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This thesis describes and defends *the moving spotlight theory*, a metaphysical theory concerning the fundamental temporal structure of reality. The moving spotlight theory has two essential components: first, a thesis about presentness; and second, a thesis about the existence (in the most general sense) of things over time. The first thesis is that exactly one instant of time is absolutely, objectively, non-relatively *present*. This thesis is usually called the ‘A-theory of time’. (The opposing view, according to which no instant of time is absolutely, objectively, non-relatively present, is usually called the ‘B-theory of time’.) The second thesis is that things neither begin nor cease to exist over time; in other words, that it is always the case that everything exists forever. Following Williamson (2013), I call this thesis *permanentism*. Historically, the moving spotlight theory has been among the least popular plausible theories of time. However, that is because the view has been badly misconstrued. In this thesis I provide a careful description of the moving spotlight theory and show that moving spotlighters can easily respond to the main arguments that have been raised against their view. I also show that the moving spotlight theory, when correctly understood, is the very best theory of time. In particular, the moving spotlight theory inherits the simplicity, explanatory power, and scientific respectability of permanentism, while at the same time describing a world in which there is genuine time and change. In terms of structure, the thesis has two parts, each containing three chapters. In Chapter One, I introduce the A-theory and defend it against some common objections. In Chapter Two, I describe a version of the moving spotlight theory which I call ‘classic MST’, and argue that if the moving spotlight theory is true, classic MST is true. In Chapter Three, I argue against the traditional method of characterising theories of time, and develop a new method in its place. In Chapter Four, I argue that the A-theory is true. In Chapters Five and Six, I argue that we think and speak as if permanentism is true, so we should accept permanentism. I conclude that the moving spotlight theory, and therefore classic MST, is true.

# PERMANENTS

## In Defence of the Moving Spotlight Theory

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St. Hilda's College



D.Phil. in Philosophy

University of Oxford

2014

A  
T H E S I S  
Concerning the  
M E T A P H Y S I C K S  
O F  
*T I M E*  
W H E R E I N T H E

Nature of the *Passage of Time* is elaborated and  
discussed & a new *Theory of Time* is presented for  
Consideration

**F i r s t P r i n t e d i n t h e Y e a r 2 0 1 4 .**

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Submitted in Fulfilment of the Requirements of the Degree of *Doctor of*  
*Philosophy*

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*For Aoife*

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# Introduction

## Time, spacetime, and metaphysics

This thesis describes and defends *the moving spotlight theory*, a metaphysical theory of the basic temporal structure of reality.

The moving spotlight theory has two essential components: first, a thesis about presentness; and second, a thesis about the existence (in the most general sense) of things over time. The first thesis is that exactly one instant of time is absolutely, objectively, non-relatively *present*. This thesis is usually called the ‘A-theory’ of time. The opposing view, according to which no instant of time is absolutely, objectively, non-relatively present (and therefore presentness for instants is always merely a relative matter) is usually called the ‘B-theory’ of time. I defend the A-theory in Chapters One and Four.

A-theorists think that there is some fundamental difference between one instant and all others in virtue of which that instant is absolutely present (and all others are either *absolutely past*, if they are earlier than the absolute present instant, or *absolutely future*, if they are later than the absolute present instant). Different A-theorists have different ideas about what this fundamental difference amounts to; but they all agree that there is a difference. B-theorists, on the other hand, deny that some instant is absolutely present, and therefore deny that there is something ‘metaphysically special’ about one instant in virtue of which it is absolutely present. As far as they are concerned, when it comes to presentness, all instants are, metaphysically speaking, on a par.

Of course, both A- and B-theorists agree that instants of time can be *relatively* present: for example, they agree that this very instant is present relative to my typing this sentence, and that some past instant is present relative to Socrates’ birth, and that every

instant is present relative to itself. The difference is that A-theorists think that in addition to all the relatively present instants, there is some instant that is also present *full stop*.

We can illustrate the difference between the A- and B-theories by considering the analogy between time and space. According to B-theorists, time and space are perfectly analogous: just as locations in space stand in various spatial relations, instants of time stand in the temporal relations of *earlier than* and *later than*; and just as every location in space can be said to be north, south, east or west relative to some orientation, every instant can be said to be past or future relative to some other instant (assuming that there is no first moment of time). Finally, just as every location in space is *here* relative to itself, every instant is *present* relative to itself. A-theorists, on the other hand, deny that space and time are perfectly analogous. In particular, even though they accept the obviously true claim that no location in space is ‘objectively here’, they deny that some instant of time is objectively present.

So far I have written about instants of time and locations in space as if time and space are separate entities. However, physicists long ago rejected the notion of separate time and space in favour of unified *spacetime*. Consider the *Neo-Newtonian* model of spacetime. The Neo-Newtonian model abandons the Newtonian notion of permanent spatial locations in favour of a manifold of *spacetime points*- momentary spatially non-extended locations- standing in permanent geometric relations. Crucially, among these relations is the relation of *absolute simultaneity*. Thus according to the Neo-Newtonian model, for any spacetime point  $p$ , there is a set of points which are simultaneous simpliciter with  $p$ . A maximal set of such points is called a *hyperplane of simultaneity*, and given that absolute simultaneity is an equivalence relation, the set of hyperplanes is a partition of Neo-Newtonian spacetime. Hyperplanes of simultaneity- maximal, instantaneous regions of spacetime- are structurally similar to instants of time, as

standardly conceived. Therefore one way to make sense of the notion of an instant of time given the physicist's spacetime model is to identify instants with hyperplanes of simultaneity- i.e. maximal slices of spacetime.

Given Neo-Newtonian spacetime, it is possible to define the notion of an instant of time simpliciter. However, that does not mean that the Neo-Newtonian model is an A-theoretic model. Neo-Newtonian spacetime may contain instants of time, but the model does not identify any instant as fundamentally distinct from all others. On the usual view, fundamentally, all instants are on a par. In other words: absolute simultaneity does not imply absolute presentness. However, absolute presentness *does* imply absolute simultaneity: if some hyperplane is present simpliciter then all the points that are members of it are simultaneous simpliciter. Moreover, under further plausible assumptions, it will follow from this that there is a unique 'correct' partition of spacetime. Thus given the spacetime model, if there is absolute presentness, there are instants of time simpliciter.<sup>1</sup>

The notion of instants of time simpliciter is acceptable given the Neo-Newtonian model of spacetime or given a commitment to absolute presentness. However, as well as rejecting the notion of absolute presentness, B-theorists (as well as many A-theorists) reject the Neo-Newtonian model. The reason is that in the 20<sup>th</sup> Century, Neo-Newtonian spacetime was superseded by *Minkowski spacetime*. Like Neo-Newtonian spacetime, Minkowski spacetime consists of a four-dimensional manifold of spacetime points standing in permanent geometric relations. However, the particular structure of fundamental properties and relations that is typically characterised as 'Minkowski spacetime' does not induce the partition of spacetime into instants of time simpliciter.<sup>2</sup> But

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<sup>1</sup> Some A-theorists- in particular, those who think that spacetime is quite different to how physicists describe it- identify instants of time with propositions of a certain sort. On this view, the absolute present instant is the *true* instant, and instants are instants simpliciter. I describe the various options for A-theorists when it comes to instants in Chapter One.

<sup>2</sup> That is not to say that there is *no* fundamental structure in the Minkowskian model which could induce a particular partition of the manifold (for example, structure concerning the occupation of spacetime by

that does not mean that the notion of an ‘instant of time’ is unacceptable to B-theorists. Given the Minkowskian model, one can define a notion of simultaneity for spacetime points *relative to the state of motion of an observer along an unaccelerated path through spacetime*; or, for short, relative to an inertial *frame of reference*. Of course, given that there are different possible reference frames, there are points that are simultaneous relative to one reference frame and non-simultaneous relative to another. However, given the notion of frame-relative simultaneity, one can define the notion of a frame-relative hyperplane of simultaneity: a maximal set of frame-relative simultaneous points, or in other words, a frame-relative instant of time. Thus, whilst it is true that B-theorists reject the notion of instants of time simpliciter, they can accept the notion of relative instants of time.

In this thesis I assume that there really are instants of time, for reasons described in Chapter One. However, I write as if instants are always instants simpliciter. Outside the context of the A-theory, B-theorists can read ‘instant’ and other relevant terms as expressing the relevant frame-relevant notions.

For A-theorists, the Minkowskian model of spacetime typically associated with contemporary physics is incomplete, as it lacks the fundamental structure underlying the notions of absolute presentness and absolute simultaneity. For many B-theorists (and indeed, for many of those without a particular stake in the metaphysics of time), the fact that the A-theoretic model of fundamental reality is inconsistent with the model associated with contemporary physics proves that the A-theory is false.<sup>3</sup> A-theorists dispute this: they point out that it is not surprising that the physical model does not posit fundamental structure corresponding to absolute presentness, as that model is solely designed to explain the physical phenomena, whereas A-theorists posit fundamental structure corresponding to

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matter). The point is just that the model as typically understood does not contain the sort of structure that would induce a partition into what could be thought of as *instants of time*.

<sup>3</sup> For example, see Sider (2001, 42-52).

absolute presentness in order to provide a philosophical account of time and change. They argue that while the physical model may well be sufficient for providing a certain kind of scientific explanation of the physical phenomena, the reality it describes is one in which there is no time and change, but merely variation.<sup>4</sup>

It is useful to compare A-theorists to those who hold that there are fundamental phenomenal properties.<sup>5</sup> For such theorists, the best physical explanation of the mind is incomplete, because it lacks fundamental structure corresponding to phenomenal consciousness. They do not *reject* the physical model of the mind; they merely supplement it. And they do not dispute that the physical model is perfectly adequate for providing a certain kind of scientific explanation of the physical phenomena. Their philosophical opponents- those who hold that phenomenal properties are non-fundamental- may argue that their view is disproved by the fact that it is inconsistent with the best physical model of the mind, in which there is no fundamental structure corresponding to phenomenal consciousness. However, this objection looks weak: surely it is possible that the best physical model of the mind *is* incomplete, and that philosophical reflection could lead to a revision of the physical theory. The real question would seem to be whether there are good *philosophical* reasons for believing in the fundamentality of phenomenal properties. Similarly, those who are tempted to reject the A-theory on the grounds that it is inconsistent with certain contemporary models of spacetime should at least be willing to consider whether there are good philosophical reasons for revising those models.<sup>6</sup>

The second essential component of the moving spotlight theory is the thesis that as time passes, things neither begin nor cease to exist; in other words, that it is always the

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<sup>4</sup> I consider some of the ways that A-theorists can respond to the charge of inconsistency with physics in Chapter One.

<sup>5</sup> For example, see Chalmers (1996).

<sup>6</sup> I describe the key arguments for the A-theory in Chapter Four.

case that everything exists forever.<sup>7</sup> I call this thesis *permanentism*.<sup>8</sup> In Chapters Five and Six, I defend permanentism against its rivals *transientism* (the view that things both begin and cease to exist over time) and *pastism* (the view that things begin but never cease to exist over time).

The moving spotlight theory combines the A-theory and permanentism. Historically, the moving spotlight theory has been the least popular of the plausible theories of time, so it may come as a surprise that someone should want to defend it. For example, Sider (2001, 18-9), a B-theorist, describes and dismisses the moving spotlight theory in the space of three paragraphs. According to Sider, the theory is ‘unmotivated’. Similarly, Zimmerman (2011, 171-2), an A-theorist, describes and dismisses the theory in two paragraphs, on the grounds that it is inconsistent with the thesis that the future is ‘open’.<sup>9</sup> The question is: why has the moving spotlight theory been so unpopular? There are two plausible reasons. First, there is a certain contrast between the two essential components of the moving spotlight theory- namely, the A-theory and permanentism- which makes it less likely that theorists would wish to combine them. The contrast is that whereas the A-theory looks inconsistent with the physics-driven model of reality but seems to fit well with ‘common sense’, permanentism seems to be part of the physics-driven model but is arguably inconsistent with ‘common sense’. Therefore theorists who are motivated to defend the theory of time that fits best with the physics-driven model typically reject the A-theory, and theorists who are motivated to defend the theory of time that appears to fit best with ‘common sense’ typically reject permanentism. Assuming that these are common motivations when it comes to defending theories of time, it is not surprising that the moving spotlight theory has been relatively unpopular.

Second, the moving spotlight theory has typically been badly misconstrued. In

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<sup>7</sup> In the most general sense of ‘exist’, according to which to exist is just to be identical to something.

<sup>8</sup> Following Williamson (2013, 4).

<sup>9</sup> I respond to this objection in Chapter Two.

particular, the theory is often falsely described as a theory according to which the *only* change that occurs as time passes is change in which instant is absolutely present.<sup>10</sup>

Understandably, this mistake has led some, like Sider (2001), to dismiss the view as unmotivated. Similarly, the theory is often mistakenly thought to imply the absurd result that *every* instant is absolutely present (Bourne 2006, Smith 2010, and Sider 2011 all make this mistake). In Chapter Two, I provide a careful description of the moving spotlight theory which shows that these really are misconceptions and mistakes. I also show that moving spotlighters can easily respond to the main arguments that have been raised against their view.

The moving spotlight theory is not merely less implausible than it seems. In this thesis, I show that the moving spotlight theory, when correctly understood, is the very best theory of time.<sup>11</sup> In particular, I show that the combination of the A-theory and permanentism is extremely powerful, even if it is not fully in line with either the physics-driven model or the ‘intuitive’ picture. The moving spotlight theory inherits the simplicity, explanatory power, and scientific respectability of permanentism, while at the same time describing a world of real time and change.

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<sup>10</sup> For example, Sider (2001, 17) appears to characterise the view this way.

<sup>11</sup> In fact, I defend a particularly simple and elegant reductive version of the moving spotlight theory called *classic MST*. Why ‘classic MST’? Because classic MST is closest to the traditional conception of the moving spotlight theory.

# Part One

## Introducing the moving spotlight theory

The conclusion of this thesis is that a version of the moving spotlight theory of time, which I call *classic MST*, is true. The thesis has two parts, and the aim of each part is to establish the truth of one of two premises that support the conclusion. The aim of Part One is to show that if the moving spotlight theory is true, then classic MST is true. The aim of Part Two is to show that the moving spotlight theory is true. Thus we have the basic argumentative structure of the thesis:

- (1) The moving spotlight theory is true  $\supset$  classic MST is true (Part One)
- (2) The moving spotlight theory is true (Part One)
- (3) Classic MST is true

Now let us zoom in on Part One. Part One has three chapters. In Chapter One, I introduce the most important theoretical distinction in the philosophy of time: that between the *A-theory* of time and the *B-theory* of time. I then describe a number of well-known arguments against the A-theory. I show that none of these arguments succeeds. In Chapter Two, I describe three well-known versions of the A-theory: *presentism*, *the growing block theory*, and *the moving spotlight theory*. I don't define these theories in the usual way, in terms of whether everything (unrestrictedly) is 'present' or whether there are also 'past' or 'future' things. Instead, I define them in terms of how they answer the question of whether as time passes, things neither begin nor cease to exist (*permanentism*), begin to exist only (*pastism*), cease to exist only (*futurism*), or both begin and cease to exist (*transientism*). I

also describe two different version of the moving spotlight theory: classic MST, which is similar to the ‘traditional’ version of the theory, and *Williamsonian passage*, which is a version of the theory based on a modal theory defended by Timothy Williamson (2002, 2010, 2013). I argue that classic MST is the better of the two theories. In Chapter Three, I defend Chapter Two’s novel definitions of the A-theories by arguing that the standard definitions are not very good (or at least, not as good as the new definitions). I focus on the standard definition of presentism (according to which always, everything is present) as a case study, and show that given each of the most plausible candidate interpretations of that definition, presentism is either trivial, too obscure or implausible to be worthwhile debating (at least, compared with presentism as defined in Chapter Two), controversial for reasons that have nothing to do with the philosophy of time, or has consequences which most self-described presentists would reject. I conclude that theorists should abandon the standard definitions in favour of the definitions introduced in Chapter Two.

# Chapter One

## The A-theory

### 1.0 Introduction

The most important theoretical division in the metaphysics of time is that between the *A-theory*, according to which some instant of time is absolutely, non-relatively present, and the *B-theory*, according to which presentness for instants is merely a relative matter (and therefore there is no absolute, non-relative present instant). The names ‘A-theory’ and ‘B-theory’ are derived from theoretical terms first introduced by the philosopher J. M. E. McTaggart in his 1908 essay ‘The Unreality of Time’. The argument of that paper is restated at length in Chapter 33 (‘Time’) of McTaggart’s 1927 book *The Nature of Existence*. There, McTaggart writes (my emphases):

I shall give the name of *the A series* to that series of positions which runs from the far past to the near past to the present, and then from the present through the near future to the far future, or conversely. The series of positions which runs from earlier to later, or conversely, I shall call *the B series*. (McTaggart 1927, 10)

Based on what McTaggart says, we can say that the instants of time form an A-series iff every instant is either absolutely past, present, or future, and form a B-series iff every instant is earlier than, later than, or simultaneous with some instant.<sup>12</sup> The contemporary A- and B-theories are closely related to the McTaggartian theses that the instants form A- and B-series. In particular, it is clear that the A-theory is true iff the instants of time form

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<sup>12</sup> I address the question of whether we should believe that there really are such things as instants of time in §1.1.3 below.

an A-series: there is an absolutely present instant iff each instant is either absolutely past, present, or future.<sup>13</sup> However, notice that while the A- and B-theories are inconsistent, the thesis that the instants form a B-series is consistent with the thesis that the instants form an A-series, and therefore with the A-theory.

The aim of this chapter is to introduce the A- and B-theories and defend the A-theory against some prominent objections. The chapter has five parts. In §1.1 I define the A- and B-theories, and describe some important points of philosophical agreement and disagreement between A- and B-theorists. In §§1.2-7 I consider six relatively well-known arguments against the A-theory. The first four arguments are closely related: they are McTaggart's (1908, 1927) argument that the A-theory is inconsistent, and three recent attempts to 'update' McTaggart's argument due to Fine (2005) and Deng (2012), Bourne (2006), and Smith (2010). The fifth argument is the 'rate of passage' argument associated with Smart (1949), to the effect that the A-theoretic account of the passage of time can be shown to be incoherent by consideration of the question of how fast time passes. The sixth argument is that the A-theory is inconsistent with modern spacetime physics (a version of which was famously articulated by Putnam 1967). I show that there are good A-theoretic responses to all of these arguments.

## 1.1 Theories of time

### 1.1.1 *The A-theory*

Let us return to McTaggart's A-/B-series distinction. We said above that the instants of time form an A-series iff each instant is either absolutely past, present, or future. Therefore

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<sup>13</sup> Assuming that an instant is absolutely past [future] iff it is earlier [later] than the absolute present instant.

if the instants form an A-series, some instant is absolutely present.<sup>14</sup> This gives us our definition of the A-theory:

A-THEORY: Some instant is absolutely present<sup>15</sup>

A few clarificatory comments on this definition: first, the A-theory is not to be confused with presentism, usually defined as the thesis that everything is present.<sup>16</sup> Presentists are A-theorists, but not all A-theorists are presentists.<sup>17</sup> Well-known non-presentist versions of the A-theory include the growing block theory, usually described as the theory that there are past and present things but no future things, and the moving spotlight theory, according to which there are past, present, *and* future things.<sup>18</sup>

Second, the predicate ‘is absolutely present’ in the above definition is intended to be read as expressing a temporary property (i.e. a property that is gained or lost over time), rather than a permanent property such as the property of being identical to now.

Third, it is supposed to be consistent with the A-theory that the property of being present is not itself a fundamental property, but rather reduces to or supervenes on the fundamental. Thus, for example, a given theory of time  $T$  counts as a version of the A-theory if according to  $T$  (i) there is an instant  $t$  such that, for all propositions  $p$ ,  $p$  is true at  $t$  iff  $p$  is true simpliciter, and (ii) for an instant  $t$  to be *present* is just for  $t$  to be the instant at which for all propositions  $p$ ,  $p$  is true at  $t$  iff  $p$  is true simpliciter. (Note that what it is for an instant to be present according to a particular version of the A-theory will depend on what sort of things plays the instant role according to that theory. I say more about different

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<sup>14</sup> And vice versa. I assume that if some instant is present then exactly one instant is present, just as we assume that if some possible world is actual then exactly one possible world is actual.

<sup>15</sup> From now on the predicates ‘is past’, ‘is present’, and ‘is future’ should be read as expressing the properties of *absolute* pastness, presentness, and futurity, unless otherwise specified.

<sup>16</sup> I argue against this way of defining presentism in Chapter Three below.

<sup>17</sup> Presentists include Bigelow (1996), Crisp (2003), Markosian (2004), Prior (1968), and Zimmerman (2008).

<sup>18</sup> Growing blockers include Broad (1923, ch 2), Forrest (2004), and Tooley (1997). The moving spotlight view is described but not endorsed by Broad (1923, 59-60).

candidates for the instant-role below.)

Finally, there are modal, spatial, and egocentric analogues of the A-theory. For example, the popular modal theory of *actualism* (usually defined as the thesis that necessarily, everything is actual) is a version of the modal A-theory, according to which some possible world is absolutely, non-relatively *actual*.<sup>19</sup> On the other hand, the spatial A-theory is, as far as I am aware, universally rejected: no-one believes that some place is metaphysically special in the same way that some instant is metaphysically special according to the A-theory. Similarly, there are few explicit defenders of the egocentric A-theory, the solipsistic theory according to which some first-person perspective is metaphysically special.<sup>20</sup> Although in what follows we shall focus exclusively on the temporal A-theory, it is useful for readers to bear in mind the modal, spatial, and egocentric A-theories. In particular, readers might consider the question of whether the various arguments levelled against the temporal A-theory have analogues that can be levelled against the modal, spatial, and egocentric A-theories, and if so, whether the analogous arguments are more or less compelling than the originals.

### 1.1.2 *The B-theory*

As we saw above, A-theorists hold that there is an absolute present instant, and therefore every instant is absolutely past, present, or future. Typically, A-theorists analyse claims about the pastness and futurity of instants as follows:

PAST INSTANTS: Instant  $t$  is past iff  $t$  is earlier than the present instant

FUTURE INSTANTS: Instant  $t$  is future iff the present instant is earlier than  $t$

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<sup>19</sup> Actualists include Adams (1974), Plantinga (1976), and Prior (1957). Bricker (2006) is an example of a *non-actualist* modal A-theorist; Lewis (1986) is an example of a non-actualist modal B-theorist.

<sup>20</sup> Hare (2009) defends the egocentric A-theory.

Of course, B-theorists can pay lip-service to these principles; however, when they express them they use the predicates ‘is past’ and ‘is future’ to express permanent properties (such as the property of being earlier than the instant it is now) at each context.

It is clear from the above principles that A-theorists hold that the instants stand in the ‘B-relations’ of precedence and simultaneity, and hence also form a B-series. However, this does not mean that A-theorists are also B-theorists. Both A- and B-theorists hold that the instants stand in permanent temporal relations: both accept common-sense claims such as that some instant  $t$  in 1066 is earlier than some instant  $t'$  in 2066 (and therefore that  $t'$  is later than  $t$ ) and that both  $t$  and  $t'$  are simultaneous with themselves. The difference is that, whereas A-theorists hold that each instant is also absolutely past, present, or future, B-theorists hold that *no* instant is absolutely past, present, or future. This gives us our definition of the B-theory:

**B-THEORY:** No instant is absolutely present

A few clarificatory comments: first, some might worry about whether B-theorists could even express the B-theory as defined above, given that the definition mentions absolute presentness. For example, suppose that propositions are structured entities á la Russell (1903). In that case, the proposition that no instant is absolutely present presumably has the property of absolute presentness as a constituent. If constituency is essential- if things cannot exist without their constituents- then if the property of absolute presentness does not exist, the proposition that no instant is absolutely present does not exist. But B-theorists might well deny that the property of absolute presentness exists. This is an instance of the familiar problem of expressing propositions about entities one rejects. There are a number of ways in which B-theorists could respond to this problem; I shall not go into details here. However, one response would be to allow that the property of absolute

presentness exists but is (permanently) unexemplified.

Some might be tempted to reject the B-theory as obviously false, on the grounds that the instant it is now is obviously absolutely present. Those who read the above definition this way should remember that ‘absolutely present’ in the definitions of the A- and B-theories means *non-relatively* present. And the thesis that no instant is non-relatively present is by no means obviously false. For example, consider the thesis that no-one is a friend.<sup>21</sup> This might sound obviously false: after all, many people are friends! However, if we read the thesis as saying that no-one is a *non-relative* friend, then the thesis is obviously true: no-one is a non-relative friend; every friend is a friend *to* someone. According to B-theorists, presentness is like friendship: just as no-one is an absolute friend, no instant is absolutely present. The thesis that no-one is an absolute friend is obviously true; the thesis that no instant is absolutely present is not obviously false.

Second, although B-theorists deny that some instant is non-relatively present, they do hold (with A-theorists) that every instant is relatively present, as every instant is present relative to itself:

RELATIVITY OF PRESENTNESS: Every instant  $t$  is such that at  $t$ ,  $t$  is present

And of course this is right: from the perspective of any given instant *that* instant is the present instant (even if it is absolutely past or future), just as from the perspective of any given story, *that* story is true (even if it is absolutely false). Moreover, instants are also present relative to objects and events; for example, some instant in 1914 is present relative to the outbreak of the First World War.

Third, although B-theorists deny that instants can be ordered as past, present, and future simpliciter, they do hold (again, with A-theorists) that instants can be ordered as past, present, and future relative to instants, or to objects and events located at instants

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<sup>21</sup> Thank you to Cian Dorr for this example.

(just as all places can be ordered as north, south, east, or west relative to places or objects and events located in places):

RELATIVE PASTNESS: Instant  $t$  is past relative to instant  $t'$  [object  $x$ /event  $e$ ] iff  $t$  is earlier than  $t'$  [ $t$  is earlier than the instant  $t'$  at which  $x/e$  is located]

RELATIVE FUTURITY: Instant  $t$  is future relative to instant  $t'$  [object  $x$ /event  $e$ ] iff  $t'$  is earlier than  $t$  [the instant  $t'$  at which  $x/e$  is located is earlier than  $t$ ]

Note that if object  $x$ /event  $e$  is located at more than one instant- that is, if  $x/e$  is *non-instantaneous*- then it is less clear what it is for an instant to be past relative to  $x/e$ . One option is to say that instant  $t$  is past relative to non-instantaneous  $x/e$  iff  $t$  is earlier than every time  $t'$  at which  $x/e$  is located. In that case, no instant in 1989 (for example) is past relative to me. On the other hand, we could say that instant  $t$  is past relative to non-instantaneous  $x/e$  iff  $t$  is earlier than *some* time  $t'$  at which  $x/e$  is located. But then there are instants in 1945 that are past relative to the Second World War, which sounds odd. Thus the first option seems preferable. (Further complications arise when we consider what it is for one non-instantaneous thing to be past relative another non-instantaneous thing. For example, suppose event  $e_1$  begins an instant later than event  $e_2$  but ends long before  $e_2$  does. Is  $e_1$  past relative to  $e_2$ ?)

B-theorists typically capture the relativity of presentness by endorsing a semantics for the predicate 'is present' according to which sentences of the form ' $x$  is present' express permanent propositions such as that  $x$  is located at  $t$ , or is identical with  $t$ , where  $t$  is the instant at which the sentence is uttered. For example, B-theorists can argue that when someone utters the sentence 'Instant  $t$  is present' (or even 'Instant  $t$  is absolutely present') in a normal context, they express the trivially true permanent proposition that  $t$  is identical with the instant it is now. Thus B-theorists can pay lip-service to the A-theory without

accepting that there really is an absolutely present instant.

Finally, as with our statement of the A-theory, the predicate ‘is absolutely present’ in the definition of the B-theory is intended to be read as expressing a temporary property, and it is not assumed that the property of being present is a fundamental property of instants.

As defined above, the B-theory is just the negation of the A-theory. Of course, A- and B-theorists naturally hold that their theories are always true if true.<sup>22</sup> Thus, we could also define the theories as follows:

ETERNAL A-THEORY: Always, some instant is absolutely present

ETERNAL B-THEORY: Always, no instant is absolutely present

The problem with defining the theories this way is that it complicates matters by drawing attention to the bizarre theory that it is sometimes but not always the case that some instant is absolutely present; or in other words (given our original definitions) that the A-theory is sometimes true and the B-theory is sometimes true. This sort of ‘occasional A-/B-theory’ is not worthy of serious consideration, so we keep things simple by sticking with our original definitions.

### 1.1.3 *Instants*

The definitions of the A- and B-theories mention instants of time. But why should we believe there are such things as instants of time? First, there are semantic reasons. In particular, quantification over instants is ubiquitous in ordinary thought and speech; consider how many everyday sentences begin with constructions like ‘That time . . .’, ‘This time . . .’, and ‘The moment . . .’. This provides us with a *prima facie* reason to

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<sup>22</sup> And, perhaps, necessarily true if true. In this thesis I try to avoid the question of the modal force of theories of time.

believe in instants. Moreover, instants are naturally taken to be the referents of precise time-dates such as ‘2pm on Thursday 21<sup>st</sup> May 1984’. Second, instants play a very useful role in our understanding of, and theorising about, time. For example, given instants we can describe the following natural principles concerning the standard temporal sentence operators ‘it was the case that . . .’ (formally represented in this thesis as ‘**P**’) and ‘it will be the case that . . .’ (formally represented in this thesis as ‘**F**’):

P-PRINCIPLE: It was the case that  $\phi$  iff at some instant  $t$  earlier than the present instant,  $\phi$

F-PRINCIPLE: It will be the case that  $\phi$  iff at some instant  $t$  later than the present instant,  $\phi$

Thus, for example, given the above principles we can say that if it was raining in Oxford, then at some past instant  $t$ , it is raining in Oxford.

The P- and F-principles characterise one important part of the theoretical role played by instants. The following principles further characterise that role:

AT-P: At instant  $t$ , it was the case that  $\phi$  iff at some instant  $t'$  earlier than  $t$ ,  $\phi$

AT-F: At instant  $t$ , it will be the case that  $\phi$  iff at some instant  $t'$  later than  $t$ ,  $\phi$

AT- $\&$ : At instant  $t$ , ( $\phi$  and  $\psi$ ) iff at  $t$ ,  $\phi$  and at  $t$ ,  $\psi$

AT- $\vee$ : At instant  $t$ , ( $\phi$  or  $\psi$ ) iff at  $t$ ,  $\phi$  or at  $t$ ,  $\psi$

AT- $\neg$ : At instant  $t$ , not- $\phi$  iff it is not the case that at  $t$ ,  $\phi$

PERMANENCE: At  $t$ ,  $\phi \supset \text{always}(\text{at } t, \phi)$ <sup>23</sup>

What the above principles show is that whatever exactly instants are, they are things *at* which things are the case, they are things that bear properties such as being past and future, they are things that stand in temporal relations such as being earlier than and later than, and they are such that whatever is the case at them is *always* the case at them.

What sort of thing could play the instant role? And what is it for something to be the case *at* an instant? The answer to the latter question plausibly depends on the answer to the former. The two most popular theories of instants are the *spacetime view* and the *propositional view*. According to the spacetime view, instants are analogous to spatial locations: they are points along the temporal dimension of four-dimensional reality, just as places are points in the three spatial dimensions of reality. More precisely, according to the spacetime view instants are *hyperplanes of simultaneity*: maximal sets of simultaneous spacetime points. Of course, theorists according to whom there is no absolute simultaneity- i.e. B-theorists- will want to add that the points in question are simultaneous *relative to a frame of reference*. For B-theorists, given that there is no absolute presentness and therefore no absolute simultaneity, there are lots of different ways of ‘slicing’ or ‘foliating’ the spacetime manifold into instants, and no metaphysically significant reason to prefer one foliation to another. That does not mean that there are no instants according to the B-theory; it simply means that for B-theorists, reference to instants is always explicitly or implicitly relativised. On the other hand, for A-theorists who accept the spacetime view, absolute presentness determines a metaphysically privileged foliation of the manifold into absolute instants.

According to the propositional view of instants, instants are analogous to *stories* or

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<sup>23</sup> Similarly, whatever is the case at a possible world  $w$  is *necessarily* the case at  $w$ . We can put it like this: what is the case at possible worlds characterises modality, so cannot itself be a contingent matter. Similarly, what is the case at instants characterises time, so is not itself a temporary matter.

*plans* rather than places: they are complete descriptions of how the world (intrinsically) is, was, or will be. More specifically, according to the propositional view an instant  $t$  is a *complete, consistent, temporal proposition*: a consistent proposition that is sometimes true, and that is such that for any proposition  $p$ , either  $p$  or not- $p$  is true at  $t$ .

Unsurprisingly, proponents of the spacetime and propositional views provide very different analyses of sentences of the form ‘At  $t$ ,  $\phi$ ’. According to proponents of the spacetime view, for something to be the case *at* an instant is for something to bear some sort of relation to a hyperplane of simultaneity. For example, consider the sentence

(1) ‘At some past instant  $t$ , John is happy’

According to the spacetime view, (1) is true iff John bears the permanent two-place happy-at relation to a past hyperplane of simultaneity. But what is it for something to bear the happy-at relation to an instant (as opposed to just being happy simpliciter)? Some proponents of the spacetime view argue that for John to be happy at a past instant  $t$  is for there to be an *instantaneous temporal part* of John that is happy simpliciter and that is located at  $t$ , where an instantaneous temporal part of John at  $t$  is (i) part of John at  $t$ , (ii) overlaps every part of John that is located at  $t$ , and (iii) is located at, and only at,  $t$ .<sup>24</sup> Others argue that for John to be happy at a past instant  $t$  is for there to be a *temporal counterpart* of John that is happy simpliciter and that is located at  $t$ , where a temporal counterpart of John is, roughly, an instantaneous object that resembles John in certain contextually salient respects.<sup>25</sup> Yet others argue that no further analysis of the happy-at relation is possible.<sup>26</sup> There is no need to go into the details of the different possible views here. The point is just that, according to the spacetime view, facts about what is the case *at* instants boil down to facts about permanent relations (which may or may not be subject to further analysis)

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<sup>24</sup> See Sider (2001, 55-62) for discussion.

<sup>25</sup> See *ibid.* 188-208 for discussion.

<sup>26</sup> Or at least, that there is no analysis of *happiness-at* in terms of happiness simpliciter.

between things (e.g. objects, events, regions of spacetime) and regions of spacetime (hyperplanes of simultaneity).

On the other hand, according to the propositional view, a sentence of the form ‘At instant  $t$ ,  $\varphi$ ’ is true iff  $t$  entails  $\varphi$ . Thus, for example, sentence (1) above is true iff there is a complete, consistent proposition  $p$  that was true and that entails that John is happy. This analysis of ‘at instant  $t$ ’ fits with the idea that according to the propositional view, instants are like stories: according to the propositional view, something is the case at an instant iff it is the case according to that time-story.

Finally, for A-theorists what it is for an instant to be absolutely present depends on the theory of instants one accepts. For example, those who accept the propositional view analyse presentness in terms of truth, so that what it is for an instant to be present is for that instant to be true.<sup>27</sup> On the other hand, those who accept the spacetime view have a choice: they can hold that presentness is a fundamental property of hyperplanes, or of spacetime points; or they can hold that presentness is a non-fundamental property of hyperplanes and that, for example, what makes a hyperplane  $t$  absolutely present is that things bear a temporary location relation to  $t$ , or there is a certain isomorphism between the fundamental properties things have and the fundamental relations they bear to  $t$ .<sup>28</sup>

There is no need to decide between the spacetime and propositional views of instants here, as the theories will be discussed in the next chapter in the context of different theories of time. The main point is just that instants- whatever they are- play a very useful role in theorising about time, and that is a good reason to think that there are such things.

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<sup>27</sup> A-theorists who accept the propositional view can still hold that there is a fundamental property of presentness. For example, an A-theorist might think that (i) what it is for an instant to be present is for that instant to be true, and (ii) there is a fundamental property of presentness instantiated by regions or points of spacetime. On this view, part of what makes a given instant true (and thus present) is that it says truly of a certain region of spacetime that it instantiates fundamental presentness.

<sup>28</sup> I discuss these views in more detail in Chapter Two.

#### 1.1.4 *Temporalism and change*

The disagreement between A- and B-theorists concerning whether there is an absolute present instant gives rise to many other disagreements. In this section, I describe two important such disagreements, concerning the sort of propositions there are and the nature of change and the passage of time.

Let us begin by defining the terms ‘temporary proposition’ and ‘permanent proposition’ as follows:

**TEMPORARY PROPOSITION:** Proposition  $p$  is temporary iff ( $p$  is true simpliciter  $\supset p$  was or will be false simpliciter) & ( $p$  is false simpliciter  $\supset p$  was or will be true simpliciter)

**PERMANENT PROPOSITION:** Proposition  $p$  is permanent iff  $p$  is not temporary

A temporary proposition is a proposition such as that Dan is sitting, which is now true simpliciter but was false simpliciter. A permanent proposition is a proposition such as that Dan is sitting at 11.47am on 17/12/2011, which is true simpliciter and never was or will be false simpliciter.

Consider the following two theses concerning temporary propositions:

**PROPOSITIONAL TEMPORALISM:** Some proposition is temporary

**PROPOSITIONAL PERMANENTISM:** No proposition is temporary

Propositional temporalism is the thesis that there is at least one temporary proposition, and propositional permanentism is the thesis that there are no temporary propositions. Given the definitions of ‘temporary proposition’ and ‘permanent proposition’, propositional temporalism is equivalent to the thesis that not every proposition is permanent, and

propositional permanentism is equivalent to the thesis that every proposition is permanent.

There are important connections between propositional temporalism and the A-theory, and propositional permanentism and the B-theory. In particular, given that there are many instants of time, the A-theory entails propositional temporalism. For suppose that the A-theory is true. In that case, some instant  $t$  is present. Call  $t$  'Presento' and consider the true proposition that Presento is present. That proposition is either permanent or temporary. If it is permanent, then it is always the case that Presento is present, which is clearly false. Therefore the proposition that Presento is present is temporary. Therefore there is at least one temporary proposition, and propositional temporalism is true.

The above argument is not simply an instance of the contentious argument that propositional permanentism entails that there is no change over time. B-theorists can consistently (i) deny that propositional permanentism entails that there is no change over time and (ii) agree with A-theorists that, given propositional permanentism, if some  $x$  instantiates the property of being  $F$  simpliciter then  $x$  never changes with regard to being  $F$ . What the above argument shows is that both A- and B-theorists must hold that for any property  $F$ , if  $F$  is instantiated simpliciter and things change over time with regard to being  $F$ , then (i) propositions of the form  $Fx$  are temporary, and (ii) the property of being  $F$  simpliciter is a *temporary property*:

TEMPORARY PROPERTY: Property  $F$  is temporary iff sometimes(some  $x$  is  $F$  and it was or will be the case that  $x$  is not- $F$ )  $\vee$  sometimes(some  $x$  is not- $F$  and it was or will be the case that  $x$  is  $F$ )

Thus, for example, given that A-theorists hold that there is a property of being present simpliciter and there is change over time in which instant is present, they must hold that (i) propositions such as that Presento is present are temporary and (ii) the property of being

present simpliciter is a temporary property of instants. (Indeed, A-theorists hold that the property of being present simpliciter is an *instantaneous* property of instants, where a property *F* is instantaneous iff always, if something is *F* then it never was and never will be *F*.)

We have seen that given some uncontroversial assumptions the A-theory entails propositional temporalism, from which it follows that propositional permanentism entails the B-theory. But does the B-theory entail propositional permanentism? Or in other words, does propositional temporalism entail the A-theory? Dorr (Book MS, *Counterparts*) provides one argument that it does: suppose that propositional temporalism is true. Then exactly one instant is *accurate*, where an instant *t* is accurate iff for all propositions *p*, *p* is true at *t* iff *p* is true simpliciter (if propositional permanentism is true, then all instants are accurate). If what it is for an instant *t* to be absolutely present is just for *t* to be accurate, then if propositional temporalism is true, the A-theory is true. And even if accuracy is not identical to presentness, accuracy entails presentness: every instant *t* is such that at *t*, *t* is present, so if instant *t* is accurate, it is true simpliciter that *t* is present. Moreover, as a matter of sociological fact, all B-theorists endorse propositional permanentism. (I take it this is what is typically meant when it is said that B-theorists are ‘reductionists about tense’, although it is not easy to see exactly what propositional permanentism, a thesis concerning the kinds of propositions there are, has to do with tense, which is a grammatical phenomenon.)

As well as disagreeing about whether there are temporary propositions, A- and B-theorists also disagree about the fundamental nature of *change over time*. Of course, there are some points of agreement between A- and B-theorists concerning change; for example, both A- and B-theorists should accept that something changes iff it is one way at some instant *t* and not that way at some other instant *t'*. However, it is natural for A-theorists to

define the notion of change over time in terms of temporary propositions, so that the following biconditional provides a ‘metaphysical analysis’ of its left-hand side:

A-CHANGE: There is change over time iff some proposition is temporary

In other words, it is natural for A-theorists to hold that *what it is* for there to be change over time is for propositional temporalism to be true. Given that B-theorists reject propositional temporalism, B-theorists agree that if the B-theory is true, there is no change over time in the A-theorist’s sense. However, that does not mean that B-theorists hold that nothing ever changes. B-theorists simply deny that change over time entails that there are temporary propositions. Rather, they hold that the facts of change over time are certain kinds of permanent facts, such as that Dan is sitting at 11.48am on 13 August 2012 and standing at 1.32pm on 13 August 2012.

The B-theoretic view of change over time is analogous to the uncontroversial common-sense view of change across space. For example, consider the flag of Switzerland. Everyone agrees that the flag of Switzerland varies, or changes, across space- it is red in some places and white in others. Everyone also agrees (or would agree, if they thought about it) that such variation does not entail the existence of spatially temporary propositions- that is, propositions that change in truth-value simpliciter across space. Rather, the natural view is that the facts of change or variation across space are spatially permanent propositions such as that the Swiss flag is red at location  $l_1$  and white at location  $l_2$ . B-theorists think that change over time is analogous to variation across space, so that both sorts of change must be described using permanent propositions of the relevant sort. A-theorists, on the other hand, think that there is an important difference between change over time and variation across space. Many A-theorists would say that the world that B-theorists describe is one in which there is no change at all.

## 1.2 McTaggart's argument

A number of influential arguments against the A-theory have been put forward over the years. Perhaps the most famous is McTaggart's (1908, 1927) argument for the unreality of time. The basic form of McTaggart's argument is as follows:

- (1) There is time  $\supset$  there is change over time
- (2) There is change over time  $\supset$  the instants of time form an A-series
- (3) The instants do not form an A-series
- (4) There is no change over time (from (2) and (3))
- (5) There is no time (from (4) and (1))

The part of this argument that has received most attention is the argument for premise (3). Given that the instants of time form an A-series iff the A-theory is true, if this argument is successful it shows that the A-theory is false. From now on, let us use *McTaggart's argument* to refer specifically to the argument for premise (3). Although McTaggart's argument has received a great deal of philosophical attention, there has never been a firm consensus concerning whether it is successful: some have dismissed it as a 'howler' (Broad 1938, 309-17 and Sider 2001, 35, n. 19), whereas others have taken it to successfully establish the falsehood of the A-theory (Dummett 1960, Mellor 1998, 72-8). In any case, the argument continues to cast some doubt over the A-theory.<sup>29</sup> In the rest of this section, I show that the argument is indeed a 'howler'.

McTaggart's argument is supposed to show that A-theorists 'cannot escape from contradiction'; that is, they cannot avoid the conclusion that the A-theory entails a

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<sup>29</sup> Why is McTaggart's argument so divisive? Part of the reason must be that the argument is, as van Inwagen (2002, 64) says, 'famously obscure'.

falsehood. The basic form of the argument is as follows: first, there is a short sub-argument to the effect that a typical A-theoretic claim  $C_1$  entails a falsehood  $F_1$ , and hence the A-theory is false. The main argument then continues as an imaginary dialectic between McTaggart and an A-theorist. The dialectic begins with the A-theorist's attempt to avoid the conclusion of the initial sub-argument, by arguing that  $C_1$  does not entail falsehood  $F_1$  but rather truth  $C_2$ . McTaggart responds that  $C_2$  entails a distinct falsehood  $F_2$ , by an argument more or less analogous to that from  $C_1$  to  $F_1$ , and therefore that  $C_1$  still entails a falsehood (namely  $F_2$ ). The A-theorist then responds that  $C_2$  does not entail falsehood  $F_2$ , but rather truth  $C_3$ . McTaggart responds that  $C_3$  entails yet another distinct falsehood  $F_3$ , by an argument analogous to those from  $C_1$  to  $F_1$  and  $C_2$  to  $F_2$ , and therefore that  $C_1$  still entails a falsehood ( $F_3$ ). The A-theorist then responds that  $C_3$  does not entail falsehood  $F_3$ , but rather the truth  $C_4$  . . . and so on. This dialectic is such that it can continue indefinitely: every time the A-theorist tries to avoid an argument to the effect that some basic A-theoretic claim  $C$  entailed by  $C_1$  (i.e.  $C_1, C_2, C_3, C_4$  . . .) entails a falsehood  $F$ , she is confronted by yet another argument analogous to the initial argument from  $C_1$  to  $F_1$  to the effect that some further A-theoretic claim entailed by  $C_1$  *also* entails a falsehood.

In a bit more detail, McTaggart argues as follows:<sup>30</sup> first, A-theorists accept e.g.

(1):

(1) Some event  $e$  is present

For example, A-theorists hold that the event of your reading this sentence is a present event. McTaggart (1927, 20) writes (my emphasis): 'If  $M$  [some event  $e$ ] is past, it has been present and future. If it is future, it will be present and past. If it is present, it has been

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<sup>30</sup> I rely on the 1927 version of McTaggart's argument. I stick quite closely to what McTaggart actually says, in contrast to some recent commentators (see e.g. Fine 2005 and Smith 2010).

future and will be past. *Thus all three characteristics belong to each event.*' In other words, McTaggart holds that

(2) If event  $e$  is past then  $e$  is present and future, and if  $e$  is present then  $e$  is past and future, and if  $e$  is future then  $e$  is past and present

Call this principle 'All Three'. McTaggart points out that, given All Three, (1) entails (3):

(3) Some event  $e$  is past, present, and future

However:

(4) Necessarily, nothing is past, present, and future<sup>31</sup>

Therefore:

(5) (1) entails a falsehood (i.e. (3)), and is therefore false

Of course, this argument does not essentially rely on there being such things as *events*: an analogous version can be run on the core A-theoretic thesis that some instant is present.

That version of the argument begins with the premise

(1\*) Some instant  $t$  is present

and concludes that some instant is past, present, and future. Therefore A-theorists who are anti-realists about events are still threatened by McTaggart's argument.

McTaggart anticipates the following A-theoretic response to the above argument:

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<sup>31</sup> There is a sense in which something can be past, present, and future: for example, I am past, present, and future in the sense that I am located in the past, present, and future. In the context of McTaggart's argument, 'is past', 'is present', and 'is future' should be read as meaning *wholly past*, *wholly present*, and *wholly future*, where something is (e.g.) wholly past if its only location in reality is in the past. Alternatively, think of the argument as concerned only with instantaneous events, or with instants (see below).

It is never true, the answer will run, that M [*e*] is present, past and future. It is present, will be past, and has been future. Or it is past, and has been future and present, or again is future and will be present and past. The characteristics are only incompatible when they are simultaneous, and there is no contradiction to this in the fact that each event has all of the successively. (McTaggart 1927, 21)

In other words, McTaggart assumes that A-theorists will deny All Three and assert that what follows from (1) is not (3), but (6):

(6) Some event *e* is such that *e* is present and *it will be the case that e* is past and *it was the case that e* is future

McTaggart responds with a rhetorical question: ‘But what is meant by “has been” and “will be”? And what is meant by “is”, when, as here, it is used with a temporal meaning, and not simply for predication?’ He answers:

When we say that X has been Y, we are asserting X to be Y at a moment of past time. When we say that X will be Y, we are asserting X to be Y at a moment of future time. When we say that X is Y (in the temporal sense of ‘is’), we are asserting X to be Y at a moment of present time. (McTaggart 1927, 21)

Thus McTaggart is committed to the following plausible claim about the truth-conditions of tensed sentences:

(7) A sentence of the form ‘It was the case that *x* is *F*’ is true iff *x* is *F* at some past instant; a sentence of the form ‘*x* is *F*’ is true iff *x* is *F* at the present instant; and a sentence of the form ‘It will be the case that *x* is *F*’ is true iff *x* is *F* at some future instant

Call (7) ‘TCs’. Given TCs, (6) is true iff (8) is true:

(8) Some event  $e$  is such that (i)  $e$  is past at some future instant and (ii)  $e$  is present at the present instant and (iii)  $e$  is future at some past instant

However, by the analogous version of All Three for instants, (8) entails (9):

(9) Some event  $e$  is such that (i)  $e$  is past at an instant  $t$  such that  $t$  is past, present, and future, and (ii)  $e$  is present at an instant  $t'$  such that  $t'$  is past, present, and future, and (iii)  $e$  is future at an instant  $t''$  such that  $t''$  is past, present, and future

Thus (1) entails (10), which is false given (4):

(10) Some instant  $t$  is past, present, and future

It follows that (1) is still false. McTaggart assumes that A-theorists will respond as they did to the initial argument, this time by rejecting the version of All Three for instants and denying that (8) entails (9). However, McTaggart will then point out that A-theorists accept a further ‘tensed’ claim analogous to (1) and (6). He will then apply TCs to this further claim and show that it entails a falsehood given (4) and the version of All Three for instants.

The dialectic between McTaggart and the A-theorist could, in principle, continue indefinitely. McTaggart describes it as a ‘vicious infinity’:

Such an infinity is vicious. The attribution of the characteristics past, present and future to the terms of any series [i.e. events or instants of time] leads to a contradiction, unless it is specified that they have them successively. This means, as we have seen, that they have them in relation to terms specified as past, present, and future. These again, to avoid a like contradiction, must in turn be specified as

past, present and future. And, since this continues infinitely, the first set of terms never escapes from contradiction at all. (McTaggart 1927, 22)

In other words, McTaggart takes it to follow from the fact that A-theorists can be engaged in the potentially infinite dialectic described above that they cannot avoid the conclusion that the A-theory entails a falsehood.

How should A-theorists respond to McTaggart's argument? First, they should point out that there is a big difference between engaging in a dialectic that *could* continue indefinitely and engaging in a dialectic that *should* continue indefinitely. McTaggart seems to think that his argument forces A-theorists into the latter position, of embarking on a dialectic that should continue indefinitely. However, that is not the case: A-theorists can legitimately end the dialectic by rejecting All Three. Consider how the dialectic would actually go were McTaggart's interlocutor a sensible A-theorist:<sup>32</sup>

*McTaggart:* The A-theory entails a falsehood. For example, you [the A-theorist] accept that some event *e* is present. But if some event *e* is present, then *e* is past, present, and future. But nothing is past, present, and future.

*A-theorist:* I do accept that some event *e* is present. But it is obviously false that if some event *e* is present then *e* is past, present, and future. You have provided no argument whatsoever for thinking that.

*McTaggart:* I grant that. But do you accept that some event *e* *will be* past, *is* present, and *was* future?

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<sup>32</sup> For ease of exposition, my imaginary sensible A-theorist is a moving spotlight theorist. However, note that McTaggart's argument can also be directed against other versions of the A-theory, as long as they are combined with the thesis that there are past and present instants.

*A-theorist:* You are changing the subject! We agreed that there is no reason to think that *e* is past or future. Now you are raising the question of whether *e* was past or *will be* future. We could just as well talk about whether *e* is *possibly* past, or past *according to some story*. All of this is irrelevant to the question of whether *e* is past or future, and we have settled that question.

[At this point, I think the A-theorist can consider herself to have successfully avoided McTaggart's argument, by rejecting All Three. However, let us assume she continues with the dialectic.]

Anyway, I do accept that *e* was past and will be future. What of it?

*McTaggart:* Well, what is meant by 'was' and 'will be'? And what is meant by 'is', when, as here, it is used with a temporal meaning, and not simply for predication? When we say that X was Y, we are asserting X to be Y at a moment of past time. When we say that X will be Y, we are asserting X to be Y at a moment of future time. When we say that X is Y (in the temporal sense of 'is'), we are asserting X to be Y at a moment of present time. Thus, a sentence of the form 'It was the case that *x* is *F*' is true iff *x* is *F* at some past instant, and a sentence of the form '*x* is *F*' is true iff *x* is *F* at the present instant, and a sentence of the form 'It will be the case that *x* is *F*' is true iff *x* is *F* at some future instant. So the sentence 'Some event *e* will be past, is present and was future' is true iff some event *e* is such that *e* is past at some future instant and *e* is present at the present instant and *e* is future at some past instant.

*A-theorist:* Yes, I agree with all that.

*McTaggart*: Aha! Given that if an instant  $t$  is present then  $t$  is past, present, and future, it follows that the sentence ‘Some event  $e$  will be past, is present, and was future’ is true iff some event  $e$  is such that  $e$  is past at an instant  $t$  such that  $t$  is past, present, and future, and  $e$  is present at an instant  $t'$  such that  $t'$  is past, present, and future, and  $e$  is future at an instant  $t''$  such that  $t''$  is past, present, and future. So the sentence ‘Some event  $e$  will be past, is present, and was future’ entails a falsehood (namely, that some instant  $t$  is past, present and future). Therefore your theory is false.

*A-theorist*: No, it is not. You’ve provided no reason to think that if an instant  $t$  is present then  $t$  is past, present, and future.

*McTaggart*: I grant that. But do you accept, for example, that some instant  $t$  is such that it *is* future and *will be* present and past?

*A-theorist*: You are changing the subject yet again, and you keep appealing to a premise [All Three] for which you have no argument. Therefore I’m afraid we have to stop speaking.

And there the dialectic ends, with the A-theorist having legitimately ‘escaped from contradiction’ by rejecting McTaggart’s strange premise.

### 1.3 Fine’s McTaggart

We have shown that A-theorists have nothing to fear from McTaggart’s argument.

However, in recent years there have been a number of attempts to up-date McTaggart’s argument. In the next three sections I consider some of these attempts, and show that each one fails.

We begin with Fine's (2005) McTaggart-inspired 'argument from passage'. Fine argues as follows:

The standard realist [roughly, the A-theorist] faces a general difficulty. For suppose we ask: given a complete tenseless description of reality, then what does he need to add to the description to render it complete by its own lights? The answer is that he need add nothing beyond the fact that a given time  $t$  is [absolutely] present, since everything else of tense-theoretic interest will follow from this fact and the tenseless facts. But then how could this solitary 'dynamic' fact, in addition to the static facts that the anti-realist [roughly, the B-theorist] is willing to accept, be sufficient to account for the passage of time? [The realist's] conception of temporal reality . . . is as static or block-like as the anti-realist's, the only difference lying in the fact that his block has a privileged centre. Even if presentness is allowed to shed its light upon the world, there is nothing in his metaphysics to prevent that light being 'frozen' on a particular moment of time. (Fine 2005, 287)

As Dorr (Book MS, *Counterparts*, 11) points out, A-theorists will naturally respond to the above by pointing out that there *is* something in the A-theorist's metaphysics that prevents the 'light of presentness' being 'frozen' on a certain moment of time: namely, the fact that not only is some instant present, but various instants were and will be present. Fine has a counter-response to this response:

However, the future presentness of  $t_+$  amounts to no more than  $t$  being present and  $t_+$  being later than  $t$ , and . . . the past presentness of  $t_-$  amounts to no more than  $t$  being present and  $t_-$  being earlier than  $t$ . But then how can the passage of time be seen to rest on the fact that a given time is present and that various other times are either earlier or later than that time? (Fine 2005, 287)

Fine's argument seems to be that, because A-theorists accept the P- and F-principles

P-PRINCIPLE: It was the case that  $\phi$  iff at some instant  $t$  earlier than the present instant,  $\phi$

F-PRINCIPLE: It will be the case that  $\phi$  iff at some instant  $t$  later than the present instant,  $\phi$

they hold that the fact that some instants were and will be present *amounts to nothing more than* the fact that some instants are earlier and later than the present; and the fact that some instants are earlier and later than the present is consistent with the thesis that presentness is frozen on a particular instant. But there is a straightforward A-theoretic response to this argument: even if the fact that some instants were and will be present amounts to nothing more than the fact that some instants are earlier and later than the present, given the P- and F-principles, the fact that some instants are earlier and later than the present entails that some instants were and will be present; and presentness cannot be frozen if some instants were and will be present. Put simply, A-theorists can respond to Fine by pointing out that the P- and F- principles cut both ways.

Dorr (Book MS, *Counterparts*, 12-13) interprets Fine as challenging A-theorists to explain *how* the P- and F-principles could hold. He argues that A-theorists can meet Fine's challenge by arguing that the P- and F-principles are not merely necessary equivalences but 'real definitions', or 'metaphysical analyses'. As Dorr points out, the P- and F-principles are natural and believable analyses for A-theorists to endorse.

According to Deng (2012), on the other hand, Fine should be read as arguing roughly as follows: there is a certain 'intuitive picture of the passage of time' that the A-theory fails to capture (in a particular sense of 'capture' to be explained below). Given that the B-theory also fails to capture this picture, it follows that neither the A- nor the B-theory

succeeds in capturing the intuitive picture of passage. Deng (2012, 13) concludes that the A- and B-theories ‘do not substantially differ over whether time is dynamic, i.e. whether time passes’.

A-theorists should strongly resist Deng’s conclusion. As we saw above, A-theorists hold that time passes iff there are temporary propositions. Given that B-theorists hold that there are no temporary propositions, from an A-theoretic perspective, the B-theory is a view according to which time does not pass. For an A-theorist to accept that there is no difference between the A- and B-theories when it comes to passage would be tantamount to giving up on the A-theory.

Let us look at Deng’s argument in a bit more detail. Deng’s core claim is that the A-theory fails to capture the intuitive picture of the passage of time. Deng describes this picture as follows:

When we picture this kind of process [the passage of time], we imagine more than the tensed facts that obtain at present, to the effect that certain other times were present and others will be. The act of imagination itself unfolds over time; first we imagine a certain time being present and certain others being past and future, *but then we also imagine the next time being present and certain others being past and future*. That is, first we imagine just one set of tensed facts holding, but shortly after that, we also imagine a different set of tensed facts holding, which privilege a different time. (Deng 2012, 8)

According to Deng, the intuitive picture of passage consists in a temporally extended imaginative episode: the act of imagining different instants being successively absolutely present. But how exactly does the A-theory fail to ‘capture’ this picture? After all, according to the A-theory different instants are successively absolutely present: no A-

theorist denies that as well as some instant being absolutely present, some other instant *was* absolutely present and some other instant *will be* absolutely present. The problem, according to Deng, is that the A-theory fails to grant sufficient metaphysical weight (in some sense) to the former presentness of past instants and the future presentness of future instants. She writes (my emphasis): ‘First we imagine one set of tensed facts holding, but shortly after that, we also imagine a different set of tensed facts holding . . . *it is this next collection of tensed facts that is left out of any given standard realist [A-theoretic] description.*’

It is a little easier to see what Deng is getting at in the above quotation if we imagine that the universe began one moment ago and will end one moment hence. Let us call the present instant  $t$ , the first moment of time  $t-$ , and the last moment of time  $t+$ . Here is an A-theoretic description of the world:

(PRES)  $t$  is present &  $t-$  was present &  $t+$  will be present

Next, here is an A-theoretic description of the how the world was at the first moment of time:

(PAST)  $t$  will be present &  $t-$  is present &  $t+$  will be present

Finally, here is how the world will be at the last moment of time:

(FUT)  $t$  was present &  $t-$  was present &  $t+$  is present

Deng’s idea is as follows: the intuitive picture of the passage of time consists in our imagining that each of PRES, PAST, and FUT is successively true. According to the A-theoretic description of the world, PRES is true, PAST was true but is no longer, and FUT will be true but is not yet. However, in order to ‘capture’ the intuitive picture of the passage of time, it is not enough to grant former truth to PAST and future truth to FUT.

More needs to be done.

What would it take to capture the intuitive picture of passage? Granting truth simpliciter to PAST and FUT would simply result in a contradictory theory, according to which e.g.  $t$  is both present and not present (remember that the property of being present is an *instantaneous* property, and therefore such that if something had or will have it, it doesn't have it). Deng seems to hold that Fine's (2005, 280) *fragmentalist* view of time is a view that succeeds in capturing the intuitive picture. According to fragmentalism, each of PAST, PRES, and FUT is fundamentally true, but fundamentally, it is not the case that PAST, PRES, and FUT are true. Thus Fine's view employs a hyperintensional operator- *it is fundamentally the case that*- in order to grant something more than former and future truth to PAST and FUT (i.e. fundamental truth), but in a way that does not lead to contradiction.

An alternative and rather more radical option would be to reject the traditional assumption that theories of time must be static representations that do not *themselves* change over time. Instead, one could argue that given the nature of time, theories of time must themselves be unfolding temporally-extended processes, and therefore cannot be stated once and for all at a given moment. On this view, the A-theory would be stated by uttering PAST at  $t-$ , PRES at  $t$ , and FUT at  $t+$ ; although PAST and FUT would both be ascribed truth simpliciter, no contradiction would arise as they are never true at the same point in the process of stating the theory. A version of the A-theory that didn't merely describe change but *involved* change in this way might be said to 'capture' the intuitive picture of passage in the relevant sense.

There are two points that A-theorists should make in response to Deng's argument. The first is that Deng never explains why a theory (such as the standard A-theory) that ascribes former and future truth to PAST and FUT fails to capture the intuitive picture; it is

merely stated that this is not enough. But of course, A-theorists can and should reject this assumption. Moreover, A-theorists can point out that when this assumption *is* accepted, the only way to capture the intuitive picture is by introducing the ideological complexity of an ‘it is fundamentally the case that’ operator, or by adopting an eccentric view of theories of time according to which they are not stated but rather ‘unfold’ over time. This indicates that the assumption should be rejected.

Second, A-theorists should point out that there at least two ways in which the A-theory (but not the B-theory) can be meaningfully said to *capture* the intuitive picture. First, the intuitive picture- the temporally extended imaginative episode described by Deng- clearly embodies a view according to which some instant is absolutely present, and various other instants were and will be present. But there is a perfectly natural sense of ‘capture’ according to which if a picture *P* embodies a theory *T* then *T captures P*. Second, notice that the A-theorist’s *beliefs* about which time is absolutely present will, from the perspective of the intuitive picture, evolve over time in a perfectly appropriate manner. Indeed, the only difference between the A-theorist’s evolving beliefs about absolute presentness and the intuitive picture (the imaginative episode) is that the intuitive picture involves imagination rather than belief. In that sense, the A-theory but not the B-theory does capture the intuitive picture.

## 1.4 Bourne’s McTaggart

We saw above that McTaggart’s argument fails miserably: to avoid it, A-theorists simply have to reject McTaggart’s unsupported and clearly false premise that if anything is past, present, or future, it is past, present, *and* future. However, according to Bourne (2006, 73-8) McTaggart’s argument- or at least, something like it- shows that A-theorists cannot accept the existence of non-present objects or events. Given that the version of the A-

theory defended in this thesis is a theory according to which there are non-present objects and events, it is especially worth responding to Bourne's argument here.

Bourne actually provides two versions of his McTaggartian argument, one directed at the conjunction of the A-theory and the thesis that there are non-present instants, and one directed at the conjunction of the A-theory and the thesis that there are non-present facts. Let us describe and respond to each in turn; we shall see that both arguments rest on the same mistake.

Bourne's first argument is as follows:

Suppose, for instance, we get someone to admit that there is a time that will become present. We then ask when that time will become present. The answer is: in the future (or, if you like, later than the present). But this concedes that there is a time in the future that is present (and so *mutadis mutandis* for all other locations in time). But a time cannot be both present and future. Thus we have a contradiction. (Bourne 2006, 75)

It is easy to see where this argument goes wrong. To make things clear, let us set out Bourne's argument in more formal terms. Suppose 'Futuro' names a future instant (e.g. some instant in 2066). Then the argument is as follows:

- (1) **F**(Futuro is present)
  
- (2) At some instant  $t$  later than the present instant, Futuro is present (from (1) and the F-principle)
  
- (3) Futuro is present

Premise (1) is true: Futuro is a future instant, and (1) says truly of it that it will be present.

Premise (2) applies the F-principle to (1). This is the answer to the question: when will

Futuro be present? (3) is the conclusion, that Futuro is present, which leads to a contradiction given that Futuro is future: nothing can be both (wholly) present and (wholly) future. The problem with this argument, of course, is that (3) does not follow from (2). According to (2), Futuro is present at a future instant  $t$ ;  $t$  is, of course, Futuro itself, as every instant is present relative to itself and only itself. However, it does not follow from the fact that an instant is present relative to itself that it is present, just as it does not follow from the fact that at some future instant I am sleeping that I am sleeping, or that at some past instant Caesar is crossing the Rubicon that Caesar is crossing the Rubicon. Bourne provides no reason at all to think that A-theorists should accept the move from premise (2) to premise (3).

Why doesn't the fact that Futuro is present at Futuro imply that Futuro is present simpliciter? On one natural A-theoretic analysis of 'at  $t$ ',  $\phi$  is the case at instant  $t$  iff it is always the case that  $t$ 's being absolutely present implies  $\phi$ .<sup>33</sup>

AT-T: At instant  $t$ ,  $\phi$  iff always( $t$  is present  $\supset \phi$ )

Given this analysis, the relativity of presentness is trivial: for an instant  $t$  to be present relative to itself is just for it to be the case that always,  $t$ 's being present implies  $t$ 's being present. But the trivial fact that whenever Futuro is present, Futuro is present in no way implies that Futuro is present, just as the trivial fact that whenever I am King of France, I am King of France in no way implies that I am King of France. The only way to reach the conclusion that Futuro is present is to add the premise that Futuro is present; but that is precisely what the argument is meant to show. Thus Bourne's argument fails to show that given the A-theory, a commitment to non-present things leads to contradiction.

Bourne's second argument is similar to his first. The argument is as follows:  
consider the proposition that

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<sup>33</sup> There are other ways for A-theorists to analyse 'at  $t$ ', as we shall see in Chapter Two.

(1) Tubbs was suckling pigs

What makes (1) true according to the A-theorist believer in non-present things? Bourne writes:

According to these theories, it is Tubbs's suckling pigs being present in the past, i.e., the location in the past of the present fact that Tubbs is suckling pigs, that makes (1) true . . . This is contradictory: facts cannot be past and present. (Bourne 2006, 77)

If we assume that Tubbs is not suckling pigs now and replace Bourne's talk of 'facts' being 'past' and 'present' with talk of events occurring (which makes no relevant difference to the argument), we get something like the following argument:

(1) **P**(The event of Tubbs's suckling pigs is occurring)

(2) At some instant  $t$  earlier than the present instant, the event of Tubbs's suckling pigs is occurring (from (1) and the P-principle)

(3) The event of Tubbs's suckling is occurring

Given that Tubbs is not suckling pigs, the conclusion (3) is false. Premises (1) and (2) are true. The question is whether the conclusion follows from the premises. As with the first argument, it does not: it does not follow from the fact that an event  $e$  is occurring at some past instant that  $e$  is occurring, just as it does not follow from the fact that I am on an aeroplane at some past instant that I am on an aeroplane. Bourne provides no reason at all why A-theorists should accept this move, and of course they should not.

## 1.5 Smith's McTaggart

A similar attempt to 'up-date' McTaggart's argument is due to Smith (2010). Smith begins by observing that A-theorists typically accept claims such as the following:

- (1) 1900 is past, was present, and was future

According to Smith, when A-theorists assert (1) they mean that 1900 is past, present, and future relative to different instants. Smith then raises a question: when A-theorists say that 1900 is past, present, and future relative to different instants, what do they mean by 'instant'? According to Smith, there are two options: they could be referring to 'normal times', such as some instant in 1900, or 'hypertimes', 'times in a second time-dimension which is distinct from our normal time-dimension.' Smith argues that A-theorists face a dilemma: if 'instant' means 'normal time', then the A-theory entails obvious falsehoods, such as that 1900 is both past and present; and if 'instant' means 'hypertime', then the A-theory is subject to certain 'devastating objections'. While Smith considers both options, let us focus on the argument that if instants are normal times, the A-theory entails obvious falsehoods.<sup>34</sup>

Smith (2010, 240-1) argues as follows:

- (1) For all instants  $t$ , at  $t$ ,  $t$  is present
- (2) 1900 is present at 1900
- (3) For all instants  $t$  (at  $t$ ,  $t$  is present  $\supset t$  is present)
- (4) 1900 is present

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<sup>34</sup> Remember that here and in what follows the monadic predicates 'is past', 'is present', and 'is future' express the properties of *absolute* pastness, presentness, and futurity respectively, unless stated otherwise.

The conclusion (4) is that 1900 is present; given that 1900 is also past, if (4) is true then 1900 is both past and present, which is a contradiction. The above argument is valid; the question is whether A-theorists should accept the premises. A-theorists (and B-theorists) should certainly accept premise (1), the principle that every instant is present relative to itself, and premise (2), which is simply an instance of this principle. For one thing, as we saw above, (1) follows straightforwardly from a natural A-theoretic analysis of ‘at  $t$ ’ according to which ‘at  $t$ ,  $\varphi$ ’ means ‘always,  $t$  is present  $\supset \varphi$ ’.<sup>35</sup> For another, what would it mean to deny (1)? It would mean that some instant of time is not present from the perspective of itself. But that would be absurd: it would be like saying there is a story which is false from the perspective of that very story. Therefore A-theorists should accept both premises (1) and (2).

Premise (3) states that every instant is such that, if it is present relative to itself, it is present simpliciter. But why would an A-theorist accept this premise, given that it leads to contradiction? Smith attempts to motivate the premise by asking us to imagine a spacetime diagram representing the world as it is according to the A-theory. He raises the following question: which instant on the diagram must A-theorists identify as the ‘objective now’ (that is, the absolute present)? The answer, one would have thought, is straightforward: the instant it is now. According to Smith, however, A-theorists must identify *every* instant as absolutely present. The reason is as follows:

The now [i.e. the absolute present] has to be in 1800- to represent the fact that as of 1800, 1800 was present . . . It also has to be in 1900- to represent the fact that as of 1900, 1900 was present. It also has to be in 3000- to represent the fact that as of 3000, 3000 will be present. And so on: the now has to be everywhen. (Smith 2010, 240)

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<sup>35</sup> It also follows on alternative analyses, as we shall see in Chapter Two.

In other words, every instant is absolutely present, because every instant is present relative to itself! This is not an argument for premise (3), but merely a restatement of it. In fact, Smith provides no independent argument for premise (3). Given that there is no reason at all why A-theorists should accept premise (3), they can easily avoid Smith's argument. (Note that Smith (2010, 241-4) assumes that A-theorists will respond to the argument by appealing to fundamental temporal operators. However, we have seen that that is not the case.)

Let us try to diagnose Smith's error. Smith thinks that given the A-theory, if an instant is present relative to itself then it is present simpliciter. Why? A reasonable conjecture is that Smith mistakenly assumes that expressions of the form 'at  $t$ ' (where  $t$  is the name of an instant) invariably display the same sort of logical behaviour as, for example, the expression 'In Co. Galway' in the sentence

(5) 'In Co. Galway, some people wear pampooties'

The expression 'In Co. Galway' in (5) simply serves to restrict the quantifier 'some people' to the good people of Co. Galway. Moreover, one can infer from (5) that some people wear pampooties. If 'at  $t$ ' always displayed the same logical behaviour as 'In Co. Galway' in (5), then one could always infer ' $t$  is present' from sentences of the form 'At  $t$ ,  $t$  is present'. One could then show that according to the A-theory, every instant is absolutely present (and past, and future).<sup>36</sup>

A-theorists deny that expressions of the form 'at  $t$ ' function like the expression 'In Co. Galway' in (5). Rather, they hold that 'at  $t$ ' functions like the expression 'In *Star Wars*' in the sentence

(6) 'In *Star Wars*, there are Wookies'

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<sup>36</sup> Bourne's (2006) arguments described in the previous section seem to rest on the same mistake concerning the expression 'at  $t$ '.

The expression ‘In *Star Wars*’ in (6) functions as a sentence operator, so the logical form of (6) is something like

(7) ‘According to the *Star Wars* films (there are Wookies)’

Crucially, one cannot infer from (6) that there are Wookies. Why not? The natural answer is: *because the Star Wars films aren’t true*. Similarly, according to A-theorists one cannot infer that 1900 is present from the sentence

(8) ‘At 1900, 1900 is present’

Why not? The natural answer is: *because 1900 is not present*. Just as truth is the missing ingredient that would get one from (6) to the existence of Wookies, presentness (which is truth according to the propositional view of instants, but may also be accuracy, or be fundamental) is the missing ingredient that would get one from (8) to the truth of ‘1900 is present’. The problem with Smith’s argument is that (like Bourne’s) it requires as a premise just what it is supposed to show.

## 1.6 The rate of passage argument

There is a well-known argument against the A-theory to the effect that the A-theory can be shown to be incoherent by consideration of the question ‘How fast does time pass?’ Call this the *rate of passage argument*. The rate of passage argument is closely associated with J. J. C. Smart, although as Markosian (1993, 836) points out, it may in fact have its origins in Broad (1938). In any case, the argument is still raised against the A-theory (e.g. in van Inwagen 2002).

Smart (1949) describes some of the ways in which time is not, after all, like a river.

According to Smart, one way in which time is not like a river is that it makes sense to ask how fast a river is flowing, but not to ask how fast time is flowing:

With respect to motion in space it is always possible to ask ‘how fast is it?’ An express train, for example, may be moving at 88ft per second. The question, ‘How fast is it moving?’ is a sensible question with a definite answer: ‘88 feet per second’. We may not in fact know the answer, but we do at any rate know what sort of answer is required. Contrast the pseudo-question ‘How fast am I advancing through time?’ or ‘How fast did time flow yesterday?’ We do not know how we set about answering it. What sort of measurements ought we to make? We do not even know the sort of units in which our answer should be expressed. ‘I am advancing through time at how many seconds per \_\_\_?’ we might begin, and then we should have to stop. What could possibly fill in the blank? Not ‘second’ surely. In that case the most we could hope for would be the not very illuminating remark that there is just one second in every second. (Smart 1949, 215)

According to Markosian (1993, 838-9), Smart advances something like the following argument in the above passage:

- (1) Time passes  $\supset$  there is a meaningful question of how fast time passes
- (2) There is a meaningful question of how fast time passes  $\supset$  there is a meaningful answer to the question of how fast time passes
- (3) There is no meaningful answer to the question of how fast time passes
- (4) Time does not pass (from (2), (3), and (4))

In common with other theorists, Markosian treats the rate of passage argument as an argument against the A-theory in particular.<sup>37</sup> However, there is no reason why the argument as stated above should not also apply to the B-theory. After all, both A- and B-theorists hold that time passes. Clearly, Markosian and others intend the notion of *the passage of time* in the above argument to be understood in such a way that premise (1) is to be read ‘If time passes *as it does according to the A-theory*, then . . .’ and the conclusion (4) is to be read ‘Time does not pass *as it does according to the A-theory*’. But then there is also a version of the argument that applies to the B-theory, in which premise (1) reads ‘If time passes *as it does according to the B-theory*, then . . .’ and the conclusion (4) reads ‘Time does not pass *as it does according to the B-theory*’. I cannot see any reason at all why B-theorists are any less obliged to respond to this version of the argument than A-theorists are obliged to respond to the A-theoretic version. However, I will follow convention and assume that the rate of passage argument applies only to A-theorists. (B-theorists should feel free to endorse the responses to the argument offered to A-theorists below, which do not rely on the truth of the A-theory).

As Markosian (1993, 840-3) points out, there are a number of ways in which A-theorists can respond to the rate of passage argument. The most natural responses are as follows: first, reject premise (3) on the grounds that there *is* a meaningful answer to the question of how fast time passes, namely, that time passes at a rate of one second per second (1sec/sec);<sup>38</sup> and second, to reject premise (1) on the grounds that there is no meaningful question of how fast time passes (perhaps because the question is really one about *rates*, and rates are defined in such a way that one cannot meaningfully ask for the

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<sup>37</sup> For example, here is Olson (2009, 3): ‘Many philosophers say that time has a kind of flow or passage that distinguishes it from space . . . This is the *dynamic view* of time. A traditional objection to the dynamic view says that if time passes in this way, it must pass at some rate, yet we cannot say what the rate would be.’ I take it that Olson identifies the ‘dynamic view of time’ with the A-theory, in contrast the ‘static view of time’ associated with the B-theory.

<sup>38</sup> Or 1min/min, and so on.

rate of the passage of time). Which response should A-theorists prefer? The correct response, I believe, is the first: that time passes at a rate of one second per second is a perfectly meaningful and sensible answer to the question of how fast time passes.

There are a number of ways in which a defender of the rate of passage argument can respond to the denial of premise (3). The most obvious is to reject the claim that time passes at the rate of one second per second is a meaningful answer to the question of how fast time passes, perhaps on the grounds that a rate of change must be a ratio of a quantity of something other than time and a quantity of time. However, this response is hard to sustain. That time passes at a rate of one second per second seems to be a perfectly meaningful answer to the question of how fast time passes. Indeed, it looks like the only sensible answer. It sounds a little odd, but that is because the question of how fast time passes is an odd question, and with odd questions one often gets odd answers. It is also uninformative, but that is to be expected: the question of how fast time passes surely demands an uninformative answer.<sup>39</sup> Moreover, there is no good reason to think that the ratio of a quantity of time to a quantity of time should not count as a *rate of change*.

A defender of the argument can also respond as follows: the claim that time passes at a rate of one second per second is a meaningful answer to the question of how fast time passes. However, it is also completely uninformative. Moreover, what the rate of passage argument really demands is a meaningful *and informative* answer to the question of how time passes. When ‘meaningful answer’ in the above argument is read throughout as ‘meaningful and informative answer’, premise (3) can no longer be rejected. Thus your response fails.

How should A-theorists respond to this argument? They should admit that premise (3) is true when ‘meaningful answer’ in the rate of passage argument is read as

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<sup>39</sup> Unless the answer is, say, that time passes at rate of 31,557,600 seconds per scientific year (365.25 days). I return to this point below.

‘meaningful and informative answer’. However, in that case they should deny premise (2), according to which (on the relevant interpretation) if there is a meaningful question of how fast time passes, there is a meaningful and informative answer to the question of how fast time passes. The question of how fast time passes, like the question ‘At what rate does length proceed?’ (or: ‘At what rate does distance lengthen?’) is a meaningful question whose answer is almost certain to be uninformative.<sup>40</sup> There is no good reason to expect an informative answer to the question, and there is no reason to be surprised that there are meaningful questions that demand uninformative answers.<sup>41</sup>

A third response to the A-theorist’s denial of premise (3) is developed by Price (1996, 13) and van Inwagen (2002, 59).<sup>42</sup> The argument is directed specifically against the claim that time passes at a rate of one second per second:

(1) Time passes  $\supset$  time passes at a rate of one second per second (1sec/sec)

(2) One second per second is equivalent to one second divided by one second

(1sec/sec = 1sec  $\div$  1sec)

(3) One second divided by one second is equal to 1 (1sec  $\div$  1sec = 1)

(4) Time passes  $\supset$  time passes at a rate of 1 (from (1), (2), and (3))

(5) 1 is not a rate of passage

(6) Time does not pass (from (4) and (5))

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<sup>40</sup> Assuming knowledge of units of time and measurement. The answer that time passes at a rate of 60 seconds per minute might be informative to someone who is familiar with seconds and minutes but doesn’t know how many seconds there are in a minute, and the answer that length proceeds at a rate of 12 inches per foot might be informative to someone who is familiar inches and feet but doesn’t know how many inches are in a foot.

<sup>41</sup> The defender of the rate of passage argument might reply that if the A-theorist cannot provide an informative answer to the (meaningful) question of how fast time passes, then she cannot claim to have given any content to the notion of *the passage of time* (or at least, no distinctively A-theoretic content). However, there is no good reason for an A-theorist to agree with this assumption; see e.g. Markosian (1993).

<sup>42</sup> This argument has been the topic of most recent discussion of the rate of passage argument; see e.g. Olson (2009) and Philips (2009).

The argument is a more sophisticated version of the first anti-A-theoretic response described above, according to which the claim that time passes at a rate of one second per second is not a meaningful answer to the question of how fast time passes. Rather than trying to argue that ‘rate of change’ is defined in such a way that one second per second cannot count as a rate of change, Price and van Inwagen argue that one second per second is equivalent to the dimensionless quantity of 1, and dimensionless 1 is not a rate of passage, and hence not a meaningful answer to the question of how fast time passes.

How should A-theorists respond to the Price-van Inwagen argument? In order to see that the argument fails, it is useful to focus on some other kinds of ‘rate’ talk. Suppose, for example, that there were twelve murders in Oxford last year.<sup>43</sup> Now you are asked ‘What was the murder rate in Oxford last year?’ A meaningful and relatively informative answer would be ‘Twelve murders per year’. What this means is that, for every year that passed last year, there were twelve murders in Oxford. However, suppose that you answer the question instead with ‘Twelve murders divided by one year’. That would not be a meaningful (or at least a very sensible) answer. What could it mean to answer the question with ‘Twelve murders divided by one year’? Similarly, it would be strange to answer the question ‘How fast were you cycling?’ with ‘Twelve miles divided by one hour’, rather than with ‘Twelve miles per hour’. What this shows is that twelve murders per year is not equivalent to twelve murders divided by one year, and twelve miles per hour is not equivalent to twelve miles divided by one hour.

That is not to deny that one can divide a number of murders by a number of years, or a number of miles by a number of hours. For example, suppose we understand the question ‘What was the murder rate in Oxford last year?’ as the question ‘What do we get when we divide the number of murders in Oxford last year by the number of years that

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<sup>43</sup> The actual murder rate in Oxford is far less than one per month. For example, in 2007/8 (the only year for which I could find a figure) there was just one murder in Oxford. There is no reason to think that this number has increased.

passed last year?’ In that case, the correct answer to the question is ‘Twelve’. But then ‘Twelve’ is a meaningful and informative answer to the question of the murder rate in Oxford last year: it is understood as giving the result of the division of the number of murders in Oxford last year by the number of years that passed last year.

Let us return to the rate of the passage of time. A-theorists ought to answer the question ‘How fast does time pass?’ with ‘One second per second’, meaning that for every second that passes, a second passes. According to the Price – van Inwagen argument, this is equivalent to ‘One second divided by one second’. However, just as ‘Twelve murders divided by one year’ would not be a sensible answer to the question of the murder rate in Oxford last year, ‘One second divided by one second’ would not be a sensible answer to the question of the rate of the passage of time. What this shows is that premise (2) of the Price-van Inwagen argument is false: one second per second is not equivalent to one second divided by one second.<sup>44</sup>

Of course, just as one can understand a request for the murder rate in Oxford last year as a request for the number of murders in Oxford last year divided by the numbers of years that passed last year, one could understand the question of the rate of the passage of time as a request for the number of seconds in a second divided by the number of seconds in a second. In that case, ‘1’ would be a meaningful answer to the question of the passage of time. But then premise (5) of the Price-van Inwagen argument would be false: it would be true that 1 is a rate of passage.

To conclude: premise (2) of the Price-van Inwagen argument is false: one second per second is not equivalent to one second divided by one second. We can see this by focusing on questions such as ‘What was the murder rate in Oxford last year?’, to which ‘Twelve murders per year’ is a sensible answer but ‘Twelve murders divided by one year’

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<sup>44</sup> See Philips (2009).

is not. Similarly, when it comes to the question ‘What is the rate of the passage of time?’, ‘One second per second’ is a meaningful but uninformative answer (equivalent to ‘For every second that passes, a second passes’) but ‘One second divided by one second’ is a meaningless (or at least, not a very good) answer. Moreover, while there *is* a way of understanding the question ‘What is the rate of the passage of time?’ in such a way that the correct answer is ‘1’, in that case 1 is a rate of passage, and therefore premise (5) of the Price-van Inwagen argument is false.

## 1.7 The argument from spacetime physics

We now consider a final argument against the A-theory, based on the fact that the A-theoretic account of fundamental reality differs from that associated with modern spacetime physics. Call this the *spacetime physics argument*. Of all the arguments against the A-theory, the spacetime physics argument is rightly considered the most powerful. In this section, I describe three versions of the spacetime physics argument and suggest responses to each on behalf of A-theorists.

In short, the spacetime physics argument is as follows: according to modern spacetime physics, fundamental physical reality consists of a four-dimensional manifold of spacetime points: a set of minimal-sized spatiotemporal locations related in such a way that their structure is geometrically describable. The points (and *regions*: sets of points) of this manifold are such that they bear certain natural structures. However, if the A-theory is true, the points of the manifold bear natural structures in addition to those posited by modern spacetime physics. Therefore, the A-theory is false.

Let us try to fill some of the gaps in the above argument. First, what sort of additional natural spacetime structure does the A-theorist posit? According to the A-theory, one instant is fundamentally distinct from all others in virtue of being the absolute

present instant. As mentioned above, that is not to say that according to the A-theory, presentness is a fundamental property: it could be that some other more fundamental property serves to distinguish the present instant from all others. However, it remains the case that given the A-theory, there is a fundamental instantaneous property instantiated by an instant  $t$  in virtue of which  $t$  is the absolute present instant and is metaphysically distinct from every other instant. Spacetime physicists, on the other hand, posit no such property, and therefore do not posit the relevant fundamental distinction between one instant and every other.

Second, note that the spacetime physics argument moves from the premise that A-theorists posit fundamental structure which physicists do not to the conclusion that the A-theory is false. But how exactly is this move made? There are at least two ways of making the argumentative transition from the first premise to the second. Here is one way:<sup>45</sup>

- (1) The A-theory posits fundamental structure that physics does not
- (2) Philosophical modesty requires that we accept the following principle: if a philosophical theory  $T$  posits fundamental structure not posited by physics, then  $T$  is false
- (3) The A-theory is false

Call this the *modesty argument*. Something like this argument is put forward by Putnam (1967) and Sider (2001, 42-52), and seems to be what many B-theorists have in mind when they argue that the A-theory is false on the grounds that it is ‘inconsistent with’ current spacetime physics (and in particular, with the Special Theory of Relativity (‘STR’)).<sup>46</sup>

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<sup>45</sup> Dorr (Book MS, *Counterparts*, 94) argues in something like the following way. Note that Dorr rejects premise (1).

<sup>46</sup> Zimmerman (2011, 208-226) examines some of the different ways in which a given theory could be said to ‘inconsistent with’ STR.

How should A-theorists respond? The key premise is the claim that philosophical modesty demands that we accept the principle that if a philosophical theory  $T$  posits fundamental structure not posited by physics, then  $T$  is false. But there is certainly room for A-theorists to argue that modesty is consistent with the denial of (2). For example, an A-theorist might reject (2) in favour of (2\*):

(2\*) Philosophical modesty demands that we accept the following principle: if a philosophical theory  $T$  posits fundamental structure not posited by physics, then we should be suspicious of  $T$

Dorr (Book MS, *Counterparts*, 94) appears to hold that philosophical modesty requires something like (2\*); he writes

My assessment is that the strongest reasons for resisting the Supplemented Manifold Theory [i.e. the physicist's spacetime manifold + the fundamental spacetime structure posited by A-theorists] are . . . the general reasons for being suspicious whenever philosophers look at some beautiful, austere account of the fundamental structure of the world and tell us it must be incomplete, on the grounds that it doesn't provide what philosophical reflection has revealed to be the necessary conditions for the obtaining of some familiar facts. Attempts to draw conclusion of that sort from philosophical reflection have a terrible track record. Modesty is called for. Before rejecting any account of fundamental structure on philosophical grounds of this sort, we had better subject the seemingly convincing philosophical reflections to the highest level of scrutiny, on the lookout for loopholes we might have missed. (Dorr, Book MS, *Counterparts*, 94)

Dorr's conception of philosophical modesty requires that we be *suspicious* of the A-theory, given that the A-theory complicates the attractive account of fundamental reality

associated with modern spacetime physics, and moreover does so on philosophical and not scientific grounds. And that is right: physics is an immensely well-established and theoretically successful discipline, and philosophers have a track record of getting the fundamental nature of things completely wrong. Therefore if a philosophical theory disagrees with or otherwise modifies a theory of physics, we should subject its reasons for doing so to the closest scrutiny. However, philosophical modesty does not require that we *reject* any theory that adds something to a theory of physics; we should not think that philosophy can *never* tell us something about fundamental reality which physics does not. It is perfectly possible to be philosophically modest and deferential to physics while at the same time holding that it is impossible to account for time and change without positing absolute presentness.

Another way to fill in the argumentative gap is as follows:<sup>47</sup>

- (1) A-theorists posit fundamental spacetime structure which physicists do not
- (2) The fundamental structure  $S$  posited by theory  $T$  is not posited by physicists  $\supset$   
 $S$  is explanatorily redundant
- (3) The fundamental structure  $S$  posited by theory  $T$  is explanatorily redundant  $\supset$   
 $T$  is false
- (4) The A-theory is false

Call this the *redundancy argument*. Unlike the modesty argument, the redundancy argument relies on the notion of *explanatory redundancy* rather than on a principle of philosophical modesty. A-theorists should be less concerned about this argument than the modesty argument. In particular, they should reject premise (2). This premise follows from

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<sup>47</sup> Zimmerman (2011, 221-6) discusses this style of argument.

the theory of *extreme physicalism*, the view that the only phenomena that require explanation are those which physicists try to explain. There is no reason why A-theorists should accept extreme physicalism. Moreover, many theorists defend views according to which there are explanatorily non-redundant fundamental structures not posited by physicists. For example, some philosophers hold that conscious experience is part of the fundamental structure of reality, and that this explains the possibility of inverted spectrum cases and unconscious physical duplicates ('philosophical zombies').<sup>48</sup> Others hold that there are fundamental semantic facts, and that reality therefore has fundamental semantic structure.<sup>49</sup> Others hold that there are fundamental normative properties, and that the world therefore has fundamental normative structure.<sup>50</sup> Yet others hold that reality contains many spatiotemporally disconnected universes ('island universes'), and hence has significantly more fundamental structure than that posited by physics; such philosophers use this significant extra fundamental structure to explain the truth of our modal claims.<sup>51</sup> Finally, theists hold that reality has fundamental structure corresponding to God, and hold that the existence of God explains all sorts of important phenomena. A-theorists who accept any of these fundamental structures have good reason to reject the premise that the only explanatorily non-redundant fundamental structures are those posited by physicists.

A final version of the spacetime physics argument, due to Markosian (2004, 73-4), focuses on STR:<sup>52</sup>

(1) STR is true

(2) STR entails that there is no such relation as absolute simultaneity

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<sup>48</sup> Chalmers (1996).

<sup>49</sup> Hattiangadi (MS, *The Fundamentality of Intentionalist*).

<sup>50</sup> Dancy (2005).

<sup>51</sup> Lewis (1986) and Bricker (2006).

<sup>52</sup> I have changed 'presentism' in Markosian's argument to 'the A-theory'.

- (3) There is no such relation as absolute simultaneity  $\supset$  there is no such property as absolute presentness
- (4) The A-theory entails that there is a property of absolute presentness
- (5) The A-theory is false

Call this the *inconsistency argument*. This argument is a particularly stark version of the spacetime physics argument. How should A-theorists respond to it? Markosian recommends the following response: STR either does or does not entail the thesis that there is no such relation as absolute simultaneity. Call the thesis that there is no relation of absolute simultaneity *NAS*. If STR does not entail *NAS*, then premise (2) of the above argument is false. On the other hand, if STR does entail *NAS*, then STR is false, and therefore premise (1) is false. Either way, the inconsistency argument poses no threat to the A-theory.

The obvious worry about Markosian's response is that it involves the claim that STR is false if it entails *NAS*. Given the theoretical success of physics compared with metaphysics, this may seem like an unduly bold move to make. Suppose STR does entail *NAS*. Which philosopher of time wants to tell spacetime physicists that STR has been disproven on the basis of philosophical reflection? However, note that the suggestion is just that A-theorists reject *the version of STR that entails NAS*. Perhaps the only reason STR entails *NAS* is because all of the theoretical work done by STR can be done without positing a relation of absolute simultaneity; in other words, perhaps STR entails *NAS* only because, from the perspective of spacetime physics, absolute simultaneity would be a 'nomological dangler'. In that case A-theorists could insist that, while absolute simultaneity might be a nomological dangler from the perspective of spacetime physics, it is an important posit from the perspective of the metaphysics of time. Therefore STR

should at least be modified so as not to entail NAS. Compare: there are many scientifically-sensitive philosophers of mind who hold that phenomenal consciousness- the ‘first-person perspective’ - is a feature of fundamental reality.<sup>53</sup> Suppose that the best, most developed physical theory of the mind entails that there is no fundamental phenomenal consciousness, on the grounds that fundamental phenomenal consciousness would be a ‘nomological dangler’ from the perspective of the scientific study of the mind. The philosophers of mind would be right to insist that the best physical theory of the mind is, in fact, false, and should be modified so as not to entail that there is no fundamental consciousness.

I have described three different versions of the spacetime physics argument against the A-theory. In my view, none of these arguments quite succeeds in establishing the falsehood of the A-theory. Admittedly, it is not a happy fact that A-theorists are forced to add to the account of fundamental reality described by modern spacetime physics. However, that they do so does not provide sufficient reason for rejecting the A-theory.

## 1.8 Conclusion

In this chapter I have introduced and defined the A- and B-theories of time, and described some important points of agreement and disagreement between A- and B-theorists. I have also considered six relatively well-known arguments against the A-theory: the four ‘McTaggartian’ arguments, the rate of passage argument, and the spacetime physics argument. I have shown that there are good A-theoretic responses to all of these arguments. I conclude that there is no good argument against the A-theory.

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<sup>53</sup> For example, see Chalmers (1996). See also Zimmerman (2010).

# Chapter Two

## A-theories

### 2.0 Introduction

In the previous chapter I introduced the A- and B-theories and defended the A-theory against some well-known objections. In this chapter, I describe the main varieties of A-theory: *presentism*, *the growing block theory*, and *the moving spotlight theory*. I focus especially on the moving spotlight theory, as that is the theory to be defended in the second half of this thesis.

The best way to initially characterise different versions of the A-theory is in relation to how they answer the following question:

THE TEMPORAL-ONTOLOGICAL QUESTION: As time passes, do things (i) neither begin nor cease to exist, (ii) begin to exist only, (iii) cease to exist only, or (iv) both begin and cease to exist?

In what follows, I consider each possible answer to this question and describe the version of the A-theory associated with that answer.<sup>54</sup>

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<sup>54</sup> This is not the standard way of characterising A-theories. Typically, A-theories are distinguished by how they answer the following pair of questions: are there past things? Are there future things? The typical answers are: no and no (presentism), yes and no (the growing block theory), and yes and yes (the moving spotlight theory). The problem with this method is that it is not clear what 'past', 'present', and 'future' mean in the context of the above questions. Chapter Three below is dedicated to criticising this method.

## 2.1 Permanentism

First, suppose one holds that as time passes, things neither begin nor cease to exist; or, more carefully, that nothing ever begins to exist and nothing ever ceases to exist. In that case, one accepts the thesis of *permanentism*:

PERMANENTISM: Always, everything always exists<sup>55</sup>

FORMALLY:  $\mathbf{A}\forall x \mathbf{A}\exists y y=x$

According to permanentism, nothing ever comes into existence and nothing ever goes out of existence; the ontological facts are eternally fixed.

Permanentism has some surprising consequences. For example, permanentism entails that if it was the case that there is a dinosaur roar ( $\mathbf{P}\exists x Dx$ ), then *there is something* that was a dinosaur roar ( $\exists x \mathbf{P}Dx$ ). Similarly, permanentism entails that if it will be the case that there is a Mars base ( $\mathbf{F}\exists x Mx$ ), then *there is something* that will be a Mars base ( $\exists x \mathbf{F}Mx$ ). More generally, permanentism entails that for any monadic property  $F$ , if it was or will be the case that there is an  $F$ , then there is something that was or will be an  $F$ .<sup>56</sup> However, permanentism is silent about whether the relevant things are  $F$ s or *former* and *future*  $F$ s: that is, things that were or will be  $F$ s but are not  $F$ s:

FORMER  $F$ :  $x$  is a former  $F$  iff  $\mathbf{P}(x \text{ is } F) \ \& \ x \text{ is not-}F$

FUTURE  $F$ :  $x$  is a future  $F$  iff  $\mathbf{F}(x \text{ is } F) \ \& \ x \text{ is not-}F$

Thus, for example, permanentism does not entail that there are dinosaur roars and Mars bases; only that there are things that *were* dinosaur roars and *will be* Mars bases.

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<sup>55</sup> As usual, 'exist' is to be read 'be identical to something' throughout.

<sup>56</sup> Informal proof: suppose there was or will be an  $x$  that is  $F$ . By permanentism, there was or will be an  $x$  that is  $F$  which always exists; so, there was or will be an  $x$  that is  $F$  that now exists; so, there is an  $x$  that was or will be an  $F$ .

Permanentists are not committed to the existence of dinosaur roars and Mars bases. However, they are committed to the existence of Napoleon and the Second World War, given certain uncontroversial assumptions concerning identity over time. If it was the case that something is identical to Napoleon ( $\mathbf{P}\exists x x = \text{Napoleon}$ ), then by permanentism there was something that is identical to Napoleon which always exists, so there was something that is identical to Napoleon which now exists, so there is something that was identical to Napoleon ( $\exists x \mathbf{P}x = \text{Napoleon}$ ). Given that identity is permanent ( $\mathbf{S}(x = y) \supset \mathbf{A}(x = y)$ ), it follows that something is identical to Napoleon; that is, that Napoleon exists. Perfectly analogous reasoning shows that permanentism entails that the Second World War exists. This might look like an odd result. However, permanentism does not entail that Napoleon is a man, or is French, or is short, or even has mass or a location in space, but only that he *was* or *had* all of these things. Similarly, permanentism does not entail that the Second World War is a war, or involves the Allies and the Axis powers, or is even happening, but only that it *was* or *did do* all of these things. Therefore although permanentism entails that Napoleon and the Second World War exist, it does not entail that there is any such short, French, concrete man as Napoleon, or that there is any such occurring war as the Second World War.

This section is concerned with permanentist A-theories. But is the *B-theory* a permanentist theory? Most B-theorists accept the restrictor principle:

**RESTRICTOR PRINCIPLE:** The standard temporal operators are implicit quantifiers over instants of time which restrict the explicit individual quantifiers ( $\forall$ ,  $\exists$ ) in their scope to things that are located at the relevant instant<sup>57,58</sup>

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<sup>57</sup> More carefully: the standard temporal operators are quantifiers over instants of time which restrict the explicit individual quantifiers in their scope to the domain of individuals that are located at the domain of instants appropriate to the operators. In what follows I use the short form in the main text for convenience. Sider (2001) is an example of a prominent B-theorist who seems to accept the restrictor principle.

Given the restrictor principle, permanentism is the obviously false thesis that for all  $x$ , for all instants  $t$ ,  $x$  is located at  $t$  (which entails that, for example, I am located at 1066 and Napoleon is located at this instant). Of course, if permanentism *were* the thesis that for all  $x$ , for all instants  $t$ ,  $x$  is located at  $t$ , then B-theorists would be right to reject it. However, there are good reasons for B-theorists to instead reject the restrictor principle and accept the thesis of permanentism.

Consider the following true sentence:

(1) ‘There is an  $x$  and a  $y$  such that there is no instant at which they are both located’

For example, there is no instant at which Napoleon and I are both located. Now consider the following very plausible temporal-logical principle:

SOMETIMES PRINCIPLE: If something is the case, then it is sometimes the case

FORMALLY:  $\phi \supset \mathbf{S}\phi$

The sometimes principle is, of course, the temporal analogue of the widely-held modal-logical principle that if something is the case then it *could* be the case ( $\phi \supset \diamond\phi$ ). Given the sometimes principle, (1) entails (2):

(2) ‘Sometimes there is an  $x$  and a  $y$  such that there is no instant at which they are both located’

Given the restrictor principle, (2) is equivalent to:

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<sup>58</sup> Similarly, it is typically assumed that *modal realism* (famously defended by Lewis 1986) must be combined with the thesis that the standard modal operators  $\square$  and  $\diamond$  are implicit quantifiers over possible worlds which restrict the explicit individual quantifiers in their scope to the relevant possible world.

(3) ‘For some instant  $t$ , there are things located at  $t$  such that there is no instant at which they are both located’

It follows that B-theorists must either deny that there are things that are not located at the same instant, reject the sometimes principle, or reject the restrictor principle. Given that it would be absurd for B-theorists to deny that there are things that are not located at the same instant, and given the plausibility of the sometimes principle (how could something be the case but *never* be the case?), it seems that B-theorists must reject the restrictor principle. In that case B-theorists should hold that the explicit quantifier in (2) is unrestricted, and therefore that (2) expresses the true proposition that there is a pair of things such that there is no instant at which they are both located.

In the absence of the restrictor principle, B-theorists should read the thesis of permanentism as equivalent to the simple logical truth that everything exists. Therefore B-theorists should be permanentists.

### 2.1.1 *The moving spotlight theory*

Among the better-known versions of the A-theory, the *moving spotlight theory* is a permanentist theory. Indeed, we can simply identify the moving spotlight theory with the conjunction of permanentism and the A-theory:

THE MOVING SPOTLIGHT THEORY: There is an absolute present instant and always, everything always exists

Historically, there has been very little serious discussion of the moving spotlight theory. The theory takes its unusual name from an influential early description of the view by C. D. Broad (1923, 59-60):

We are naturally tempted to regard the history of the world as existing eternally in a certain order of events. Along this, and in a fixed direction, we imagine the characteristic of presentness as moving, somewhat like the spot of light from a policeman's bull's-eye traversing the fronts of the houses in a street. What is illuminated is the present, what has been illuminated is the past, and what has not yet been illuminated is the future (Broad 1923, 59).

Although Broad provides the rich metaphor from which the theory takes its name, he is not a fan of the moving spotlight theory: he rejects the view in favour of the growing block theory (Broad 1923, 60).<sup>59,60</sup>

Recent discussions of the moving spotlight theory can be found in Sider (2001, 17-21) and (2011, 259-62). In particular, Sider (2011) distinguishes two versions of the moving spotlight theory, which he calls 'Williamsonian passage' and 'the moving spotlight view'.<sup>61</sup> In order to avoid confusion, from now on I refer to the latter theory as *classic MST*. Of course, both theories are simply versions of what I am calling 'the moving spotlight theory', as both are permanentist A-theories. However, it is instructive to examine how Sider describes and distinguishes the two theories, as doing so draws attention to some common misconceptions about the moving spotlight theory and to the theoretical options left open (or, apparently left open) by acceptance of the basic package of permanentism and the A-theory.

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<sup>59</sup> I describe the growing block theory below.

<sup>60</sup> It is not easy to understand why Broad rejects the moving spotlight theory. Broad's objection seems to be that the temporal relations between instants (Broad speaks of events, but let us simplify) cannot be explained in terms of the property of absolute presentness. However, that seems false: we can say that one instant is earlier than another just in case whenever the first is present the second will be. And in any case, there is no obvious reason why the temporal relations cannot be fundamental.

<sup>61</sup> 'Williamsonian passage' is so called because it is inspired by Williamson's (1998, 2002, 2013) theory of modality.

### 2.1.2 Williamsonian passage

Sider (2011) characterises Williamsonian passage as a permanentist theory according to which (i) some temporal operators are primitive and (ii) the current perspective is fundamental. But what does this mean? First, to say that some temporal operators are primitive is to say that at least some of the following one-place sentence operators describe part of the fundamental structure of reality (i.e. they ‘carve reality at the joints’), and hence cannot be further analysed:

**P** (Informally: it was the case at some past instant that)

**F** (It will be the case at some future instant that)

**G** (It is the case at every future instant that)

**H** (It is the case at every past instant that)

**S** (It is the case at some instant that)

**A** (It is the case at every instant that)

**N** (It is the case at this instant that)

Call the view that at least one of the above operators is fundamental *operator*

*fundamentalism*.<sup>62</sup> If operator fundamentalism is true, then one cannot provide a complete description of fundamental reality without using one of the above operators; or, to use one of Sider’s favourite metaphors, if operator fundamentalism is true then at least one of the

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<sup>62</sup> What is the relationship between operator fundamentalism and propositional temporalism? In practice, operator fundamentalists are always propositional temporalists. Given that propositional temporalism entails the A-theory, it follows that, in practice, operator fundamentalists are always A-theorists. However, one can be a propositional temporalist without being an operator fundamentalist. In particular, the version of the moving spotlight theory defended in this thesis- classic MST- is a propositional temporalist theory according to which there are no fundamental temporal operators.

above operators appears in ‘the Book of the World’.

Operator fundamentalism is in contrast to *operator reductionism*, the view that temporal operators are not required to provide a complete description of fundamental reality. Operator reductionists hold that all temporal operator-facts can be reduced to facts concerning what is the case at instants earlier or later than the present instant. One way to be an operator reductionist is as follows: first, hold that the P-, F-, and N-principles provide, not merely true biconditionals, but *metaphysical analyses* of their left-hand sides:

P-PRINCIPLE: It was the case that  $\phi$  iff at some instant  $t$  earlier than the present instant,  $\phi$

F-PRINCIPLE: It will be the case that  $\phi$  iff at some instant  $t$  later than the present instant,  $\phi$

N-PRINCIPLE: It is now the case that  $\phi$  iff  $\phi$

Then, define the other temporal operators in terms of **P**, **F**, and **N** as follows: **G** $\phi$  iff  $\neg \mathbf{F} \neg \phi$ , **H** $\phi$  iff  $\neg \mathbf{P} \neg \phi$ , **S** $\phi$  iff  $\mathbf{P}\phi \vee \mathbf{N}\phi \vee \mathbf{F}\phi$ , and **A** $\phi$  iff  $\mathbf{P}\phi \ \& \ \mathbf{N}\phi \ \& \ \mathbf{F}\phi$ .

Second, what does Sider mean when he says that according to Williamsonian passage ‘the current perspective is fundamental’? Sider identifies the thesis of the fundamentality of the current perspective (*FCP* for short) with the conjunction of the following three theses:

(FCP1) NOW REDUNDANCY:  $\phi \leftrightarrow \mathbf{N}\phi$  (for any proposition  $\phi$ )

According to now redundancy, whatever is the case is now the case, and vice versa. Why would anyone reject this obvious-seeming principle? As we saw above, B-theorists such as Sider (2001) accept the restrictor principle:

RESTRICTOR PRINCIPLE: The standard temporal operators are implicit quantifiers over instants of time which restrict the explicit individual quantifiers ( $\forall$ ,  $\exists$ ) in their scope to things that are located at the relevant instant

B-theorists who accept the restrictor principle would interpret a typical utterance at instant  $t$  of the simple past-tensed sentence

(1) ‘There used to be dinosaurs’

as expressing something like the proposition that there is an instant  $t'$  earlier than  $t$  such that there are dinosaurs located at  $t'$ . Similarly, they would interpret an utterance at instant  $t$  of the sentence ‘There is a hurricane now’ as expressing the proposition that there is a hurricane located at  $t$ . Given that B-theorists hold that (i) quantifying unrestrictedly, the sentence ‘There are dinosaur roars’ is true as uttered at the current instant, and that (ii) there are no dinosaur roars *located at* the current instant, B-theorists who accept the restrictor principle must reject now redundancy.<sup>63</sup> (Of course, as we saw above, B-theorists should actually reject the restrictor principle, in which case they can accept now redundancy.)

On the other hand, no A-theorist would reject now redundancy. For example, take an operator reductionist permanentist A-theorist who holds that, quantifying unrestrictedly, there are dinosaurs.<sup>64</sup> There is no reason why such an A-theorist would take an utterance at instant  $t$  of the sentence ‘There are now dinosaurs’ to express the proposition that there are dinosaurs *located at*  $t$ , as some B-theorists do. Rather, she would take it to express the proposition that at  $t$ , there are dinosaurs, and then provide some reductive analysis of the ‘at  $t$ ’ operator.<sup>65</sup>

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<sup>63</sup> See e.g. Sider (2011, 241): ‘He [the ‘spatializer’, i.e. B-theorist] accepts ‘‘There are dinosaurs’’.’

<sup>64</sup> Perhaps because being a dinosaur is a kind property, and is therefore permanent.

<sup>65</sup> I describe one such analysis below.

(FCP2) Some ordinary present tense sentences such as ‘Dan is sitting’ are saturated

What does it mean to say that a sentence is ‘saturated’? According to Sider, a sentence is saturated when it is complete in the *metaphysical* sense (not the semantic, grammatical, or psychological sense); when all of its variables and parameters have been filled in, metaphysically speaking. The best way to try to get grip on the notion is via an example. Consider the sentence

(2) ‘Dan is to the left of John’

According to Sider (2) is *unsaturated*: there is an orientation parameter yet to be filled in in (2). Sider’s claim is that according to Williamsonian passage, some ordinary present tense sentences such as ‘Dan is sitting’ are *unlike* sentences such as (2). That is, according to Williamsonian passage, the sentence ‘Dan is sitting’ is metaphysically complete: there is no parameter yet to be filled in in the sentence ‘Dan is sitting’. In this sense, Williamsonian passage is supposed to contrast with the B-theory, according to which the sentence ‘Dan is sitting’ is missing a temporal parameter, and is therefore *unsaturated*.

How useful is Sider’s notion of saturation? Sider introduces the concept in his interpretation of Williamson’s (2002) argument against modal realism. According to Sider (2011, 248), Williamson’s argument can be interpreted as follows: there is genuine contingency only if there are contingent saturated sentences. However, according to modal realism there are no contingent saturated sentences: there are ordinary sentences such as ‘TB was PM in 2000’, which are unsaturated, and there are sentences with an explicit world-parameter such as ‘TB was PM in 2000 in the actual world’, which are saturated but necessary. Therefore according to modal realism there is no genuine contingency. Therefore modal realism is false. As Sider points out, A-theorists (Sider’s ‘prophets of passage’) can make an analogous argument against B-theorists (Sider’s ‘spatializers’). The

argument is as follows: there is genuine change only if there are temporary saturated sentences. However, according to the B-theory there are no temporary saturated sentences: there are ordinary sentences such as ‘Dan is sitting’, which are unsaturated, and there are sentences with explicit time-parameters such as ‘Dan is sitting at 2pm on 17 March 2013’, which are saturated but permanent. Therefore according to the B-theory there is no genuine change. Therefore the B-theory is false.

There is a simpler and more natural interpretation of Williamson’s argument, as follows: there is change iff there are temporary propositions (i.e. propositional temporalism is true); according to the B-theory there are no temporary propositions; therefore according to the B-theory there is no change; therefore the B-theory is false.<sup>66</sup> Rather than relying on the notion of saturation, this interpretation of Williamson’s argument relies on the clearly-defined notion of a proposition’s being temporary or permanent. Perhaps Sider wishes to avoid an interpretation of Williamson’s argument that relies on the existence of propositions. However, the fact that the proposition-theoretic version of the argument is so much simpler and clearer than Sider’s saturation-theoretic version is simply more evidence for the existence of propositions.

(FCP3) Many ordinary predicates- such as ‘is a dinosaur’, ‘is a human’, and ‘is red’- express temporary properties

Like now redundancy, no A-theorist would reject this thesis. One obvious argument for the thesis from an A-theoretic perspective is as follows: there are things that are sometimes but not always (e.g.) red; therefore the property of being red is one that certain things sometimes but not always have; therefore the predicate ‘is red’ expresses a temporary

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<sup>66</sup> I discuss this argument in greater detail in Chapter Four below.

property.<sup>67</sup>

Moreover, A-theorists hold that many ordinary sentences express temporary propositions. After all, consider the contrary view, that in ordinary language we never (or very rarely) express temporary propositions. Why would an A-theorist hold this view? For one thing, to do so would be to concede a great deal to B-theorists, according to whom we only ever express permanent propositions. Having rejected the B-theory, it would be very strange for an A-theorist to make such a concession. For another, it would raise all sorts of difficult questions concerning *why* we don't (or only very rarely) express temporary propositions in ordinary language. However, it follows naturally from the view that many ordinary sentences express temporary propositions that many ordinary predicates express temporary properties. Therefore A-theorists should hold that many ordinary predicates express temporary properties.

Finally, as we shall see below, all A-theorists hold that there is at least one temporary fundamental property, in which case there are temporary properties for ordinary predicates to express. For example, suppose there is a temporary fundamental property of presentness. Then the ordinary predicate 'is sitting' could express the temporary property of sitting at a present instant. It would be inexplicable for A-theorists to hold that ordinary predicates express permanent properties rather than such temporary properties.

How useful are operator fundamentalism and FCP for characterising permanentist A-theories? Operator fundamentalism is relatively useful: as we shall see, classic MST is best interpreted as an operator *reductionist* theory, in contrast to Williamsonian passage. FCP, on the other hand, is of very little use. FCP1, now redundancy, is rejected only by B-theorists who are in the grip of the restrictor principle, and therefore cannot be used to distinguish A-theories. As for FCP2, the notion of saturation is not required for the

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<sup>67</sup> This argument relies on the principle of property abstraction, according to which always, if some  $x$  is  $F$  then  $x$  has the property of being  $F$ . I discuss this principle in Chapters Five and Six.

purpose for which Sider introduces it, namely, to interpret Williamson's (2002) argument against modal realism. Finally, FCP3, like FCP1, is such that no sensible A-theorist would reject it.

We have seen that Sider's characterisation of Williamsonian passage is not very good. Can we improve on Sider's characterisation? I believe we can. The best way to characterise permanentist A-theories is in terms of how they answer the following question:

THE FUNDAMENTAL QUESTION: How many fundamental properties are temporary?

Consider: spacetime physics provides us with a picture of the world as a four-dimensional manifold of spacetime points, with a permanent stock of objects and events standing in permanent fundamental relations and bearing permanent fundamental properties.<sup>68</sup> Given the success to date of physics, we should take this picture very seriously. However, if we are A-theorists, we also know that there is at least one temporary property: the instantaneous property of absolute presentness, instantiated by exactly one instant of time. We know, therefore, that at least one fundamental property is temporary- for given permanentism, if all fundamental properties were permanent, then all properties would be permanent.<sup>69</sup> The question is: *how many* of the fundamental properties are temporary? There are numerous answers, ranging from 'just one' to 'all of them'. As we shall see below, classic MST is the version of the permanentist A-theory according to which exactly one fundamental property is temporary: the instantaneous property of presentness, instantiated by successive three-dimensional slices of the spacetime manifold.

Williamsonian passage, on the other hand, can be characterised as the version of the

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<sup>68</sup> We have already seen that the B-theoretic picture- which is modelled on the spacetime physicist's picture- is permanentist.

<sup>69</sup> I assume that all of the properties supervene on the fundamental properties.

permanentist A-theory according to which *many* (perhaps most, perhaps all) fundamental properties are temporary. Thus the distinctive central claim of the Williamsonian view is that, in addition to the permanent fundamental relations posited by physicists, there are numerous temporary fundamental properties. For example, a Williamsonian might say that, if there is a permanent fundamental relation of *having mass at* (or *having a certain mass at*) which objects bear to instants, then there is also a temporary fundamental property of *having mass simpliciter* (or *having a certain mass simpliciter*).

Various other A-theoretic and distinctively Williamsonian commitments follow quite naturally from the Williamsonian answer to the fundamental question. For example, consider the question of what it is for an instant to be absolutely present. One option open to Williamsonians is to follow Classic MSTers and hold that presentness is among the temporary fundamental properties. Another more distinctively Williamsonian option is to hold that the absolute present instant is just the instant  $t$  at which there is a certain ‘isomorphism’ between the fundamental properties of things and their fundamental relations to  $t$ . For example, if there is a fundamental relation ‘ $n$ -is-the-mass-of- $x$ -at- $t$ ’ and a fundamental property ‘ $n$ -is-the-mass-of- $x$ ’, then the absolute present instant is the instant  $t$  such that for all  $x$  and  $n$ ,  $n$ -is-the-mass-of- $x$ -at- $t$  iff  $n$ -is-the-mass-of- $x$  (and further similar clauses). Another option is to hold that instants are complete, consistent, sometimes-true propositions, and that the present instant is just the true instant.

Second, it follows naturally from the thesis that many fundamental properties are temporary that many ordinary predicates express temporary properties. For if there are temporary properties at all, it is natural to assume that e.g. the predicate ‘is sitting’ expresses a property that things have exactly when they are sitting. In other words, given at least one temporary property, it would be very odd (for reasons described above) for an A-theorist to hold that the ordinary predicate ‘is sitting’ expresses a permanent property. And

for similar reasons, the thesis that many fundamental properties are temporary naturally implies that many ordinary sentences express temporary propositions.

There is also a natural route from the Williamsonian thesis that many fundamental properties are temporary to the thesis of operator fundamentalism. Remember that operator reductionism involves regarding biconditionals such as the P-principle as providing metaphysical analyses of their left-hand sides:

P-PRINCIPLE: It was the case that  $\phi$  iff at some instant  $t$  earlier than the present instant,  $\phi$

Now suppose that one is a Williamsonian according to whom *all* fundamental properties are temporary; this is an obvious position for Williamsonians to take, as it serves to sharply distinguish the Williamsonian view from classic MST (as we shall see below). In that case, it is natural to hold that facts about the temporal relations between instants reduce to facts about the instantiation of temporary properties by those instants, so that (e.g.) the following expresses a metaphysical analysis of the left-hand side:

EARLIER: Instant  $t$  is earlier than instant  $t'$  iff  $t$  is present and  $\mathbf{F}(t'$  is present) or  $\mathbf{P}(t$  is present and  $\mathbf{F}(t'$  is present)) or  $\mathbf{F}(t$  is present and  $\mathbf{F}(t'$  is present))<sup>70</sup>

In other words, one instant is earlier than another just in case, whenever the first instant is absolutely present the second instant *will be* absolutely present. (If instants are, e.g. complete, consistent temporal propositions, then this means that facts about certain temporal relations between instants reduce to facts about the instantiation of truth by temporal propositions.) A Williamsonian who accepted this reduction could not embrace standard operator reductionism, as the reduction of earlier-than facts to facts about what was or will be the case would make analyses such as that expressed by the P-principle

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<sup>70</sup> Both sides of the biconditional are, of course, permanent.

circular. Therefore a commitment to operator fundamentalism naturally follows from a distinctively Williamsonian answer to the fundamental question.

### 2.1.3 *Classic MST*

Let us begin within Sider's (2011) initial characterisation of the theory that he calls 'the moving spotlight view', but which we will call classic MST:

The defender of the spotlight theory also embraces past and future objects [like the Williamsonian], but she accepts a "fuller" conception of these objects than the Williamsonian. According to her, these objects have all the features that the spatializer [B-theorist] thinks they have. We can put this by saying that the spotlight theorist joins the spatializer in accepting the block universe. But the spotlight theorist accepts something in addition: a joint-carving monadic property of presentness . . . which is possessed by just one moment of time, and which "moves", to be possessed by later and later times, as time passes. This motion . . . amounts to tensed facts about which moment of time possesses this property.

(Sider 2011, 259)

Sider provides a relatively accurate basic characterisation of classic MST. We saw above that the central question for permanentist A-theorists is: how many fundamental properties are temporary? Williamsonians look at the physicist's four-dimensional 'block universe' and answer: many. They hold that, in addition to or instead of the permanent fundamental properties and relations that seem to be posited by physicists, there are numerous temporary fundamental properties. Classic MSTers, on the other hand, look at the physicist's block universe and answer: just one. They hold that, in addition to the permanent fundamental properties and relations posited by physicists, there is exactly one temporary fundamental property: absolute presentness, possessed by successive moments

of time. In that sense, Sider is correct that classic MSTers ‘embrace past and future objects’ which ‘have all the [fundamental] features that the spatializer thinks they have.’ Moreover, classic MSTers can agree with Sider that the ‘movement’ of presentness through the block universe ‘amounts to tensed facts about which moment of time possesses this property’, if that means that sentences such as

(3) ‘Presento is present’<sup>71</sup>

express temporary propositions.

So far, so good. However, what does Sider mean when he says that classic MSTers ‘accept a “fuller” conception of these [i.e. past and future] objects than the Williamsonian’? Further quotations reveal that Sider goes on to build a peculiar and very unattractive theory from the basic components of classic MST:

She [the classic MSTer] accepts that there exist dinosaurs located before 2011; but this is the spatializer’s proposed truth-condition for an utterance in 2011 of ‘There were dinosaurs.’ More generally, the spotlight theorist can accept the spatializer’s reduction of tense for all tensed statements except those concerning presentness. (Sider 2011, 260)

[According to classic MST] there is genuine change in which moment is present. But notice that the spotlight theorist does not admit genuine change for anything else! For her there is no genuine change in whether I am sitting, or in whether there are dinosaurs, or whether a war is occurring, since her account of these matters is identical to the spatializer’s. (Sider 2011, 260)

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<sup>71</sup> Remember that ‘Presento’ is the name of the present instant.

Sider seems to think that it follows from the thesis that there is only one temporary fundamental property- the property of absolute presentness- that ordinary predicates such as ‘is sitting’ express permanent properties, and therefore ordinary sentences such as ‘Dan is sitting’ express permanent propositions (‘*there is no genuine change in whether I am sitting . . . since her account of these matters is identical to the spatializer’s*’). However, the opposite is the case. If there is a temporary fundamental property of presentness, then there are temporary relational properties of e.g. *sitting at a present instant*. For reasons described above, it would be very odd for an A-theorist to hold that the ordinary predicate ‘is sitting’ expresses a permanent property rather than this temporary property. Therefore classic MSTers would naturally hold that ordinary predicates such as ‘is sitting’ express temporary properties, and many ordinary sentences express temporary propositions.

Contra Sider, according to classic MST there *is* genuine change in whether he is sitting, as the sentence ‘Sider is sitting’ expresses the temporary proposition that Sider is sitting at a present instant (which is true simpliciter when fundamental presentness is instantiated by instants to which Sider bears the permanent *sitting-at* relation, and false otherwise). More generally, moving spotlights, like all A-theorists, should hold that many ordinary predicates express temporary properties and many ordinary sentences express temporary propositions.

According to Sider’s interpretation of classic MST, we only ever express temporary propositions when we use extraordinary predicates like ‘is absolutely present’. We have seen that classic MSTers need think no such thing. However, Sider is in the vicinity of a significant point concerning classic MST: the property of presentness plays an extremely important metaphysical-semantic role for classic MSTers. For according to classic MST, any sentence that does not contain the extraordinary predicate ‘is present’ at

the level of metaphysical analysis expresses a permanent proposition.<sup>72</sup> It just so happens that many of our ordinary tensed sentences *do* contain the extraordinary predicate ‘is present’ at the level of metaphysical analysis. In that sense, for classic MSTers the temporariness of absolute presentness is the ground of all temporariness: it is the fundamental source of time and change. Note that this is not something that Williamsonians can say; however, it strikes me as a very appropriate thesis for A-theorists to hold.

Sider’s second mistake is to think that classic MSTers must be operator fundamentalists. He writes

The spotlight theorist [i.e. classic MSTer] accepts primitive tense operators . . . Using the tense operators, the spotlight theorist can describe the change in which moment has the property of presentness . . . Describing this change . . . is in fact the only purpose of the tense operators in the spotlight theory. (Sider 2011, 259-60)

The spotlight theorist can accept the spatializer’s reduction of tense for all tensed statements except those concerning presentness. (Sider 2011, 260)

There are two points here. First, Sider thinks that classic MSTers ‘accept the spatializer’s reduction of tense’ for some sentences. Second, Sider thinks that classic MSTers require fundamental temporal operators in order to ‘describe the change in which moment has the property of presentness’. Let us deal with these points in turn. First, we have already seen that classic MSTers (like all A-theorists) should hold that many ordinary sentences express temporary propositions. Therefore they should reject the *spatializer’s* reduction of ordinary tensed sentences (according to which all such sentences express permanent propositions). What about the ‘reduction of tense’ in the sense of reduction of the temporal operators? In

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<sup>72</sup> That is: if the predicate ‘is (absolutely) present’ does not appear in the most metaphysically perspicuous truth-conditions for sentence *s* then *s* expresses a permanent proposition.

other words, should classic MSTers be operator fundamentalists or reductionists? We saw above that at least one Williamsonian answer to the fundamental question- namely, that all fundamental properties are temporary- leads naturally to the view that temporal operators are fundamental, as a commitment to multiple temporary fundamental properties makes it difficult to provide a non-circular analysis of the operators. In contrast, the classic MSTer's answer to the question- that there is exactly one fundamental temporary property, absolute presentness- fits very naturally with operator reductionism. In particular, the view that all change is grounded in the temporariness of presentness, so that all facts concerning change reduce to facts concerning the relations in which things stand to the present and other instants, combines with temporal operator reductionism to generate simple and elegant metaphysical truth-conditions for facts involving tense operators.

For example, suppose that classic MSTers accept operator reductionism, so that biconditionals such as the P- and F-principles express metaphysical analyses of their left-hand-sides:

P-PRINCIPLE: It was the case that  $\phi$  iff at some instant  $t$  earlier than the present instant,  $\phi$

F-PRINCIPLE: It will be the case that  $\phi$  iff at some instant  $t$  later than the present instant,  $\phi$ <sup>73</sup>

Given the classic MSTer's interpretation of ordinary predicates as expressing temporary relational properties defined in terms of absolute presentness, there is some permanent relation  $R$  such that, according to the classic MSTer, 'Dan is sitting' is metaphysically analysed as ' $\exists t(t \text{ is present} \ \& \ R(\text{Dan}, t))$ '. It follows that according to classic MST the truth of

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<sup>73</sup> Or, even better: it will be that  $\phi$  iff at some instant  $t$  such that the present is earlier than  $t$ ,  $\phi$ .

(4)  $\mathbf{P}$ (Dan is sitting)

reduces to the fact that

$\exists t' \exists t'' (t' \text{ is present} \ \& \ t'' \text{ is earlier than } t' \ \& \ \text{at } t'' (\exists t (t \text{ is present} \ \& \ R(\text{Dan}, t))))$

Informally: there is an instant  $t$  earlier than the present and at  $t$ , Dan bears the permanent sitting-at relation to a present instant. Given an operator reductionist analysis of ‘at  $t$ ’ according to which, for any instant  $t$  and permanent property  $F$ , the proposition that at  $t' (\exists t (t \text{ is present} \ \& \ F(t))$  reduces to the proposition that  $F(t')$ , it follows that the truth of (4) reduces to the fact that Dan bears  $R$  to some past instant.<sup>74</sup>

Second, why does Sider think that classic MSTers require fundamental temporal operators in order to ‘describe the change in which moment has the property of presentness’? He argues as follows:

‘1776 once had presentness’ cannot be analyzed as saying that 1776 has the property of presentness relative to itself, since presentness is a monadic property, and is not had relative to anything. 2011 has presentness simpliciter; nothing else has presentness; there are no other non-tensed facts about presentness; hence we cannot analyze the tensed claim that ‘1776 once had presentness’ in nontensed terms.’ (Sider 2011, 260)

Sider argues that tensed sentences containing the predicate ‘is present’ cannot be subject to operator-reductionist analyses. To see why Sider is wrong, let us focus on the sentence

(5) 1776 was once present

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<sup>74</sup> I return to this account below.

Sider argues that (5) cannot be subject to an operator-reductionist analysis because ‘there is no nontensed fact about [absolute] presentness’ to which (5) can be reduced. That is false. According to the operator reductionist classic MSTer, the truth of (5) reduces to the fact that there is a past instant  $t$  such that at  $t$  (1776 is present). But given the operator reductionist analysis of ‘at  $t$ ’ mentioned above, according to which for any instant  $t$  and permanent property  $F$ , the proposition that at  $t$  ( $\exists t(t$  is present &  $F(t)$ ) reduces to the proposition that  $F(t')$ , it follows that the truth of (5) reduces to the fact that some past instant is 1776. But a past instant is just an instant earlier than the absolute present instant. Therefore (5) reduces to the fact that some instant earlier than the absolute present is 1776; or in other words, that 1776 is earlier than the absolute present instant. But this is a ‘nontensed’ fact about absolute presentness; therefore there is, after all, a ‘nontensed’ fact about absolute presentness to which (5) can be reduced.

Similarly, consider the sentence

(6) 2066 will be past

Given operator reductionist classic MST, (6) reduces to the truth that there is a future instant  $t$  and at  $t$ , 2066 is earlier than the present instant. Moreover, given the operator reductionist analysis of ‘at  $t$ ’ mentioned above, (6) further reduces to the fact that 2066 is earlier than some future instant. Given what it is for an instant to be *future*, it follows that (6), like (5), reduces to a ‘nontensed’ fact about absolute presentness: namely, that 2006 is earlier than some instant later than the absolute present (e.g. a moment in 2067). More generally, it is clear that Sider is wrong to think that classic MSTers require fundamental temporal operators in order to ‘describe the change in which moment has the property of presentness’.

Classic MSTers do not *have* to be operator reductionists: the theory is consistent

with operator fundamentalism. (Similarly, Williamsonian passage is consistent with operator reductionism.) An operator fundamentalist classic MSTer would hold that the temporal operators in sentences such as (4), (5), and (6) cannot be ‘analysed away’. They would also be under pressure to join certain Williamsonians in reducing facts concerning the temporal relations between instants to facts concerning the instantiation of temporary properties by those instants, as it would seem theoretically uneconomical to accept both fundamental operators and fundamental temporal relations.<sup>75</sup> However, operator reductionism combines very well with the classic MSTer’s view that absolute presentness is the fundamental source of time and change. As we saw above, given operator reductionism, the truth of ordinary tensed sentences such as (4), (5), and (6) reduce to simple, operator-free (but not permanent!) facts concerning the properties of, and relations between, instants. There is an elegance and simplicity to the conjunction of operator reductionism and classic MST which makes the view very theoretically attractive.

Classic MSTers hold that there are absolutely past, present, and future instants. But what exactly are *instants* according to classic MST? And what is it for something to be the case *at* an instant? An attractive picture is as follows: first, instants of time are *hyperplanes of simultaneity*: maximal temporally non-extended slices of the physicist’s four-dimensional spacetime manifold. As we have already seen, according to classic MST one such slice instantiates absolute, fundamental presentness (either directly, or derivatively by being such that every point that makes it up instantiates absolute, fundamental presentness). That slice is the *present instant*. *Past instants* are slices earlier than that instant, and *future instants* are slices later than that instant.

Second, we saw in Chapter One that according to one natural A-theoretic analysis of ‘at *t*’, ‘at *t*,  $\phi$ ’ just means that whenever *t* is present,  $\phi$ :

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<sup>75</sup> Zimmerman (2011, 204) raises this objection against a certain kind of ‘spacetime permanentist’ presentist.

AT-T: At instant  $t$ ,  $\phi$  iff always( $t$  is present  $\supset \phi$ )

Given that on this account ‘at  $t$ ’ is analysed in terms of temporal operators, it is not available to operator reductionist classic MSTers. However, there is an attractive operator reductionist analysis open to classic MSTers: namely, that ‘at  $t$ ’ functions to replace all occurrences of ‘is present’ in the relevant sentence with ‘is  $t$ ’. Call this the *substitutional analysis*. Being a bit more careful, the substitutional analysis is as follows: suppose  $\phi$  is a sentence free of temporal operators and ‘at  $t$ ’, in which the only formulae that attribute temporary properties are formulae of the form ‘ $x$  is present’. Then ‘at  $t$ ,  $\phi$ ’ is analysed by  $\phi^*$ , where  $\phi^*$  is the sentence like  $\phi$  except that every formula of the form ‘ $x$  is present’ is replaced by ‘ $x=t$ ’. For example, as we saw above, given the P-principle sentence (4) ‘**P**(Dan is sitting)’ reduces to

$$\exists t' \exists t'' (t' \text{ is present} \ \& \ t'' \text{ is earlier than } t' \ \& \ \text{at } t'' (\exists t (t \text{ is present} \ \& \ R(\text{Dan}, t))))$$

which given the substitutional analysis reduces to

$$\exists t' \exists t'' (t' \text{ is present} \ \& \ t'' \text{ is earlier than } t' \ \& \ \exists t (t=t'' \ \& \ R(\text{Dan}, t)))$$

Similarly, given the P-principle sentence (5) ‘1776 was once present’ reduces to

$$\exists t' \exists t'' (t' \text{ is present} \ \& \ t'' \text{ is earlier than } t' \ \& \ \text{at } t'' (\exists t (t \text{ is present} \ \& \ t=1776)))$$

which given the substitutional analysis reduces to

$$\exists t' \exists t'' (t' \text{ is present} \ \& \ t'' \text{ is earlier than } t' \ \& \ \exists t (t=t'' \ \& \ t=1776))^{76}$$

On this account, to analyse a sentence of the form ‘at  $t$ ,  $\phi$ ’ in general, one first needs to provide a metaphysical analysis of  $\phi$  that reduces away all the temporary properties until the only one left is presentness.

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<sup>76</sup> As before, contrary to Sider (2011, 260) there is an operator-free reduction of sentence (5).

It is useful to define the effect of the ‘at  $t$ ’ operator on an arbitrary sentence  $A$  of a specified language including the operator inductively on the complexity of  $A$ . The relevant language,  $L$ , is standard first-order quantificational logic with identity, and with the predicates ‘ $<$ ’ (earlier than) and ‘is present’, the ‘at  $t$ ’ operator, and instant variables  $t, u, v, \dots$ .  $\$$  is a mapping from sentences of  $L$ ,  $\$_t$  etc. is a family of auxiliary mappings (one for each temporal term  $t$ ) from sentences of  $L$ , and  $A$  is an arbitrary sentence of  $L$ . We can then define the effect of ‘at  $t$ ’ as follows:

$$\$A =_{\text{def}} A \text{ if } A \text{ is atomic}$$

$$\$_t(v \text{ is present}) =_{\text{def}} v=t$$

$$\$_t(A) =_{\text{def}} A \text{ for all other atomic sentences } A$$

$$\$\neg A =_{\text{def}} \neg \$A$$

$$\$_t\neg A =_{\text{def}} \neg \$_t A$$

$$\$(A \& B) =_{\text{def}} \$A \& \$B$$

$$\$_t(A \& B) =_{\text{def}} \$_t A \& \$_t B$$

$$\$\exists v A =_{\text{def}} \exists v \$A$$

$$\$_t \exists v A =_{\text{def}} \exists v \$_t A$$

$$\$(\text{at } t^* A) =_{\text{def}} \$_{t^*} A$$

$$\$_t(\text{at } t^* A) =_{\text{def}} \$_{t^*} A \text{ (where } t^* \text{ may but need not be a different term from } t)$$

It is clear that  $\$$  maps all formulas of the language- including those with complex embeddings of ‘at  $t$ ’- to ‘at  $t$ ’-free formulas in the intended way.

There are a few points to note concerning the substitutional analysis. First, it differs slightly from the operator reductionist analysis of ‘at  $t$ ’ mentioned below, according to which for any instant  $t$  and permanent property  $F$ , the proposition that at  $t$  ‘( $\exists t(t$  is present &  $F(t)$ )’ reduces to the proposition that  $F(t)$ . In particular, on the substitutional analysis one often gets a sentence of the form ‘ $\exists t(t=t$  & . . .  $t$  . . .)’ where on the previous analysis one would get a sentence of the form ‘. . .  $t$ ’ (see, for example, the different analyses of sentence (4) above). However, this is merely a result of the greater generality of the substitutional account, which does not require that ‘present’ occurs in a definite description ‘the instant that is present’.

Second, note that on the substitutional analysis ‘At  $t(t$  is present)’ reduces to ‘ $t=t$ ’. Therefore on this analysis as on the operator-theoretic analysis, the thesis that every instant is present relative to itself is trivial; in this case, for an instant  $t$  to be present relative to itself is just for  $t$  to be self-identical. Therefore it remains the case that contrary to Bourne (2006) and Smith (2010), it does *not* follow from that the fact that some instant is present relative to itself that it is present simpliciter.

Third, consider how the classic MSTer interprets the thesis of permanentism given the substitutional analysis. Permanentism is the thesis that always, everything always exists. Given the A-principle ( $\mathbf{A}\phi$  iff  $\forall t$  at  $t(\phi)$ ), this reduces to

$$\forall t \text{ at } t(\forall x (\forall t \text{ at } t(\exists y y=x)))$$

which given the substitutional analysis reduces to

$$\forall t(\forall x (\forall t(\exists y y=x)))$$

in which the ‘ $\forall t$ ’s are redundant, and which is therefore equivalent to

$$\forall x (\exists y y=x)$$

In other words, given the substitutional analysis, permanentism is equivalent to the trivial truth that everything exists. This makes sense considering that given operator reductionist classic MST, the temporal operators are sensitive to ‘is present’, and there is no ‘is present’ in the thesis of permanentism.

Finally, some might worry that the substitutional analysis is circular, as the above description of the analysis mentions temporary properties (‘in which the only formulae that attribute *temporary properties* are formulae of the form ‘ $x$  is present’’), which given operator reductionism are analysed in terms of ‘at  $t$ ’. However, this is not a genuine concern. The substitutional analyses of *particular* sentences of the form ‘at  $t$ ,  $\phi$ ’ do not contain the phrase ‘temporary properties’. For example, according to the substitutional analysis the sentence ‘At  $t$ ,  $t$  is present’ is simply analysed as ‘ $t=t$ ’, and the sentence ‘At  $t$ ,  $t$  is a billion years after the start of the universe’ is simply analysed as ‘ $t$  is a billion years after the start of the universe’. The phrase ‘temporary properties’ is merely used in an attempt to help others to understand *in a general way* which sentence-level analyses the substitutional analyst is committed to; and one can use any expressive resources one wishes in such attempts.

#### 2.1.4 *Concreteness*

We saw above that permanentism entails that Napoleon exists and that there are things that were dinosaur roars and will be Mars bases. We also saw that like all A-theorists, moving spotlights hold that many ordinary properties are temporary; for example, the properties of being a man, a dinosaur roar, and a Mars base. It follows that moving spotlights are committed to the existence of things such as former men (e.g. Napoleon), former dinosaur roars, and future Mars bases.<sup>77</sup> Following Williamson (1998, 2002, 2013), it also seems

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<sup>77</sup> According to Sider (2011, 258) FCP entails that there are no dinosaurs, so that given permanentism, Williamsonians must hold that there are former dinosaurs. However, there is no reason why moving

natural to think that the property of *being concrete*- roughly, being in space, or having a volume- is among the temporary properties.<sup>78</sup> After all, it would be very odd to think that, for example, Napoleon is no longer a man, or short, or French, or Napoleon-shaped, but is still concrete. More generally, there is no clear reason why one would hold that things gain and lose the properties of e.g. having a colour and shape but always be concrete. In that case, it follows that according to moving spotlights, things such as former men, former dinosaur roars, and future Mars bases are also former/future concrete things. They exist, but they are no longer located anywhere.<sup>79</sup>

The temporariness of concreteness might be surprising to some A-theorists, who are used to thinking of concreteness as a permanent property (in the sense of ‘property that is such that if one ever has it, one has it whenever one exists’). However, the thesis of the temporariness of concreteness plays some useful theoretical roles for moving spotlights. Williamson (2013) mentions two such roles.<sup>80</sup> First, many theorists wish to count ‘natural kind’ properties such as being a dinosaur and being a human as ‘essential’ properties. On the standard account, a property *F* is *essential* to some *x* only if necessarily, whenever *x* exists, *x* is *F*.<sup>81</sup> Thus, if being a dinosaur and being a human are essential properties, then a dinosaur is a dinosaur whenever it exists and a human is a human whenever it exists. However, according to the moving spotlight theory, there are things that were dinosaurs but are no longer, and things that are human but won’t always be. Therefore moving

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spotlights *have* to hold that the property of being a dinosaur is a temporary property. In particular, a moving spotlighter could hold that the property of being a dinosaur is an essential and therefore permanent property, so that things that were dinosaurs are still dinosaurs (and therefore dinosaurs at the present instant). I do not think this is an attractive position- I feel sure there are no dinosaurs- but it is not ruled out by the moving spotlight package.

<sup>78</sup> Note that ‘concrete’ is not supposed to mean ‘non-abstract’.

<sup>79</sup> Here is Williamson (2013, 13): ‘Where is the past or future coin now? Nowhere.’

<sup>80</sup> Williamson focuses on the modal case; I focus on the analogous temporal case.

<sup>81</sup> This is not an *analysis* of ‘essential property’: it merely describes a necessary condition for a property’s being essential. The reason is that, if the necessary condition was also sufficient, then it would follow that the property of existing- of *being something* – is an essential property of everything (as, for any *x*, necessarily, if *x* exists then *x* exists). However, many theorists who hold that there are essential properties would deny that existence is part of the essence of everything. An alternative account might be to say that a property *F* is essential to some *x* iff being *F* is guaranteed by *x*’s nature. Given that existing is not guaranteed by my nature, this analysis does not entail that existing is among my essential properties.

spotlighters must deny that properties such as being a dinosaur or a human are ‘essential’ in the usual sense. However, as Williamson (2013, 8) points out, given the temporariness of concreteness moving spotlighters can accept the following necessary condition on essential properties: a property  $F$  is essential to some  $x$  only if necessarily, whenever  $x$  is concrete,  $x$  is  $F$ .<sup>82</sup> Given this condition, it is true according to moving spotlighters that the properties of being a dinosaur and being a human are essential, as dinosaurs are dinosaurs whenever they are concrete and humans are humans whenever they are concrete.

Second, given the temporariness of concreteness moving spotlighters can try to save the truth of certain ordinary sentences which seem to be inconsistent with permanentism, such as

(7) ‘I won’t exist forever’

and

(8) ‘Napoleon doesn’t exist’

They can do this by interpreting sentences such as (7) and (8) as expressing propositions concerning what is concrete, so that a typical utterance of (7) expresses the true proposition that Dan won’t always be concrete, and a typical utterance of (8) expresses the true proposition that there is no such concrete thing as Napoleon.<sup>83</sup> More generally, moving spotlighters could respond to worries about the ‘counter-intuitiveness’ of permanentism by arguing that our everyday quantifiers are sometimes (perhaps often) tacitly restricted to the concrete realm, so that many ordinary pre-philosophical beliefs about *existence over time* are really beliefs about *concreteness over time*. This would by no means be an entirely ad hoc move to make: given that humans are concrete beings with an

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<sup>82</sup> Again, remember that this is a necessary but not sufficient condition; otherwise, it would follow that the necessarily non-concrete number 2 is essentially a dinosaur.

<sup>83</sup> See Williamson (2013, 14).

interest in concrete survival, it is natural that many of our beliefs should be geared toward what is concrete, not to what exists in the logician's 'thin' technical sense of being identical to something. (Note that B-theorists can also agree with this point: they can argue that our everyday quantifiers are often tacitly restricted at an instant to the things that are spatiotemporally located at that instant.)

However, we should not simply assume that moving spotlights are obliged to interpret ordinary quantification as (often) implicitly restricted to the concrete realm. The temptation to do so arises from a commitment to the natural principle that metaphysical theories should not make large swathes of people's ordinary beliefs about the world false (at least, not without very good reason). However, it is not *always* uncharitable to interpret people as having false beliefs; indeed, sometimes it is *more* charitable to interpret people as having false beliefs, as doing so accords them due respect as considered thinkers (albeit considered thinkers in the grip of a false theory). With this in mind, moving spotlights might simply say: many ordinary people have a certain theory about existence over time, namely, that many things really are created and destroyed as time passes; however, philosophical research has shown that this theory is false, and therefore their theory is false. (Again, note that it is also open to B-theorists to make this point).

Finally, moving spotlights are not obliged to regard concreteness as a *fundamental* property. For example, it may be that to be concrete is just to stand in some permanent physical relation (or one of some set of permanent physical relations) to the present instant. In particular, it is natural for classic MSTers (and perhaps Williamsonians, depending on how the view is worked out) to hold that some  $x$  is concrete at an instant  $t$  iff  $x$ 's spatiotemporal location overlaps  $t$ , and concrete simpliciter iff  $x$ 's spatiotemporal location overlaps  $t$  and  $t$  is present.

### 2.1.5 *Objections*

A number of objections have been raised against the moving spotlight theory. Two popular objections have already been considered: Smart's (1949) rate of passage argument, and the 'McTaggartian' arguments of Bourne (2006), Smith (2010) and Deng (2012). Two further objections are as follows: first, that concreteness cannot be temporary if permanentism is true; and second, that the moving spotlight theory leads to scepticism about whether we are located at the absolute present instant. In this section, I describe these objections and show that moving spotlighters can easily respond to each of them.

First, some theorists object to the conjunction of permanentism and the temporariness of concreteness. For example, here is Zimmerman (2008):

[The moving spotlight theory] has less appealing consequences as well. Headaches can exist but not be truly painful; a horse can exist although it is not actually alive or even spatially located . . . an explosion can continue to exist when all its energy has dissipated. (Zimmerman 2008, 215)

Moving spotlighters should reply to this objection as follows: it may be true according to the moving spotlight theory that there are former headaches, former horses, and former explosions, and moreover that some former headaches are not painful, some former horses are neither alive nor spatially located, and some former explosions are such that their energy is dissipated. However, moving spotlighters are not committed to absurd sounding claims such as that something is both a headache and not painful, or a horse but not alive or spatially located, or an explosion but releases no energy. The only claim in the vicinity which moving spotlighters might make is the claim there are *former* headaches that are no longer painful, and *former* horses that are neither alive nor spatially located, and *former*

explosions that release no energy.<sup>84</sup> It is difficult to see what is so strange about the claim that former horses are neither alive nor spatially located; one would not expect them to be. Similarly, Fitch (2007) writes that ‘it is worth noting how implausible it is to maintain that a concrete object *becomes* non-concrete or that a non-concrete object *becomes* concrete’. It is difficult to see what Fitch finds so implausible about the temporariness of concreteness. Perhaps the implausibility is supposed to lie in the fact that for something to change from being concrete to non-concrete (or vice versa) is for that thing to undergo an implausibly profound sort of change. However, non-permanentists such as transientists hold that things begin and cease to exist; yet as far as I am aware, no-one objects to transientism on the grounds that it posits an implausibly profound sort of change. Perhaps the implausibility is supposed to lie in the idea that anything could *survive* a change from being concrete to non-concrete (or vice versa). However, it is difficult to see why this should be thought implausible. If to exist is just to be identical to something, then there is no obvious reason to think that something concrete should cease to be identical to something as soon as it becomes non-concrete (or vice versa).

A second objection to the moving spotlight theory is what we may call the *epistemic objection*.<sup>85</sup> Sider (2011) describes the objection as follows:

We believe that we exist in the present; indeed, we take ourselves to know this. But given the spotlight theory, there are ever so many people, with similar evidence to our own, who also think they are in the present but are wrong- they’re wrong because the times at which they are located do not have monadic presentness.

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<sup>84</sup> Assuming they think that the properties of being a headache, a horse, and an explosion are temporary. This is not forced by the moving spotlight theory: a moving spotlihter might think that e.g. explosions are always explosions, but only temporarily *occur*.

<sup>85</sup> Bourne (2002) and Braddon-Mitchell (2004) put forward an analogous argument against the growing block theory (defended by Tooley 1997), and Lewis (1986, 93) seems raise an analogous argument against the modal A-theory. There is no obvious reason why the response described here could not be modified by growing blockers and modal A-theorists to respond to those arguments.

George Washington, for example, thinks in 1776 that 1776 is present; we think, here in 2011, that 2011 is present. We cannot both be right, since the property of presentness is monadic and possessed by only one moment. And our evidence is no better than Washington's (we see flowers brightly blooming in 2011; he sees flowers brightly blooming in 1776, and so on), so it's hard to believe that we're more likely to be right than Washington. Indeed, it seems likely that we're both wrong, since 1776 and 2011 are merely two of the infinitely many times, only one of which has presentness. The spotlight theory leads to scepticism about whether we're in the present. (Sider 2011, 261)

The epistemic objection fails. To see this, consider Sider's argument in the above quotation. Sider states, correctly, that 'George Washington, for example, thinks in 1776 that 1776 is present; we think, here in 2011, that 2011 is present.' More carefully, the following is true given the moving spotlight theory (remember that 'Presento' names the current instant): at some instant  $t$  in 1776, George Washington thinks that  $t$  is (absolutely) present, and at Presento, Dan thinks that Presento is (absolutely) present. Now, notice that there is no disagreement here: George Washington thinks *as of  $t$*  that  $t$  is present, and I think *as of Presento* that Presento is present. Given that every instant is present relative to itself, as of our respective instants we are both right, contrary to Sider:  $t$  is indeed present at  $t$ , and Presento is indeed present at Presento (as we saw above, according to operator reductionist classic MST, this just amounts to  $t$  and Presento both being self-identical). We could *not* both be right if George Washington thought that  $t$  is present and I thought that Presento is present, given that it is always the case that exactly one instant is present and  $t \neq$  Presento. But there is no reason at all why a moving spotlihter would claim that George Washington thinks that  $t$  is present and I think that Presento is present. Given that something is the case at the present instant iff it is the case simpliciter, it follows given the

moving spotlight theory that I think that Presento is present. But it does *not* follow that George Washington thinks that  $t$  is present, and therefore disagrees with me: rather, it is the case *at*  $t$  that George Washington thinks that  $t$  is present (the ‘at  $t$ ’ does not simply ‘drop off’, as  $t$  is not the absolute present; Presento is). But without disagreement between me and George Washington there is no epistemic objection, as the objection relies on the premise that there is massive disagreement between individuals located at past, present, and future instants about which instant is absolutely present (‘the [epistemic] objection turns on the fact that the spotlight theorist thinks that many people such as Washington think that they’re in the present’). This disagreement is supposed to induce scepticism in those of us located at Presento that Presento really is the absolute present instant, given the further premise that our evidence that Presento is present is no better than the evidence of those located at other instants that those instants are present (‘our evidence is no better than Washington’s’). But as we have seen, there is no disagreement, and therefore no argument against the moving spotlight theory.

Sider’s argument involves a by-now familiar error: that given the permanentist A-theory, one can always infer ‘ $\phi$ ’ from ‘at instant  $t$ ,  $\phi$ ’. As we saw in Chapter One, Bourne (2006) commits this error by mistakenly assuming that given the permanentist A-theory, if an event is occurring at some past instant, then it is occurring simpliciter; in other words, that if at past  $t$ , event  $e$  is occurring, then  $e$  is occurring. Similarly, Smith (2010) assumes that given the A-theory, if an instant is present relative to itself then it is present simpliciter; in other words, that if at  $t$ ,  $t$  is present then  $t$  is present. Sider’s epistemic objection commits the same sort of mistake: Sider assumes that given the moving spotlight theory, if Washington thinks in 1776 that 1776 is present, then Washington thinks that 1776 is present; in other words, that if at 1776, Washington thinks that 1776 is present, then Washington thinks that 1776 is present. Of course, moving spotlights do not allow

this sort of inference. They hold that Washington thinks (correctly) as of 1776 that 1776 is present; they do not hold that this implies that Washington thinks that 1776 is present.

After all, if one could always infer ‘ $\phi$ ’ from ‘at  $t$ ,  $\phi$ ’, then given that there is an instant at which I am sitting and another at which I am standing, it would follow that I am both sitting and standing. More generally, if moving spotlights always allowed this sort of inference, the view would be massively contradictory, as it would entail that *things always have all the properties they ever have*.

#### 2.1.6 Classic MST or Williamsonian passage?

We have described two kinds of moving spotlight theory, Williamsonian passage and classic MST.<sup>86</sup> But which is better? There are two good reasons to prefer classic MST to Williamsonian passage, both of which derive from the relative theoretical simplicity and elegance of classic MST. First, classic MSTers are in greater agreement with contemporary spacetime physics. In particular, classic MSTers agree with spacetime physicists that all of the fundamental physical properties are permanent, whereas Williamsonians hold that many of the fundamental physical properties are temporary. The classic MSTer’s fundamental picture of the world is just the spacetime physicist’s with the sole addition of a temporary fundamental property of presentness. The Williamsonian’s fundamental picture of the world further modifies the spacetime physicist’s by the addition of a number of temporary fundamental physical properties; e.g. the property of *having mass simpliciter*, or *being negatively charged simpliciter*. The fact that it is in greater agreement with contemporary spacetime physics is surely a significant virtue of classic MST.

Second, whereas classic MSTers can embrace operator reductionism, there is

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<sup>86</sup> Strictly speaking, Williamsonian passage is a family of views: namely, permanentist A-theories according to which there are many temporary fundamental properties. However, for ease of exposition I speak as if there is a single ‘Williamsonian view’.

pressure on Williamsonians to either (i) embrace operator fundamentalism or (ii) accept many unexplained metaphysical necessities. To see this, suppose that the property of having mass simpliciter is among the Williamsonian's temporary fundamental physical properties, and consider the fact that

(10) Necessarily, for all  $x$  ( $x$  has mass simpliciter  $\supset$   $x$  has mass at an instant)

The question is: why does (10) hold? More generally, why do the spatial properties (e.g. the property of having mass simpliciter) necessarily line up with the spatiotemporal properties (e.g. the property of having mass at some instant)? For the classic MSTer, the truth of (10) is easily explained by the fact that what it is for something to have mass simpliciter is for it to bear the permanent *mass-at* relation to a present instant, and therefore to have mass at some instant. In other words, classic MSTers can provide a ready reductive explanation of (10) (and other such necessary connections). What about the Williamsonian? If instants are complete, consistent, temporal propositions, then (10) can be derived from the sometimes principle (whatever is the case is sometimes the case, and therefore the case at some instant) and the fact that necessarily, there is a complete, consistent, temporal proposition. However, in that case Williamsonians must accept operator fundamentalism, given that the propositional view of instants is inconsistent with operator reductionism (a temporal proposition is one that is sometimes true). On the other hand, if instants are hyperplanes, then it looks as if Williamsonians have no explanation of why (10) holds, and more generally no answer to the question of why the spatial properties necessarily line up with the spatiotemporal properties. Therefore the choice facing Williamsonians is between operator fundamentalism on one hand and unexplained necessities on the other. Either choice complicates Williamsonian passage relative to classic MST.

## 2.2 Pastism

One way to answer the temporal-ontological question is that things never begin or cease to exist. Another way to answer is that that as time passes, things begin to exist only; or, more precisely, that nothing ever ceases to exist but sometimes something begins to exist.

In that case, one rejects permanentism in favour of *pastism*:

PASTISM: Nothing ever ceases to exist, but sometimes something begins to exist

FORMALLY:  $\mathbf{A}(\neg \exists x \mathbf{F} \neg \exists y y=x) \ \& \ \mathbf{S}(\exists x \mathbf{P} \neg \exists y y=x)$

Pastists hold that the sum total of what exists increases, but never decreases, over time.

Like permanentism, pastism entails that (for example) if it was the case that something is a dinosaur roar, then there is something that was a dinosaur roar. More generally, pastism entails that for any monadic property  $F$ , if it was the case that something is  $F$  then there is something that was  $F$ . However, like permanentism, pastism is silent about whether things that were  $F$ s are  $F$ s or *former*  $F$ s (i.e. things that are not  $F$ s, but were). Therefore pastism does not entail that there are dinosaur roars, but only that there are things that *were* dinosaur roars.

Like permanentists, pastists cannot avoid admitting that Napoleon exists, given certain uncontroversial assumptions concerning identity over time. For pastism entails that, if it was the case that something is identical to Napoleon ( $\mathbf{P}\exists x x = \text{Napoleon}$ ), then it was the case that something is identical to Napoleon and will always exist, and therefore it was the case that something is identical to Napoleon and now exists, and therefore something is such that it was identical to Napoleon ( $\exists x \mathbf{P}(x = \text{Napoleon})$ ). Given that identity is permanent ( $\mathbf{S}(x = y) \supset \mathbf{A}(x = y)$ ), it follows that something is identical to Napoleon; that is, that Napoleon exists. Perfectly analogous reasoning shows that pastism entails that the

Second World War exists. However, pastism does not entail that Napoleon is a man, or French, or short, or concrete, but only that he *was* all of these things. Similarly, pastism does not entail that the Second World War is a war, or involves the Allies and the Axis powers, or is *happening*, but only that it *was* or *did do* all of these things. Therefore although pastism entails that Napoleon and the Second World War both exist, it does not entail that there is any such short, French, concrete man as Napoleon, or that there is any such occurring war as the Second World War.

Among the main varieties of A-theory, the *growing block theory* is a pastist theory. Indeed, we can identify the growing block theory with the conjunction of pastism and the A-theory:

**THE GROWING BLOCK THEORY:** There is an absolute present time and nothing ever ceases to exist but sometimes something begins to exist

There is a slight complication here. Standard, self-described ‘growing blockers’ are not just any old pastists: they are pastists according to whom *many* objects and events, such as Mars bases and the coronation of Prince George, do not yet exist (or as they would put it, according to whom it will be the case that there are many things which are now nothing). However, pastism is consistent with the existence of Mars bases and the coronation of Prince George. Indeed, pastism is consistent with the view that throughout all time, exactly one thing comes into existence. Of course, this would be a strange view, and it is difficult to think of a reason why anyone would ever hold it. Therefore although we identify the growing block theory with the conjunction of the A-theory and pastism, in what follows ‘the growing block theory’ is typically used to refer to the conjunction of the A-theory and the view that nothing ever ceases to exist but it will be the case that there are many objects and events which are now nothing.

Historically, the growing block theory has had more support than the moving spotlight theory; well-known growing blockers include Broad (1923), Tooley (1997), and Forrest (2004). Here is Broad's (1923) description of the view:

Whatever is has become, and the sum total of the existent is continually augmented by becoming. There is no such thing as *ceasing* to exist; what has become exists henceforth for ever. When we say that something has ceased to *exist* we only mean that it has ceased to be *present*; and this only means that the sum total of existence has increased since any part of the history of the thing became . . . (Broad 1923, 69. Author's emphases)

There are at least two plausible reasons why the growing block theory has historically found more favour than the moving spotlight theory. First, the moving spotlight theory is usually misunderstood in the manner of Sider's (2011) characterisation of classic MST. As we saw above, according to Sider's version of classic MST we only ever express temporary propositions when we use the extraordinary predicate 'is (absolutely) present'. It follows that ordinary predicates such as 'is a dinosaur' express permanent properties and ordinary sentences such as 'Dan is sitting' express permanent propositions. This way of characterising classic MST is totally unjustified, and makes the theory look like a parody of the A-theory. In comparison, the growing block theory- *even if* it is similarly misunderstood- appears more 'A-theoretic' due to its rejection of permanentism, which as we saw above is (or ought to be) accepted by B-theorists.

Second, there is an idea that the growing block theory but not the moving spotlight theory (or, indeed, the B-theory), is consistent with the thesis that the future is 'open'. For example, here is Diekemper (2007): 'If the event of the Third World War exists eternally, then in what sense is that event- prior to its occurrence- *not* inexorable?' Of course, the

question of whether the growing block theory but not the moving spotlight theory is consistent with the open future thesis depends on what it means for the future to be *open*. If it simply means that certain objects and events (such as Mars bases and the coronation of Prince George) do not yet exist, then it is true that the growing block theory but not the moving spotlight theory is consistent with the open future thesis. (Of course, it also follows that pastism is consistent with the open future thesis. However, it does not follow that pastism *entails* that the future is open: as mentioned above, one could be a pastist according to whom there is a Mars base and a coronation of Prince George.) However, that would be a simplistic interpretation of the open future thesis. The idea that the future is open is not just the idea that things like Mars bases and the coronation of Prince George do not yet exist. The thesis that things like Mars bases and the coronation of Prince George do not yet exist may entail that the future is open, but it is a distinct thesis.

On the other hand, if the open future thesis means that certain propositions about the future- such as the proposition that there will be Mars stations and a coronation of Prince George- are neither true nor false, then there is no reason to think that the open future thesis is inconsistent with the moving spotlight theory. There is nothing essential to the moving spotlight theory that prevents moving spotlights from rejecting bivalence for certain propositions about the future (putting aside the question of whether they should ever want to reject bivalence). As Barnes and Cameron (2009) point out, the idea that the open future thesis entails the rejection of bivalence is not uncommon. For example, Markosian (1995) explicitly defines the open future thesis as the rejection of bivalence:

Let us agree on some terminology. To say, with regard to some time  $t$ , that the future is open at  $t$  is to say that there are some propositions about the future relative to  $t$  that are, at  $t$ , neither true nor false. To say that the future is closed at  $t$  is

to deny this, i.e., to say that every proposition about the future relative to  $t$  is, at  $t$ , either true or else false. Markosian (1995, 96)

However, as Barnes and Cameron also point out, there is a more promising view with which we can identify the open future thesis which does not involve the rejection of bivalence, namely, the view that certain propositions about the future *are metaphysically unsettled* (where metaphysical unsettledness is a primitive notion). For example, according to this view, it is unsettled that there will be Mars stations and a coronation of Prince George. However, it is settled that either there will be Mars bases and a coronation of Prince George, or there won't be. More generally, it is settled that there is *some way* the future will be, but there is no way the future will be such that it is settled that it will be *that way*. The view is consistent with bivalence: every proposition is either true or false; it is *settled* that every proposition is either true or false. However, it is not the case that for every proposition  $p$ , it is settled that  $p$  is true or it is settled that  $p$  is false. For example, the proposition that there will be Mars stations and a coronation of Prince George is such that it is settled that it is either true or false (the proposition has a classical truth value), but it is not settled that it is true and it is not settled that it is false. The settling of its truth-value depends on how the future unfolds. That is just what it is for the future to be 'open' according to this view.

If the open future thesis is simply the thesis that certain propositions about the future are metaphysically unsettled, then it is clearly false that the growing block theory but not the moving spotlight theory is consistent with the open future thesis: there is nothing essential to the moving spotlight theory that prevents moving spotlights from holding that certain propositions about the future are metaphysically unsettled.<sup>87</sup> That is not to say that we must identify the open future thesis with the thesis that certain

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<sup>87</sup> As Barnes and Cameron (2009, 305-8) point out.

propositions about the future are metaphysically unsettled, or indeed that we should think that the future is ‘open’ in the first place. The point is just that considerations regarding the openness of the future do not seem to provide a reason for preferring the growing block theory to the moving spotlight theory, as some theorists seem to think.

Given pastism, growing blockers accept that all past objects and events exist. Moreover, as A-theorists, growing blockers should agree with moving spotlighters that many ordinary predicates express temporary properties and many ordinary sentences express temporary propositions. However, just as there are different versions of the moving spotlight theory, there are different versions of the growing block theory. In particular, growing blockers are faced with the question of how many fundamental properties are temporary.<sup>88</sup> According to the *Williamsonian growing block theory*, many (perhaps most, perhaps all) fundamental properties are temporary.<sup>89</sup> According to the *spotlit block theory*, there is just one temporary fundamental property- absolute presentness, instantiated by successive instants. According to the *classic growing block theory* (‘classic GBT’), there are *no* temporary fundamental properties: all fundamental properties are permanent.<sup>90</sup> On this view, the only change at the fundamental level is the coming into existence of new objects, and the present instant is just the latest slice of the manifold (or the latest *occupied* slice of the manifold, if there are future (possibly ersatz) slices).<sup>91</sup>

Further questions for growing blockers concern how to account for (i) the spacetime manifold and (ii) instants of time, given pastism. As we saw above, given permanentism, moving spotlighters can wholly endorse the physicist’s picture of the world

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<sup>88</sup> Note that ‘temporary property’ here means ‘property that is such that something sometimes exists and has it, and sometimes exists and doesn’t have it’.

<sup>89</sup> Zimmerman (2011, 170) calls this the ‘ghostly growing block’.

<sup>90</sup> Note that ‘permanent property’ here means ‘property that is such that if something ever has it, then it has it whenever it exists’.

<sup>91</sup> It is an interesting feature of classic GBT that on that view, what makes the present slice fundamentally distinct from all others is how it is related to other slices, not that it has some fundamental temporary property.

as a four-dimensional spacetime manifold with a permanent population of past, present, and future events, and can identify instants of time with appropriate three-dimensional slices of the manifold (hyperplanes of simultaneity). Given pastism, on the other hand, things are more complicated. Wholesale acceptance of the physicists' picture is impossible, given that it is essentially a permanentist picture. However, growing blockers still need to account for the truth of modern spacetime theories. For that reason, an attractive option for growing blockers is to identify the manifold with a permanent, abstract structure- a sort of 'ersatz' spacetime manifold- in which there are 'points' and 'regions' that are such that they will be, but are not yet, the locations of certain future events.<sup>92</sup> Given such a structure, growing blockers can try to account for the truth of modern spacetime theories in a way that is consistent with the growing block theory.

As for instants, growing blockers appear to have a couple options. One is to endorse the spacetime view by identifying instants with 'slices' of an ersatz spacetime manifold. Another is to endorse the propositional view, according to which instants are complete, consistent temporal propositions.<sup>93</sup> Either way, it looks as if growing blockers must be operator fundamentalists: even if instants are slices of the ersatz manifold, as we saw above, there are 'points' and 'regions' of that manifold which are such that they *will be* but are not yet the locations of future events.

There is a great deal more to be said about the growing block theory. The main point of this section is simply to draw attention to the fact that the growing block theory is a pastist theory. However, it should also be clear from what has been said that the growing block theory is a more complex theory than the moving spotlight theory. First, permanentism is a simpler and more elegant theory than pastism. According to permanentism, there is no ontological change over time: the facts about what there is are

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<sup>92</sup> Zimmerman (2011) recommends this option to growing blockers.

<sup>93</sup> See, for example, Briggs and Forbes (2012).

eternal and unchanging. Of course, there is qualitative change over time: the facts about *how things are* are in constant flux. However, for permanentists the flow of qualitative change takes place within a fixed and eternal ontological structure. This is a neat and compelling picture. According to pastism, on the other hand, things come into existence, and therefore there is ontological as well as qualitative change over time.<sup>94</sup> Therefore pastists reject the permanentist's attractive picture of qualitative change within a fixed and eternal ontological structure, by adding the complication of ontological change over time.

Second, as mentioned above, the basic picture of the world provided by current spacetime physics- that of a four-dimensional manifold of spacetime points filled with a permanent stock of things, standing in permanent fundamental relations and bearing permanent fundamental properties- is essentially a permanentist picture. Therefore growing blockers cannot accept this picture in full. This is a serious disadvantage of the growing block theory, given the beauty and theoretical power of the physicists' picture. Moreover, while there may be ways in which growing blockers can still account for the truth of modern spacetime theories- for example, by positing a permanent, abstract 'spacetime'- doing so complicates the growing block theory relative to the moving spotlight theory. Finally, we saw above that unlike moving spotlights, growing blockers cannot endorse operator reductionism. Yet again, this complicates the growing block theory relative to the moving spotlight theory.

Given that the growing block theory is more theoretically complex than the moving spotlight theory, there would need to be some very compelling reason to prefer the former to the latter. The only reason that I can think of is that the growing block theory but not the moving spotlight theory is consistent with the open future thesis. However, we have already seen that that is false. Therefore I cannot see any reason for preferring the growing

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<sup>94</sup> Although as we saw above, it is open to pastists to hold that there is no *fundamental* qualitative change.

block theory to the moving spotlight theory. Moreover, as we shall see in chapters Five and Six below, there is another good reason for preferring the moving spotlight theory to the growing block theory: there are true everyday and scientific sentences such that permanentists can provide a far more elegant and simple account of their truth than pastists. Given the truth of the A-theory (see Chapter Four), this provides further evidence that the moving spotlight theory, rather than the growing block theory, is the true theory of time.

## 2.3 Futurism and transientism

The mirror image of pastism is *futurism*, according to which nothing ever begins to exist, but sometimes something ceases to exist:

FUTURISM: Nothing ever begins to exist, but sometimes something ceases to exist

FORMALLY:  $\mathbf{A}(\neg \exists x \mathbf{P} \neg \exists y y=x) \ \& \ \mathbf{S}(\exists x \mathbf{F} \neg \exists y y=x)$

Futurists hold that the sum total of what there is decreases but never increases over time. As far as I am aware, no plausible version of the A-theory is a futurist theory.<sup>95</sup> The reason is straightforward: some people endorse pastism because they think (erroneously) that only the growing block theory is consistent with the thesis that the future is ‘open’. However, no-one (as far as I am aware) holds that the future is closed but the past is open, and therefore no-one is attracted to the futurist ‘shrinking block theory’.

Finally, suppose one holds that the correct answer to the temporal-ontological question is that as time passes, things both begin *and* cease to exist; or, more carefully, that

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<sup>95</sup> One possibility: the ‘shrinking tree’ theory defended by McCall (1994), according to which, roughly, the only ontological change that takes place over time is that ‘merely possible futures’ cease to exist. I am not certain whether this view should be described as ‘futurist’.

sometimes, something begins to exist and sometimes, something ceases to exist. In that case, one accepts the thesis of *transientism*:

TRANSIENTISM: Sometimes, something begins to exist and sometimes, something ceases to exist

FORMALLY:  $\mathbf{S}(\exists x \mathbf{P} \rightarrow \exists y y=x) \ \& \ \mathbf{S}(\exists x \mathbf{F} \rightarrow \exists y y=x)$

Transientists hold that as time passes, things both come into and go out of existence.

Unlike permanentists and pastists, transientists are under no obligation to admit that there are things that were dinosaurs, or that Napoleon exists: they can hold that although there *were* dinosaurs, nothing is such that it was a dinosaur, and although Napoleon did exist, he no longer does. Similarly, unlike permanentists and futurists, transientists are under no obligation to admit there are things that will be Mars bases: they can hold that while there *will be* Mars bases, nothing is such that it will be a Mars base.

Among A-theories, the relatively popular theory of *presentism* is a transientist theory. Indeed, we can identify presentism with the conjunction of transientism and the A-theory:

PRESENTISM: There is an absolute present time and sometimes, something begins to exist and sometimes, something ceases to exist

As with the growing block theory, there is a slight complication: although transientism is consistent with the strange thesis that throughout all time exactly one thing begins to exist and exactly one thing ceases to exist (perhaps the very same thing), in practice self-described ‘presentists’ hold that *many* things come into and go out of existence over time (or as they would put it, that there were and will be many things that are now nothing, and there are many things that were and will be nothing). Therefore although we identify

presentism with the conjunction of the A-theory and transientism, in what follows ‘presentism’ is typically used to refer to the conjunction of the A-theory and the view that there were and will be many objects and events which are now nothing (which of course implies transientism).

The idea that presentism can be identified with the conjunction of the A-theory and transientism may seem rather controversial to those familiar with the philosophy of time literature. In the literature, presentism is typically defined as the thesis that always, everything (unrestrictedly) is present. The idea is that according to presentism, there is some special, non-trivial (although not necessarily fundamental) property- the property of *presentness*- borne by every existing thing. Growing blockers and moving spotlights are supposed to reject presentism insofar as they hold that there are things that exist- past or future things- which do not bear this property.

The idea that there is a special property of presentness is suggested by the fact that there is so much agreement among presentists concerning which things exist and which things merely did and will. The question naturally arises: why is there so much agreement, given that neither the A-theory nor transientism alone provide any guidance in the matter (after all, we saw above that transientism is consistent with the view that throughout all time exactly one thing begins and ceases to exist)? One tempting answer is that presentists only accept the existence of things with the special property of presentness, and it is easy to know that there are no e.g. dinosaur roars or Mars bases with that property. The question, however, is what it is for something to have this special property. After all, it is not the same property of presentness with which the A- and B-theories are concerned: that property is a property of instants, and as we shall see below, just like moving spotlights and growing blockers, there are presentists according to whom there are instants of time that do not instantiate that property (i.e. past and future instants). It follows from the

traditional definition of presentism that those instants instantiate the special property of presentness, despite not being present in the sense that matters for the A-/B-theory debate.

The question of what it is to instantiate the special property of presentness mentioned in the traditional definition of presentism is the topic of the next chapter. Spoiler: I argue that while there numerous possible answers to the question of what it is for something to be ‘present’ in the sense of the traditional definition of presentism, the question of whether everything unrestrictedly has this property or whether there are also things that do not is not an especially interesting question to pursue, and certainly not as interesting and substantive as the question of whether transientism is true. This conclusion is what justifies the current chapter’s definition of presentism in terms of transientism rather than ‘presentness’.

As with the growing block theory, further questions for presentists concern how to account for (i) the spacetime manifold and (ii) instants of time given transientism. Like growing blockers, an attractive option for presentists is to identify the manifold with a permanent, abstract structure in which there are ‘points’ and ‘regions’ that are such that they were but no longer are, and will be but are not yet, the locations of certain past and future events. Given such a structure, presentists can account for the truth of modern spacetime theories in a way that is consistent with presentism. Similarly, it is natural for presentists to either identify instants with ‘slices’ of the abstract manifold or to endorse the propositional view;<sup>96</sup> either way, unlike classic MSTers and like growing blockers, presentists cannot endorse operator reductionism.

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<sup>96</sup> See, for example, Markosian (2004) and Crisp (2007).

## 2.4 Conclusion

The aim of this chapter was to describe the main versions of the A-theory: the moving spotlight theory, the growing block theory, and presentism. Unlike other theorists, I have defined these theories in terms of how they answer the temporal-ontological question; that is, the question of whether permanentism, pastism, or transientism is true (futurism is not a plausible answer). This is a new way of defining the A-theories, and it has substantial theoretical value. First, it is *systematic*: the three main versions of the A-theory (as well as the B-theory) are located within a single, unified framework. Second, it is *clear*: the important decision-point which distinguishes the three theories (i.e. how to answer the temporal-ontological question) is clear, and the logical relations between the theories are obvious. In particular, theories are not characterised using the ill-understood predicate ‘is present’ which appears in the traditional definition of presentism.

As well as providing a new and better way of defining the main versions of the A-theory, in this chapter we have reached some conclusions concerning some of those theories. In particular, we have seen that (i) different answers to the fundamental question (the question of how many fundamental properties are temporary) give rise to different versions of the moving spotlight theory: classic MST, according to which there is exactly one temporary fundamental property, and Williamsonian passage, according to which there are many temporary fundamental properties; (ii) classic MST is the best version of the moving spotlight theory; and (iii) there are good reasons to prefer the moving spotlight theory to the growing block theory. The second half of this thesis is dedicated to arguments for preferring the moving spotlight theory to either the growing block theory or presentism. However, in the course of those arguments, I return to some of the conclusions reached in this chapter.

# Chapter Three

## Presentism

### 3.0 Introduction

In Chapter One I introduced the A- and B-theories and defended the A-theory against a number of well-known objections. In Chapter Two I described the three main types of A-theory: presentism, the growing block theory, and the moving spotlight theory. However, instead of defining these theories in the usual way, in terms of whether everything is ‘present’ or whether there are also ‘past’ or ‘future’ things, I defined them in terms of the theses of permanentism, pastism, and transientism. In this chapter I justify that choice. First, I point out that there is no agreed interpretation of what it is for something to be ‘past’, ‘present’ or ‘future’ in the sense of the standard definitions of the A-theories.<sup>97</sup> Next, I point out that A-theorists who endorse the standard definitions but also accept that there are past and future instants must posit two senses of the predicate ‘is present’. This is a complication that can be avoided by rejecting the standard definitions. Finally, I argue that there is no plausible interpretation of the predicate ‘is present’ as it appears in the standard definitions. I do this by means of a case study into the standard definition of presentism, the thesis that always, everything (unrestrictedly) is present. I show that given each of the most plausible candidate meanings for the predicate ‘is present’, presentism so defined is either trivial, too obscure or implausible to be worthwhile debating (at least, compared with the question of whether transientism is true), controversial for reasons that have nothing to do with the philosophy of time, or has consequences which most self-described

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<sup>97</sup> I assume that for something to be ‘past’ or ‘future’ in the sense of the definitions of the growing block and moving spotlight theories is defined in terms of what it is for something to be ‘present’ in the sense of the standard definition of presentism.

presentists would reject. I conclude that self-described presentists should abandon the standard definition and instead focus on defending the conjunction of transientism and the A-theory. Similarly, self-described growing blockers and moving spotlighters should forget about the standard definitions of their views and instead focus on defending the A-theory and pastism (the growing block theory) or the A-theory and permanentism (the moving spotlight theory).

### 3.1 Defining A-theories

Different versions of the A-theory are typically characterised in terms of how they answer the following questions:

- THE TRADITIONAL QUESTIONS:
- (i) Are there past things?
  - (ii) Are there future things?

Presentists (I omit ‘self-described’ from now on) answer ‘no’ to (i) and (ii): they hold that everything is present. Growing blockers answer ‘yes’ to (i) and ‘no’ to (ii); they hold that, in addition to all the present things posited by presentists, there are some extra things which are past, but none which are future. Finally, moving spotlighters answer ‘yes’ to (i) and (ii); they hold that in addition to all the past and present things posited by growing blockers, there are some extra things which are future. For example, here are some standard definitions of the A-theories due to Sider:

Presentism is the doctrine that only the present is real. (Sider 1999, 325)

Intermediate between the polar opposites of presentism and eternalism [the view that ‘past and future objects and times are just as real as currently existing ones’] is the view . . . that the past is real but the future is not. (Sider 2001, 12)

According to one such view [the moving spotlight theory], reality consists of the four-dimensional manifold accepted by the B-theorist, with an equally real past, present, and future. But one slice of the manifold enjoys a special metaphysical privilege: it is the *present*. (Sider 2001, 17)

Here is Hare (2009):

Some imagine that the past exists but the future does not . . . Some imagine that the future exists but the past does not . . . Presentists, meanwhile, hold that only present objects, events, moments exist (and perhaps things that exist timelessly, like gods and numbers). There are no past or future things. (Hare 2009, 17)

Finally, here is Callender (2011):

Some metaphysicians (“eternalists”) believe that the past, present, and future are all real, others (“possibilists”) believe the past and present are real but the future is not, and yet a third group (“presentists”) hold that only the present is real. (Callender 2011, 3)

An immediate problem with these definitions is that it is not at obvious what it is for something to be ‘past’, ‘present’, or ‘future’ in the relevant sense. Most theorists who discuss the A-theories do not even attempt to analyse these notions.<sup>98</sup> Moreover, as we shall see in the course of our case study into presentism below, there is very little agreement among those who do attempt to provide analyses. Therefore the standard definitions are obscure. In contrast, the theses of permanentism, pastism, and transientism are clear: as we saw in Chapter Two, they can be unambiguously stated using only

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<sup>98</sup> See e.g. Sider (2001). Sider’s (2001) is one of the most important contributions to the philosophy of time in the past twenty years; however, Sider makes no attempt to say what it is for something to be past, present, or future in the sense of the standard definitions.

temporal operators, quantifiers, and the identity predicate.

In Chapter One the A- and B-theories were defined in terms of the predicate ‘is present’. Does that mean that the definitions of the A- and B-theories are also obscure? No: the predicate that features in the definitions of the A- and B-theories expresses a property of *instants*, and is distinct from the predicate that features in the standard definition of presentism. It is relatively easy to say what it is for an *instant* to be present (or past, or future). Of course, A-theorists disagree about what it is for an instant to be present: as we saw in Chapter One, according to some A-theorists, for an instant to be present is just for that instant to be true, whereas according to others presentness amounts to accuracy, or is fundamental.<sup>99</sup> However, every A-theorist has some view about what it is for an instant to be present. The problem with the standard method of defining A-theories is that it relies on a distinct and much less clear sense of ‘is present’.

That the sense of ‘is present’ employed in the standard definitions of the A-theories is distinct from the sense employed in the definition of the A- and B-theories is demonstrated by the fact that there are presentists according to whom there are past and future instants. Such theorists hold that past and future instants are *present* in the sense of the standard definition of presentism and *non-present* in the sense of the definition of the A- and B-theories. For example, Crisp (2007) combines presentism with the view that all past and future instants exist (Crisp endorses the propositional view of instants).<sup>100</sup> Therefore Crisp is committed to the view that there are two distinct senses of the predicate ‘is present’. According to Crisp, in the sense of ‘is present’ operative in the standard definition of presentism, for some  $x$  to be present is just for  $x$  to be such that for all  $y$ ,  $x$  has no temporal distance from  $y$ . All past and future instants are present in this sense according to Crisp. On the other hand, according to the propositional view of instants, for an instant  $t$

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<sup>99</sup> Crisp (2007) defends the truth-view; Dorr (Book MS, *Counterparts*) defends the accuracy view; I defend the fundamentalist view.

<sup>100</sup> As does Markosian (2004).

to be present is just for  $t$  to be true; obviously, past and future instants are not present in this sense.

Presentism as standardly defined does not sit well with a commitment to past and future instants. For example, here is a strange thing that Crisp is forced to say: 1066 bears no temporal distance to 2066 *and* is 1,000 years earlier than 2066. This is bizarre: how could something be 1,000 years earlier than something else but not bear any temporal distance to it? As we saw in Chapter One, it is very plausible that there are past and future instants: for one thing, we freely quantify over past and future instants in ordinary language and in our best physical theories; for another, it is much easier to theorise concerning time given the existence of past and future instants. Therefore the problem is not with the thesis that there are past and future instants, but with the standard definition of presentism.

### 3.2 Case study: the standard definition of presentism

Crisp's problem illustrates the difficulty of providing a plausible analysis of what it is for something to be 'present' in the sense of the standard definitions of the A-theories.

However, the case against the standard definitions is yet to be made. After all, Crisp's interpretation of 'is present' is not the only available option. In order to make the case compelling, let us take as a case study the standard definition of presentism.

Presentism is typically defined as the thesis that *always, everything is present*.<sup>101</sup>

STANDARD DEFINITION (PRESENTISM): Always, everything is present

FORMALLY:  $\mathbf{A}\forall xPresent(x)$

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<sup>101</sup> Versions of this definition are given by, for example, Bigelow (1996, 35), Crisp (2003, 215), De Clerq (2006, 386), Markosian (2004, 47, n.1), Meyer (2005, 213) and Sider (1999, 326).

There are four important points to note concerning this definition. First, some hold that presentism is *necessarily* true if true (Markosian 2004, 47; Sider 1999, 326), whereas others allow that presentism may be contingently true if true (Crisp 2003, 215). Whether the theory is necessary or contingent has no bearing on what follows, so I will continue to operate with the modally non-committal standard definition.

Second, some theorists omit the initial ‘always’ from the standard definition (e.g. Bigelow 1996). I assume that this is because they take it for granted that metaphysical theories of time are always true if true. It is very difficult to imagine why anyone would want to defend the thesis that everything is present, but not the thesis that *always* everything is present.<sup>102</sup> This would mean defending the view that sometimes, everything is present, and sometimes, something is non-present. Call this thesis *occasional presentism*. It is very difficult to think of a reason why a presentist would want to defend occasional rather than standard ‘eternal’ presentism.<sup>103</sup> Therefore let us continue to assume that presentism is the thesis that *always* everything is present.

Third, there is a question about whether the universal quantifier ‘everything’ in the standard definition should be read as restricted or unrestricted. The natural thing to say is that the quantifier is unrestricted (as Crisp 2004 does, for example); metaphysical theories typically aim for maximum generality. However, if the quantifier is unrestricted, it follows that if there are abstract things, abstract things are present. Some presentists who believe in abstract things might wish to deny that some or all abstract things can bear temporal properties such as being present. Such presentists will naturally recommend that the quantifiers in the standard definition be read as restricted so as to exclude atemporal abstracta. Otherwise, if there are atemporal abstracta then presentism is false, and if there

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<sup>102</sup> There is one other possibility: when presentists say that always, everything is present, what they *really mean* is that the sentence ‘everything is present’ is true in every context of utterance. I consider this interpretation below.

<sup>103</sup> On the other hand, growing blockers according to whom there is a first instant of time might do so.

are necessarily existent atemporal abstracta then presentism is necessarily false.

The question of whether the quantifier in the standard definition should be read as restricted or unrestricted really depends on what it means to say that something is *present* in the sense of the standard definition. For example, suppose that in the sense of the standard definition, to be present is just to be spatially located. In that case, if there are abstract things and all abstract things are non-spatial, the quantifier in the standard definition should at least be read as restricted to non-abstract things; otherwise presentism is inconsistent with the existence of abstract things.<sup>104</sup>

The question of what it is for something to be present in the sense of the standard definition of presentism is the central question of this chapter. For now, I will follow Crisp's (2004, 37) advice and assume that the quantifier in the standard definition is unrestricted, and therefore ranges over abstract things like numbers and sets if there are such things. If we find later that given the best candidate interpretation of the predicate 'is present', presentism is inconsistent with the existence of abstract things, then we can revise the standard definition accordingly.

Finally, there is a distinct (although not always clearly distinguished) debate concerning the standard definition of presentism which turns on the question of whether the universal quantifier in the definition is tensed or tenseless. Some argue along the following lines (see, for example, Ludlow 2004 and Meyer 2005): the quantifier in the standard definition is either tensed or tenseless. If it is tensed, then presentism is the obviously false thesis that always, everything is now present. If it is tenseless, then presentism is the trivially true thesis that always, everything is, was, or will be present. Therefore presentism is either obviously false or trivially true. This argument fails, for the simple reason that it makes no sense to talk about quantifiers being 'tensed' or 'tenseless'.

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<sup>104</sup> As before, unless otherwise specified, 'exist' and related terms are used in the logician's sense in what follows, according to which *to exist* is just to be something.

There may be a sense in which *claims* or *propositions* can be distinguished as either tensed or tenseless- for example, we can say that the temporary proposition that I climbed the tower of St Anne's is 'tensed' but the permanent proposition that I am sitting at 2pm on 14/1/2014 is 'tenseless'- but it is not at all obvious that *quantifiers* can be distinguished in the same way. Therefore there is no reason why the quantifier in the standard definition has to be read in one of the two ways described in the above argument. There is a perfectly clear reading of the universal quantifier- the standard reading employed in classical quantificational logic- according to which the standard definition of presentism expresses a thesis that is neither trivially true nor obviously false, namely, the thesis that always, everything is present (formally:  $\mathbf{A}\forall x \text{ Present}(x)$ ). The interesting question is not how we should read the universal quantifier, but what it is for something to be present in the relevant sense.

### 3.3 The problem with the standard definition

In this section I describe a number of plausible suggestions for what presentists might mean by 'is present' in the context of the standard definition of presentism. In each case, I show that given the relevant analysis of 'is present', presentism so defined is either trivial, too obscure or implausible to be worthwhile debating (at least, compared with the question of whether transientism is true), controversial for reasons that have nothing to do with the philosophy of time, or has consequences which most self-described presentists would reject.

First, suppose that to be present is just to *exist*:

PRESENTNESS 1:  $x$  is present  $=_{\text{def}}$   $x$  exists

Given presentness 1, the standard definition comes to:

## PRESENTISM 1: Always, everything exists

This analysis is supported by the following quote from Zimmerman (1996):

There is no advantage for the presentist in distinguishing between being present and existing; and no other obvious candidate to play the role of ‘being present’ comes readily to mind. *Thus to be present just is to be real or to exist.*

(Zimmerman 1996, 117; Italics mine)

It is also supported by the fact that some philosophers interpret the modal thesis of *actualism*, which is supposed to be analogous to presentism, as the thesis that necessarily, everything exists. For example, here is Plantinga (1983):

Let’s agree that there neither are nor could have been any non-existent objects; it’s a necessary truth that there aren’t any. This view is sometimes called ‘actualism’; I shall follow this custom.<sup>105</sup> (Plantinga 1983, 4)

In the above quotation, Plantinga defines actualism as the thesis that necessarily, there aren’t any non-existent objects; in other words, that necessarily, everything exists.

The problem with presentism 1 is that the thesis that always, everything exists is trivial, and therefore no A- or B-theorist would deny it. In other words, if presentism is presentism 1, then everyone is a presentist. If presentists wish to defend a non-trivial thesis, they should reject presentism 1 as the correct interpretation of the standard definition.

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<sup>105</sup> In fact Plantinga denies that actualism is the thesis that necessarily, everything is actual, on the grounds that there are non-actual states of affairs (e.g. London’s being smaller than Los Angeles). Similarly, a presentist who identified presentism with presentism 1 might reject the thesis that always, everything is present on the grounds that there are non-present states of affairs (e.g. my being shorter than my father). However, for our purposes in this chapter it makes no great difference whether a proposed definition of presentism (such as presentism 1) is put forward as an *interpretation of*, or an *alternative to*, the standard definition.

Second, perhaps to be present is to instantiate the fundamental property of presentness:<sup>106</sup>

PRESENTNESS 2:  $x$  is present  $=_{\text{def}}$   $x$  instantiates fundamental presentness

Given presentness 2, the standard definition comes to:

PRESENTISM 2: Always, everything instantiates fundamental presentness

There are two problems with this suggestion. The first is that normal self-described presentists have explicitly rejected this interpretation. For example, Dean Zimmerman (1996: 118, n.8) writes that ‘no *real* presentist has any reason to believe in a special quality of “being present” (and, indeed, no articulate presentist that I know of has ever posited such a quality).’ Zimmerman goes on to characterise ‘real presentism’ as a thesis that ‘has no room for a special quality of “being present”’. Similarly, Sider (2011, 242, n.8) states that ‘neither presentists nor spatializers [e.g. B-theorists] should accept a fundamental feature of “presentness”’. I believe that most presentists would agree with Zimmerman and Sider. As Zimmerman points out, no presentist explicitly defends the thesis that always, everything has some fundamental property of presentness. Therefore there is good reason not to think that presentism 2 is the thesis that presentists want to defend.<sup>107</sup>

The second problem is that if presentism is presentism 2, then the debate between presentists, growing blockers, and moving spotlights reduces to a debate about whether everything or only some things instantiate fundamental presentness (a property which is apparently distinct from the property of presentness mentioned in the definition of the A-theory). However, that sounds more like a parody of debates in the philosophy of time than

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<sup>106</sup> Why not a *non*-fundamental property of presentness? Because then we would still be faced with the question of what it is, in fundamental terms, for something to be non-fundamentally present.

<sup>107</sup> Similarly, the view that necessarily, everything instantiates some special property of actuality does not sound at all like the thesis that actualists want to defend.

a substantive philosophical debate. Presentists who wish to engage in a genuinely interesting debate should reject this interpretation of the standard definition.

Next, consider the following pair of analyses due to Williamson (2013, 24). First, suppose that something is present iff it has a spatial location:

PRESENTNESS 3:  $x$  is present  $=_{\text{def}}$   $x$  has a spatial location

Given presentness 3, the standard definition comes to:

PRESENTISM 3: Always, everything has a spatial location

As Williamson points out, the problem with this suggestion is that given presentism 3, presentism is controversial for reasons that have nothing to do with the philosophy of time. In particular, if presentism is presentism 3 and if, as many believe, abstract objects such as numbers and sets have no spatial location, it follows that if presentism is true there are never any abstract objects. But one would not expect the truth of presentism to rule out the existence of numbers and sets.

It is tempting to add a temporally rigid element to presentness 3, so that to be present is just to be such as to have a spatial location *now* (formally:  $\mathbf{A}\forall x (Present(x) \leftrightarrow \mathbf{N} Spatial\ Location(x))$ ).<sup>108</sup> The problem with this suggestion is that it means presentism has consequences that most self-described presentists would reject. For example, given that Napoleon did exist (formally:  $\mathbf{P}\exists x x=\text{Napoleon}$ ), it follows by standard temporal logic that presentism 3 entails that Napoleon has a spatial location now.<sup>109</sup> However, most self-described presentists accept the following principle:

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<sup>108</sup> I assume that ‘now’ rigidly designates the time of utterance in every context, just as ‘actually’ rigidly designates the possible world of utterance in every context. It follows that for all propositions  $p$ ,  $\mathbf{N}p$  iff  $\mathbf{A}Np$ .

<sup>109</sup> Informally: if everything located at every instant is such that it has a spatial location at the current instant, then in particular, everything located at every *past* instant has a spatial location at the current instant. Given that Napoleon is located at a past instant, it follows that Napoleon has a spatial location at the current instant. (Note that we assume here and throughout that identity facts are permanent.)

PROPERTY PRINCIPLE: Always, everything is always such that, if it has some property then it exists<sup>110</sup>

Given the property principle, it follows from the fact that Napoleon has a spatial location now that Napoleon exists. (It is left open how Napoleon is: for example, whether he is now a general or merely a former general). However, I think it is safe to say that most presentists hold that Napoleon no longer exists (change the example if you disagree). Therefore the addition of a temporally rigid element to presentness 3 leads to a conclusion which most presentists would reject.

The fact that a given interpretation of the standard definition has consequences which most self-described presentists would reject does not automatically rule out that interpretation as the correct one: it could be that most presentists fail to see the full implications of their view. If an interpretation with such consequences yields a view which is particularly plausible or interesting, then it could still be worth defending and debating. However, presentism 3 is not such a view. Indeed, the thesis that this very instant is such that always, everything has a spatial location at it is totally implausible: surely the event of my birth, for example, does not have a spatial location at this instant (where is it?). This shows that presentists should not identify presentism with presentism 3.

As Williamson (2013) points out, another natural thought is that presentism 3 can be fixed by restricting the scope of the initial quantifier. For example, suppose we restrict the scope of the quantifier in presentism 3 to things with a temporal location. Then we get the following analysis of 'present':

PRESENTNESS 4:  $x$  is present  $=_{\text{def}}$  if  $x$  has a temporal location then  $x$  has a spatial location

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<sup>110</sup> Plantinga (1983, 11) refers to the conjunction of the analogous modal principle with the thesis that necessarily, everything exists (the thesis that Plantinga calls 'actualism') as 'serious actualism'.

Given presentness 4, the standard definition comes to:

PRESENTISM 4: Always, everything with a temporal location is spatially located

Like unmodified presentism 3, the problem with presentism 4 is that it has contentious consequences outside the philosophy of time: if presentism is presentism 4 and mental events are non-physical events (and as such lack a spatial location) that occur in time (and as such have a temporal location), then if presentism is true there are never any mental events. It follows that presentism 4 is a poor candidate for the correct interpretation of the standard definition.<sup>111</sup>

We have seen that to be *present* in the sense of the standard definition cannot merely be to exist or to have a spatial location, or to instantiate the fundamental property of presentness. Perhaps the problem with the interpretations so far is that they omit the fact that presentness has something to do with how things are *now*. For example, perhaps to be present is not just to exist, but to exist now:

PRESENTNESS 5:  $x$  is present  $=_{\text{def}}$   $x$  exists now

Given presentness 5, the standard definition comes to:

PRESENTISM 5: Always, everything exists now

For example, Zimmerman (1996, 115) writes that ‘presentists hold that the only things that really exist are those that exist *now* . . .’<sup>112</sup> The problem with this interpretation is that like presentism 3, presentism 5 has consequences that most self-described presentists would reject. For example, if everything at every instant exists now, given that Napoleon did

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<sup>111</sup> I do not see any hope in performing further scope-restricting manoeuvres on the quantifier in presentism 3. For example, one could restrict the scope of the quantifier to non-abstract things. However, this would raise the difficult question of what it is for something to be *non-abstract*. It is no solution to the problem of defining presentness to define it in terms of ‘non-abstractness’.

<sup>112</sup> Granted, Zimmerman leaves out the initial ‘always’ here; however, I take it that Zimmerman holds that presentism is always true if true.

exist, it is now the case that Napoleon exists. Therefore if presentism is presentism 5, presentism entails that Napoleon exists now. However, I think it is safe to say that most presentists hold that Napoleon no longer exists (change the example if you disagree).

As with modified presentism 3, the fact that presentism 5 has consequences which most self-described presentists would reject doesn't rule it out as the correct interpretation of presentism: it may simply be that most presentists have failed to see the full implications of their view. If presentism 5 was a particularly plausible or interesting thesis, then it could still be worth defending and debating. However, presentism 5 is not particularly plausible. In particular, the choice of this very instant as the instant at which everything at every instant exists seems completely arbitrary. There is no good reason to think that this instant is eternally special in that way. Of course, this problem can be avoided by modifying the view so that everything at every instant exists at *every* instant. However, in that case presentism is just permanentism. This shows that presentists should reject presentism 5 as the correct interpretation of the standard definition.

A defender of presentness 5 could reply to the above argument as follows: while it is true for the reasons described above that presentism 5 cannot be the correct interpretation of presentism, it does not follow that presentness 5 is the wrong analysis of what it is for something to be present in the sense of the standard definition. The reason is that if a presentist accepted presentism 5, what she would mean when she said that always, everything is present is that the sentence 'Everything is present' is true in every context of utterance. Therefore given presentness 5, the correct interpretation of presentism is:

PRESENTISM 5.5: The sentence 'Everything exists now' expresses a true proposition in every context of utterance

Permanentist A-theorists accept presentism 5.5: they hold that for any instant  $t$ , the sentence ‘Everything exists now’ expresses at  $t$  the true proposition that at  $t$ , for all  $x$ ,  $x$  exists. B-theorists should also accept presentism 5.5: given a rejection of the restrictor principle, B-theorists should hold that the quantifiers in the sentence ‘Everything exists now’ are unrestricted, and therefore that the sentence expresses relative to any context of utterance the trivial proposition that everything exists.

The fact that presentism 5.5 is consistent with the B-theory does not show that it cannot be the correct interpretation of presentism; there is no reason to think that given the standard definition, presentism entails the truth of the A-theory or the falsehood of permanentism. We should not be surprised to find that given certain plausible candidate interpretations of the standard definition, the question of whether presentism is true cross-cuts the debates concerning whether permanentism and the A-theory are true. The real problem with presentism 5.5 is that it is trivial: no-one should deny that the sentence ‘Everything exists now’ is true in every context. Therefore presentists should not identify presentism with presentism 5.5.

The failure of presentism 5 demonstrates that, whatever it is to be ‘present’ in the sense of the standard definition, it is not to meet some condition *now*, or bear some relation to what there is *now*. Surprisingly, some theorists miss this point. For example, consider the following interpretation of the standard definition due to Mozersky (2011, 122-5). According to Mozersky, presentism is the thesis that ‘that and only that which exists<sub>1</sub>, exists<sub>2</sub>’, where (Mozersky explains) ‘exists<sub>1</sub>’ is a tensed verb that entails ‘exists now’, and ‘exists<sub>2</sub>’ is similar in meaning to the existential quantifier of first-order predicate logic, in the sense that it is ‘neutral with respect to temporal context of utterance’. Although he does not say so explicitly, we can assume that Mozersky thinks that presentism is always true and therefore that it is *always* the case that ‘that and only that which exists<sub>1</sub>, exists<sub>2</sub>’. Given

what Mozersky says about the meanings of the terms ‘exist<sub>1</sub>’ and ‘exist<sub>2</sub>’, the thesis that always, that and only that which exists<sub>1</sub>, exists<sub>2</sub> is equivalent to the following thesis:

PRESENTISM 6: Always, everything exists now iff it exists

Given that presentism 6 is equivalent to presentism 5, presentism 6 inherits all of the problems with that interpretation. For example, given that Napoleon did exist, it follows from presentism 6 that it is now the case that Napoleon exists. Therefore presentism 6 entails that Napoleon exists now. However, most presentists hold that Napoleon does not exist now (as usual, change the example if you disagree). Moreover, there is no reason at all to think that this instant is eternally special in the way described by presentism 6: the choice of this very instant as the instant at which always, everything exists seems completely arbitrary. Moreover, removing this arbitrariness simply makes presentism equivalent to permanentism. Therefore presentists should reject presentism 6.

Mozersky is not the only presentist to mistakenly state that to be present in the sense of the standard definition is to meet some condition now, or bear some relation to what there is now. According to Crisp (2003) ‘an object *x* is present iff *x* occupies or exists at the present time.’ But what is ‘the present time’, and what is it for something to ‘occupy’ it? Crisp explains:

We shall think of *the present time* as follows. Say that an object *x* is *slim* iff, for any *y* and *z*, if *y* and *z* are parts of *x*, then there is either no temporal distance or a temporal distance of *zero* between *y* and *z*. A *time . . .* is a maximal slim object: an object such that the mereological sum of it and anything which isn’t a part of it is not slim. The present time . . . is the maximal slim object that includes as a part

every event that occurs *now*. Thirdly, say that something *exists at* or *occupies* the present time iff it is a part of the present time.<sup>113</sup> (Crisp 2003, 212)

Putting all of the above together yields the following analysis of the predicate ‘present’:

PRESENTNESS 7:  $x$  is present  $\equiv_{\text{def}}$   $x$  is part of a maximal slim object that includes as a part every event that is occurring now

Given presentness 7, the standard definition comes to:

PRESENTISM 7: Always, everything is part of a maximal slim object that includes as a part every event that is occurring now

As with previous definitions involving a temporally rigid element, this interpretation has implications that most self-described presentists would reject. If it is always the case that everything is part of a maximal slim object that includes as a part every event that is occurring now, then (for example) it was the case that Napoleon is part of a maximal slim object that includes as a part every event that is occurring now. Consider an event that is occurring now, such as the event of your reading this sentence. Given that the event of your reading this sentence is occurring now, it follows from presentism 7 that it was the case that Napoleon is part a maximal slim object that includes as a part the event of your reading this sentence. Given Crisp’s account of what it is for an object to be *maximally slim*, it follows that it was the case that there is no temporal distance or a temporal distance of zero between Napoleon and the event of your reading this sentence. However, I take it that most presentists would argue that Napoleon and the event of your reading this sentence are never at temporal distance zero.

Some presentists, such as Zimmerman (1997), argue that certain kinds of events are

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<sup>113</sup> This characterisation of the present instant precedes Crisp’s adoption of the propositional view of instants in Crisp (2007).

permanent. Such presentists might want to allow that the event of your reading this sentence is permanent, and therefore that it *was* the case that Napoleon and the event of your reading this sentence were at temporal distance zero. However, there is a good reason why presentists who allow that some events are permanent should deny that the event of your reading this sentence is permanent. The reason is that the following seems plausible: always, if the event of your reading this sentence exists, then you exist. After all, if you are reading this sentence at an instant  $t$  then surely you are doing something at  $t$ - namely reading this sentence- and if you are ever doing something at an instant  $t$  then surely you exist at  $t$ . It follows that if the event of your reading this sentence is permanent, you are permanent. However, even presentists who hold that some events are permanent would deny that you are permanent. Therefore such presentists should deny that the event of your reading this sentence is permanent.

Let us consider one final interpretation of the standard definition. A natural thought is that presentism is the thesis that *always, everything is simultaneous*, or that *there is never any temporal distance between things*.<sup>114</sup> But what exactly does it mean to say that two things are simultaneous? A plausible answer is that two things are simultaneous iff they are (spatiotemporally) located at the same instant. In that case, perhaps what it means to say that always, everything is present is that always, for any two things, if they are located at instants, they are located at the same instant:

PRESENTISM 8: Always, for all  $x$  and  $y$  and instants  $t$  and  $t^*$ , if  $x$  is located at  $t$  and  $y$  is located at  $t^*$  then  $t = t^*$

Should presentists identify presentism with presentism 8? First, note that presentism 8 is consistent with the permanentist A-theory. As we saw in Chapter Two, the natural view for permanentist A-theorists is that objects and events are permanently

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<sup>114</sup> Crisp (2007, 103) opts for this interpretation.

located at instants; for example, Liam is permanently located at an interval beginning in 1946. This view fits with the picture of spacetime derived from modern spacetime physics, and is obviously inconsistent with presentism 8. However, it is open to permanentist A-theorists to reject this picture of permanent spatiotemporal locations and instead hold that the spatiotemporal location relation is temporary, so that the only instant at which anything is ever located is the present instant. On this view, Liam is located at just one instant- the present instant- and Napoleon is no longer located at any instants, although he was. Given that to be concrete is just to be located at the present instant (or: to have a spatiotemporal location that overlaps the present instant), it follows on this view that non-concrete things have no spatiotemporal location at all. Presentism 8 follows naturally from the temporariness of spatiotemporal location: if the only instant at which anything is ever located is the present instant, then it is always the case that any two things that have a temporal location are located at the same instant (namely, the present).

The fact that presentism 8 is consistent with the permanentist A-theory does not by itself rule out presentism 8 as the correct interpretation of the standard definition. However, it does cast serious doubt on whether presentists should identify their view with presentism 8. For one thing, most presentists explicitly reject permanentism, and therefore it would be quite surprising if their view was after all consistent with that thesis. For another, suppose that presentism is presentism 8. Then if the permanentist A-theory is true, the debate concerning whether presentism is true reduces to the debate concerning whether the location relation is temporary. However, this seems like a relatively trivial debate compared with the question of whether permanentism or transientism is true. The truth of transientism would have profound consequences for our view of the world: for one thing, it would show that the temporal ontology of modern spacetime physics (i.e. permanentism) is false. It would also have consequences for how we account for the truth of those parts of

ordinary thought and speech which seem to require for their truth the truth of permanentism (see Chapters Five and Six below). It seems that presentists who wish to defend a philosophically significant thesis should defend the conjunction of transientism and the A-theory.

### 3.4 Conclusion

We have made a number of plausible suggestions for what the predicate ‘present’ might mean in the context of the standard definition of presentism. In each case we have seen that, given the relevant interpretation, presentism is either trivial (e.g. presentism 1 and presentism 5.5), too obscure or implausible to be worthwhile debating (e.g. presentism 2 and presentism 8), controversial for reasons that have nothing to do with the philosophy of time (e.g. presentism 3 and presentism 4), or has consequences which most self-described presentists would reject (e.g. presentism 5 and presentism 9). This provides strong evidence that presentists should reject the standard definition and instead define their thesis in terms of transientism and the A-theory, as per Chapter Two. Moreover, as we saw above, presentism as standardly defined does not sit well with a commitment to the existence of past and future instants, as this requires positing two meanings for the predicate ‘is present’. This leads to the problem of having to say that, e.g., 1066 is earlier than 2066 but bears no temporal distance to it. Presentists who define their theory as the conjunction of transientism and the A-theory face no such problems: they can treat the predicate ‘is present’ as univocal. Given how plausible it is that there are past and future instants (§1.1.5), this provides another reason for presentists to reject the standard definition.

The problems with the standard definition of presentism carry over to the standard definitions of the growing block and the moving spotlight theories, given that what it is for

something to be *past* or *future* is naturally defined in terms of what it is for something to be present. Combined with the fact that A-theorists who opt for the standard definitions have to posit two meanings for each of the predicates ‘is past’, ‘is present’, and ‘is future’, this shows that *all* A-theorists should reject the standard definitions of their theories and instead define their views in terms of the A-theory and the relevant temporal-ontological thesis (permanentism, pastism, or transientism).

### 3.5 Actualism

I have argued that presentists (as well as other A-theorists) should reject the standard definition of their view. There is an analogous argument to the effect that self-described ‘actualists’ should do the same. Actualism is a thesis in the philosophy of modality standardly defined as the thesis that necessarily, everything is actual:<sup>115</sup>

STANDARD DEFINITION (ACTUALISM): Necessarily, everything is actual

FORMALLY:  $\Box \forall x \text{ Actual}(x)$

I believe that the arguments in the modal case are just as good as the arguments in the temporal case, and therefore the arguments of this chapter also support the conclusion that actualists should reject the standard definition of their view. In other words, given the analogy between time and modality, the following argument is sound:

- (1) The standard definition of presentism is not very good  $\supset$  the standard definition of actualism is not very good
- (2) The standard definition of presentism is not very good
- (3) The standard definition of actualism is not very good

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<sup>115</sup> Actualists include Adams (1974), Plantinga (1976) and Fine (2005).

As everyone knows, one man's modus ponens is another man's modus tollens. Therefore, I expect that some readers will be tempted to argue against the thesis of this chapter by accepting premise (1) above and denying the consequent. The problem with this response is that it must be combined with a plausible interpretation of the predicate 'is actual' in the context of the standard definition of actualism. However, given that the modal and temporal cases are analogous, the arguments of this chapter show that there is no such interpretation of 'is actual' to be had. Therefore this response seems doomed to failure. (Of course, one could argue that there is a plausible interpretation of actualism that has no temporal analogue. However, in that case it would be hard to accept premise (1) above, which derives its plausibility from the analogy between the modal and temporal cases. Why think that the standard definition of actualism succeeds only if the standard definition of presentism succeeds unless the modal and temporal cases are analogous?)

Actualists are in the same position as presentists: it is very difficult to provide a substantive, interesting, uncontroversial interpretation of the standard definition of actualism. However, that does not mean that actualists are out of a job. In light of the failure of the standard definition of actualism, actualists should abandon the debate concerning whether necessarily, everything is actual, and instead concentrate on defending the clear and straightforward modal-ontological thesis of *contingentism*, according to which there could be something that could have failed to exist:<sup>116</sup>

CONTINGENTISM:  $\diamond (\exists x \diamond \neg \exists y y=x)$

FORMALLY: Possibly, there is something that possibly doesn't exist

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<sup>116</sup> See Williamson (2010) on contingentism and the negation of contingentism, *necessitism*. Williamson (2013) makes the case against contingentism and for the 'modal spotlight theory' - i.e. the conjunction of necessitism (the thesis that necessarily, everything is necessarily something) and the modal A-theory (the thesis that there is an absolutely actual possible world).

Most actualists are contingentists: in particular, most actualists hold that many ordinary material objects such as cats, cars, trees and stars could have failed to exist. Moreover, contingentism can be clearly and unambiguously stated using only modal operators, quantifiers, and the identity predicate. These features make contingentism an ideal thesis for actualists to defend. Just as presentists should define their view as the conjunction of transientism and the temporal A-theory, actualists should define their view as the conjunction of contingentism and the modal A-theory.

## Part Two

# Defending the moving spotlight theory

In Part One I described a number of different versions of the A-theory and argued that if the moving spotlight theory is true, classic MST is true. In Part Two, I argue that the moving spotlight theory is true. Part Two has the following structure: in Chapter Four, I argue that the A-theory is true. I defend this argument against the accusation of ‘begging the question’ against the B-theory. I also argue that B-theorists who are unmoved by the arguments of the chapter should still be interested in the defence of the moving spotlight theory as the best *A-theory*. In the following two chapters I argue that permanentism is true. In simple terms, the argument is that we speak and think as if permanentism is true, so we ought to be permanentists. In slightly more detail, the argument is that there are everyday and scientific sentences such that permanentists can provide a simpler and more elegant account of their truth than transientists or pastists. Therefore, by the familiar criteria of theory-choice, we should prefer permanentism to transientism or pastism (I assume that futurism is a not a live option).

The argument for permanentism is split in two. In Chapter Five I introduce the crucial notions of *transientist-unfriendly* and *pastist-unfriendly* sentences: true sentences whose truth seems to require the falsehood of transientism and pastism respectively. In Chapter Five I focus on the case of transientist- and pastist-unfriendly *cross-time* sentences: sentences that seem to be about relations between things that exist at different instants. I describe some transientist and pastist strategies for accounting for the truth of these sentences, and argue that none of the strategies is as theoretically attractive as simply

rejecting transientism and pastism. In Chapter Six I focus on transientist- and pastist-unfriendly *singular* sentences: sentences that seem to be about particular past and future individuals. I describe some transientist and pastist strategies for accounting for the truth of these sentences, and argue that none of the strategies is as theoretically attractive as simply rejecting transientism and pastism. I conclude that the arguments of Chapters Five and Six show that permanentism is true. Combined with the arguments of Chapter Four, this leads to the conclusion that the permanentist A-theory- i.e. the moving spotlight theory- is true. In Part One, I argued that if the moving spotlight theory is true, classic MST is true. Therefore the arguments of Parts One and Two establish the thesis that classic MST is true.

# Chapter Four

## Arguments for the A-theory

### 4.0 Introduction

In this chapter I describe the main arguments for the A-theory, and defend those arguments against the claim that they ‘beg the question’ against the B-theory. I also argue that B-theorists who are unmoved by the arguments for the A-theory should still be interested to know that classic MST is the true *A-theory*.

### 4.1 The arguments

The simplest argument for the A-theory is the ‘no change’ argument, and the simplest version of the no change argument is as follows:

- (1) The B-theory is true  $\supset$  there is no change over time
- (2) There is change over time
- (3) The B-theory is false (from (1) and (2))
- (4) The A-theory is true (from the definitions of ‘A-theory’ and ‘B-theory’)

Call this the *simple no change argument*. B-theorists will naturally object that this argument begs the question against the B-theory, on the grounds that only an A-theorist would accept the first premise; I address the matter of question-begging in the next section.

The simple no change argument is unlikely to convert dedicated B-theorists to the A-theory. Moreover, the argument is unlikely to convince anyone who is undecided

between the two theories. One way to increase the rhetorical force of the argument is to include the A-theoretic analysis of change over time as an explicit premise. As we saw in Chapter One, it is natural for A-theorists to analyse the notion of *change over time* in terms of temporary propositions:

A-CHANGE: There is change over time iff some proposition is temporary (i.e. propositional temporalism is true)

Given that the B-theory entails that there are no temporary propositions, we can build the left-to-right half of A-change into the simple no change argument:

- (1) There is change over time  $\supset$  there are temporary propositions (from A-change)
- (2) The B-theory is true  $\supset$  there are no temporary propositions
- (3) The B-theory is true  $\supset$  there is no change over time (from (1) and (2))
- (4) There is change over time
- (5) The B-theory is false (from (3) and (4))

Call this the *modified no change argument*. As with the simple no change argument, most B-theorists will reject the modified no change argument as question begging, on the grounds that only an A-theorist would accept premise (1). However, the modified no change argument at least has more rhetorical force than the simple no change argument. The idea that there is change only if there are temporary propositions can be found compelling even if one is unsure about whether the A- or B-theory is true; similarly, the idea that there is contingency only if there are contingent propositions can be found compelling even if one is unsure about whether the modal A- or B-theory is true.

An argument for premise (1), the thesis that there is genuine change only if there

are temporary propositions, can be recovered from Williamson's (2002) argument against Lewis's (1986) modal B-theory.<sup>117</sup> Williamson argues as follows (I have inserted adjustments for the temporal case in square brackets):

There is genuine contingency [change] in how things are only if, once values have been assigned to *all* variables, the resulting proposition could still have differed [did or will differ] in truth-value. It is not contingent that Blair was Prime Minister in 2000 in @ and that he was not Prime Minister in 2000 in *w* [That Blair is Prime Minister in 2000 and not Prime Minister in 2010 does not change]. What is contingent is simply that Blair was Prime Minister in 2000 [What changes is simply that Blair is Prime Minister]. Its contingency [temporariness] requires it not to have a variable waiting to be assigned a world [instant]. The reply 'But contingency [change] just is variation in truth-value with variation in the value of the world [instant] variable' betrays a failure to grasp what contingency [change] is.

According to David Lewis's modal realism [the B-theory], contingency [change] consists in differences between possible worlds [instants], which are conceived as equally real, mutually disconnected spatiotemporal regions [maximal, instantaneous, three-dimensional slices of the spacetime manifold]. Consider the commonsense claim 'It is contingent that there are no talking donkeys' ( $\neg\exists x(Tx \ \& \ Dx) \ \& \ \diamond(\exists x(Tx \ \& \ Dx))$ ) ['There are no dinosaurs, but there used to be' ( $\neg\exists xDx \ \& \ \mathbf{P}\exists xDx$ )]. If one interprets the quantifier as unrestricted, modal realism [the B-theory] makes the claim false by making its first conjunct false: the modal realist [B-theorist] holds that there really are talking donkeys [dinosaurs], in spatiotemporal systems [slices of the manifold] other than ours. For

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<sup>117</sup> As noted by Sider (2011, 247ff).

modal realism [the B-theory] to make the claim true as uttered in the actual world [at the current instant], one must interpret the quantifier as implicitly restricted to the objects in a world [the objects at an instant]. Our spatiotemporal system [slice of the manifold] contains no talking donkeys [dinosaurs] but, on Lewis's [the B-theorists] account, other spatiotemporal systems [slices of the manifold] do contain talking donkeys [dinosaurs]. The restricted quantifier is given an implicit argument place for a world [for an instant]. Intuitively, however, a difference between spatiotemporal systems [slices of the manifold] in itself constitutes no contingency [change] at all. For all that has been said, it is necessary [it is always the case] that another spatiotemporal system [slice of the manifold] contains talking donkeys [dinosaurs] while this system [slice] does not, in which case the matters at issue are not contingent [changeable]. A necessary [permanent] difference between spatiotemporal systems [slices of the manifold] constitutes no contingency [change]. Even if there are mutually disconnected spatiotemporal systems [three-dimensional slices of the spacetime manifold] such as Lewis [the B-theorist] postulates, they are not the distinctive subject matter of modal [temporal] discourse. They are simply more of what there is, about which we can ask genuinely modal [temporal] questions: for instance, whether there could have been [were or will be] more or fewer spatiotemporal systems [slices of the manifold] than there actually are [are now].

In the second paragraph above, (temporal-analogue) Williamson provides something like the following argument for the thesis that there is change only if there are temporary propositions:

- (1) There are no temporary propositions  $\supset$  (there is change  $\supset$  facts about change = facts about differences between slices of the four-dimensional manifold)
- (2) Facts about differences between slices of the four-dimensional manifold are permanent
- (3) Permanent facts about differences between slices of the four-dimensional manifold are not facts about change
- (4) There are no temporary propositions  $\supset$  (there is change  $\supset$  facts about change are not facts about change) (from (1), (2), and (3))
- (5) There is change  $\supset$  there are temporary propositions (from (4))

Williamson also makes an important point at the end of the second paragraph about how A-theorists view the world as described by B-theorists. According to B-theorists, the complete, fundamental B-theoretic description of the world (i.e. a complete description of the B-theoretic manifold in the language of physics) settles all questions concerning change over time. In particular, if according to that description some  $x$  is one way at one slice of the manifold and some other way at a distinct slice,  $x$  changes over time. However, from the A-theoretic perspective, the B-theorist's complete, fundamental description of the world fails to settle *any* facts about change over time. Therefore it is natural for A-theorists to ask questions about whether the world as described by B-theorists changes over time: questions such as whether there were or will be fewer slices of the manifold than there are now. As (temporal-analogue) Williamson puts it, the B-theorist's manifold is 'simply more of what there is, about which we can ask genuinely temporal questions'.

As well as the two versions of the no change argument, there is an argument for the A-theory which attempts to cause those who are repulsed by the *modal* B-theory- the view

that there is no absolutely actual possible world, and therefore actuality is merely a relative matter- to feel equally repulsed by the temporal B-theory. Informally, the argument is as follows:

According to the modal B-theory, there is no objective actual world: every world is actual relative to itself. This means that the facts are world-relative as well: for example, it is a fact that the Earth is round relative to this world, but some other shape relative to some other world. There is no absolute, non-world-relative fact concerning the shape of the Earth; and similarly for many other ordinary facts. This is a repulsive view: surely the Earth is round simpliciter, not merely round *relative to some world*.

The temporal B-theory is analogous to the modal B-theory. While the modal B-theory says that there is no objective actual world, the temporal B-theory says that there is no objective present instant. Moreover, just as the modal B-theory says that many ordinary facts (such as facts about the shape of the Earth) are world-relative, the temporal B-theory says that many ordinary facts are *instant-relative*. For example, according to the temporal B-theory it is a fact that you are sitting at this instant but standing relative to some other instant. There is no absolute, non-instant relative fact concerning your posture.<sup>118</sup> But this is a repulsive view: surely you are sitting simpliciter, not merely sitting *relative to some instant*. More generally, you should be as repulsed by the temporal B-theory as you are by the modal B-theory. The modal B-theory takes modality and sucks it out of the world, leaving behind an amodal, relativistic shell. Similarly, the temporal B-theory takes time and sucks it out of the world, leaving behind an atemporal, relativistic shell. Each view ultimately eliminates the feature of reality

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<sup>118</sup> There may be absolute, non-instant-relative facts concerning *instantaneous temporal parts of you*; but that is a different matter. See Dorr (Book MS, *Counterparts*, 84-6).

that it attempts to explain. So the B-theory must be false, in which case the A-theory is true.

Call this *the analogue argument*. Like the no change argument, I find the analogue argument entirely compelling. However, like the no change argument, the analogue argument is unlikely to convince a committed B-theorist, who will reject the argument on the grounds that only A-theorists think that the B-theory ‘takes time and sucks it out of the world’.

## 4.2 Begging the question

B-theorists are likely to reject the arguments described in the previous section as ‘question begging’. How should A-theorists respond to this accusation? One bad response is to retreat to claims about people’s intuitions, or about ‘common-sense’. Consider the modified no change argument. Some A-theorists might be tempted to try to avoid the accusation of question begging by adding a premise to the argument to the effect that the A-theoretic account of change is intuitive, or part of common-sense. The problem with this strategy is that, although some B-theorists might agree that at least one of the following propositions

(1) It is part of common-sense that the A-theoretic account of change is true

(2) It is intuitive that the A-theoretic account of change is true

is true, there is no obvious argumentative route from the sociological fact that it is part of common-sense that  $\phi$  to  $\phi$ , or from the psychological fact that it is intuitive that  $\phi$  to  $\phi$ .<sup>119</sup> Therefore there is little to be gained by adding premises such as (1) or (2) to the A-theoretic arguments.

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<sup>119</sup> As Williamson (2007, 211) points out.

A-theorists should not be moved by the charge of question begging. First, it is famously difficult to say exactly what it is for an argument to beg the question. It cannot simply be that an argument is question begging if those who reject the conclusion cannot consistently accept the premises, as all deductively valid arguments are question begging in that sense. A-theorists must demand that those who reject their arguments as question begging provide some sensible account of what it is for an argument to beg the question. I suspect that this will not be a straightforward task.<sup>120</sup>

Second, the idea that one ought to avoid begging the question against one's opponents looks very like the idea that one's arguments for a given position ought to be such that each of the premises of those arguments is acceptable to those who reject that position.<sup>121</sup> However, there is no good reason for accepting this principle. I hold that there is change over time only if there is a temporary proposition. Why should it worry me that B-theorists reject this premise? Of course they do: otherwise, they would not be B-theorists! An argument for a position some of whose premises are unacceptable to those who reject the position is not therefore a bad argument; it is merely an argument for a certain position.

Third, it is notable that some allegedly question begging arguments are (or at least, seem to be) routinely accepted. For example, consider the modal analogue of the modified no change argument:

- (1) There is contingency  $\supset$  there are contingent propositions
- (2) The modal B-theory is true  $\supset$  there are no contingent propositions
- (3) The modal B-theory is true  $\supset$  there is no contingency

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<sup>120</sup> See Sinnott-Armstrong (1999) for discussion.

<sup>121</sup> Williamson (2007, ch 7) calls this thesis (or something like it) *evidence neutrality*.

(4) There is contingency

(5) The modal B-theory is false

Call this argument the *no contingency argument*. Most philosophers reject the modal B-theory, and it is probable that many of those philosophers would be content to provide something like the no contingency argument in defence of their view. However, the no contingency argument is perfectly analogous to the modified no change argument, and in particular it begs the question against the modal B-theory in just the way that the modified no change argument begs the question against the temporal B-theory. This supports the idea that the charge of begging the question is rather more akin to a statement of disagreement than a principled objection to a certain form of argument. When there is no one around to disagree, as in the case with the no contingency argument, worries about begging the question often disappear.

Finally, it is important to note that A-theorists are not alone in being unable to articulate a ‘neutral’ deductive argument (that is, a deductive argument with premises acceptable to all disputants) for their position. As Fine (2005) points out, neutral deductive arguments for positions are the exception, and not the rule, in philosophy:

I know of no long chains of reasoning, such as one finds in mathematics, that are both successful and helpful. Sometimes short arguments can lead to surprising conclusions . . . but such cases are the exception. Usually, deductive argumentation serves merely to articulate a previously held position. If philosophy is compared to stumbling in the dark, then deductive argumentation is like the groping one does with one’s hands; it helps to fix where one is, but not to move forward. (Fine 2005, 210)

The fact that B-theorists reject the premise that there is change only if there are temporary propositions does not affect the truth of the premise, nor the validity of the argument in which it features. Moreover, as we saw above, trying to avoid accusations of question begging can lead to pointless attempts to argue from sociological or psychological premises, which do nothing to advance one's position. A-theorists are better off begging the question.

### 4.3 Conclusion

At this point, some B-theoretic readers might wonder whether they should bother to read on. Perhaps you are such a reader. I would strongly urge you to keep reading, for a number of reasons. First, the arguments in the rest of Part Two are arguments for permanentism, and B-theorists are (or at least should be) permanentists: as we saw in Chapter Two, B-theorists must reject the restrictor theory in order to avoid contradiction, in which case permanentism is equivalent to the logical truth that everything exists. Therefore the arguments of the rest of this thesis also lend support to the B-theory, given that the B-theory is a permanentist theory. Second, it is useful for B-theorists to know what the best version of the A-theory is, even if they think that the A-theory is crazy. It means they have a specific version of the theory to attack. Finally, all philosophers of time should be interested to know that if the A-theory were true, classic MST would be true.<sup>122</sup> For one thing, the moving spotlight theory has traditionally been considered implausible even by A-theorists.<sup>123</sup> It is interesting to know how A-theorists could have got it so wrong. Second, people change their minds; you may be a B-theorist now, but what about in ten years time? If you do change your mind, it will be useful to know that classic MST is the

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<sup>122</sup> Some might worry that, given that the A-theory is necessarily false if actually false, this conditional has a metaphysically impossible antecedent and hence is trivially true. I agree with Sider (1999, 16) that the conditional still seems to say something substantive. See Nolan (1997) for a defence of the view that there are non-trivially true counterfactuals with metaphysically impossible antecedents.

<sup>123</sup> See e.g. Sider (2001) and Zimmerman (2011).

best A-theory. Third, among plausible versions of the A-theory, classic MST most resembles the B-theory. In particular, both theories are permanentist theories according to which (i) temporal operators are non-fundamental and (ii) there are very few fundamental temporary properties.<sup>124</sup> The fact that the B-theory and the best version of the A-theory are so similar should be of interest to both A-theorists and B-theorists.

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<sup>124</sup> According to the B-theory, there are none; according to classic MST, there is just one.

# Chapter Five

## Cross-time sentences

### 5.0 Introduction

We saw in Chapter Two that *transientism* is the view that as time passes, at least one thing begins to exist and at least one thing ceases to exist (in the logician's sense of 'exist', according to which something exists iff there is something that is identical to it). Given this definition, a theory according to which exactly one thing ever begins to exist and exactly one thing ever ceases to exist (perhaps the very same thing) counts as a transientist theory. However, that is not the sort of theory that actual transientists defend. Most actual transientists call themselves 'presentists', and hold that (for example) people don't exist before they are born or after they are dead, and events don't exist except when they are happening. These theorists hold that *many* things - in particular, medium-sized material objects such as plants, animals, people (or at least, people's bodies), human artefacts, and geological formations - begin and cease to exist over time. In this chapter and the next, I use 'transientism' to refer to this sort of theory (which of course entails transientism). Similarly for pastism: I use 'pastism' to refer to the sort of theory that self-described 'growing blockers' defend, according to which people don't exist before they are born and events do not exist before they have happened (which of course entails pastism).

In this chapter and the next, I argue that we think and speak as if transientism and pastism are false, so we should reject transientism and pastism. In more detail, I argue as follows: first, there are true sentences, including many everyday sentences, which seem to imply the falsehood of transientism:

TRANSIENTIST-UNFRIENDLY SENTENCE: Sentence  $s$  is *transientist*

*unfriendly* =<sub>def</sub>  $s$  is true  $\supset$  transientism is false

Faced with apparently transientist-unfriendly sentences, transientists have a choice: they can allow that the sentences are transientist-unfriendly and false, or they can try to show that they are not really transientist-unfriendly. The problem with the first option is that apparently transientist-unfriendly sentences are ubiquitous in ordinary thought and speech, and therefore taking this option would mean holding that much of our ordinary thought and speech is false. Why is it a problem if a theory is inconsistent with a large part of ordinary thought and speech? Not because ordinary thought and speech cannot be falsified by theory: there is no good reason to think that people's (whose, exactly?) pre-philosophical beliefs must be more likely to be true than the contents of a philosophical theory. It would be foolish, for example, to reject *nihilism* (the theory that there are no composite objects) solely on the grounds that it is a pre-philosophical belief that there are chairs. However, it does seem very natural to think that substantial conflict with pre-philosophical beliefs is a real *cost* of a theory, albeit one that can be outweighed by its benefits. For example, nihilism has a steep cost in terms of conflict with ordinary thought and speech; although it has the theoretical benefit of ontological simplicity, many reject nihilism on the grounds that the cost is too high, or at least, that it outweighs the benefits. Similarly, a transientist who took the first option would have to accept that transientism has a steep cost in terms of conflict with ordinary thought and speech. Although such costs can in principle be outweighed by theoretical benefits, in what follows I assume that transientism does not have such compensatory benefits, and therefore that transientists should avoid the first option. (This is not an unfair assumption given that transientists typically argue for their view on the grounds that transientism, unlike permanentism, is a common-sense theory consistent with ordinary beliefs about temporal ontology such as

that Napoleon does not exist. However, as we saw in Chapter Two (§2.1.4), permanentists have the resources to dodge this conflict with common-sense by simply interpreting the relevant common-sense thoughts as being implicitly restricted to the concrete realm. As we shall see, there is no such quick-fix for the transientist's conflict with common-sense.)

The problem with the second option is that there many apparently transientist-unfriendly sentences for which transientists cannot provide plausible truth-conditions. Given that permanentists can provide straightforward truth-conditions for the relevant sentences, we should reject transientism in favour of permanentism. Second, an analogous argument holds for pastism: there are apparently pastist-unfriendly sentences for which pastists cannot provide a satisfactory account. Given that permanentists can easily account for the relevant sentences, we should reject pastism in favour of permanentism. For ease of exposition, I focus on the argument against transientism; the analogous argument against pastism is described in the final section (§5.4) of the chapter.

Not all apparently transientist-unfriendly sentences are actually transientist-unfriendly. For example, consider the sentence

(1) 'Some dinosaurs were carnivores'

Let us assume that (1) is true; that is, that an ordinary utterance of (1) expresses a true proposition. What is the true proposition expressed by an ordinary utterance of (1) according to transientists? Not the proposition that

(2) There are dinosaurs that were carnivores

because it would then follow that there are dinosaurs, and according to transientists there are no dinosaurs: they ceased to exist when they became extinct. Moreover, transientists hold that there are no *former* dinosaurs: things that were but are no longer dinosaurs. Therefore transientists also reject the idea that (1) expresses the proposition that

(3) There are things that were carnivorous dinosaurs

In order to maintain that (1) is true, transientists need to argue that the apparent quantification over dinosaurs in (1) is *merely* apparent. The standard way to do this is to argue that the true ‘logical form’ of (1) is something like

(4) ‘ $\mathbf{P}(\exists x \textit{Dinosaur}(x) \ \& \ \textit{Carnivore}(x))$ ’,<sup>125</sup>

where the temporal operator ‘ $\mathbf{P}$ ’ (‘it was the case that . . .’) takes wide scope over the existential quantifier. In that case, an ordinary utterance of (1) expresses the proposition that it was the case that there are carnivorous dinosaurs. On this account the truth of (1) is consistent with transientism, because ‘ $\mathbf{P}\phi$ ’ doesn’t entail ‘ $\phi$ ’: the fact that it was the case that there are carnivorous dinosaurs is consistent with the claim that there are no carnivorous dinosaurs, just as the fact that it could have been the case that there are talking donkeys is consistent with the claim that there are no talking donkeys.

Transientists can account for the truth of apparently transientist-unfriendly sentences such as (1) by arguing that they have logical forms in which the troublesome quantifiers are within the scope of temporal operators such as ‘ $\mathbf{P}$ ’, ‘ $\mathbf{F}$ ’, and ‘ $\mathbf{S}$ ’. This type of strategy for dealing with sentences involving troublesome quantification is not confined to transientism. For example, most *contingentists* (those who hold that it is possible that something could fail to exist) think that there could have been things that do not actually exist, such as talking donkeys. Therefore a contingentist will naturally interpret an ordinary utterance of the true sentence

(5) ‘Talking donkeys could have roamed the Earth’

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<sup>125</sup> Or perhaps ‘ $\mathbf{P}(\exists x \mathbf{P}(\textit{Carnivore}(x)))$ ’: it was the case that some dinosaurs *were* carnivores. This sort of reading is more natural for sentences such as ‘Some Lord Mayors were footballers.’

as expressing the proposition that it could have been the case that talking donkeys roam the Earth, which is consistent with the claim that there are no talking donkeys. Similarly, those who wish to avoid quantification over imaginary objects can interpret ordinary utterances of the sentence

(6) ‘Dragons allegedly hoard treasure’

as expressing the proposition that allegedly, dragons hoard treasure, which is consistent with the claim that there are no dragons.

As Szabó (2006, 402) points out, transientists have a choice about whether to endorse a semantic theory of tense according to which tense is represented by temporal operators or by quantification over instants. On the latter account, (4) is true iff there is a past instant  $t$  such that at  $t$ , there are carnivorous dinosaurs. If, as some transientists argue, instants are complete, consistent temporal propositions (see e.g. Crisp 2007), then (4) is true iff there is a complete, consistent proposition  $p$  that was true and that entails that there are carnivorous dinosaurs. The existence of such a proposition is, of course, consistent with the claim that there are no dinosaurs. In what follows, I take no stand on whether transientists should prefer a semantic theory according to which tenses are represented by temporal operators or quantification over instants.<sup>126</sup>

We have seen that transientists can provide a relatively straightforward account of the truth of apparently transientist-unfriendly sentences such as (1). Here is an example of an apparently transientist-unfriendly sentence that causes rather more trouble for transientists, due to Lewis (2004):

(6) ‘There have been two kings named ‘Charles’’

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<sup>126</sup> The semantic theory that verb tenses are temporal operators (a view defended by e.g. Prior 2003 [1968] and Brogaard 2012) rather than quantifiers over instants has been out of favour for some years. In particular, the quantificational theory of tense provides a simpler and more elegant account of iterated tenses and certain anaphoric constructions. See Partee (1973) and Ogihara (1996) for details.

A treatment of (6) analogous to the above treatment of (1) would recommend that (6) be assigned something like the following logical form:

(7)  $\mathbf{P}(\exists x \text{ King named 'Charles'}(x) \ \& \ \exists y \text{ King named 'Charles'}(y) \ \& \ x \neq y)$

However, the proposition expressed by (7) is false: there were never two kings named 'Charles'; kings are never simultaneous. (Remember that '**P**' is informally read 'it is the case at some past *instant* that . . .'). According to Lewis, the best translation for (6) available to transientists is

(8)  $\mathbf{P}(\exists x \text{ King named 'Charles'}(x) \ \& \ \mathbf{P}(\exists y \text{ King named 'Charles'}(y) \ \& \ x \neq y))$

Informally, (8) can be read as saying that there is a past instant at which the following is true: there is a king named 'Charles', and there is a past instant at which there is a king named 'Charles' distinct from him. However, there are a number of problems for transientists with this translation. Lewis (2004, 6-7) describes two: first, suppose that two-way eternal recurrence is true, so that there have been infinitely many kings named 'Charles'. In that case, the following sentence is true:

(9) 'There have been infinitely many kings named 'Charles''

Given the strategy that recommends translating (6) as (8), transientists would have to make use of constructions with temporal operators nested ad infinitum in order to interpret (9):

(10)  $\mathbf{P}(\exists x \text{ King named 'Charles'}(x) \ \& \ \mathbf{P}(\exists y \text{ King named 'Charles'}(y) \ \& \ \mathbf{P}(\dots))$

As Lewis points out, this makes the transientist approach look very unappealing. An alternative strategy for translating (9) is to translate it as an infinite conjunction of 'There

have been  $n$  kings named ‘Charles’ for all natural numbers  $n$ .<sup>127</sup> However, there are two problems with this strategy: first, a sentence with an apparently simple surface form (that is, (9)) is assigned a highly complex translation, at least in terms of length; compare this to a likely permanentist translation of (9): ‘There are infinitely many former kings named ‘Charles’’. Second, as Goodman and Fritz (Unpublished MS, ‘Counting Impossibles’) point out, the analogous modal strategy will not work for sentences of the form ‘There are uncountably many possible  $\phi$ s’, and therefore presumably the temporal strategy will not work for sentences of the form ‘There have been uncountably many  $\phi$ s’. Therefore the infinite conjunction strategy has only limited applicability.<sup>128</sup>

Second, consider the sentence

(11) ‘There have been many kings named ‘George’

It is hard to know how to begin translating (11): how many kings named ‘George’ must there have been for there to have been many kings named ‘George’? Suppose we agree that six is the minimum. Then the strategy that recommends translating (6) as (8) would recommend translating (11) as

(12)  $\mathbf{P}(\exists x \text{ King named 'George'}(x) \ \& \ \mathbf{P}(\exists y \text{ King named 'George'}(y) \ \& \ \mathbf{P}(\exists z \text{ King named 'George'}(z)))) \vee \mathbf{P}(\dots)$

Again, the simple sentence (11) is assigned an unwieldy translation, making the current strategy look unappealing.<sup>129</sup>

There is a final problem for transientists which Lewis (2004) does not mention, but

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<sup>127</sup> This strategy is inspired by Goodman and Fritz (Unpublished MS, ‘Counting impossibles’), who recommend that contingentists (according to whom there could be things that are actually nothing) translate sentences of the form ‘There are infinitely many possible  $xs$ ’ as the infinite conjunction of the claim ‘There  $n$  possible  $xs$ ’ for all natural numbers  $n$ .

<sup>128</sup> Goodman and Fritz (Ibid, 6) recommend a distinct strategy for dealing with the relevant modal sentences.

<sup>129</sup> Similarly, consider the sentences ‘Few kings have been named ‘George’ and ‘Most kings have been named ‘George’.

which is significant. Consider (8) again. Informally, the sentence reads something like: there is a past instant  $t$  at which there is a king named ‘Charles’, and there is a past instant  $t'$  earlier than  $t$  at which there is a king named ‘Charles’ distinct from him.’ But how can this sentence be true, if kings named ‘Charles’ are never simultaneous? For in that case, there is only one king named ‘Charles’ at  $t'$ , and therefore there is no way of *distinguishing* kings named ‘Charles’ at that instant (‘there is a past instant  $t'$  earlier than  $t$  at which there is a king named ‘Charles’ distinct from him’- who exactly does ‘him’ refer to?). The problem is that (8) is only true if the later king named ‘Charles’ has the relational property of being distinct from the earlier king named ‘Charles’ at a time at which he (the later Charles) does not exist.<sup>130</sup> However, it seems like a very reasonable principle that nothing can ever bear a property or stand in a relation at an instant at which it doesn’t exist. Transientists who accept this principle – ‘serious transientists’, to modify the existing jargon – will reject (8) as a translation of (6). (I discuss this principle in more detail in §5.1 below.)

We have seen that the best natural translation of (6) available to transientists leads to significant complications. In contrast, permanentists of all stripes are free to analyse (6) and (9) as expressing the relatively straightforward propositions that

(13) There are two former kings named ‘Charles’

(14) There are infinitely many former kings named ‘Charles’

If transientists wish to avoid problems like the above, they will have to provide some other account of the truth of apparently transientist-unfriendly sentences such as (6). Lewis (2004) considers three options: first, holding that ‘nonexistent past and future

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<sup>130</sup> Why not allow that it is not the case that the later king is identical with the earlier king, but deny that the later king has the relational property of being distinct from the earlier king? I return to this point below in §5.2.3.

things have existent surrogates, and . . . we are free to quantify, with or without restrictions, over the domain of these surrogates'; second, holding that tensed plural quantifiers such as 'there have been' and 'there will be' are primitive; and third, holding that there are fundamental temporal 'span' operators such as 'it is the case at some past interval that . . . ' ('**WAS**') and 'it is the case at some future interval that . . . ' ('**WILL**'). Each of these options is discussed in some form or other in this chapter and the next. As we shall see, no transientist solution to the problem of accounting for apparently transientist-unfriendly sentences is as attractive as simply rejecting transientism in favour of permanentism.

In the rest of this chapter I describe some ways in which transientists can try to account for the truth of one kind of apparently transientist-unfriendly sentence: namely, sentences that seem to be about *cross-time relations*, or in other words, relations between things that are located at different instants.<sup>131</sup> I call such sentences *cross-time sentences*. I consider two different kinds of cross-time sentence: everyday cross-time sentences (§5.1 and §5.2) and cross-time sentences from spacetime physics (§5.3). I show that both kinds of sentence cause problems for transientists. Finally, I show that pastists are in the same boat as transientists (§5.4).

## 5.1 Everyday cross-time sentences

### 5.1.1 *The problem for transientists*

Consider the following (apparently) true, everyday cross-time sentences:

(15) 'Some American admires an ancient Greek philosopher'

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<sup>131</sup> More specifically: relations between things which are such that there is no instant  $t$  at which they are both located.

(16) ‘Someone was Liam’s great-grandfather’

(17) ‘The building’s collapse was caused by an explosion’

It is natural to represent the logical form of (15) as something like:

(18) ‘ $\exists x \exists y \textit{American}(x) \ \& \ \textit{Ancient Greek Philosopher}(y) \ \& \ \textit{Admires}(x,y)$ ’

In that case, an ordinary utterance of (15) is true iff some American admires some ancient Greek philosopher. However, (15) entails that an ancient Greek philosopher exists, and transientists deny that there are any ancient Greek philosophers; therefore the truth of (15) is inconsistent with transientism.

A strategy analogous to that used on (1) will not work on (15). Such a strategy involves assigning something like the following logical form to (15):

(19) ‘ $\mathbf{P}(\exists x \exists y \textit{American}(x) \ \& \ \textit{Ancient Greek Philosopher}(y) \ \& \ \textit{Admires}(x,y))$ ’

Aside from the fact that it is hard to see where the temporal operator in (19) comes from (the verb in (15) is apparently present-tensed), (19) is false given transientism. The reason is that transientists deny that an American (in the sense of a citizen of the United States of America) and an ancient Greek philosopher ever coexisted; that is, they hold that it is always the case that either there are no Americans or no ancient Greek philosophers. However, according to (19) it was the case that there is an American and an ancient Greek philosopher.

Similarly, consider the following alternative translations of (15):<sup>132</sup>

(20) ‘ $\exists x \textit{American}(x) \ \& \ \mathbf{P}(\exists y \textit{Ancient Greek Philosopher}(y) \ \& \ \textit{Admires}(x,y))$ ’

(21) ‘ $\mathbf{P}(\exists x \textit{Ancient Greek Philosopher}(x) \ \& \ \mathbf{N}(\exists y \textit{American}(y) \ \& \ \textit{Admires}(x,y)))$ ’

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<sup>132</sup> See Sider (1999, 6) for similar examples.

The problem with these translations is that the following seem like very plausible principles:<sup>133</sup>

PROPERTY PRINCIPLE: Always, everything is always such that, if it has some property then it exists

RELATION PRINCIPLE: Always, for any  $x$  it is always the case that for any  $y$ , it is always the case that if  $x$  and  $y$  stand in a relation then they both exist

If (20) is true, the formula '*Admires*( $x,y$ )' in the second conjunct is satisfied at some past instant; however, it is hard to see how that could be the case given the relation principle and the fact that transientists deny that an American and an ancient Greek philosopher ever co-existed.<sup>134</sup> Similarly, if (21) is true, the formula '*Admires*( $x,y$ )' in the second conjunct is satisfied now; however, it is hard to see how that could be the case given the relation principle and the fact that transientists deny that any ancient Greek philosophers exist now.

What goes for (15) also goes for (16) and (17). Consider (16). The most natural transientist interpretation of the logical form of (16) is something like

(22) ' $\mathbf{P}(\exists x \textit{Great-grandfather}(x,\textit{Liam}))$ '

However, transientists deny that Liam and his great-grandfather ever co-existed. Given the relation principle, a translation of (16) analogous to (21) fails for similar reasons.

Finally, consider (17). Suppose (17) is uttered while the building is collapsing, and that the explosion in question happened the day before the collapse. If transientists deny that the explosion and the collapse ever coexist, then they cannot provide the most obvious transientist interpretation of (17):

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<sup>133</sup> I discuss these principles in more detail below.

<sup>134</sup> Couldn't it be the case that '*Admires*( $x, y$ )' is satisfied at instant  $t$  but  $x$  doesn't stand in the admiration relation to  $y$  at  $t$ ? In that case the relation principle would not apply. I consider this response below. Until then, I assume that if  $R(x, y)$  then  $x$  bears relation  $R$  to  $y$ .

(23)  $\mathbf{P}(\exists x \textit{Building Collapse}(x) \ \& \ \exists y \textit{Explosion}(y) \ \& \ \textit{Cause}(y,x))$

Given the relation principle, translations of (17) analogous to (20) and (21) fail for similar reasons.

We have seen that transientists cannot appeal to the most obvious transientist translations (let alone the most obvious translations simpliciter) of ordinary cross-time sentences such as (15). Therefore they have some work to do to account for the truth of such sentences. As usual, matters are more straightforward for permanentists. For example, moving spotlights can interpret (15) – (17) as follows:

(24)  $\exists x \exists y \textit{American}(x) \ \& \ \mathbf{P}(\textit{Ancient Greek Philosopher}(y)) \ \& \ \textit{Admires}(x,y)$

(25)  $\exists x \mathbf{P}(\textit{Great-grandfather}(x,\textit{Liam}))$

(26)  $\exists x \textit{Building Collapse}(x) \ \& \ \mathbf{P}(\exists y \textit{Explosion}(y) \ \& \ \textit{Cause}(y,x))$

In other words, according to the moving spotlight theory (15) is true because an American currently stands in the admiration relation to a non-concrete ancient Greek philosopher; (16) is true because there is a past instant at which a non-concrete man stands in the great-grandfather relation to Liam;<sup>135</sup> and (17) is true because there is a building collapse and a non-occurring explosion which stand in the causal relation at some past instant.<sup>136</sup>

The only potential complication for moving spotlights is in accounting for the presence of a temporal operator in (24), given that (15) is apparently present-tensed. One

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<sup>135</sup> Indeed, the non-concrete man is still Liam's great-grandfather. That is not to say that Liam's great-grandfather is *always* his great-grandfather: he was not Liam's great-grandfather before Liam was born (you become a great-grandfather when your great-grandchild is born). However, he *always will be* Liam's great-grandfather, given that Liam has been born.

<sup>136</sup> Indeed, the non-occurring explosion is still the cause of the building's collapse. That is not to suggest that the explosion is *always* the cause of the building's collapse: it was not the cause of the building's collapse before the building's collapse had occurred (an event becomes a cause when its effect occurs). However, it *always will be* the cause of the building's collapse, given that the building has collapsed. More generally, according to the moving spotlight theory (i) events can stand in causal relations even when they are not occurring, and (ii) events are not caused to *exist*, but caused to *occur*.

possible strategy is to argue that in certain contexts, predicates like ‘is an ancient Greek philosopher’ express ‘past-directed’ properties such as the property of *having been* an ancient Greek philosopher. Another possible strategy is to argue that in certain contexts, predicates like ‘is an ancient Greek philosopher’ express disjunctive properties such as the property of being an ancient Greek philosopher or having been ancient Greek philosopher. Say that something is an *ancient Greek philosopher\** iff it is or was an ancient Greek philosopher; on this account, (15) has the form

(27) ‘ $\exists x \exists y \text{ American}(x) \ \& \ \text{Ancient Greek Philosopher}^*(y) \ \& \ \text{Admires}(x,y)$ ’

Both of these strategies require further development, and I will not attempt to assess which is the most promising here. In any case, it should be obvious that permanentists, including moving spotlights, can provide a much simpler account of the truth of sentences such as (15) than transientists.

### 5.1.2 *A problem for moving spotlights?*

Ordinary cross-time sentences such as (15) are a problem for transientists because their truth seems to entail that there are things which according to transientists do not exist. Such sentences do not cause problems for permanentists, according to whom everything always exists. However, there may be certain cross-time sentences that also cause problems for moving spotlights. For example, consider the sentence

(28) ‘John baked the cake’

Suppose that John prepared the cake mixture and put it in the oven, but sadly died before the mixture had been baked into a cake. Suppose further that (28) is uttered after the cake is baked. In that case, (28) seems true: John did bake the cake, even though he did not live to see it emerge from the oven. However, some might argue that accounting for the truth of

(28) in that situation is difficult for moving spotlighters. In particular, they might argue that no-one can ever bake a non-concrete cake and no-one non-concrete can ever bake a cake. In that case, given that according to the moving spotlight theory there is no past instant at which John and the cake are both concrete, the moving spotlighter's most natural translation of (28)

(29) '∃x *Cake*(x) & **P**(*Baking*(John, x))'

is false even though (28) is true.<sup>137</sup>

What the above example shows is that some predicates appear to express relations that require their relata not just to exist, but to be concrete as well (consider also the predicates 'kicked' and 'is taller than'). Call such relations *top-grade relations*. The following principle applies to top-grade relations:

TOP-GRADE RELATION PRINCIPLE: Always, for any *x* it is always the case that for any *y*, it is always the case that if *x* and *y* stand in a top-grade relation then they both exist and are concrete

Given the top-grade relation principle, cross-time sentences such as (28) which seem to be about top-grade cross-time relations cause problems for moving spotlighters analogous to the problems everyday cross-time sentences cause for transientists. A moving spotlighter might respond to this problem by pointing out that it is not entirely obvious that (28) is true in the relatively unusual situation where John dies before his cake is baked. If the problem for moving spotlighters only arises with regard to a limited number of cross-time sentences as uttered in relatively unusual contexts, then perhaps the problem is not so bad after all; it certainly isn't as bad as the problem facing transientists, who have trouble

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<sup>137</sup> I assume that John becomes non-concrete on his death and the cake becomes concrete and a cake only when it is baked; change the example if you disagree.

accounting for the truth of *all* cross-time sentences. However, sentences expressing top-grade cross-time relations could be more widespread. In particular, suppose the causal relation is a top-grade relation.<sup>138</sup> In that case, causal sentences are only true when the relevant causal relata are concrete (or occurring), in which case moving spotlights also have a problem with everyday cross-time causal sentences such as (17). If moving spotlights cannot account for the truth of everyday cross-time causal sentences, then they have a serious problem.<sup>139</sup>

How should moving spotlights respond to the problem of top-grade cross-time relations? As mentioned above, one option is to argue that sentences such as (28) are false in the unusual situations in which they cause trouble for the moving spotlight theory; for example, if John dies before the cake is baked, then it is just false that John baked the cake. Of course, John *tried* to bake the cake; he caused the cake to be baked; but he did not bake the cake, because he died before it was baked. I think that this is a bad response, for two reasons. First, (28) really does seem true in the situation where John dies before the cake is baked. Why should John's death, which could have taken place only an instant before the cake was baked, prevent him from having baked it? John's corpse certainly didn't bake the cake; a cake was baked; so who baked it? The answer is 'John', surely. Similarly, suppose John tries to kick Tim but dies an instant before his boot connects with Tim's leg. In that case, it is true that John kicked Tim. After all, John's corpse didn't kick Tim; Tim was kicked by someone; so it must be John who kicked Tim. A second reason for rejecting this response is that it does not seem applicable in the case of cross-time causal sentences. If the causal relation is top-grade, then everyday cross-time causal sentences such as (17) are a problem for moving spotlights. However, it is not plausible to argue that all ordinary

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<sup>138</sup> Perhaps in the sense that always, for any two things, it is always the case that if they stand in a causal relation then they are both *occurring*. If events are the sorts of things that can be concrete or non-concrete, then it seems natural to think that events are concrete iff they are occurring.

<sup>139</sup> Assuming as I do throughout that it is a real cost of a theory if it falsifies large parts of our everyday thought and speech.

cross-time causal sentences are false (more on this below).

A better option for moving spotlights is to argue that cross-time sentences such as (28) are true, but to deny that ordinary predicates such as ‘baked’ and ‘caused’ express top-grade relations.<sup>140</sup> In that case, moving spotlights can allow that things sometimes stand in the baking relation when one of them is non-concrete, and that events are sometimes causally related when one of them (or, indeed, both of them) is non-concrete (or non-occurring). Indeed, there is evidence that the predicate ‘baked’ is not actually top-grade: for example, the sentence

(30) ‘John was baking this cake for three hours’

could be true in a situation where the cake only just became a concrete cake. Moreover, non-concrete things bear all sorts of interesting properties: for instance, non-concrete Rory is dead, and is a great-grandfather, and is the referent of the name ‘Rory’. And unless *all* relations are supposed to be top-grade, non-concrete things can stand in relations: for example, non-concrete Rory bears the great-grandfather relation to Kitty. Therefore it is not too much of a leap to allow that (for example) concrete John was baking a non-concrete cake, and that a non-concrete explosion is a cause of the current event of the building’s collapse.<sup>141</sup> Finally, it is important to remember that ‘concrete’ and ‘non-concrete’ in this context are philosophers’ terms of art, even if they do derive some of their content from the ordinary notion of concreteness. Therefore it is in large part up to philosophers to provide them with content, by giving them a useful theoretical role to play.

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<sup>140</sup> Of course, some *extraordinary* predicates are top-grade, such as the predicate ‘is concrete at the same instant as’.

<sup>141</sup> The analogous response for transientists to the problem of everyday cross-time sentences would be to reject the (standard) relation principle, and allow that some things can stand in relations even when one of them does not exist. Unlike the strategy of denying that most predicates are top-grade, I think that this would be crazy. See §5.2.2 below.

There is no obvious reason why moving spotlights should not allow that part of this role is to attach to things that get baked or stand in causal relations.

## 5.2 Transientist solutions

Given the lack of obvious transientist translations for true, everyday cross-time sentences, transientists must find some other way to account for their truth, or at least explain why they *seem* true. In this section I describe and reject the most plausible transientist strategies for dealing with everyday cross-time sentences.

### 5.2.1 *Quasi-truth*

Transientists could argue that everyday cross-time sentences such as (15) are false, but also instantiate some ‘positive’ property *in the vicinity of truth*, such as *being confusable with a truth* or *being close to the truth*. This strategy is recommended by Sider (1999), and is endorsed by Markosian (2004).

Let us focus on Sider’s (1999) version of the strategy.<sup>142</sup> According to Sider, transientists should argue that all cross-time sentences are false, but some such sentences also have the ‘positive status’ of being *quasi-true*. Sider provides the following informal introduction to the notion of quasi-truth:

The working idea of a quasi-true sentence is one that, *philosophical niceties aside*, is true. Put a second way, a sentence is quasi-true if the world is similar enough to the way it would have to be for the sentence to be genuinely true. A third characterization specifies quasi-truth by the role I want it to play in my defence of presentism. To remain plausible, presentism should not require us to drastically

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<sup>142</sup> In my presentation of Sider’s strategy, I replace all talk of ‘presentism’ and ‘eternalism’ with talk of transientism and permanentism.

alter our beliefs about the past; giving up on our ordinary beliefs being true, but retaining belief in quasi-truth, is intended to be a sufficiently non-drastring alteration. (Sider 1999, 8)

More formally, according to Sider transientists should hold that a sentence  $s$  is quasi-true iff  $s$  expresses a proposition  $p$  such that for some true proposition  $p'$ , were permanentism true  $p'$  would have been true and would have metaphysically entailed  $p$ .<sup>143</sup>

It is easy enough to get a grip on what it is for a sentence to be quasi-true in the context of transientism. For example, consider (16) above:

(16) 'Someone was Liam's great-grandfather'

We saw above that none of the most obvious transientist translations of (16) make the sentence true. According to the present strategy, transientists should admit that (16) is false, but add that it is also quasi-true, because there is a true proposition  $p$  such that, were permanentism true,  $p$  would still have been true and would have entailed the false proposition expressed by (16) (namely, the proposition that someone was Liam's great-grandfather). Which proposition is  $p$ ? A natural candidate would be something like the proposition that

(31)  $\mathbf{P}(\exists x \text{ Father of Liam}(x) \ \& \ \mathbf{P}(\exists y \text{ Father of } x(y) \ \& \ \mathbf{P}(\exists z \text{ Father of } y(z))))$

Given transientism, (31) is true. Moreover, if permanentism were true, (31) would still have been true and would have entailed the proposition that someone was Liam's great-grandfather.<sup>144</sup>In other words, the fact that  $\mathbf{P}(\exists x \text{ Father of Liam}(x) \ \& \ \mathbf{P}(\exists y \text{ Father of } x(y)))$

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<sup>143</sup> This definition relies on the assumption that permanentism and transientism are necessarily true if true.

<sup>144</sup> Suppose that quasi-truth were defined in terms of the B-theory rather than permanentism. In that case, (31) could not serve as an underlier for (16), as it would not even have existed were the B-theory true. The reason is that (31) is actually a temporary proposition, and if the B-theory were true, there would be no possibly non-permanent propositions.

&  $\mathbf{P}(\exists z \text{ Father of } y(z))$ ) would have provided a supervenience base for (16) had permanentism been true. Therefore transientists can say that (16) is quasi-true. Following Sider, call (31) the *underlying truth* for (16).

It is relatively straightforward to describe an underlying truth for a sentence such as (16). But what about sentences such as (15) and (17), concerning cross-time admiration and causation? These sentences seem to make harder cases for the transientist fan of quasi-truth. Of course, in practice transientist fans of quasi-truth such as Markosian (2004) do not attempt to describe the full transientist underlying truths for all transientist-unfriendly sentences; it is enough for them that the project of providing transientist underliers appears feasible in principle. But even then, it is difficult to imagine what the underlying truths for sentences such as (15) and (17) could be, given transientism. The underlier for (15) might be some very complicated proposition concerning causal relations between various temporally overlapping events, expressed by a sentence involving a large number of nested temporal operators. However, that depends on whether (i) facts concerning admiration are reducible to causal facts, and (ii) for any two causally related events  $e$  and  $e'$  there is a series of causally related, temporally-overlapping events that link  $e$  and  $e'$ .<sup>145</sup> Neither of these theses is obviously true. Transientists who endorse the quasi-truth strategy have some work to do to show that the project of providing underlying truths is even feasible in principle.

There are further problems for the quasi-truth strategy. First, transientist fans of quasi-truth give up the project of accounting for the truth of sentences such as (15), (16), and (17). However, they must still account for the fact that such sentences *seem* to be true. According to Sider (1999, 10), it is enough for the transientist to point out that in ordinary English, for ease of communication we quantify freely over all sorts of things which may

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<sup>145</sup> I discuss this thesis in more detail below.

or may not exist (in this category Sider includes non-actual and non-present things, fictional things, and abstract things). Sider's idea seems to be that the goal of everyday communication is not to express truths (and thereby cause people to believe truths) but rather to 'communicate effectively', which can be achieved by uttering sentences that are false but close to the truth (i.e. quasi-true) as well as sentences that are strictly true. That is why we are inclined to count sentences such as (15), (16), and (17) as true, despite the fact that they are strictly false: what we really mean when we say that they are 'true' is that they are communicatively efficacious.

Effective communication can sometimes involve causing people to believe falsehoods. For example, if I know that Grace thinks that all trees are inhabited by fairies, it could still be communicatively efficacious for me to say to her 'There is a tree in the garden', even though I know that it will cause her to form the false belief that there is a fairy in the garden.<sup>146</sup> However, it is hard to say that I am communicating effectively when I tell Grace that someone was Liam's great-grandfather, thereby causing her to form the false belief that someone was Liam's great-grandfather. In the case of the trees and the fairies, the sentence I utter expresses a true proposition, namely, the proposition that there is a tree in the garden. My utterance causes Grace to form the false belief that there is a fairy in the garden, but it also causes her to form the true belief that there is a tree in the garden. On the other hand, in the case of Liam's great-grandfather, the sentence I utter expresses a false proposition, and my utterance merely causes Grace to form a false belief. This does not look like effective communication. More generally, it is hard to believe that many people who were told they were causing people to form false beliefs by uttering sentences such as (15), (16), and (17) would consider themselves to be 'communicating effectively'. The notion of effective communication is more closely tied to uttering truths

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<sup>146</sup> Thank you to Cian Dorr for this example.

and causing people to believe truths than Sider suggests.

Second, we said above that it is plausible that metaphysical theses should not falsify large parts of ordinary thought and speech without some compensatory theoretical gain. Given that transientist fans of quasi-truth hold that many ordinary sentences are false, they either have to reject this plausible principle or show that transientism brings with it some compensatory theoretical gain. One option would be to argue that the above principle is actually false, and that the correct principle (which the combination of transientism and quasi-truth does not violate) is that metaphysical theses should not falsify large parts of ordinary thought and speech without some compensating theoretical gain, *unless* they can show that the relevant parts of ordinary thought and speech are at least close to the truth. The problem with this option is that the modified principle does not seem plausible- our theories should not make large parts of ordinary thought and speech false without some compensatory theoretical gain. We should not let philosophy overrule our everyday beliefs without some good reason. The other option is to argue that transientism does bring with it some compensatory theoretical gain, namely, a more 'intuitive' and streamlined ontology. This is highly questionable. For one thing, it is not at all clear that our intuitions (everyday beliefs) really are transientist- as argued in §2.1.4 above, it is quite plausible to interpret out everyday temporal quantification as restricted to the concrete realm, so that sentences such as 'Someday I won't exist' as expressing the proposition that someday I won't be concrete. Second, permanentists should not accept that the transientist ontology is 'streamlined', or relatedly that the permanentist ontology is 'bloated'. Transientists posit fewer things than permanentists- the question is whether they are right to do so. The evidence from their difficulty in accounting for the apparent truth of many of our everyday thought and speech is that are not.

Third, Sider's definition of quasi-truth gives rise to some strange results. For example, consider the sentence

(32) 'Permanentism is true'

According to transientists, (32) is false. However, it is also quasi-true: (32) expresses a proposition  $p$  such that for some true proposition  $p'$  (that  $2 + 2 = 4$ ), were permanentism true,  $p'$  would have been true ( $p'$  is a metaphysically necessary truth, and therefore true in all possible situations in which permanentism is true) and would have metaphysically entailed  $p$  (if permanentism were true it would be necessarily true, and hence  $p$  and  $p'$  would be true in every possible situation).

The quasi-truth of (32) for transientists does not sit well with Sider's informal characterisation of quasi-truth. As we saw above, Sider provides two main glosses on quasi-truth: he writes that (i) 'a quasi-true sentence is one that, *philosophical niceties aside*, is true', and that (ii) 'a sentence is quasi-true if the world is similar enough to the way it would have to be for the sentence to be genuinely true.' If transientism counts as a 'philosophical nicety', then the first characterisation is met. However, it seems wrong to say that the transientist world is 'similar enough to' the way it would have to be for permanentism to be true. After all, transientists hold that there is a great deal of ontological change over time, whereas permanentists hold that there is never any ontological change. These look like two very dissimilar pictures of the world.

A second problem arising from the above example is that it shows that the proposition that  $2 + 2 = 4$  is an underlying truth for permanentism, given Sider's definition of 'underlying truth'. Given that any metaphysically necessary truth would have sufficed in the example, it follows that all metaphysically necessary truths are underlying truths for permanentism given Sider's definition of 'underlying truth'. This does not seem to fit with

what Sider means by ‘underlying truth’: an underlying truth is supposed to be a true proposition that, given transientism, is in some way ‘equivalent’ to the false proposition expressed by the quasi-true sentence. The proposition that  $2 + 2 = 4$  obviously does not fulfil this role.

### 5.2.2 *The relation principle*

We saw above that transientists cannot accept the following natural transientist interpretations of sentence (15):

(20) ‘ $\exists x \text{ American}(x) \ \& \ \mathbf{P}(\exists y \text{ Ancient Greek Philosopher}(y) \ \& \ \text{Admires}(x,y))$ ’

(21) ‘ $\mathbf{P}(\exists x \text{ Ancient Greek Philosopher}(x) \ \& \ \mathbf{N}(\exists y \text{ American}(y) \ \& \ \text{Admires}(x,y)))$ ’

The reason is that given the relation principle

RELATION PRINCIPLE: Always, for any  $x$  it is always the case that for any  $y$ , it is always the case that if  $x$  and  $y$  stand in a relation then they both exist

and the very plausible assumption that for any  $x$  it is always the case that for any  $y$ , it is always the case that if  $x$  ever admires  $y$  then  $x$  stands in the admiration relation to  $y$ , the truth of either (20) or (21) would be inconsistent with the transientist belief that an American and an ancient Greek philosopher never coexist. The question is: should transientists accept the relation principle?<sup>147</sup>

The relation principle is typically bundled together with the property principle, according to which always, everything is always such that if it has some property then it exists. From now on, let us refer to the conjunction of the property principle and the generalisation of the relation to principle to  $n$ -place relations for all  $n$  the *existence*

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<sup>147</sup> I consider whether transientists should accept the principles of property/relation abstraction in the next section.

*principle*.<sup>148</sup> Most transientists accept the existence principle; at least, very few transientists explicitly reject it, even in the context of the problem of cross-time sentences.<sup>149</sup> Among transientists who explicitly defend the principle are Bigelow (1996, 39), Markosian (2004, §3.1), Crisp (2005, 7), and Bourne (2006, 95).<sup>150</sup> For example, here is Crisp:

The main problem with this reply to the objection from cross-time relations is that it is so hard to believe . . . some presentists of a more Meinongian bent will see no problem here. But for those of us suspicious of propertied non-existents, the frivolous presentist's reply simply is not a serious option. (Crisp 2005, 7)

Here is Bourne:

It is widely held, and I think correctly so, that a necessary condition for the existence of relations is that both of the *relata* exist. (Bourne 2006, 95)

On the other hand, among those who explicitly reject the principle are Hinchcliff (1996, 124) and Salmon (1998, 286-91).<sup>151</sup> Hinchcliff rejects the principle as part of a defence of the view that transientists can refer to past and future instants without there being any past and future instants. Salmon rejects the principle in order to account for the truth of sentences concerning past individuals, such as

(33) 'Socrates does not exist'

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<sup>148</sup> The existence principle is sometimes referred to as 'serious presentism' (see e.g. Sider 1999, 6 and Salmon 1998, 131) by analogy with Plantinga's (1983) modal thesis of 'serious actualism', according to which necessarily, everything is such that necessarily, if it has some property then it exists. According to Plantinga, *actualism* is the thesis that necessarily, everything exists; to be a *serious* actualist one must add that necessarily, if something *has a property* then it exists. In order to avoid any confusion, I do not use the term 'serious presentism' in what follows, and instead continue to refer to the property principle, the relation principle, and the existence principle.

<sup>149</sup> For example, Zimmerman (2011, 16-19) does not even consider rejecting the existence principle as a solution to the problem of accounting for cross-time sentences.

<sup>150</sup> Plantinga (1983) defends the modal existence principle. See Fine (2005, 194-202) for a critical discussion.

<sup>151</sup> See also Fine (2005, 194-7).

which according to Salmon expresses the non-existent singular proposition that Socrates does not exist.

For permanentists, the existence principle is a logical truth: given that everything always exists, it follows that everything is always such that if it has a property it exists, and any things at any instants are such that if they are ever related they exist. For transientists, on the other hand, acceptance of the principle is not forced by logic alone. However, the existence principle is extremely plausible, and transientists should be very reluctant to reject it. Those who reject the existence principle hold that there are instants at which things bear properties, or stand in relations, but don't exist. But how could something bear a property or stand in a relation at an instant at which it doesn't exist? Surely *existence* is the most basic precondition for bearing a property or standing in a relation. Those who reject the existence principle seem open to Russell's (1919) accusation against followers of Meinong that their theory embodies 'a failure of that feeling for reality which ought to be preserved even in the most abstract studies'. Of course, in the case of Meinongianism, the failure consisted in thinking that things like round squares have, in Russell's words, 'some kind of logical being.' On the other hand, the failure in the case of those who reject the existence principle is not having too many ontological commitments but *too few*: that is, to fail to admit the existence of the things that are thought to falsify the existence principle.

There are versions of the existence principle whose rejection *is* reasonable. For example, consider a version of the property principle with all quantifiers restricted to the concrete, according to which always, everything concrete is such that always, if it has a property then it is something concrete. Moving spotlights, for example, reject this principle: they hold that there are concrete things that sometimes have properties but aren't concrete. For example, I'm concrete, but in two hundred years I will be non-concrete and

will have the properties of being non-concrete and dead. Transientists who are tempted to reject the existence principle need to be sure that they are not confusing the principle with a version such as the above whose failure might seem plausible (especially if it is relatively unusual in ordinary thought and speech to operate with wholly unrestricted quantifiers).

There is another way of misreading the existence principle so that its failure sounds plausible. As we saw in Chapter Two, B-theorists typically accept the restrictor principle:

RESTRICTOR PRINCIPLE: The standard temporal operators are quantifiers over instants of time which restrict the explicit individual quantifiers ( $\forall$ ,  $\exists$ ) in their scope to things that are located at the relevant instant

B-theorists who accept the restrictor principle will be tempted to read the relation principle as the thesis that for any instants and things  $x$  and  $y$  that are located at those instants, for all instants  $t$ , if  $x$  and  $y$  are related at  $t$  then they are both located at  $t$ . However, on this reading the principle is false. For example, consider sentence (16):

(16) ‘Someone was Liam’s great-grandfather’

For permanentists, the most natural interpretation of the logical form of (16) is

(25)  $\exists x \mathbf{P}(\text{Great-grandfather}(x, \text{Liam}))$

Given the restrictor principle, (25) is equivalent to

(34) ‘There is a past instant  $t$  such that someone is Liam’s great-grandfather at  $t$ ’

However, given the above reading of the relation principle, (34) entails that there is an instant at which both Liam and his great-grandfather are located, which is false. Therefore

the relation principle is false.<sup>152</sup>

Of course, transientists reject the restrictor principle; they hold that the temporal operators are metaphysically fundamental. However, transientists might argue that, given that B-theorists must reject the relation principle, there is no reason why they should accept it. The problem with this argument is that it relies on the premise that B-theorists ought to accept the restrictor principle. However, as we saw in Chapter Two, B-theorists should reject the restrictor principle because it is inconsistent with the sometimes principle (the principle that what is the case is sometimes the case) and other basic B-theoretic commitments such as that there are things which are located at different instants. Without the restrictor principle, there is no inconsistency between the relation principle (which for B-theorists turns out to be equivalent to a logical truth), (31), and the thesis that there is no instant at which both Liam and his great-grandfather are located. Therefore there is no good reason why B-theorists should reject the relation principle.

Some theorists reject the modal and temporal existence principles as part of their account of the truth of sentences containing fictional and mythical names. For example, consider the sentences

(35) ‘Sherlock Holmes is a great detective’

and

(36) ‘Pegasus is a winged horse’

Such theorists assert that, for example, the name ‘Sherlock Holmes’ in (35) refers to Sherlock Holmes, and therefore given that if something is referred to it has the property of being referred to, Sherlock Holmes has the property of being referred to even though

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<sup>152</sup> Stephanou (2007, 246-9) argues against the relation principle along these lines.

Sherlock Holmes does not exist.<sup>153</sup> Space does not permit a full discussion of the different theories of the semantics of fictional and mythical names here.<sup>154</sup> However, a number of theorists - such as van Inwagen (1977), Searle (1979), Salmon (1998), and Thomasson (1999) - have defended the *artefactualist* view that the names of fictional characters refer to abstract artefacts which are created by their authors and ‘encode’ (as opposed to exemplify) all sorts of interesting properties, such as being attracted to virgins (in the case of Pegasus). According to artefactualism, fictional entities such as Sherlock Holmes and Pegasus exist, and therefore the truth of sentences such as (35) and (36) provides no reason to reject the existence principle. There is no obvious reason why transientists should not endorse artefactualism.<sup>155</sup> In any case, it is not worth rejecting the existence principle merely in order to account for the truth of sentences such as (35) and (36).<sup>156</sup>

### 5.2.3 Abstraction

One way for transientists to account for the truth of apparently transientist-unfriendly sentences such as (15) is to interpret them along the lines of (20) or (21) and reject the existence principle. However, this is not a viable strategy for transientists, given the plausibility of the existence principle. An alternative strategy is to reject the following principles:

PROPERTY ABSTRACTION: Always, for all  $x$ , always( $x$  is  $F$  iff  $x$  has the property of being  $F$ )

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<sup>153</sup> See Bacon (2013). See also Williamson (2013, 148-58) for discussion.

<sup>154</sup> I discuss the question of how transientists should treat the names of past and future entities in Chapter Six.

<sup>155</sup> An overview of the arguments for and against artefactualism can be found in Sainsbury (2010). Briefly, the two main objections to the view are (i) the problem of accounting for apparently true sentences such as ‘Holmes does not exist’ and (ii) the problem of explaining what ‘encoding’ a property involves. I do not think these problems are too serious. As for the first, such sentences could be read as expressing propositions such as that Holmes is non-concrete, rather than that he doesn’t exist in the logician’s sense. As for the second, I think that talk of ‘encoding’ is unhelpful, and that fictional entities should simply be thought of as being represented as having the properties they are said to ‘encode’. Thus ‘Pegasus is attracted to virgins’ is true iff the abstract artefact Pegasus is represented as being attracted to virgins in the Pegasus myths.

<sup>156</sup> Bigelow (1996, 38-9) agrees.

RELATION ABSTRACTION: Always, for any  $x$ , always, for any  $y$ , always( $x$  Rs  $y$  iff  $x$  bears the  $R$  relation to  $y$ )<sup>157</sup>

For example, consider interpretation (20) of sentence (15):

(20) ‘ $\exists x$  *American*( $x$ ) &  $\mathbf{P}(\exists y$  *Ancient Greek Philosopher*( $y$ ) & *Admires*( $x,y$ ))’

In the absence of the relation abstraction principle, the truth of (20) is consistent with transientism: if (20) is true then there is past instant at which an American admires an ancient Greek philosopher, but it does not follow that there is a past instant at which an American *stands in a relation to* an ancient Greek philosopher, and therefore it does not follow given the existence principle that there is a past instant at which an American and an ancient Greek philosopher both exist. In other words, in order to accept the truth of (20), all that transientists have to do is reject the following instance of the relation abstraction principle: always for any  $x$  and always for any  $y$ , always,  $x$  admires  $y$  iff  $x$  bears the admiration relation to  $y$ . Similarly, transientists can accept the analogous interpretations of sentences (16) and (17) by rejecting the relevant instances of the relation abstraction principle.

The problem of cross-time relations provides transientists with a reason to reject the relation abstraction principle. There is an even more straightforward reason for transientists to reject the *property* abstraction principle: transientists hold that, for example, Napoleon doesn’t exist; given the property abstraction principle, it follows that Napoleon has the property of not existing, and therefore that Napoleon exists given the existence principle. Given the existence principle and the property abstraction principle, transientists cannot provide even a basic expression of their ontological commitments. For transientists, this is evidence that for all their immediate plausibility, either the existence principle or the

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<sup>157</sup> The quantifiers in both of these principles should be read as restricted to particulars, to avoid Russell’s Paradox-generating instances involving properties such as the property of *being non-self-instantiating*.

property abstraction principle is false. For permanentists, this is further evidence that non-permanentism is unsustainable.

There is a natural transientist response to the above argument: in the case of the sentence ‘Napoleon doesn’t exist’, the sentence should be interpreted as having the form ‘Not (Napoleon exists)’ rather than ‘Napoleon does (not exist)’; i.e., the negation should be read as sentence negation rather than predicate negation. In that case, the sentence does not involve predication, and therefore there is no way to apply the property abstraction principle. As Williamson (2013, 157) points out, this response ‘may seem to force implausibly artificial choices on the analysis of language’. Williamson describes the example of the sentences ‘John is single’ and ‘John is unmarried’: if the former is formalised as  $Sj$  and the latter as  $\neg Mj$  (as seems natural), then given the existence principle, the former entails that John is something whereas the latter does not, despite the presumed semantic equivalence of the predicates ‘is single’ and ‘is unmarried’. Saving the equivalence means either treating the former predicate as negative despite its apparent positive content, or treating the latter as positive despite its apparent negative content. As Williamson points out, there is a solution: the transientist could supplement her logic with a variable-binding, predicate-forming operator  $\lambda$  - a *lambda-abstractor*- and formalise ‘John is unmarried’ as  $\lambda x(\neg Mx)j$  (roughly: ‘John has the property of being not married’), so that both ‘John is single’ and ‘John is unmarried’ entail that John exists, given the existence principle. This strategy also allows transientists to consistently claim that after John dies, he is neither married nor unmarried ( $\neg Mj \ \& \ \neg \lambda x(\neg Mx)j$ ). Using the lambda-abstractor, we can say that the transientist response to the above argument concerning Napoleon is to formalise the sentence ‘Napoleon does not exist’ as  $\neg \exists x x=Napoleon$  rather than  $\lambda x(\neg \exists y y=x)Napoleon$ . The problem with this response is that it means denying that if it is not the case that Napoleon exists, then Napoleon is such that he does

not exist. Similarly in the case of John above, it means denying that if it is not the case that John is married, then John is such that he is not married. Given that these seem like quite natural implications, this strikes me as a cost of the transientist's response to the problem of negative existentials and the property abstraction principle. However, I shall not press the matter here, as transientists already have enough trouble with the relation abstraction principle arising from the problem of cross-time relations.

Crisp (2005, 11-14) describes a version of the argument from cross-time sentences which relies on the premises that sentences such as (15) (i) 'express Moorean facts' and (ii) 'are predicative with respect to the names of non-present entities'. By (i), Crisp means that sentences such as (15) express 'true proposition[s] that only a fool could fail to believe and believe firmly'. He cites the examples of the propositions that modus ponens is a valid form of inference, that there are material objects, and that there was a President of the United States named Lincoln. By (ii), Crisp means that sentences such as (15) express propositions such as that some American stands in the admiration relation to some ancient Greek philosopher. Crisp's response to his version of the argument is to argue that either (i) or (ii) is true, but not both. In other words, Crisp argues that if sentences such as (15) express Moorean facts, they do not express propositions which are 'predicative with respect to the names of non-present entities'.

Crisp's version of the argument from cross-time sentences is clearly different to the one described in this chapter. In particular, the argument of this chapter does not rely on any sort of claim about sentences expressing Moorean facts. The only claim in the vicinity is that sentences such as (15) *seem to be true*, and it would be a serious drawback (though not necessarily fatal) for any theory if it implied that all such sentences were false. This has nothing to do with whether some facts are Moorean. Similarly, the argument of this chapter does not rely on the claim that sentences such as (15) express propositions which

are ‘predicative with respect to the names of non-present entities’. For example, whichever proposition sentence (15) expresses- whether it expresses the proposition expressed by (18), (19), (20), or (21)- if the existence and relation abstraction principles are both true, then the truth of (15) implies the falsehood of transientism. Perhaps it is true that if (15) expresses a Moorean fact then it does not express the proposition that some American stands in the admiration relation to an ancient Greek philosopher; however, the truth of this claim would not help transientists to avoid the argument of this chapter.

Suppose a transientist rejects the relation principle by holding that there is a past instant at which some American admires but does not stand in the admiration relation to an ancient Greek philosopher. This seems crazy: how could someone ever admire someone else without standing in the admiration relation to them? In other words, how could the following ever be true:  $x$  does not stand in the admiration relation to  $y$ , but  $x$  admires  $y$ ? Surely it is always the case that admiring someone implies standing in the admiration relation to them. Anyone who thinks that admiration and standing in the admiration relation sometimes come apart would appear to have lost a grip on the meanings of ‘admires’ and ‘stands in the admiration relation to’.

Some *nominalists* deny the existence of properties and relations altogether, and therefore hold that there are *no* true instances of the property and relation abstraction principles.<sup>158</sup> Transientists who are nominalists of this kind will have no problem rejecting the property and relation abstraction principles. I think that this kind of nominalism is false: there is no compelling reason to reject the existence of properties and relations. The fact that nominalists have to reject the property and relation abstraction principles is just more evidence for the falsehood of nominalism. Moreover, nominalism is a difficult position to sustain, and is not popular despite its promise of a much-reduced ontology.

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<sup>158</sup> For example see Quine (1947) and more recently Rodriguez-Pereyra (2002).

A transientist who holds that there is a past instant at which some American admires but does not stand in the admiration relation to an ancient Greek philosopher rejects the relation abstraction principle by rejecting the following instance of the principle: always, for any  $x$  and always, for any  $y$ , always ( $x$  admires  $y$  iff  $x$  stands in the admiration relation to  $y$ ). However, the transientist does not have to reject the following weakening of the relevant instance of the principle: always, for any  $x$  and always, for any  $y$ ,  $x$  admires  $y$  iff  $x$  stands in the admiration relation to  $y$ . Does saving this weaker instance of the principle help the transientist? Not particularly. What is implausible about the rejection of the relevant instance of the relation abstraction principle is the idea that anyone *ever* admires someone else without standing in the admiration relation to them. Holding on to the weaker version of the relevant instance of the principle does little to help the transientist.

A bad transientist argument against the abstraction principles is as follows: permanentists and non-permanentists (e.g. transientists) both agree that the existence principle is true. In that case, both permanentists and non-permanentists have to reject the abstraction principles, if they want to maintain any sort of grip on their ontological commitments. For example, permanentists agree that the sentence

(37) 'Pegasus does not exist'

is true. However, given the existence principle and the property abstraction principle, (37) implies that Pegasus exists. Therefore permanentists cannot accept the abstraction principles and the existence principle. Given that they accept the existence principle, they have to reject the abstraction principles. So not only do transientists have to reject the abstraction principles: permanentists do as well.

The correct response to this argument is that there is no such route from the

existence principle, the property abstraction principle, and (37) to the conclusion that Pegasus exists. It is true that the existence and property abstraction principles jointly imply the principle that always, for all  $x$ , always ( $x$  does not exist  $\supset$   $x$  exists). However, this principle is consistent with the truth of (37). To see this, consider the principle that for all  $x$ ,  $x$  does not exist  $\supset$   $x$  exists, which follows straightforwardly from the uncontroversial fact that for all  $x$ ,  $x$  exists. This principle is consistent with the truth of (37), as those who hold that Pegasus does not exist reject the instance of Universal Instantiation that takes one from ‘For all  $x$ ,  $x$  exists’ to ‘Pegasus exists’. But adding ‘always’ on either side of the universal quantifier in ‘for all  $x$ ,  $x$  does not exist  $\supset$   $x$  exists’ makes no difference to this fact. Those who hold that (37) is true do not merely hold that Pegasus does not exist; they hold that Pegasus *never* exists. (This distinguishes (34) from the sentence ‘Socrates does not exist’: although transientists reject the instance of Universal Instantiation that takes one from ‘For all  $x$ ,  $x$  exists’ to ‘Socrates exists’, transientists hold that Socrates *did* exist, and therefore must admit that the sentence ‘Socrates does not exist’ is inconsistent with the principle that always, for all  $x$ , always ( $x$  does not exist  $\supset$   $x$  exists). The eternity makes a difference when it comes to Socrates.) Moreover, there is no reason why permanentists have to accept that (37) is true: as mentioned above, there is well-established position, artefactualism, according to which fictional and mythical entities such as Pegasus exist as abstract artefacts. (Although permanentists will naturally reject the claim that abstract artefacts are created by their authors and cease to exist if the relevant fictions and myths cease to exist.)

#### 5.2.4 *Span operators*

We have seen that it is hard for transientists to reject either the existence principle or the abstraction principles. An alternative strategy is to use so-called ‘span operators’ to

provide transientist-friendly paraphrases of sentences such as (15).<sup>159</sup> Span operators are like the standard temporal operators ‘P’ and ‘F’ except that, whereas ‘P’ is read informally as ‘it was the case at some past instant that . . .’ and ‘F’ is read informally as ‘it will be the case at some future instant that . . .’, the past span operator ‘WAS’ is read informally as ‘it was the case at some past *interval* that . . .’ and the future span operator ‘WILL’ is read informally as ‘it will be the case at some future *interval* that . . .’. In other words, whereas the standard temporal operators concern *instants* of time, span operators concern *intervals* of time.

As Lewis (2004, 12) points out, given past and future span operators transientists can provide the following transientist-friendly paraphrases of (6), (9), and (11):

(38) ‘WAS(There are two kings named ‘Charles’)

(39) ‘WAS(There are infinitely many kings named ‘Charles’)

(40) ‘WAS(There are many kings named ‘George’)

What about everyday cross-time sentences such as (15), (16), and (17)? Paraphrasing analogous to the above would yield:

(41) ‘WAS( $\exists x \exists y$  *American*(x) & *Ancient Greek Philosopher*(y) & *Admires*(x,y))’

(42) ‘WAS( $\exists x$  *Great-grandfather*(x,Liam))’

(43) ‘WAS( $\exists x \exists y$  *Explosion*(x) & *Building Collapse*(y) & *Cause*(x,y))’

There are two immediate problems with this suggestion, one minor and one major. First, it is difficult to see where the past span operator in (41) comes from, given that (15) is present tensed. This is something that transientists who provide the above paraphrases

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<sup>159</sup> See Sider (2001, 26-7), Lewis (2004, 12-4), and Brogaard (2007) for recent discussions.

need to explain. Second, given transientism it seems that (16) and (17) could be true while (42) and (43) are false. For example, take (17) and suppose that the building began to collapse this very instant. Then given transientism, (17) is true but (43) seems false: it is not the case that there is a past interval during which the explosion is the cause of the building's collapse. A similar case can be described for (16), if we suppose that the sentence is uttered at the moment of Liam's birth. A relatively natural solution to this sort of problem is for transientists to introduce a further span operator '**SOMETIMES**', read informally as 'it is the case at *some* interval of time that . . .' With this operator transientists can paraphrase (15), (16) and (17) as in (41), (42), and (43), but with '**SOMETIMES**' in place of '**WAS**'. In that case there is no mysterious past tense in the paraphrase of (15), and (17) is true even if the building began to collapse this instant, as it is true that there is *some* interval (i.e. one that includes the present instant) during which the explosion is the cause of the building's collapse.

The most serious problem with the span operator strategy, however, is that the span operators are ambiguous, and therefore transientists who wish to use them to solve the problem of cross-time relations must first disambiguate them and specify which sense they intend to employ.<sup>160</sup> According to Lewis (2004), transientists cannot make use of span operators because 'they are so badly behaved that nobody should claim to have a primitive understanding of them'. For example, consider the sentence

(44) 'It is raining and the sun is shining'

A typical utterance of (44) would be relatively unambiguous; for example, as uttered in Oxford right now, (44) expresses something like the proposition that there are currently sun-showers in Oxford. However, if we prefix '**WAS**' to (44) we get

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<sup>160</sup> Zimmerman (2011, 14), a transientist, rejects the span operator strategy as a solution to the problem of cross-time relations on the grounds that the span operators are ambiguous.

(45) ‘**WAS**(It is raining and the sun is shining)’

An utterance of (45) in Oxford right now could mean two things: it could mean that there is some past interval at which there are sun-showers in Oxford, or it could mean that there is some past interval with at least one sub-interval at which it is raining in Oxford and at least one sub-interval at which the sun is shining in Oxford. What this example shows is that our initial introduction of the operator ‘**WAS**’ was insufficient: it is not enough to simply say that ‘**WAS**’ means something like ‘there is a past interval that . . .’. The task for transientists who wish to use span operators to paraphrase sentences such as (15) is to introduce the operators in such a way that enables us to properly evaluate sentences such as (45).

As Lewis (2004) also points out, the ambiguity of the span operators gives rise to further problems. For example, consider the sentence:

(46) ‘It is raining and it isn’t raining’

As uttered in Oxford right now, (46) would appear to express a contradiction.<sup>161</sup> However, if we prefix ‘**WAS**’ to (46) then we get

(47) ‘**WAS**(It is raining and it isn’t raining)’

An utterance of (47) in Oxford right now has at least one consistent reading, according to which it says that there is some past interval with at least one sub-interval at which it is raining in Oxford and one sub-interval at which it is not raining in Oxford. Therefore it appears that one can prefix span operators to contradictions to create truths. Moreover, if span operators can be prefixed to contradictions to make truths, then one cannot always

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<sup>161</sup> I am ignoring the possibility of using (46) to express the proposition that it is only sort of raining, or that it is vague whether it is raining.

substitute logical equivalents within the scope of span operators without a change in truth value. For example, (47) is true, but

(48) ‘**WAS**(2pm, 21 January 2014 is an instant and 2pm, 21 January 2014 is not an instant)’

is false. The question for transientists who wish to employ span operators is whether they have to understand span operators in such a way as to make sentences such as (47) true. Answering this question is an important part of the transientist’s task of introducing the span operators in a way that enables us to properly evaluate ambiguous sentences such as (45).

Lewis (2004) argues that given the ambiguity of the span operators, it is difficult to believe that transientists could have a primitive understanding of them. And it is true that transientists must include span operators as part of their fundamental ideology: any attempt to analyse span operators in terms of the standard temporal operators ‘**P**’ and ‘**F**’, or in terms of quantification over sets of instants, would simply reintroduce the problem that span operators are intended to solve. In contrast, B-theorists (for example) can accept a reductive analysis of span operators in terms of intervals of time. As Lewis (2004, 13) puts it, B-theorists ‘can safely use span operators’ because they have ‘another language available to remove ambiguities and to explain why sentences with embedded contradictions may nevertheless be true.’

Transientists who support the span operator strategy could try to raise doubts about the extent to which sentences such as (45) really are ambiguous, by drawing attention to analogous spatial sentences such as

(49) ‘In this area, there is a murder and a party’

(49) is similar in form to (45), except that it involves the spatial span operator ‘In this area’ instead of the temporal span operator ‘**WAS**’. However, (49) is not ambiguous: it is not natural to read the sentence as saying that there is a point in the relevant area at which a murder and a party are both taking place. In other words, the only natural reading of (49) is the ‘sub-intervals’ reading. Transientists could try to argue that this undermines the claim that (45) is ambiguous. There are two problems with this response. First, the fact that (45) is ambiguous and (49) is not may simply point to a disanalogy between the temporal and spatial span operators. Second, even if the response shows that the correct reading of (45) is the ‘sub-intervals’ reading, there remains the further task of showing that *given* the sub-intervals reading, the span operators are suitable to the task of paraphrasing sentences such as (15).

Finally, although Lewis does not quite put things like this, his objection to span operators seems to be at least partly based on the idea that transientists who employ span operators are somehow ‘cheating’. The idea that fundamental span operators are a cheat can be brought out by consideration of the span operator ‘**ALWAYS**’, read informally as ‘it is the case at the entire span of time that . . .’. ‘**ALWAYS**’ is just as badly behaved as ‘**WAS**’ and ‘**WILL**’: one can prefix ‘**ALWAYS**’ to an unambiguous sentence to make an ambiguous sentence; one can prefix ‘**ALWAYS**’ to a contradiction to make a truth; and substituting logical equivalents within the scope of ‘**ALWAYS**’ does not always preserve truth-value. Furthermore, it looks like transientists can account for the truth of *any* qualitative sentence by assigning it a paraphrase in which ‘**ALWAYS**’ takes widest scope. Therefore ‘**ALWAYS**’ solves all of the transientist’s problems in one fell swoop: as far as qualitative facts go, with ‘**ALWAYS**’ in hand transientists can speak as if transientism is false. This does look like cheating. (Of course, it *could* be that truth-values are sometimes going to shifted in bad ways by prefixing ‘**ALWAYS**’; but it is up to transientists to show

that this is the case by providing a more specific account of the semantics of the span operators.)

### 5.2.5 *Overlappers*

The span operator strategy is one version of the *paraphrase strategy*, according to which the true logical structure of sentences such as (15) is transientist friendly, despite appearances to the contrary. A more popular version of the paraphrase strategy utilises *overlappers*: informally, sets of temporally overlapping things which connect the relata of the sentence through a chain of simultaneous relations. Given overlappers, sentences which appear to describe cross-time relations between temporally non-overlapping things could in principle be translated as transientist-friendly sentences that describe simultaneous relations between temporally overlapping things.<sup>162</sup>

Let us see how the overrapper strategy might be applied to sentences (15), (16), and (17). First, consider (15):

(15) ‘Some American admires an ancient Greek philosopher’

There are at least three ways of paraphrasing (15) given the overrapper strategy. The first suggestion, due to Markosian (2004, 63) and endorsed by Bourne (2006, 99), makes use of properties (conceived of as abstract, permanent things) as overlappers:

(50) ‘There are various properties  $p_1 - p_n$  such that (i) there is some  $x$  who is American and who believes that  $\mathbf{P}$ (there is an ancient Greek philosopher who instantiates  $p_1 - p_n$ ), and (ii)  $\mathbf{P}$ (there is an ancient Greek philosopher who instantiates  $p_1 - p_n$ ), and (iii) were an object to instantiate  $p_1 - p_n$ ,  $x$  would admire it’

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<sup>162</sup> See Chisholm (1990), Sider (1999), Markosian (2004), Crisp (2005), Bourne (2006), and de Clerq (2006) for recent discussion.

A similar suggestion due to de Clerq (2006, 395-6) involves translating (15) as a sentence concerning a relation between an individual (in this case, some American) and a proposition:

(51) ‘Some American believes the proposition that **P**(some ancient Greek philosopher is admirable)’<sup>163</sup>

According to this suggestion, to say that someone admires someone else is just to say that the former has a certain belief about the latter, namely, that the latter is admirable. Of course, this translation is obviously hopeless: if an American admired Socrates and mistakenly believed that he was an ancient Roman philosopher, then (15) would be true while (51) was false. A third and rather more plausible suggestion involves translating (15) as a complicated causal statement concerning a chain of causally related, temporally overlapping events.<sup>164</sup> This strategy relies on the thesis (mentioned above in §5.2.1) that for any temporally non-overlapping, causally related events  $e$  and  $e'$  there is a chain of causally related, temporally-overlapping events connecting  $e$  and  $e'$ :

CHAIN: For any temporally non-overlapping, causally related events  $e$  and  $e'$ , there is a chain of causally related, temporally-overlapping events connecting  $e$  and  $e'$

Markosian (2004) defends Chain as follows:

It is natural to think that events generally take some time to occur, and also that direct causal relations between events always involve events that are contemporaneous for at least some period of time. If we grant these assumptions,

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<sup>163</sup> I count de Clerq’s suggestion as a version of the overlapper strategy because it involves paraphrasing a cross-time sentence as a transientist-friendly sentence involving simultaneous relations, even though it does not quite fit with my initial characterisation of the overlapper strategy.

<sup>164</sup> Sider (1999, 8) suggests that admiration facts supervene on complicated causal facts.

then it will turn out that, whenever we want to say that one event,  $e_1$ , causes another, much later event,  $e_{23}$ , there will be a causal chain of linking events connecting  $e_1$  and  $e_{23}$ , such that each adjacent pair of events in the chain will be contemporaneous for at least some period of time (Markosian 2004, 60).

Next, consider (16):

(16) ‘Someone was Liam’s great-grandfather’

The most obvious version of the overlapper strategy for (16) makes use of people as overlappers, translating (16) as a sentence involving nested temporal operators along the following lines:

(52) ‘ $\mathbf{P}$ (someone  $x$  is Liam’s father and  $\mathbf{P}$ (someone  $y$  is  $x$ ’s father and  $\mathbf{P}$ (someone  $z$  is  $y$ ’s father)))’<sup>165</sup>

One problem with this suggestion, as Sider (1999, 8) points out, is that in a situation in which Liam’s great-grandfather died and was cremated before the birth of Liam’s grandfather, his sperm having been frozen and implanted in Liam’s great-grandmother’s egg, (16) will be true but (52) will be false (given familiar transientist strictures). Thus (52) will not quite do as a paraphrase of (16); something more sophisticated is required.

Alternatively, (16) could be paraphrased as a complicated causal statement concerning a chain of causally related, temporally overlapping events. The idea that relations of descent supervene on complicated causal facts is endorsed by Szabó (2006, 405), who writes that ‘descendance is a *causal* relation: ‘ $x$  descended from  $y$ ’ is true just in case some event involving  $y$  caused  $x$ ’s birth in the right sort of way.’

Finally, consider (17):

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<sup>165</sup> See Markosian (2004, 59).

(17) ‘The explosion was the cause of the building’s collapse’

The most obvious overlapper paraphrase for (17) is one that uses temporal operators to paraphrase (17) as a series of ‘snapshots’ of simultaneous causal relations between events.

Another option, due to Bigelow (1996, 47), paraphrases (17) as a sentence about propositions (or ‘world properties’):

(53) ‘The proposition that  $\mathbf{P}^{\text{1DAY AGO}}$ (there is an explosion) is causally related to the proposition that the building is collapsing’

Bigelow’s version of the overlapper strategy, like de Clerq’s, uses propositions as overlappers, paraphrasing sentences that seem to be about causal relations between temporally non-overlapping events into sentences about direct causal relations between propositions, which are thought of as permanent abstract objects.<sup>166</sup>

There are a number of reasons why transientists should be unimpressed by the overlapper strategy. First, it is hard to believe that ordinary sentences such as (15), (16), and (17) are synonymous with their overlapper translations. For example, (15), (16), and (17) all look like relatively simple sentences; however, according to the overlapper strategy such sentences are actually quite complex, possibly involving huge numbers of nested temporal operators (as when they are translated as complex causal statements). This point also applies at the psychological level: the thought that the explosion was the cause of the building’s collapse (for example) seems like a relatively simple thought; however, if the overlapper strategy is correct, then it is actually an extremely complex thought. Of course, we should be open to the possibility that some apparently simple sentences have a surprisingly complex logical form. Yet there is a limit to how much deep structural complexity we should be willing to assign to such apparently simple sentences. The

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<sup>166</sup> As with de Clerq’s paraphrase for (15) above, I count Bigelow’s theory as a version of the overlapper strategy, even if it does not exactly fit with our initial characterisation of the strategy.

overlapper strategy might reasonably be thought to go beyond that limit.

Second, in some cases the overlapper strategy seems to get the subject of what we think and say wrong. For example, according to one version of the overlapper strategy, when I utter (15) under normal circumstances I say something about a set of properties (as in (50)). But surely (15) is a sentence about Americans and ancient Greek philosophers, not about properties. We can put it like this: if (15) is synonymous with (50), then anyone who thinks that some American admires some ancient Greek philosopher thinks about properties. But that seems false. Similarly, consider Bourne's (2006, 97-8) proposed translation of the sentence 'I am taller than my grandfather', which uses numbers as overlappers: 'I bear the height-in-feet relation to the number 6 and  $\mathbf{P}$ (my grandfather bears the height-in-feet relation to the number 5) and  $5 > 6$ '. In this case, when I utter the sentence 'I am taller than my grandfather' in normal circumstances, I end up saying something about numbers. But this sentence is not about numbers, it is about my height relative to my grandfather's. More generally, it is very odd to think that anyone who thinks about how tall they are relative to their grandparents ends up thinking about numbers. (One might respond here that if it is odd to be talking about abstract objects such as numbers in talking about relative tallness, then it should also be odd to talk about abstract objects such as heights when talking about relative tallness; e.g. 'But this sentence is not about numbers, *it is about my height relative to my grandfather's.*' However, that is to miss the point of the objection: the oddity is not that talking or thinking about relative height involves talking or thinking about abstract objects, but that it involves talking or thinking about *numbers*, and in particular, about e.g. how one relates to numbers ('I bear the .height-in-feet relation to the number 6'.))

Third, we have seen that many of the overlapper translations of sentences such as (15) rely on Chain, the thesis that for any temporally non-overlapping, causally related

events  $e$  and  $e'$ , there is a chain of causally related, temporally-overlapping events connecting  $e$  and  $e'$ ; or in other words, that temporally non-overlapping events are never directly causally related, so that all direct causal relations are simultaneous. I do not know whether Chain is a plausible thesis concerning the nature of causation. It certainly doesn't seem to be a piece of common sense that all direct casual relations are simultaneous, as Markosian (2004, 60) suggests; the question of whether Chain is true looks like a highly theoretical question. And if chain is false - that is, if there are direct causal relations between temporally non-overlapping events- then it may be that (15), (16), and (17) can be true while their causation-based overlapper paraphrases are false. Zimmerman (2011, 174) rejects Chain; he writes: 'continuous causal processes seem to require fundamental relationships between events or states of affairs that occur at non-overlapping events or intervals.' More generally, transientists who opt for causation-based overlapper paraphrases for cross-time sentences such as (15), (16), and (17) rely on the truth of Chain. However, transientists should be reluctant to base the success of their theory- a theory of temporal ontology - on the truth of an otherwise unsupported thesis concerning causation.<sup>167</sup>

A similar point applies to Bigelow's paraphrase (53) of (17). According to Bigelow, sentences such as (17) that appear to describe cross-time causal relations between non-overlapping events are to be translated as sentences concerning causal relations between permanent propositions. However, transientists should be wary of resting the success of their view on the relatively non-standard thesis that the verb 'cause' expresses a relation that can hold between propositions, which are usually conceived as abstract objects. (That is not to deny that propositions can stand in causal relations: for example,

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<sup>167</sup> Of course, a transientist could hold that events are permanent and can therefore exist without occurring, and that there are direct causal relations between 'temporally non-overlapping' events in this sense: there are causally related events that never occur at the same instant. I discuss the option of endorsing permanentism about events in the next section.

the relation that holds between propositions that P and that Q when P *because* Q, in the causal sense of ‘because’, can be counted as a causal relation.) Granted, moving spotlights hold that non-occurring events such as former explosions sometimes enter into causal relations. However, unlike propositions, non-occurring events are not abstract objects (perhaps they are non-concrete, but being non-concrete does not entail being abstract). Moreover, moving spotlights at least preserve the thesis that all causal relations are events or states of affairs.

Finally, it is worth noting that most of the translations discussed in this section are merely gestures in a certain direction rather than concrete proposals. In particular, this applies to the most popular and widely applicable version of the overlapper strategy, according to which sentences such as (15), (16), and (17) are actually complicated causal statements. For that reason, it is not entirely clear how the overlapper strategy will work in every case, and therefore it is hard to make a proper assessment of the strategy. Until the overlapper strategy has been developed in much greater detail, it is arguable that it should not be considered a solution to the problem of apparently transientist-unfriendly cross-time sentences, but merely a promissory note for a future solution.

### 5.2.6 *More things*

Sentences such as (15) seem to require for their truth the existence of things which, according to transientism, do not exist. Therefore one obvious way for transientists to account for the truth of such sentences is to modify standard transientism by positing some extra things. For example, consider (17) again:

(17) ‘The explosion was the cause of the building’s collapse’

We saw above that moving spotlights can easily account for the truth of (17), because given permanentism the event of the explosion still exists while the building is collapsing

(albeit as a non-occurring former explosion). Transientists could adopt this account without abandoning transientism by accepting a restricted version of permanentism according to which always, every event is always something. In that case, given that the day-old explosion is no longer *occurring*, transientists can hold that at the instant of the collapse the explosion still exists (albeit as a non-occurring former explosion). For example, Zimmerman (2011, 172-6) argues that there are good reasons- reasons independent of the problem of accounting for the truth of everyday cross-time sentences- for transientists to identify at least some events with *states of affairs*.<sup>168</sup> But what exactly is a ‘state of affairs’? Whereas on the ordinary ‘thick’ conception of events, events are temporary and exist iff they are occurring, ‘thin’ states of affairs are permanent and exist even when they are not occurring.<sup>169,170</sup> Zimmerman argues that consideration of the structure of how we ordinarily think and speak provides strong reasons to hold that some events are of the latter kind. For example, there are everyday sentences that are naturally interpreted as involving direct quantification over non-occurring events, such as

(54) ‘My playing a game of horseshoes with Bob Dylan is one of the things I hope will happen’

(55) ‘John’s next party is taking a great deal of organisation’

(56) ‘Your visit next week is causing great excitement here’

The above sentences appear to involve direct quantification over non-occurring events, and therefore accounting for the truth of such sentences seems to require positing permanent

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<sup>168</sup> What makes something an event? Something is an *event* iff it plays the event role; in particular, if it occurs and is among the primary causal relata.

<sup>169</sup> States of affairs are also supposed to be *repeatable*, in contrast to ordinary ‘thick’ events. We can say that an event is repeatable iff it can begin to occur at more than one instant.

<sup>170</sup> A state of affairs occurs iff it *obtains*, where a state of affair’s obtaining is supposed to be comparable to a proposition’s being true; see Chisholm (1976, 115). Indeed, according to Chisholm, propositions comprise a subcategory of states of affairs: they are states of affairs that are such that necessarily, if they obtain then they always obtain, and necessarily, if they don’t obtain then they never obtain.

events that can exist without occurring.

A transientist who identified events with permanent states of affairs could provide a relatively simple account of the truth of sentences such as (54)-(56). On this view, sentence (17)

(17) ‘The explosion was a cause of the building’s collapse’

is true because a state of affairs that no longer obtains- the explosion- was causally related to a state of affairs that currently obtains- the building’s collapse. Moreover, such a transientist could argue that the acceptance of permanentism for events but not individuals is not an ad hoc response to the problem of accounting for cross-time sentences, but rather a principled response to the compelling semantic evidence for widespread quantification over events in ordinary language adduced by theorists such as Davidson (1967) and Higginbotham (2009).

Finally, as Zimmerman (2011, 174-5) also points out, there are other ‘more or less abstract entities’ to which transientists can appeal in order to account for the truth of certain apparently transientist-unfriendly sentences. For example, consider Lewis’s (2004) example described above:

(6) ‘There have been two kings named ‘Charles’’

Szabó (2006) argues that transientists can account for the truth of (6) (as well similar sentences such as ‘Helen of Troy had three husbands’) by positing *past-directed resultant states*: states of the world having been a certain way, such as the world’s having been such that there is a king named ‘Charles’, or having been such that there is a husband of Helen. In contrast to Zimmerman’s states of affairs, resultant states are not permanent- they begin to exist, although they never cease to exist- and they obtain whenever they exist. By positing resultant states, the transientist can paraphrase (6) as follows:

(58) ‘There are two distinct states of the world’s having been such that there is a king named ‘Charles’

There are problems with the strategy of positing extra things to account for the truth of everyday cross-time sentences. First, neither permanent states of affairs nor resultant states seem to provide transientists with an account of the truth of sentences such as (15) and (16):

(15) ‘Some American admires an ancient Greek philosopher’

(16) ‘Someone was Liam’s great-grandfather’

Perhaps facts concerning admiration and descent supervene on causal facts, so that sentences such as (15) and (16) can be paraphrased as transientist-friendly sentences concerning causal relations between events. However, as mentioned above, the project of showing that apparently transientist-unfriendly cross-time sentences can be successfully recast as transientist-friendly causal sentences has barely begun.

Second, there are reasons for transientists to reject permanentism about events. For one thing, it is hard to see how transientists can provide a principled reason for accepting permanentism about events but not individuals. Transientists could argue that their reason for accepting permanentism about events is the compelling semantic evidence in favour of quantification over non-occurring events (for example, in sentences such as (54), (55), and (56)). The problem with this argument is that it is analogous to the argument for unrestricted permanentism. The argument is that the simplest way to account for ordinary thought and speech is to interpret ordinary thought and speech as involving quantification over non-occurring past and future events. The argument of this chapter and the next is that the simplest way to account for ordinary thought and speech is to accept unrestricted permanentism. Transientists who accept permanentism about events on the basis of the

above semantic argument ought therefore to accept unrestricted permanentism on the basis of the arguments of this chapter.

It is also hard to see how a transientist who accepted permanentism about events could avoid accepting permanentism about individuals.<sup>171</sup> For example, consider some event of Napoleon's eating a sausage. Given permanentism about events, that event exists, even if it no longer obtains. But how could that event exist without Napoleon existing? What makes the event one in which Napoleon is eating a sausage and not in which e.g. *I* am eating a sausage? The natural answer is that Napoleon (but not me) is the *agent* of the event. However, if Napoleon is the agent of the event- if the event bears the having as an agent relation to Napoleon- then given the existence principle, Napoleon exists. We have already seen that transientists should be very reluctant to reject the existence principle; therefore, in the absence of some other explanation of how the event could be one in which Napoleon but not me is eating a sausage, it looks as if transientists who accept that the event of Napoleon's eating a sausage exists should also accept that Napoleon exists.

A natural transientist response to this argument is that the relevant event not only no longer obtains, but is also no longer a sausage-eating by Napoleon, and therefore no longer such that Napoleon is its agent. In other words, transientists can reply that the event is a *former* sausage-eating by Napoleon, and is therefore formerly such that Napoleon is its agent.<sup>172</sup> In that case, the existence of the event does not entail the existence of Napoleon, even given the existence and relation abstraction principles. The problem with this response is that the following two theses seem very plausible: first, the agents of events are *constituents* of those events. This thesis is particularly plausible when events are identified with abstract states of affairs (see e.g. Chisholm 1976), which are typically conceived of as

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<sup>171</sup> This argument foreshadows the main argument of Chapter Six below.

<sup>172</sup> This view of non-present events is analogous to Plantinga's (1983) theory of the identity properties ('thisnesses') of non-actual (and therefore, according to Plantinga, non-existent) individuals, according to which such properties could be but actually aren't the properties of being identical to the relevant individuals. I discuss Plantinga's views in more detail in Chapter Six below.

structured complexes.<sup>173</sup> Second, if something is at some time a constituent of something else, then whenever the latter exists, the former does:

CONSTITUENCY ESSENTIALISM: Always, for all  $x$ , for all  $y$  ( $x$  is a constituent of  $y \supset$  always( $y$  exists  $\supset x$  exists))<sup>174</sup>

Constituency essentialism is a highly plausible thesis: if a structured complex ever has a certain constituent, then surely the complex never exists without the constituent.

Being a constituent of a structured complex is not like being part of an ordinary persisting object, because persisting objects gain and lose parts. For example, the cells that make up my body will not always be part of my body; my body will continue to exist even after all the cells that now make it up have been destroyed. In contrast, consider the relationship between Brian McClair and the 1993/94 FA Cup-winning Manchester United football team. This team can be thought of as a structured complex with individual football players such as Brian McClair as constituents. We can see that constituency is essential if we consider a scenario in which someone tells us that the 1993/94 FA Cup-winning Manchester United football team is in the next room: if we subsequently entered the room and found that Brian McClair was not there, then we would take them to have told us something false. Whenever that team exists, Brian McClair exists; the team cannot exist at an instant at which Brian McClair does not.<sup>175</sup>

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<sup>173</sup> A transientist could argue that events are states of affairs, but there are no states of affairs with individuals as agents. However, in that case it is hard to see how states of affairs could play the role that they are supposed to play for transientists. There are true everyday cross-time causal sentences involving the names of individuals, such as 'Dan's eating the meal yesterday caused his current stomach ache.' How would a transientist according to whom there are no states of affairs with individuals as agents account for the truth of that sentence? The challenge is especially difficult given the well-known problems with the descriptivist account of the meanings of proper names (Kripke 1980).

<sup>174</sup> This is the generalised temporal version of 'existentialism', against which Plantinga (1982) argues. As Plantinga points out, existentialism is accepted by transientists such as Prior (1977) and Adams (1981).

<sup>175</sup> Of course, in general individuals are not essential to institutions or groups: Manchester United did not cease to exist when Brian McClair retired. Popular music group the Sugababes continue to exist despite having undergone a complete change of membership. The example here involves a specific team: the 1993/94 FA Cup-winning Manchester United team. It seems plausible that individuals are essential to particular teams.

As Fine (2005, 187-8) points out, it is natural to think of the constituency relation as analogous to the set-membership relation. Just as sets are structured abstract objects with (concrete or abstract) members, properties, propositions, and states of affairs are structured abstract objects with (concrete or abstract) constituents; and just as the set-membership relation is essential, the constituency relation is essential. A proposition or state of affairs could no more lose a constituent and remain the same proposition than a set could lose a member and remain the same set. To reject constituency essentialism would be to sever the obvious connection between the constituency relation and the set-membership relation. Indeed, in the absence of constituency essentialism, it is not clear what sort of relation constituency really is.

Given the above two theses, it follows that if some event of Napoleon's eating a sausage exists, given that Napoleon was the agent of that event, Napoleon exists. More generally, given the thesis that an event that has someone as an agent at some instant can only exist at some other instant if that person does, permanentism about individuals is hard to resist given permanentism about events. Therefore there are good reasons for transientists to reject permanentism about events.

### 5.3 Cross-time sentences in physics

Sider (2001, 28-35) describes the problem for transientists arising from true cross-time sentences in spacetime physics:

The presentist [i.e. transientist] must describe the world using sentences of the form:

It WAS/WILL BE the case  $n$  units of time ago/hence that:  $\phi$ .

The totality of such sentences specifies a series of ‘snapshots’ of the world at successive moments of time, complete with the order and temporal distance relations between the snapshots . . . But the sentences do not specify how the snapshots line up with each other spatially, since such facts are not facts about what things are like at any one time (Sider 2001, 32).

In a little more detail: transientists typically hold that spacetime points are instantaneous (something *x* is *instantaneous* iff always, if *x* exists then *x* never did and never will exist). It follows that according to transientists, there are no spacetime points at which events have occurred or will occur; the only points that exist are those at which events are occurring. However, certain physical facts concerning the states of motion of particles - for example, whether they are accelerating and whether they are moving on a continuous or discontinuous path - supervene on facts about the relations between points at which events are occurring and points at which events have occurred and will occur.<sup>176</sup> Given the existence principle, it is hard to see how transientists can account for the truth of sentences expressing facts of the former kind.

For example, consider the sentence:

(59) ‘Particle *a* is moving along a continuous unaccelerated path’

For a particle *a* to be moving along a continuous unaccelerated path is just for *a* to occupy a set of points, some members of which are points at which events have occurred, and over which a certain geometric relation holds (the relation of *linear between-ness*). Therefore if (59) is true, there is a relation between points at which events are occurring and points at which events have occurred. Given the existence and relations abstraction principles, it follows that if (59) is true, there are spacetime points at which events have occurred. But

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<sup>176</sup> See Sider (2001, 30-2).

as we saw above, according to transientists there are no points at which events have occurred. Therefore transientists cannot straightforwardly account for the truth of (59). In particular, as Sider notes in the above quotation, transientists cannot account for the truth of sentences such as (59) by paraphrasing them as complex transientist-friendly sentences involving nested temporal operators:

(60) ‘Particle  $a$  occupies point  $p$  and  $\mathbf{P}(a$  occupies point  $p^*$  and  $\mathbf{P}(a$  occupies point  $p^{**}$  and  $\mathbf{P}(a$  occupies point . . .)’

Because  $a$ 's precise state of motion depends on relations between the points that  $a$  successively occupies, a sentence of the form (60) is consistent with  $a$ 's being in a number of different states of motion, such as moving along a continuous accelerated path, or moving along a discontinuous path. Therefore (60) could be true even when (59) is false - that is, even when  $a$  is not moving along a continuous unaccelerated path. Indeed, even a transientist-friendly sentence that specified *the total state of the entire world at successive moments*- a sentence of the form

(61) ‘The world is in total state  $s$  and  $\mathbf{P}(\text{the world is in total state } s')$  and  $\mathbf{P}(\text{the world is in total state } s'')$  and  $\mathbf{P}(\text{ the world is in total state . . . }'$

- would not serve as an adequate paraphrase of (59).<sup>177</sup>

It goes without saying that permanentists have no trouble accounting for the truth of sentences such as (59). In particular, both B-theorists and classic MSTers hold that spacetime points and the relations between them are permanent. Therefore both theories

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<sup>177</sup> It is important to note that the problem for transientists generated by sentences such (59) concerning the motions of particles depends crucially on the rejection of Newtonian ‘spacetime’ in favour of Galilean or Minkowskian spacetime. The difference is that on the Newtonian view, there are permanent spatial points: permanent places where events occur as time passes. If there were such permanent places, then of course transientists could provide transientist-friendly translations of sentences such as (59) along the following lines: ‘There is a spatial point  $p$  such that particle  $a$  is located at  $p$  and  $\mathbf{P}(a$  is located at  $p$  and  $\mathbf{P}(a$  is located at  $p$  and . . .’.

can easily account for the truth of sentences describing the states of motion of particles which depend for their truth on the holding of relations between points at which events have occurred.

How can transientists account for the truth of sentences such as (59)? Zimmerman (2011) argues that transientists should respond by rejecting ordinary ‘one-slice’ transientism in favour of pastism about spacetime points, so that every point at which an event has ever occurred exists now. Zimmerman distinguishes two ways in which transientists could endorse pastism about points. First, they could combine pastism with the thesis that all formerly occupied points stand in the geometric relations (such as linear in between-ness) in which physicists take them to stand. Zimmerman calls this the *empty box* view of formerly occupied points. Second, they could combine pastism with the thesis that formerly occupied points no longer stand in any of the physical relations in which physicists take them to stand, even the geometric ones (although of course they are such that they *did* stand in such relations). Zimmerman calls this the *ghostly box* view of formerly occupied points.

Which of these options should transientists prefer? There is a good reason for transientists who are pastists about points to reject the ghostly box view. To see this, consider some formerly occupied point  $p$ . According to the ghostly box view,  $p$  has the property of, for example, being such that it did but no longer does bear some physically significant three-place relation  $R$  to two other formerly occupied points  $q$  and  $r$ . Now suppose that  $q$  was occupied the instant before  $p$  and  $r$  was occupied the instant after  $p$ . The question is: when did  $p$  bear  $R$  to  $q$  and  $r$ ? Not when  $p$  or  $r$  were occupied, because at those instants  $q$  was a formerly occupied point, and therefore (according to the ghostly box view) didn’t stand in any significant physical relations. Not when  $q$  was occupied, because at that instant neither  $p$  nor  $r$  existed (given pastism about points). And not at any time

when all three points were formerly occupied, because according to the ghostly box view formerly occupied points no longer stand in significant physical relations. Thus there was *never* a time when  $p$  bore  $R$  to  $q$  and  $r$ . This example shows that transientists who are pastists about points should be empty boxers: that is, they should hold that formerly occupied points currently (and always will) stand in all of the physical (including geometric) relations in which physicists take them to stand.

Given pastism about points, transientists can account for the truth of sentences such as (59) concerning the states of motion of particles. For example, they can say that (59) is true because (i) particle  $a$  occupies a certain spacetime point  $p$ , (ii)  $p$  bears certain permanent physical relations to certain formerly occupied points, and (iii) it was the case that  $a$  occupies those formerly occupied points. But isn't it ad hoc for transientists to accept pastism about points but not pastism about things like Napoleon? Zimmerman (2011, 200) argues that it is not:

I begin my philosophical reflection convinced that there exist only a relatively few events and objects. I exist, and the sounds I am hearing; but I find it hard to believe that there are any such things as the Peloponnesian War and Alexander the Great's horse . . . On the other hand, I do not - or at least *should* not - begin my philosophical reflection with strong convictions about the existence of quarks, or dark matter. The spacetime manifolds of SR and GR resemble quarks and dark matter more than they resemble horses and wars . . . They are theoretically posited entities that earn their keep by the crucial roles they play in successful scientific theories.

Zimmerman's argument is that the transientist view of temporal ontology should agree with what ought to be the pre-philosophical view of temporal ontology, and that

acceptance of pastism about points does not disagree with what ought to be the pre-philosophical view of temporal ontology, because the pre-philosophical view of temporal ontology ought not to entail the non-existence of formerly occupied points. All that the pre-philosophical view of temporal ontology ought to rule out is the existence of things like the Peloponnesian War; and according to transientism, the Peloponnesian War does not exist.

Even if Zimmerman is right that acceptance of pastism about points is consistent with pre-theoretic temporal ontology, it remains the case that pastism about points- and therefore the thesis that the spacetime region in which e.g. the Peloponnesian War took place exists- threatens to undermine the appeal of the transientist Weltanschauung. As we saw in Chapter Three, ordinary transientists- those who describe themselves as ‘presentists’- have failed to find a non-trivial property instantiated by all and only those things whose existence they accept. Therefore there is no principled way of deciding whether the proposition that a certain object *o* or event *e* exists is consistent with ordinary transientism. All that ordinary transientists can do is try to stake out a position in temporal ontology that is philosophically appealing. One way to do this is to try to describe an ontology that captures the general idea that the past and future, unlike the present, are not real. However, the thesis that the Peloponnesian War does not exist but the spacetime region in which it took place does, does not strike me as a view that does capture this idea; and this is so *even if* acceptance of pastism about points is consistent with pre-theoretic temporal ontology.

## 5.4 Pastism

I have argued that transientists cannot satisfactorily account for the truth of apparently transientist-unfriendly sentences. Given the ubiquity of such sentences in ordinary thought

and speech, and the fact that transientism provides no obvious compensatory theoretical benefits, we should reject transientism. An analogous argument holds for pastism: there are many apparently pastist-unfriendly sentences for whose truth pastists cannot satisfactorily account. A pastist-unfriendly sentence is just a sentence whose truth materially implies the falsehood of pastism:

PASTIST-UNFRIENDLY SENTENCE: Sentence  $s$  is *pastist unfriendly*  $\equiv_{\text{def}}$   $s$  is true  $\supset$  pastism is false

As with ‘transientism’ in the definition of ‘transientist-unfriendly sentence’, ‘pastism’ as it appears in the above definition refers to the thesis that (for example) people don’t exist before they are born and events don’t exist before they have happened. Like most actual transientists, actual pastists (who typically describe themselves as ‘growing blockers’) hold that many things - in particular, medium-sized material objects such as plants, animals, people (or at least, people’s bodies), human artefacts, and geological formations - begin to exist over time (they disagree with transientists about whether these things *cease* to exist). Faced with apparently pastist-unfriendly sentences, such theorists have a choice: they can allow that the sentences are pastist-unfriendly and false, or they can try to show that they are not pastist-unfriendly after all. The problem with the first option is that apparently pastist-unfriendly sentences are relatively ubiquitous in ordinary thought and speech, and therefore taking this option would mean holding that many of our ordinary utterances are false. Although this theoretical cost can in principle be outweighed by compensatory theoretical benefits, in what follows I assume that pastism (like transientism) does not have such compensatory theoretical benefits, and therefore that pastists should avoid this option. The problem with the second option is that there are many apparently pastist-unfriendly sentences for which it is very hard for pastists to provide plausible truth-conditions. Given

that permanentists can provide straightforward truth-conditions for the relevant sentences, it follows that we should reject pastism in favour of permanentism.

In particular, there are everyday and scientific cross-time sentences which are apparently pastist-unfriendly and for which pastists (unlike permanentists) cannot provide a satisfactory account; for example:

(62) ‘John was looking forward to his wedding’

(63) ‘Particle *a* will move along a continuous unaccelerated path’

Take (62), and suppose that John’s wedding is yet to occur. One natural interpretation of (62) is:

(64) ‘ $\mathbf{P}(\exists e(e \text{ is the event of John's wedding \& John is looking forward to } e))$ ’

Pastists cannot accept (64) because it straightforwardly implies that John’s wedding exists at a past instant. Another natural pastist interpretation of (62) is

(65) ‘ $\mathbf{F}(\exists e(e \text{ is the event of John's wedding \& } \mathbf{P}(\text{John is looking forward to } e)))$ ’

The obvious problem with (65) is that given the existence and relation abstraction principles if (65) is true then whenever John looks forward to his wedding, his wedding exists. But (62) could be true even if John stops looking forward to his wedding a week before it occurs. Moreover, there are problems with (65) which do not turn on the existence and relation abstraction principles. For one thing, unlike (62), (65) requires John’s wedding to be in the future. For another, unlike (62), (65) is consistent with John’s looking forward being in the future (so long as it is before the wedding). Finally, it is natural to interpret (62) as being true even in a situation in which John’s wedding is cancelled. However neither (65), nor indeed (64), would be true in that situation. Given

these problems, (65) is a poor interpretation of (62).<sup>178</sup>

There are various ways in which pastists could try to account for the truth of sentences such as (62), such as holding that (62) is actually false but quasi-true, rejecting the existence or relation abstraction principles, or positing events that have yet to occur. I will not describe these strategies in detail here: they are just the strategies described above to which transientists can appeal to account for the truth of apparently transientist-unfriendly cross-time sentences. Moreover, as in the case of transientism, none of these strategies is as theoretically attractive as simply rejecting pastism in favour of permanentism. Permanentists have no trouble accounting for the truth of sentences such as (62), because according to permanentists the yet-to-occur event of John's wedding has always existed.

There are also pastist-unfriendly cross-time sentences in physics, such as:

(63) 'Particle  $a$  will move along a continuous unaccelerated path'

For it to be the case that a particle  $p$  will move along a continuous unaccelerated path is just for it to be the case that  $p$  occupies a set of points at which events will occur, and over which a certain geometric relation holds (the relation of *linear betweenness*). Thus (63) requires for its truth the holding of a relation between points at which events are occurring and points at which events will occur. Given the existence principle, (63) therefore requires for its truth the existence of spacetime points at which events will occur. But according to ordinary 'growing block' pastists, there are no points at which events will occur. Therefore ordinary pastists cannot account for the truth of (63).

Pastists could account for the truth of (63) by endorsing permanentism about points. However, as in the case of transientism, this strategy is not in the spirit of pastism

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<sup>178</sup> Perhaps one could fiddle with (65) so as to avoid these problems, but such fiddling would likely increase the ad hocishness of (65) and thereby decrease the possibility of generalising the relevant strategy.

as it is usually conceived. In the absence of some principled way of deciding whether something exists according to pastism, the appeal of the theory relies on describing an ontology that satisfies the general idea that the future, unlike the past and present, is yet to be. The thesis that the spacetime region where the birth of my first great-great grandchild will take place exists now does not satisfy this general idea, and therefore undermines the appeal of the theory.<sup>179</sup> If pastists can accept permanentism about points and regions, they should not find it hard to accept permanentism about events and individuals as well; that is, they should not find it hard to accept permanentism simpliciter. In contrast to pastists, permanentists have no trouble accounting for the truth of sentences such as (63): permanentism implies that there are points at which events will occur.

Some might worry that the case against pastism from consideration of sentences such as (62) and (63) is not as strong as the analogous case against transientism from consideration of sentences such as (15), (16), and (17). For example, it might be thought that the quasi-truth strategy (or something like it) has more traction in the case of sentences such as (62), and that permanentism about points is less at odds with pastism than pastism about points is at odds with transientism. In response to such worries, it is worth drawing attention to two further reasons for preferring permanentism to pastism. First, as well as everyday cross-time sentences such as (62), there are plenty of (apparently) true everyday sentences which appear to involve direct quantification over future events, such as (62) above and the following sentences:

(66) ‘Everyone is preparing for tomorrow’s storm’

(67) ‘John’s holiday is costing a fortune’

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<sup>179</sup> The point here is not that pastism is undermined by the fact that it conflicts with ‘common sense’. Rather, the point is that the *philosophical* appeal of pastism is undermined if the theory does not succeed in capturing the idea that the future is less real than the past and present.

Sentences such as (62), (66) and (67) are ubiquitous in ordinary thought and speech, and appear to involve direct quantification over future events. Even if there are ways in which pastists can try to account for the truth of such sentences, it remains the case that permanentists can provide a much simpler account of their truth.

Second, as we saw in Chapter Two, the growing block theory is a more complex theory than the moving spotlight theory.<sup>180</sup> For one thing, the moving spotlight theory is a simpler and more elegant metaphysical theory than the growing block theory, as growing blockers add the complication of ontological change to the moving spotlihter's attractive picture of qualitative change within a fixed and eternal structure of things. For another, the basic picture of the world associated with modern spacetime physics is essentially a permanentist picture, and therefore growing blockers cannot accept it in full. Given the beauty and theoretical power of the physicists' picture, this is a serious drawback of the growing block theory. These considerations alone provide good reason to prefer the moving spotlight theory to the growing block theory.

## 5.5 Conclusion

In this chapter I have argued that non-permanentists (transientists and pastists) cannot provide a plausible account of the truth of many apparently non-permanentist-unfriendly cross-time sentences. This is a serious theoretical cost of non-permanentism. Given that permanentists can easily account for the truth of such sentences, we should (all things considered) prefer permanentism to non-permanentism.

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<sup>180</sup> In contrast to the rest of this section, I assume the truth of the A-theory here. But that is acceptable, as I have already argued that the A-theory is true in Chapter Four.

# Chapter Six

## Singular sentences

### 6.0 Introduction

In Chapter Five I showed that transientists and pastists, unlike permanentists, have trouble accounting for the truth of everyday and scientific cross-time sentences. I concluded that this provides a good reason to prefer permanentism to either transientism or pastism. In this chapter, I describe another type of apparently transientist-unfriendly sentence: namely, sentences that appear to be about particular non-present things. Let us call a sentence that appears to be about a particular thing a *singular sentence*. The sentence

(1) ‘Catherine Violet is chubby’

is a singular sentence: it appears to be about a particular individual, namely, Catherine Violet. Similarly, the sentences

(2) ‘London is bigger than Paris’

and

(3) ‘Redness is a property that some apples have’

appear to be about the particular things London, Paris, and the property of redness. This chapter is primarily concerned with *apparently transientist-unfriendly singular sentences*: singular sentences whose truth seems to imply the falsehood of transientism. I argue that no plausible transientist strategy for dealing with apparently transientist-unfriendly

singular sentences is as theoretically attractive as simply rejecting transientism in favour of permanentism. As in Chapter Five, the analogous case against pastism is described in the final section of the chapter (§6.3).

## 6.1 Everyday singular sentences

According to the widely-accepted *direct reference* theory associated with Russell (1905) and Kripke (1980) and defended by Kaplan (1989), terms such as proper names (e.g. ‘Liam Deasy’), indexicals (e.g. ‘I’ and ‘here’), and demonstratives (e.g. ‘that’ and ‘this’)-so-called ‘singular terms’- are such that their semantic contribution to the propositions expressed by the sentences of which they are a part is just their referents. Thus, for example, according to the direct reference theory the semantic contribution of the term ‘Liam Deasy’ to the proposition expressed by the sentence ‘Liam Deasy keeps a diary’ is the very man Liam Deasy. As Kaplan (1978) puts it, according to the direct reference theory Liam is ‘right there, trapped in a proposition.’ Following convention, let us call the propositions expressed by sentences involving directly referential terms *singular propositions*. Given the direct reference theory, singular propositions are structured complexes which have particular things as constituents- namely, the referents of the singular terms that are constituents of the sentences that express them.

It is easy to see how the direct reference theory comes into conflict with transientism. We saw in Chapter Five that the following is a very plausible thesis:

CONSTITUENCY ESSENTIALISM: Always, for all  $x$ , for all  $y$  ( $x$  is a constituent of  $y \supset$  always( $y$  exists  $\supset x$  exists))

In other words, if something is ever a constituent of something else, then whenever the latter exists the former does. Now consider the following sentences:<sup>181</sup>

(4) ‘Aristotle was taught by Plato’

(5) ‘The Peloponnesian War had three phases’

(6) ‘Reagan was a hero to many conservatives’

If singular terms are directly referential, then the propositions expressed by sentences (4), (5), and (6) are structured entities which have the referents of the proper names in (4), (5) and (6) as constituents. Given constituency essentialism, it follows that it is always the case that if the propositions expressed by (4), (5), and (6) exist, their constituents exist. Therefore (4), (5), and (6) are transientist-unfriendly: if they express true propositions, there are propositions with e.g. Plato and Aristotle as constituents, and therefore Plato and Aristotle exist; however, if Plato and Aristotle exist, transientism is false. Thus the truth of (4), (5), and (6) implies the falsehood of transientism.

It is tempting to put the above in the form of an anti-transientist argument:

(7) Aristotle was taught by Plato  $\supset$  the proposition that Aristotle was taught by Plato is true

(8) The proposition that Aristotle was taught by Plato is true  $\supset$  the proposition that Aristotle was taught by Plato exists

(9) The proposition that Aristotle was taught by Plato exists  $\supset$  Aristotle and Plato exist

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<sup>181</sup> For ease of exposition, in this section I focus on singular sentences that seem to be about specific *past* things. I deal with singular sentences that seem to be about future things in §6.3.

(10) Aristotle and Plato exist  $\supset$  transientism is false

(11) Aristotle was taught by Plato

(12) Transientism is false

Of course, analogous arguments can also be run using sentences (5) and (6). This argument is reminiscent of three well-known modal arguments: Plantinga's (1983) and Bealer's (1998) arguments for the necessary existence of propositions, and Williamson's (2002) argument for the necessary existence of absolutely everything.

The thesis of constituency essentialism was invoked as an explanation for the motivation for premise (9) above. However, there are other ways of motivating premise (9). For example, suppose as above we accept that singular terms are directly referential, so that the propositions expressed by sentences containing proper names have the referents of those names as constituents. In that case, Plato and Aristotle are constituents of the true proposition expressed by sentence (4). Given the relation abstraction principle, it follows that Plato and Aristotle both bear the constituent relation to the proposition expressed by (4), from which it follows given the existence principle that Plato and Aristotle exist. In this version of the anti-transientist argument, the route to premise (9) runs via the existence and relation abstraction principles rather than constituency essentialism. This distinguishes the argument from the arguments of Plantinga (1983), Bealer (1998) and Williamson (2002) mentioned above.

In fact, as Williamson (2002) points out, one can also motivate premises such as (9) in the absence of the direct reference theory. For example, suppose that the semantic contribution of proper names to the sentences of which they are a part is not their referents, but rather *senses* of their referents- i.e. ways of thinking about their referents.<sup>182</sup> In that

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<sup>182</sup> See Frege (1892).

case, the proposition expressed by sentence (4) does not have Plato and Aristotle as constituents. However, it does have constituents which *refer* to Plato and Aristotle, namely, the senses of Plato and Aristotle. Given the relation abstraction principle, it follows that the senses of Plato and Aristotle bear the reference relation to Plato and Aristotle, from which it follows given the existence principle that Plato and Aristotle exist. In this version of the anti-transientist argument, the route to premise (9) runs via the Fregean theory of names rather than the direct reference theory.

From now on I assume that the direct reference theory is true, and therefore that the route to premise (9) should run through this theory. Some might worry that relying on the direct reference theory to motivate premise (9) begs the question against transientism.<sup>183</sup> The possible Fregean motivation for premise (9) described above should help to assuage this worry. Moreover, we have already argued in Chapter Four that the charge of question begging should not be taken too seriously. And in any case, the argument of this section is not simply that sentences such as (4), (5) and (6) express true singular propositions and therefore transientism is false. Rather, the argument is that sentences such as (4), (5), and (6) appear to be transientist-unfriendly, and while there are various ways in which transientists can try to account for the truth of such sentences (such as by rejecting the direct reference theory), no such account is as simple as accepting the direct reference theory and rejecting transientism in favour of permanentism.

The question of the scope of the temporal operators is not relevant in the case of singular sentences as it is in the case of transientist-unfriendly sentences such as

(13) ‘Some dinosaurs were carnivores’

With (13), transientists can avoid commitment to things such as former dinosaurs by interpreting (13) so that the past operator has wide scope over the existential quantifier. In

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<sup>183</sup> See, for example, Szabó (2006, 422, n.9).

that case, (13) expresses the transientist-friendly proposition that it was the case that there are carnivorous dinosaurs. However, given the direct reference theory, it makes no difference whether sentence (4) (for example) is interpreted as having the form ‘it was the case that Plato taught Aristotle’, or ‘Aristotle is such that he was taught by Plato’, or ‘Aristotle and Plato are such that the latter taught the former’. Whatever the scope of the past operator, it follows given the direct reference theory that the truth of (4) entails that Plato and Aristotle both exist.

The problem of accounting for the truth of apparently transientist-unfriendly singular sentences is independent of the problem of cross-time sentences.<sup>184</sup> The problem of cross-time sentences arises from the logical form of the relevant sentences and the relation abstraction and existence principles. The problem of singular sentences, on the other hand, arises from the standard semantic theory of singular terms and either constituency essentialism or the existence and relation abstraction principles. As we shall see, there are certain transientist strategies that can be applied to both problems: for example, the quasi-truth strategy (combined with the paraphrase strategy in the case of singular sentences). However, there are also strategies that only apply to the problem of cross-time sentences, such as the span operators strategy (for the reason described in the last paragraph), and strategies that only apply to the problem of singular sentences, such as the Plantingan strategy (described below).

The distinctness of the cross-time and singular sentence problems has one important consequence: solving one problem does not guarantee a solution to the other. For example, some transientists (such as Szabó 2006) hold out hope that all cross-time sentences are either such that (i) they can be paraphrased as transientist-friendly sentences concerning simultaneous causal relations between events (in the case of sentences

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<sup>184</sup> As Crisp (2005, 6) points out.

ascribing extensional cross-time relations) or (ii) they do not really concern relations at all (in the case of sentences ascribing intensional cross-time relations). Even if that were true, the problem of accounting for apparently transientist-unfriendly singular sentences would remain: no one seriously suggests that all singular sentences are disguised causal sentences. Therefore transientists who have some favourite solution to the problem of cross-time sentences are not out of the woods on that basis.

It should be clear that the problem of accounting for the truth of sentences such as (4), (5), and (6) does not arise for permanentists. According to permanentists, Aristotle, Plato, the Peloponnesian War, and Reagan always exist. Therefore permanentists can accept that there are true singular propositions concerning those individuals, such as the propositions expressed by (4), (5), and (6). More generally, given permanentism one can accept the orthodox direct reference theory of singular terms, and on that basis provide a very straightforward account of the truth of singular sentences. That is a great theoretical advantage of permanentism over transientism.

## 6.2 Transientist solutions

Given that transientists deny that individuals such as Plato and Aristotle exist, they must find some other way to account for the apparent truth of sentences such as (4), (5), and (6). In this section I describe and assess the most plausible transientist strategies for dealing with such sentences.

### 6.2.1 *Quasi-truth*

One option for transientists is to appeal to the quasi-truth strategy described in Chapter Five, according to which certain sentences express false propositions but also instantiate

some ‘positive’ property in the vicinity of truth.<sup>185</sup> Markosian (2004) recommends that transientists adopt this strategy for dealing with transientist-unfriendly singular sentences.

In the case of sentences such as (4), (5), and (6), it is not enough for transientists to simply argue that the sentences are false but quasi-true. The sentence ‘Reagan was a hero to many conservatives’ (for example) is false only if the proposition it expresses- namely, the singular proposition that Reagan was a hero to many conservatives- is false. Given the existence and property abstraction principles, if the proposition that Reagan was a hero to many conservatives is false then it exists. Given the direct reference theory and constituency essentialism, if the proposition that Reagan was a hero to many conservatives exists then Reagan exists. In short, given the direct reference theory, the falsehood of (6) implies that Reagan exists, contrary to transientism.

What this shows is that transientists who opt for the quasi-truth strategy in the case of singular sentences must combine the strategy with a rejection of the direct reference theory. For example, they could argue that logical analysis of sentences such as (4), (5), and (6) reveals that they contain only quantifiers, predicates, and logical connectives (and perhaps operators). In that case, sentence (6) (for example) might be paraphrased as follows:<sup>186</sup>

(14) ‘ $\exists x$  Referent of ‘Reagan’(x) & . . . & P(Hero to Many Conservatives(x))’<sup>187</sup>

(14) is false according to transientists, and moreover its falsehood does not entail that Reagan exists. Therefore transientists who opt for the quasi-truth strategy can argue that (14) represents the true logical form of sentence (6), and that although (6) is false (as

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<sup>185</sup> Sentences that do not express propositions at all cannot be quasi-true given the formal definition of quasi-truth described in Chapter Five, according to which a sentence *s* is quasi-true iff *s* expresses a proposition *p* such that for some true proposition *p*’, were permanentism true, *p*’ would be true and would entail *p*. A different version of the quasi-true strategy might say that some sentences do not express propositions and hence are not true, but still instantiate some other ‘positive’ property.

<sup>186</sup> Following Markosian (2004, 68).

<sup>187</sup> The ellipsis stands for further descriptive material.

nothing is the referent of ‘Reagan’ and . . .), there is a true proposition  $p$  (some complicated transientist-friendly proposition) such that, were permanentism true,  $p$  would be true and would entail the proposition expressed by (6).

Transientists could opt for the quasi-truth strategy in the face of transientist-unfriendly singular sentences, as long as they combined the strategy with some version of the paraphrase strategy. However, what went for the quasi-truth strategy in Chapter Five goes for the quasi-truth strategy in this chapter: the strategy is beset by puzzles and complications. (Moreover, whether or not sentences such as (4), (5), and (6) have the form they appear to have, it seems crazy to deny that they are *true*, even if they are also ‘quasi-true’!)

### 6.2.2 *Priorian paraphrases*

A much better option for transientists is to accept that sentences such as (4), (5), and (6) are true, but to argue that they have transientist-friendly paraphrases; in other words, to reject the quasi-truth but not the paraphrase strategy. Naturally enough, the core idea of the straightforward paraphrase strategy is to develop paraphrases for sentences such as (4), (5), and (6) which do not contain reference to, or quantification over, non-present things. For example, Prior (1968) writes concerning the apparently transientist-unfriendly singular sentence ‘Queen Anne has died’:

‘Can a statement really be *about* Queen Anne after she has ceased to be? An alternative solution is worth mentioning. We might paraphrase ‘Queen Anne has died’ as ‘Once there was a person named “Anne”, who reigned over England, etc., but there is not now any such person’. (Prior 1968, 17)

Prior goes on to emphasise that as long as the purely qualitative paraphrase for ‘Queen Anne has died’ has the temporal operator ‘**P**’ in wide scope over the existential quantifier,

the sentence ‘Queen Anne has died’ is transientist-friendly. Similarly, de Clercq (2006, 390) proposes that transientists paraphrase

(15) ‘Napoleon was defeated’

as something like

(16) ‘ $\mathbf{P}\exists x$  ( $x$  is named by the name-type *Napoleon* and . . . and  $x$  is defeated)’<sup>188</sup>

de Clercq endorses the same version of the paraphrase strategy as Prior: for any apparently transientist-unfriendly singular sentence  $s$  of the form ‘ $Fa$ ’, paraphrase  $s$  as either  $\mathbf{P}$ (There is an  $x$  such that  $x$  is named ‘ $a$ ’ and . . . and  $Fx$ ) or  $\mathbf{F}$ (There is an  $x$  such that  $x$  is named ‘ $a$ ’ and . . . and  $Fx$ ), depending on whether  $a$  is a past or future individual.<sup>189</sup> Let us call this the *Priorian paraphrase strategy*. According to the Priorian paraphrase strategy, sentence (4), for example, has something like the following transientist-friendly logical form:

(17) ‘ $\mathbf{P}\exists x \exists y$  (*Named ‘Aristotle’*( $x$ ) & . . . & *Named ‘Plato’*( $y$ ) & . . . & *Taught*( $y$ ,  $x$ ))’

The Priorian paraphrase strategy embodies a *descriptivist* semantic theory of proper names, according to which proper names (and other ‘singular terms’ such as indexicals and demonstratives) ‘abbreviate’ definite descriptions; that is, according to which the semantic contributions of proper names to the propositions of which they are a part are definite descriptions.<sup>190</sup> Transientists who embrace the Priorian paraphrase strategy have a choice

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<sup>188</sup> The ellipsis stands for further descriptive material.

<sup>189</sup> The incorporation of metasemantic elements into the relevant descriptions is not an essential part of the Priorian paraphrase strategy, but it may be more promising than other sorts of properties to which a defender of the strategy could appeal.

<sup>190</sup> As Kripke (1980, 32-3) points out, there is more than one way to be a descriptivist. In particular, one could distinguish between ‘full-blooded’ descriptivism according to which proper names have definite descriptions as meanings (the sort of descriptivism embodied by the Priorian paraphrase strategy) and ‘soft’ descriptivism according to which definite descriptions somehow fix the reference of proper names, even though they do not give the meanings of proper names. Presumably, full-blooded descriptivism entails soft

about whether to apply descriptivism to all proper names (*wide descriptivism*) or just to the names of non-present things (*narrow descriptivism*). According to narrow descriptivism, it was the case in 1994 that sentence (6) (for example) expresses a singular proposition concerning Reagan, but at some time after Reagan died it ceased to express that proposition and began to express a distinct, purely qualitative proposition along the lines of that expressed by (17).

Narrow descriptivism has some unappealing consequences. For example, suppose that in 2014 a journalist reports on a speech made by Gorbachev in 1984. According to narrow descriptivism, when the journalist reports the parts of Gorbachev's speech which mention Reagan, he reports Gorbachev as talking about the man named 'Reagan' who is President of the United States and . . . However, when Gorbachev spoke about Reagan in 1984, he expressed singular propositions concerning Reagan. Thus given narrow descriptivism, it looks as if the journalist cannot accurately report the content of Gorbachev's speech. More generally, given narrow descriptivism, one cannot make an accurate speech report after someone's death of a speech using that person's name.

Markosian (2004, 58) also objects to narrow descriptivism: he argues that it is strange to think that e.g. sentence (6) and the sentence 'There was a man named 'Reagan' who . . . and who was a hero to many conservatives' had different meanings in 1994 but have the same meaning in 2014, given that 'there were no changes in the interpretation of the relevant language between those two times'. A defender of narrow descriptivism could respond to Markosian by arguing that the change in the meaning of these sentences due to the death of Reagan *is* a change in the interpretation of the relevant language. And given content externalism, there is nothing strange about sentences changing their meaning over time even when there are no relevant changes in the relevant internal states of the speakers

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descriptivism, but obviously not vice versa. I do not discuss soft descriptivism here, as I do not think the view can contribute anything to the transientist's attempts to solve the problem of transientist-unfriendly singular sentences.

over that time.<sup>191</sup> However, Markosian could respond by arguing that even if content externalism is true, a change in the structure of the proposition expressed by a sentence- such as the change in the structure of the proposition expressed by sentence (6) between 1994 and 2014- can only occur when there is some kind of relevant change in the internal states of speakers. This thesis is supported by the idea that the structure of the proposition expressed by a sentence mirrors the logical form of the sentence, and the true logical form of a sentence captures something salient about the way that the meaning of the sentence is represented in the internal structure of speaker's minds. It follows from this view that a change in the logical form of a sentence- such as occurs in the change in meaning of (6) between 1994 and 2014- implies a corresponding change in the internal structure of speaker's minds. If this is correct (and the argument would need further development), then Markosian's objection can be recast as follows: it is difficult to see how sentence (6) could have changed its meaning in the way that narrow descriptivists claim it did, given that there were no relevant changes in the relevant internal states of the speakers over that time.

Even given wide descriptivism, the Priorian paraphrase strategy faces some serious objections. In particular, the thesis that proper names are synonymous with definite descriptions has been powerfully criticised in the latter half of the 20<sup>th</sup> century, most famously by Kripke (1980), Donnellan (1972), and Kaplan (1989). There is no need to rehearse the familiar anti-descriptivist arguments here.<sup>192</sup> However, here is one example for flavour. Suppose, as per standard descriptivism, that 'Aristotle' means something like 'the man named 'Aristotle' who taught Alexander, and was taught by Plato, and was fond of dogs, and . . . '. Now consider the sentences

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<sup>191</sup> The locus classicus of content externalism is Putnam (1975).

<sup>192</sup> See Devitt and Sterelny (1999, 45-64) for a short overview of the arguments. Note that the arguments apply to both narrow and wide descriptivism.

(19) 'Aristotle might not have been Aristotle'

(20) 'Aristotle might not have been the man named 'Aristotle' who taught Alexander, and was taught by Plato, and was fond of dogs, and . . .'

If it had been the case that Aristotle was *not* the man named 'Aristotle' who taught Alexander, and was taught by Plato, and was fond of dogs, and . . . then (20) would have been true. However, (19) would have been false: clearly, nothing could have failed to be itself. Thus (19) and (20) differ in meaning, and in particular, the proper name 'Aristotle' does not mean 'the man named 'Aristotle' who taught Alexander, and was taught by Plato, and was fond of dogs, and . . .'. More generally, modal considerations such as the above seem to show that proper names are not synonymous with definite descriptions, and therefore that both narrow and wide descriptivism are false.

Of course, there are descriptivist responses to anti-descriptivist arguments such as the above, and increasingly sophisticated forms of descriptivism have been developed. Briefly, here is one descriptivist strategy designed to avoid the Kripkean objections: consider a certain Brush, made of Handle and Head. Now take the proposition that Brush is useful. The descriptivist could argue that the proposition that Brush is useful is identical to the proposition that Handle and Head compose something useful. As long as Handle and Head outlast Brush, this would explain how the proposition that Brush is useful could outlast Brush. Moreover, it is plausible that Brush is necessarily composed of Handle and Head. The idea is to apply a similar strategy to propositions concerning Plato and Aristotle. For example, one could argue that the proposition that Aristotle was wise (for example) is identical to the proposition that the unique person who resulted from the fusion of sperm S and egg E was wise. If these propositions are identical, then that would explain how the proposition that Aristotle was wise could outlast Aristotle. Moreover, the

modal objection does not apply in this case: given the widely-accepted view of the necessity of origins, Aristotle could not have failed to arise from the fusion of S and E. There are still problems with this strategy, however. For one thing, there is an epistemic objection: surely, we might think, one could believe that Aristotle was wise without believing that the unique person who resulted from the fusion of S and E was wise. For another, according to transientists S and E no longer exist, and therefore some descriptivist story needs to be told about the meanings of the names ‘S’ and ‘E’ which also avoids the modal objection.

Whether or not there is a descriptivist strategy which improves on those described above, it remains the case that transientists who endorse the Priorian paraphrase strategy endorse a semantic theory that is unpopular, relatively complicated, and subject to serious objections. Indeed, there are few arguments in contemporary philosophy that command quite as much assent as Kripke’s anti-descriptivist arguments. Therefore transientists should be very reluctant to hitch the wagon of transientism to the descriptivist horse.

### 6.2.3 *Plantingan paraphrases*

We saw above that the Priorian paraphrase strategy is subject to the powerful Kripkean objections to descriptivism. In this section, we describe a non-descriptivist paraphrase strategy based on a modal theory due to Plantinga (1974, 1976, 1983).<sup>193</sup>

According to the Plantingan paraphrase strategy, the semantic contribution of the names of non-present individuals to the propositions expressed by the sentences of which they are a part are not the individuals themselves but rather the identity properties or ‘thisnesses’ of the individuals. Thus the Plantingan strategy has two main components: first, a theory of identity properties; and second, a theory of the meanings of the proper names of non-present individuals. Let us describe each theory in turn.

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<sup>193</sup> See also Adams (1986).

We begin with the theory of identity properties. Identity properties are *haecceities*: essential and essentially unique properties of individuals which every individual must have:

HAECCCEITY-OF:  $F$  is a haecceity of  $x =_{\text{def}} \text{necessarily}(x \text{ exists} \supset Fx) \ \&$   
 $\text{necessarily}(\forall y(Fy \supset x=y))$

Assuming that what is necessarily the case is always the case, it follows that a haecceity of an individual  $x$  is a property  $F$  such that whenever  $x$  exists it is  $F$  and nothing else is ever  $F$ . Moreover, it is always the case that for all  $x$ ,  $x$  has a haecceity. For example, the property of being identical with me- call it the property of *Danicity*- is one of my haecceities.

The claim that identity properties are haecceities is uncontroversial: everyone agrees that identity properties are essential and essentially unique properties of individuals which every individual must have. A more controversial claim which Plantinga does not make is that every individual has *exactly one* haecceity, namely, its identity property. This view would only be acceptable to someone with a course-grained view of properties according to which necessarily equivalent properties are always identical; otherwise, one might think that (for example) Danicity and the property of having arisen from the fusion of a certain sperm S and egg E are two distinct haecceities of mine.

We have said what it is for a property to be a haecceity of some individual; but what is for something to be a haecceity simpliciter? This brings us to another important aspect of the Plantingan theory of identity properties. According to Plantinga, identity properties are necessary and therefore permanent: every identity property always exists. Given that always, everything has an identity property, it follows that always, everything has a permanent identity property. Thus Danicity will exist in a thousand years, and Plato's

and Aristotle's identity properties- Platicity and Aristoticity- exist now. Here is Plantinga (1983, 4-5) on the modal case: 'Not all abstract objects are necessary beings. Still, what about properties? It is natural to think ... that a crucial difference between sets and properties lies just here.'<sup>194</sup> However, although identity properties are permanent, given transientism, the individuals whose identity properties they are are *not* permanent, and therefore identity properties are not *permanently* identity properties.<sup>195</sup> For example, take Danicity. According to the Plantingan theory, Danicity is currently the property of being identical to me. Thus, Danicity is currently exemplified by me. However, when I cease to exist there will be no  $x$  such that Danicity is the property of being identical to  $x$  (although of course it will be the case that there *was* an  $x$  such that Danicity is the property of being identical to  $x$ ). Thus when I cease to exist, Danicity will cease to be my identity property. However, given that identity properties are permanent, Danicity will still exist: it will be a former identity property of mine, and it will be formerly such that it is exemplified by me. Similarly for Platicity and Aristoticity: given that Plato and Aristotle no longer exist (says the transientist), Platicity and Aristoticity are former identity properties. Here is Plantinga (1983) again on the analogous modal case:

Isn't it just clear or obvious that the property *being Socrates* could not have existed if Socrates had not existed? What would my thisness [identity property] have been, if I hadn't existed? But it doesn't seem to me, on reflection, to be the least bit obvious. And what would my thisness have been, had I not existed? It would have been an unexemplified essence that could have been the thisness of something.

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<sup>194</sup> Plantinga (1983) argues that some sets are contingent on the grounds that individuals have contingent existence and that *membership essentialism*- according to which for all  $x$ , for all  $y$ , if  $x$  is a member of  $y$  then necessarily (if  $y$  exists then  $x$  exists)- is true. As Fine (2005, 187-88) points out, it is odd that Plantinga accepts membership essentialism but apparently rejects constituency essentialism. More on this below.

<sup>195</sup> In other words: the second-order property of being an identity property is a temporary property.

We are now in a position to say what it is for something to be a haecceity simpliciter according to the Plantingan theory. Assuming that what goes for identity properties goes for all properties, a haecceity is (in modal terms) a property that is possibly such that there is something that has it essentially and essentially uniquely:

HAECCEITY:  $F$  is a haecceity  $=_{\text{def}}$  possibly( $\exists x(\text{necessarily}(x \text{ exists} \supset Fx) \ \& \ \text{necessarily}(\forall y(Fy \supset x=y)))$ )

Given transientism, in temporal terms a haecceity is a property such that sometimes, there is something of which it is an essential and essentially unique property. This captures the surprising Plantingan thesis that there are haecceities (such as Platicity) such that there is now nothing of which they are essential and essentially unique properties.

The second part of the Plantingan strategy involves a theory of the meanings of proper names. The theory is straightforward: proper names such as ‘Dan’, ‘Plato’ and ‘Reagan’ are terms whose semantic contribution to the propositions expressed by the sentences of which they are a part are identity properties. Thus, for example, sentence (4) expresses something like the following proposition:

(21)  $\mathbf{P}\exists x\exists y(\text{Identical with Plato}(x) \ \& \ \text{Identical with Aristotle}(y) \ \& \ x \text{ teaches } y)$

(21) is the proposition that at some past instant, Platicity and Aristoticity were instantiated and the thing that instantiated Platicity taught the thing that instantiated Aristoticity.

Plantinga (1983, 3) claims that (21) is a singular proposition: he redefines the notion of a singular proposition as a proposition that ‘has either at least one individual or at least one quiddative property [an identity property or property that ‘involves an identity property in a certain way] as a constituent’.<sup>196</sup>

It is easy to see how the Plantingan strategy is supposed to help transientists avoid

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<sup>196</sup> Adams (1986, 315) endorses the same definition.

the problem of singular sentences. Suppose transientism is true and take sentence (4). Given the Plantingan theory, (4) expresses proposition (21), which on the structured view of propositions has the properties of Platicity and Aristoticity as constituents. Given the existence and relation abstraction principles, it follows that Platicity and Aristoticity exist.<sup>197</sup> However, according to the Plantingan theory, these properties are no longer identity properties of Plato and Aristotle. Therefore there is no route from the existence and relation abstraction principles and the structured view of properties to the claim that Plato and Aristotle exist. It follows that the existence of Platicity and Aristoticity is consistent with the transientist view that neither Plato nor Aristotle exists.

Should transientists endorse the Plantingan strategy? There are good reasons why they should not. First, consider the Plantingan theory of permanent identity properties. Assuming a Russellian structured view of properties, this theory involves a rejection of the principle of constituency essentialism. For example, Danicity is currently the property of being identical to me; on the structured view, it is a structured complex that has me and the identity relation as constituents. When I cease to exist sometime in the future, Danicity will cease to have me as a constituent. This is contrary to constituency essentialism, according to which if something ever has something else as a constituent then whenever the former exists the latter does. However, as we saw in Chapter Five (§5.2.6), constituency essentialism is a very plausible thesis. In particular, the relation of constituency is to structured objects such as properties and propositions what the relation of membership is to sets. Given that sets have their members essentially, there is therefore a very good reason for thinking that structured objects have their constituents essentially; in other words, that constituency essentialism is true.

Plantinga (1983, 7-9) is alert to this potential objection, and accordingly attempts to

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<sup>197</sup> We could also appeal to the principle of constituency essentialism to derive the existence of the properties from the propositions; however, as Plantinga rejects constituency essentialism, it is best to avoid using it here.

cast doubt on constituency essentialism (I have numbered the quotations for ease of reference):

(1) What exactly, or even approximately, is the relationship *being a constituent of*?

Do we know or have reason to suspect that propositions *have* constituents? What can we say about the relation that holds between an object . . . and a proposition, when the former is a constituent of the latter? Maybe not much.

(2) I feel as if I have a grasp of this notion of constituency when I'm told that, say, wisdom but not beauty is a constituent of the proposition *Socrates is wise*; but when it is added that Socrates himself is also a constituent of that proposition, I begin to lose my sense of what's being talked about. If an abstract object like a proposition has constituents, wouldn't they themselves have to be abstract?

(3) If we're prepared to suppose . . . that persons can be constituents of propositions, why insist that a proposition is ontologically dependent upon its constituents? Why boggle at the idea that a proposition could exist even if one of its constituents didn't?

Plantinga's argument is roughly as follows: the notion of constituency is not terribly well understood (quote (1)). In particular, the idea that a concrete object could be a constituent of an abstract object stretches the notion of constituency (quote (2)). If we are willing to stretch the notion of constituency to the extent that we allow abstract objects to have concrete objects as constituents, then why not stretch it a little bit further and allow that abstract objects can exist even when their constituents do not (quote (3))?

There are two points to make in response to the above argument. The first is that if we think of constituency as analogous to set-membership, then it is not at all strange to think that abstract objects can have concrete constituents, given that (abstract) sets can

have concrete members.<sup>198</sup> And Plantinga (1983, 4) does hold that sets are abstract objects with concrete members: he explicitly characterises Quine's singleton as an abstract object with (concrete) Quine as a member. Moreover, if we allow that constituency is analogous to set-membership, then we should accept that constituency is essential, given that set-membership is essential. Once again, Plantinga (1983, 4) does hold that set-membership is essential; he writes: '*Containing Quine and containing nothing distinct from Quine are surely essential properties of Quine's singleton; hence there is no possible world in which it exists but he does not.*' In sum, we can keep a relatively firm grip on the notion of constituency if we think of constituency as analogous to set-membership. However, in that case, we should not think that there is anything particularly strange about abstract objects having concrete constituents and we should accept constituency essentialism.

The second response to Plantinga's argument is related to the first. Like set-membership, constituency is a largely theoretical notion. Part of the way that theoretical notions get their content is from the way in which they are put to use in theories. Therefore theoreticians themselves have some degree of control over the meanings of the theoretical notions they employ. Take the notion of constituency. In quote (1), Plantinga seems to imply that the notion of constituency is mysterious, and not well understood. However, in view of the way that theoretical notions attain their content, this is disingenuous: it is (at least partly) up to theorists to provide the notion of constituency with content by putting it to work in a theoretical context. Those who hold that constituency is an essential relation that can hold between concrete objects and propositions (or properties) do exactly that. It is theorists who reject constituency essentialism that *make* the notion mysterious.

A natural way for Plantingans to respond to the arguments against temporary constituency is to modify his view so that proper names do not refer to permanent identity

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<sup>198</sup> Fine (2005, 188) makes this point.

properties, but rather some other sort of permanent haecceity. But what? An obvious candidate would be purely qualitative haecceities, whose only constituents are other (permanent) properties. For example, the property of having fewer members than any other set is a purely qualitative haecceity of the null set. However, it is not clear that ordinary individuals such as Plato and Aristotle have purely qualitative essences. For example, as mentioned above, one of my haecceities is the property of having arisen from a certain sperm S and egg E. However, this property is not purely qualitative, as it has the particulars S and E as constituents.

The failure of the above response naturally leads to the idea that there are *fundamental* essences: metaphysically fundamental properties that are such that sometimes, there is something that has them essentially and essentially uniquely. Given transientism, such properties are temporarily exemplified, but because they are fundamental, they never have the objects that sometimes exemplify them as constituents. The problem with this response is that it merely solves one problem by creating another: that is, the problem of a commitment to fundamental essences. It is hard to believe there are properties that are fundamental, and therefore 'logically simple', but also essential, and therefore necessarily tied to particular individuals. Fundamental essences are a piece of mysterious metaphysical furniture that theorists should try to avoid. Moreover, a commitment to permanent, fundamental essences is not in the spirit of transientism. As mentioned above, the theoretical attraction of transientism depends on the view that (very roughly) lots of important things are temporary. Adding permanent, fundamental essences to the transientist ontology- as it were, the 'souls' of temporary particulars- undermines the basic theoretical attraction of transientism.

Finally, we turn to the semantic component of the Plantingan strategy, according to which the semantic contributions of proper names to the propositions expressed by the

sentences of which they are a part are haecceities. One immediate problem with this view is that it is open to the following question: given that I exist, why is the meaning of the name ‘Daniel’ my haecceity and not me (as per the direct reference theory)? For example, suppose that the meaning of ‘Daniel’ is the property of being me. The property of being me has me as a constituent, and therefore if constituency is transitive, propositions expressed by sentences containing my name have me as constituents. Now suppose you are standing in front of me and you point at me and shout ‘There’s Dan!’ According to the Plantingan theory the proposition you thereby express is something like the proposition that Danicity is exemplified there. But why not the much simpler proposition that Dan (this very guy) is there?<sup>199</sup> There is something strange about the way my name ‘semantically dodges’ me in favour of my haecceity on the Plantingan view. Of course, one way to deal with this oddity is to adopt a restricted version of the Plantingan view according to which the names of existing individuals are directly referential and the names of non-present individuals have haecceities as semantic contents. The problem with this view, however, is that it shares the unappealing consequences of narrow descriptivism, namely, that some sentences change their logical form over time even when there is no relevant change in the internal states of the speakers of the relevant language. Thus the Plantingan semantic theory raises problems whether one opts for the restricted or the unrestricted version of the view.

#### 6.2.4 *Gappy propositions*

According to Plantingans, names such as ‘Plato’ and ‘Aristotle’ have semantic content, but the sentences of which they are a part are transientist-friendly. Another option for transientists is to argue that names such as ‘Plato’ and ‘Aristotle’ have no semantic

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<sup>199</sup> Assuming, as usual, a fine-grained view of propositions according to which these propositions are distinct.

content. For example, following remarks made by Kaplan (1989, 496, n.23), Braun (1993, 2005) and Salmon (1998) develop a semantic theory according to which sentences containing proper names for things that do not exist ('empty names') express *gappy propositions*: incomplete or 'half-formed' structured propositions. In order to get a grip on the idea of gappy propositions, let us allow that structured propositions can be represented by ordered  $n$ -tuples of objects, properties, relations, and so on. In that case, the proposition expressed by the sentence

(22) 'Dan is happy'

can be represented as the ordered pair of Dan and the property of being happy, as follows:  $\langle \text{Dan, happiness} \rangle$ . Now, suppose we introduce the proper name 'Freddy' for the non-existent present actual King of Germany, and hold that 'Freddy' fails to refer. According to the view developed by Braun and Salmon, it follows that the proposition expressed by the sentence

(23) 'Freddy exists'

is a gappy proposition: an incomplete structured proposition which can be represented as either the ordered pair  $\langle \emptyset, \text{existence} \rangle$  (Braun) or the ordered pair  $\langle \text{____}, \text{existence} \rangle$  (Salmon; the symbol '\_\_\_\_' represents a gap).<sup>200</sup>

Faced with the problem of accounting for the truth of apparently transientist-unfriendly singular sentences, transientists could adopt something the like the gappy proposition theory developed by Braun and Salmon.<sup>201</sup> That is, they could argue that the

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<sup>200</sup> From now on I shall use Braun's null-set representation of gappy propositions. I discuss Braun's and Salmon's different means of representing gappy propositions below.

<sup>201</sup> As a matter of interest, Salmon (1998) actually holds that the names of non-present individuals are not empty but directly referential, but that non-present individuals do not exist. Hence, Salmon rejects the existence principle. For example, according to Salmon 'Aristotle' directly refers to Aristotle, and therefore the sentence 'Aristotle was wise' expresses the true singular proposition that Aristotle was wise, but neither Aristotle nor the proposition that Aristotle was wise exist. I discuss Salmon's view of the names of non-

proper names of non-present things fail to refer, and therefore apparently transientist-unfriendly singular sentences such as (4), (5), and (6) express gappy propositions. For example, on this view the proposition expressed by (6) can be represented as something like:  $\langle \emptyset, \text{being a hero to many conservatives}, \mathbf{P} \rangle$ .

One important question for gappy theorists is whether gappy propositions are true, false, or truth-valueless. Braun and Salmon disagree on this point. Braun (1993, 463) endorses the following principle:

BRAUN'S PRINCIPLE: If  $P$  is a proposition having a single subject position and a one-place property position, then  $P$  is true iff the subject position is filled by one, and only one, object, and it exemplifies the property filling the property position. If  $P$  is not true then it is false.

Thus on Braun's view, the gappy proposition expressed by e.g. (6) is false, as the subject position is unfilled. On the other hand, according to Salmon (1998) 'atomic structurally challenged propositions [i.e. gappy propositions] cannot be either true or false'. Therefore according to Salmon, the gappy proposition expressed by (6) is neither true nor false, but truth-valueless. (This fits with Salmon's view of a gappy proposition as 'severely disabled, the partially formed product of a failed attempt to construct a true-or-false proposition, something whose cognitive and semantic function is that of a truth-valued proposition but is unable to fulfil its function for lack of an essential component.')

Another question for gappy theorists is how to explain why the following sentences

(24) 'Socrates was wise'

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present individuals in the next section. Salmon also holds that the names of fictional and mythical things are directly referential, and that such things exist (as abstract objects). According to Salmon, the only genuinely empty names (what he calls 'thoroughly non-referring names') are names such as 'Freddy' in (23) above. Braun (2005), on the other hand, argues that in some contexts fictional and mythical names fail to refer, and are therefore empty.

(25) ‘Aristotle was wise’

seem to express different propositions, given that according to the gappy proposition theory both sentences express the same gappy proposition, namely, the proposition represented as  $\langle \emptyset, \text{wisdom}, \mathbf{P} \rangle$ .<sup>202</sup> There are different ways for gappy theorists to answer this question; I shall not go into detail concerning the different accounts here. Briefly, according to Braun (1993) the difference between (24) and (25) is a difference in cognitive rather than semantic value: that is, typical utterances of (24) are used to express, and give rise to, different belief states than typical utterances of (25). On the other hand, according to Taylor (2000), empty names such as ‘Socrates’ are associated with definite descriptions, and sentences involving those names that express gappy propositions also pragmatically convey propositions involving those descriptions. For example, on this account sentence (24) above semantically expresses the gappy proposition represented as  $\langle \emptyset, \text{wisdom}, \mathbf{P} \rangle$ , but *pragmatically conveys* the proposition that the man named ‘Socrates’ who taught Plato and was ugly and bearded and married to Xantippe and . . . was wise.

There are a number of good reasons for transientists to avoid the gappy propositions theory. First, if apparently transientist-unfriendly singular sentences such as (4), (5), and (6) express gappy propositions, they are either false or lack a truth-value; in any case, they are not true. Given the ubiquity of such sentences, this feature of the gappy propositions theory represents a serious cost for transientists. Moreover, transientist gappy theorists cannot simply respond by claiming that the gappy propositions expressed by sentences such as (4), (5), and (6) are in fact true. For example, suppose the gappy proposition expressed by (24) is true. In that case, the gappy proposition represented as  $\langle \emptyset, \text{wisdom}, \mathbf{P} \rangle$  is true. But given the gappy theory, the sentence

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<sup>202</sup> I assume that ‘Socrates’ and ‘Aristotle’ are empty names for the purpose of the example.

(26) ‘Thrasymachus was wise’

also expresses the gappy proposition represented as  $\langle \emptyset, \text{wisdom}, \mathbf{P} \rangle$ . Thus if the gappy proposition expressed by (24) is true, it follows that (26) is true, which is false (Thrasymachus was most unwise- see Plato, *Republic* Book I). Hence (24) cannot express a true proposition given the gappy propositions theory.

A second problem with the application of the gappy propositions theory to apparently transientist-unfriendly singular sentences is that it is hard to believe that sentences such as (24) and (25) express the same proposition, even given the various explanations provided by gappy theorists as to why this *seems* not to be so. It is a cost of the gappy propositions theory that it assigns sentences such as (24) and (25) the same meaning, even if they do have different cognitive significances.

Finally, there are serious worries about the idea that there could be such things as gappy propositions. There are a few different ways of putting pressure on the notion of a gappy proposition. For example, we initially characterised a gappy proposition above as a ‘half-formed’ or incomplete structured proposition. Similarly, Salmon describes gappy propositions as ‘partially formed’ and ‘lacking an essential component’. But are Russellian structured propositions the kinds of things that can be half-formed or incomplete? Some things can be incomplete; for example, a jigsaw puzzle with some pieces missing. However, some things cannot be incomplete, such as sets: a set containing all of the red things but one is not the incomplete set of all red things, but rather the (distinct) set of all red things but one. A serious worry concerning gappy propositions is that structured propositions are more like sets than jigsaw puzzles: they can only exist when they are whole. In that case, there are no gappy propositions: there are only propositions (which are

necessarily complete) and non-propositions.<sup>203</sup> Of course, a fan of gappy propositions could respond by arguing that gappy propositions are objects of belief and assertion, and thus play the proposition role, and are therefore propositions (see for example Braun 2005, 604-5). However, this response is not sufficient: the worry is precisely that nothing that is both structured and incomplete in the way that gappy propositions are supposed to be could play the proposition role.

Another way to put pressure on the idea of gappy propositions is to focus on the different ways in which gappy theorists represent gappy propositions. For example, as we have seen, Braun (1993) argues that gappy propositions expressed by sentences of the form ' $Fa$ ' (where ' $a$ ' is non-referring) should be represented by ordered pairs of the null set and a property, as follows:  $\langle \emptyset, \text{being } F \rangle$ . But how are we supposed to treat the null set in representations of gappy propositions? Presumably the null-set is included merely as a representational device; the gappy proposition expressed by (24) and (25), for example, is not the proposition that the null-set was wise; nor does Braun claim that all apparently empty names actually refer to the null-set. But if the null-set is merely a representational device, what does it represent? Gappy theorists might answer: a gap. But what is a gap? It is a space where there could be something, but there is not. But are propositions (the objects of belief and assertion) the sorts of things that can contain empty spaces? Alternatively, gappy theorists might answer: an unoccupied position. But what is an unoccupied position? Again, it is a place where there could be something, but there is not. But are propositions the sorts of things that can contain empty places? The worry is that gappy theorists rely on spatial metaphors concerning 'gaps' and merely representational devices such as the null-set (and Salmon's perhaps even more mysterious '      ') to

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<sup>203</sup> We can also put the point like this: according to Braun (1993), gappy propositions are false. Salmon (1998, 381, n.54) argues that gappy propositions, in virtue of being incomplete or defective in some way, are not the sorts of things that can be true or false; he concludes that they are truth-valueless. A natural extension of Salmon's argument is: gappy propositions, in virtue of being incomplete or defective in some way, aren't the sorts of things that can be *propositions*.

make it *seem* as if there could be such things as gappy propositions, when in fact there could not. If gappy propositions do not really after all contain gaps (being abstract and therefore non-spatial) and do not really contain the null-set or dashes, it is hard to say *what* they are.

We have seen that there are a number of reasons for transientists to reject the gappy propositions theory. In particular, the very idea of ‘gappy propositions’ seem quite dubious: the concept has the familiar air of philosophical invention. Therefore transientists should reject the gappy proposition strategy.

#### 6.2.5 *The existence and relation abstraction principles*

So far I have assumed that transientists cannot avoid the problem of singular sentences by rejecting the existence or relation abstraction principles. The reasons why transientists should not reject these principles were described in Chapter Five. However, there are relatively well-known responses to the problem of singular sentences due to Salmon (1998) and Fine (2005) which rely on a rejection of the existence principle in particular. I briefly describe and discuss these responses in this section.

Salmon (1998) explicitly rejects the existence principle in order to account for apparently transientist-unfriendly singular sentences. According to Salmon, the proper name ‘Socrates’, for example, is directly referential, and therefore the proposition that Socrates was wise is a true structured proposition with Socrates as a constituent. Moreover, neither Socrates nor the proposition that Socrates was wise exists (although both did exist). Thus, if I utter the sentence ‘Socrates was ever so wise’ right now, I express a proposition that ceased to exist in the distant past; I express something such that there is nothing that I express. I find it hard to believe that anyone could hold such a position and still claim to understand what it is for something to exist (in the logical sense, at least).

Salmon (1998) expresses his rejection of the existence principle in a characteristically robust manner:

Some may balk at my proposal on the grounds that it conflicts with the metaphysical principle that any object must exist in every conceivable circumstance in which that objects has any properties. This principle . . . is a confused and misguided prejudice. Undoubtedly, existence is a prerequisite for a very wide range of ordinary properties—being blue in colour, having such-and-such mass, writing *Waverly*. But the sweeping doctrine that existence universally precedes suchness has very clear counterexamples . . . Socrates does not exist in my present circumstance, yet he has numerous properties here—for example, being mentioned and discussed by me. (Salmon 1998, 290-1)

Note that there is no argument here, but merely a statement of Salmon's position. Fine (2005), on the other hand, implicitly rejects the modal analogue of the existence principle in his response to Plantinga's (1983) 'anti-existentialist' argument for the conclusion that the proposition that Socrates does not exist could exist even if Socrates did not. Fine responds to Plantinga's argument by distinguishing two different notions of world-relative truth for propositions: *inner truth* and *outer truth*. Fine briefly sketches the two concepts as follows:

According to the outer notion, we can stand outside a world and compare the proposition with what goes on in the world in order to ascertain whether it is true. But according to the inner notion, we must first enter with the proposition into the world before ascertaining its truth. (Fine 2005, 194)

According to Fine, the following principle holds for inner truth but not outer truth:

INNER TRUTH: Proposition  $p$  is true at possible world  $w \supset p$  exists at  $w$

In other words, if proposition  $p$  is true at world  $w$  in the *inner* sense of 'true at  $w$ ' then  $p$  exists at  $w$ ; however, it does not follow from the fact that  $p$  is true at world  $w$  in the *outer* sense of 'true at  $w$ ' that  $p$  exists at  $w$ . Thus in the outer sense of 'true at  $w$ ', a proposition could be true at a world without existing at that world, in violation of the modal property principle. Hence insofar as Fine accepts that propositions can be true at worlds in the outer sense, he rejects the modal existence principle.

With the notions of inner and outer truth in hand, Fine argues that Plantinga's argument is unsound on any uniform interpretation of the predicate 'is true at  $w$ '. In particular, Fine argues that Plantinga's third premise

(27) For all worlds  $w$ , if the proposition that Socrates does not exist is true at  $w$ ,  
then the proposition that Socrates does not exist exists at  $w$

is false given the outer sense of truth at a world. Similarly, given an analogous *temporal* sense of outer truth, transientists could reject the second premise of the anti-transientist argument described at the beginning of this chapter, according to which if the proposition that Aristotle was taught by Plato is true at instant  $t$ , then the proposition that Aristotle was taught by Plato exists at  $t$ .

Transientists could avoid the problem of apparently transientist-unfriendly singular sentences by distinguishing between temporal notions of inner and outer truth and arguing that although there are no propositions which sentences such as (4), (5), and (6) now express, there *were* propositions which they now express and which are now true in the outer sense. However, just as accepting that propositions can be true in the modal outer sense involves rejecting the modal existence principle, accepting that propositions can be true in the temporal outer sense involves rejecting the temporal existence principle. Thus

Fine's notions of inner and outer truth fail to provide transientists with a plausible means of solving the problem of apparently transientist-unfriendly singular sentences.

### 6.3 Pastism

I have argued that transientists, unlike permanentists, cannot satisfactorily account for the truth of apparently transientist-unfriendly singular sentences. On that basis, I think that we should reject transientism in favour of permanentism. An analogous argument holds for pastism: there are apparently pastist-unfriendly singular sentences- that is, sentences about particular things whose truth would seem to imply the falsehood of pastism- for which pastists, unlike permanentists, cannot satisfactorily account. Therefore we should reject pastism in favour of permanentism.

For example, suppose that 'Newman' names the first person born in the year 2100, and consider the sentence

(28) 'Newman will be human'<sup>204</sup>

If proper names are directly referential then given constituency essentialism it follows that if (28) is true, Newman exists. However, according to pastists, Newman does not exist yet. Therefore (28) is (apparently) pastist-unfriendly. Moreover, even if constituency essentialism is false, given the existence and property abstraction principles, (28) implies that Newman exists.

The fact that the name 'Newman' is introduced using a definite description does not entail that 'Newman' is *synonymous* with a definite description. 'Newman' does not mean 'the first man born in the year 2100'; rather, 'Newman' is supposed to be a singular term, whose semantic function is to refer to a particular individual. Therefore it is true that

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<sup>204</sup> This is based on a famous example due to Kaplan (1968).

Newman could be born in the year 2099, for example; the particular person to whom ‘Newman’ refers could be going to be born a little earlier. If ‘Newman’ was synonymous with ‘the first man born in the year 2100’, then of course it would not be true that Newman could have been born in 2099.<sup>205</sup>

Some might worry that, even if there are future things, we cannot introduce names for them because they are distant from us in a way that makes it impossible to secure a referential connection to them.<sup>206</sup> For example, someone might argue that in order to introduce a proper name for some individual  $x$  we must stand in a perceptual or causal relation to  $x$ . Given that we do not stand in perceptual or causal relations to future individuals, it would follow that we cannot introduce names such as ‘Newman’ for them. This sort of view is said to follow from certain ‘naturalistic’ theories of reference situated within the broader project of showing that semantic facts are ultimately reducible (in principle) to physical facts. The problem with such theories (aside from the difficult question of what counts as a ‘physical fact’) is that they inevitably circumscribe our linguistic and cognitive capabilities in unrealistic and unattractive ways. For example, suppose that cosmologists have good reason to posit events in distant parts of the universe to which we have no perceptual or causal relations. According to the demanding theory of reference above, we cannot speak or think about any particular such events. Similarly, mathematicians might posit abstract objects to which we have no perceptual or causal relations. Again, according to the demanding theory of reference no-one can think or speak about any particular such objects. Surely we should not think that our referential abilities are so limited.

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<sup>205</sup> Kaplan (1973) introduces the term *dubbing* for the act of introducing a proper name such as ‘Newman’. See Kaplan (1989, 560-1) for discussion.

<sup>206</sup> Following Kaplan (1969), Donnellan (1977, 25) argues that ‘in order to have a *de re* propositional attitude toward an entity one must be... *en rapport* with it’, meaning that the relevant entity itself must enter into the explanation of how the thinker or speaker came to acquire the name. I suspect that Donnellan has in mind a causal-scientific explanation.

Donnellan (1977) presents the following argument concerning singular propositions about future individuals: suppose I am lucky enough to live until the year 2100 and the first child born in the 22nd Century is (then) named 'Grace'. Then I say to Grace 'I knew [or asserted, or believed] that you would be human'. According to Donnellan what I say is false. Therefore I cannot *now* know [assert, believe] the singular proposition expressed by the sentence 'Newman will be human'.

How should we respond to Donnellan's argument? A defender of the Fregean theory would say that sentence (28) and sentence (29) as uttered to Grace

(29) 'You are human'

express distinct propositions: that is, propositions containing different senses of the referent of 'Grace' and 'Newman'. In that case, what I say to Grace ('I knew [asserted, believed] that you would be human') could be false, even though I now know [assert, believe] that Newman will be human. However, let us continue to assume that the direct reference theory is true, so that the meaning of the names 'Grace' and 'Newman' is simply a particular individual. Many people who defend the direct reference theory hold a 'Millian' view of the propositional attitudes according to which (e.g.) the following pair of sentences

(30) 'Lois Lane believes that Clark Kent can fly'

(31) 'Lois Lane believes that Superman can fly'

express the same proposition. Those who hold this view think that we are liable to be misled when we make intuitive judgements concerning the truth-values of propositional attitude ascriptions; for example, we are liable to judge that (30) is false, even though it is

true. Therefore they will not be moved by Donnellan's argument, which relies on the intuition that the sentence

(32) 'Dan knew that Grace would be human'

is false. In fact, sentence (32) is true, as I now know that Grace will be human.

## 6.4 Conclusion

In this chapter I have shown that transientists and pastists- unlike permanentists- struggle to account for the truth of apparently transientist- and pastist-unfriendly singular sentences. Given that such sentences are ubiquitous in ordinary thought and speech, and that counting all such sentences as false would represent a serious theoretical cost (which transientism and pastism fail to offset), it follows that we should reject transientism and pastism in favour of permanentism.

# Conclusion

We have seen that permanentism provides a simpler, more elegant account of the truth of transientist- and pastist-unfriendly sentences than either pastism or transientism. Given that transientist- and pastist-unfriendly sentences are ubiquitous in ordinary thought and speech, this represents a serious theoretical cost of transientism and pastism compared with permanentism. Moreover, transientism and pastism fail to offset this cost with benefits elsewhere (their reduced ontological commitments are precisely what give rise to this cost). Therefore all things considered, we should prefer permanentism to either transientism or pastism. Given that the A-theory is true (Chapter Four), we should be permanentist A-theorists; in other words, we should accept the moving spotlight theory. And given that classic MST is the simplest, most elegant version of the moving spotlight theory (Chapter Two), we should accept classic MST. Classic MST is the correct theory of time.

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