eternity.

with Hodgson about temporal consciousness during the 1880s,[34] it is plausible that Royce drew on Hodgson when constructing his own position.

Perhaps Hodgson took neither of these elements from Hartley, and simply reinvented both. Yet as we know Hodgson had some familiarity with Hartley's work, this line of influence is possible. And, from Hodgson, Hartley's specious present theory would have made its way to James.

5. Final Thoughts

Whatever their subsequent influence, this paper has shown that Hartley, Priestley, Tucker, and Watson advanced views relevant to the history of the specious present. Arguably, they even held specious present theories over a century earlier than the likes of Hodgson, Kelly, Ward, and James. This study bolsters the findings of earlier scholars, that Hartley and Tucker anticipated James. Further, the 1785 Watson-Herschel experiments push the standard history of micro-time back before the nineteenth century.

Given the great admiration Hartley, Tucker, and Watson held for Locke, it's likely his *Essay* first stirred their interest in temporal consciousness. From there, other factors shaped their reasoning, including neuroscience in the case of Hartley, divine eternity in Tucker, and astronomy or electricity in Watson. Priestley is the exception: I suspect his interest and reasoning on temporal consciousness can *all* be traced to his undying admiration for Hartley. Against a Lockean backdrop, these mid-eighteenth-century theories offer rich and sometimes surprising ideas, intertwined with theories of happiness, motion, duration, eternity, and time. All four thinkers deserve a place in the history of temporal consciousness.[35]

34. See The Papers of Josiah Royce (HUG 1755), Harvard Library Archives. The extant correspondence appears incomplete.

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