1 Metaphysics

Metaphysics, namely the most general study of the nature, structure, and inner workings of reality, is an essential discipline in any intellectual approach to temporality. It has identified the core questions upon which our quest to understand time depends. It has also produced many of the tools necessary to deconstruct time, allowing us to separate out its conceptual component parts and use them to rebuild various candidate temporal theories. By its very nature, it goes beyond what the empirical investigation of the sciences can contribute, and so becomes an essential tool when assessing the deeper meaning behind the measurements. It is the perfect place to begin our investigation. In this chapter, I introduce the key debates happening in temporal metaphysics. This will not only set out central features of the metaphysical landscape, but it will provide the conceptual apparatus required for the subsequent analyses of the physics of time and the nature of soteriological transformation. Thus, the ideas explored in this chapter provide the conceptual architecture within which the rest of this project is constructed.

The contemporary philosophy of time can be delineated into four primary debates: the relationalist/substantivalist, dynamic/static, tensed/tenseless, and presentist/eternalist debates. The first concerns how time is structured, particularly whether spacetime is a fundamental entity that exists in distinction from the objects within it.[1] The substantivalist answers yes, affirming the object-independent existence of spacetime. The relationalist, on the other hand,

[1] For a comprehensive discussion of the substantivalist/relationalist debate, see (Pooley 2013b). An equivalent debate exists with regard to space, see (Dasgupta 2015).

understands spacetime to be reducible to the relations between objects and events and that any claims about the nature of spacetime itself are actually claims about entities within spacetime and the various spatiotemporal relations between them. Essentially, if no material bodies or events existed, then spacetime, too, would not exist.

This first debate will not really feature in the subsequent discussion as it is at most tangentially relevant to my primary concerns.[2] The last three debates, however, are tightly interwoven, and aspects of them are frequently considered together. Though they have been separated for introductory purposes, ultimately, later chapters will refer to broadly defined temporal theories and will only focus on the nuances of each set of debates where appropriate. Nevertheless, before speaking in more general terms, it is necessary to explore the finer features of this metaphysical landscape.

The second debate concerns time's motion, with its central concern being whether time objectively passes. The proponent of dynamic time will answer in the affirmative, claiming that there is an observer-independent, often universally uniform, passage of time that causes events to go from being objectively present to objectively past. The proponent of static time, however, will view time as analogous to space – all temporal moments eternally and tenselessly exist, and any perceived passage is mind dependent or illusory. The third debate concerns the status of tensed facts. Proponents of tensed time believe in the reality of tensed facts and claim that these are grounded by the passage of time and the reality of tense. In other words, it is a fact that the extinction of the dinosaurs is objectively *past*, meaning there is no available observational perspective where the fact that 'the dinosaurs went extinct in the past' is false. Something essential about this fact is that it is tensed, and this reflects that reality is objectively tensed. Proponents of tenseless time deny the existence of tensed

[2] For further reading, see (Huggett 2015) (Maudlin 2012, chapters 1 and 2) (Rynasiewicz 1996, 2000) (Maudlin 1993) (Teller 1991) (Earman 1989) (Barbour 1982).

facts, claiming that they are not required to explain why language contains tense and tensed truths.[3] This debate relies on the fourth debate for its ontological underpinnings. The fourth debate also concerns time's structure, but with particular reference to the temporally determined ontological status of objects and events. The presentist believes that all and only existing things are present, that is that the entire set of existing objects and events is comprised exclusively of objects and events that possess the objective property of being *present*. The eternalist, on the other hand, believes all objects and events to tenselessly exist, with no special ontological priority given to any moment. Eternalism understands time as analogous to space in that, as no ontologically privileged position is afforded to the property *here*, neither is there any such privilege for the property *now*. Eternalism is another name for this book's primary focus: the block universe.

A-SERIES, B-SERIES, AND C-SERIES

Though the philosophy of time can be traced back as far as the Ancient Greeks,[4] the contemporary debate took its current form after J. M. E. McTaggart's (1908) paper, 'The Unreality of Time'. This seminal work continues to shape the contemporary debate over a century later. McTaggart's argument is comprised of two parts. Part One seeks to establish that change is essential to time. Part Two, sometimes referred to as McTaggart's Paradox, shows that the tensed temporal A-series (on which change occurs) is contradictory. From these, he concludes that time is unreal. I will argue that his paradox successfully demonstrates that the A-series is self-contradictory, but not that time is unreal.

McTaggart begins by distinguishing between three systems of ordering positions in time: by their possession of the properties *past*, *present*, and *future*, in accordance with the two-place relations *earlier*

[3] A detailed survey of this position can be found in (Craig 2000).

[4] That is Parmenides' commitment to static temporal ontology and Heraclitus' ontology of flux (Palmer 2016) (Russell 2004, 46–60) (Qureshi-Hurst 2022d, 1.1).

than, later than, and *simultaneous with*, and following the three-place relations of *temporal betweenness*. He names the first system the A-series. As time passes, events possess the properties of being future, then present, and then past. The A-series holds that tensed properties provide the most fundamental description of temporal reality, meaning that the most basic description of a temporal series is whether its constituents are past, present, or future.

The second system, the B-series, holds that relations of temporal order are the most fundamental constituents of time. On the B-series, the most basic description of a temporal series is the directed order of events, meaning one can give a complete account of time by describing which events are *earlier than, later than,* or *simultaneous with* all other events. All B-series events tenselessly exist, and because there is no metaphysically privileged present moment that determines what exists (as is the case on the A-series), no event is 'more real' than any other event. On the B-series, describing time with recourse to relations and not objective tensed properties is sufficient to account for its fundamental structure. The Battle of Hastings, for example, will always be *earlier than* World War II, and both still exist somewhere 'out there' in the universe.

The C-series is equally committed to the tenseless existence of all events, but is even more ontologically impoverished than the B-series insofar as it lacks an inherent direction. Instead, it holds that a complete description of temporal reality can be given by accounting for which events are between which other events. In this way, the C-series resembles the colour spectrum in that it makes equal sense being read from either the red end or the violet end. There is no objective beginning or end, and there is no privileged direction in which an ordered temporal series ought to be understood. Any perceived direction is emergent, perspectival, and not reducible to facts about time itself. Subsequent scholarship has reified these temporal series into fully fledged metaphysical theories, namely the A-theory, B-theory, and C-theory.

Any A-theory of time, namely a theory of time that maintains that time is most fundamentally described by the A-series, must have

the property of admitting tensed facts. There are several different temporal theories that include A-series time, each of which has a different combination of properties. There are two principal A-theories, and a third that has received far less scholarly attention. The first, presentism, claims that the only things that exist are the events that occur on the present's knife-edge. The term knife-edge is appropriate to describe the present because it is sharp, has very little extension, and cuts the future from the past. Existence entails being present, meaning the only existing things (entities, events, and spatiotemporal locations) are present things. This claim can be reformulated as the claim that all objects that exist are simultaneous with each other and with the present. So, dinosaurs do not exist, and nor does the human colonisation of exoplanets, as anything past or future is non-real.[5]

The second leading A-theory, the growing block, echoes presentism's claims about an objective present moment that functions as the frontier of becoming. It differs, however, in that it does not restrict existence claims to the present but allows the accumulation of real past events in a 'block' that grows as ever more moments and events come into existence and move from being present into the past (Broad 1923, 66). The past and the present constitute the exhaustive set of all that is real, and the future remains merely potential with events not becoming actualised until one (or the only, on a deterministic view) potential future becomes the actual present. On this view, human colonisation of exoplanets does not exist, but dinosaurs are still out there in the 'block' of past events.[6]

The final A-theory, the moving spotlight, is committed to the eternalist 'block universe' metaphysic of the B-theory and C-theory,

[5] For more on presentism, see (Bigelow 1996) (Zimmerman 1998) (Hinchliff 2000) (Percival 2002) (Crisp 2003) (Zimmerman 2004, part 1) (Bourne 2006) (Fine 2006) (Zimmerman 2008) (Tamm and Olivier 2019) (Emery 2020) (Tallant and Ingram 2020).

[6] For more on the growing block, see (Broad 1923) (Tooley 1997) (Correia and Rosenkranz 2003) (Braddon-Mitchell 2004) (Forest 2004) (Merricks 2006) (Forbes 2015) (Deng 2017a) (Miller 2018) (Correia and Rosenkranz 2018) (Perović 2019).

but with the additional property of a moving present. On this view, a so-called moving spotlight picks out a metaphysically privileged point that defines an objective *now*. This model accommodates both tensed facts and a block universe (Skow 2009, 666). The moving spotlight has only a handful of supporters,[7] as it has deep structural problems. Oliver Pooley, for example, has argued that the moving spotlight view, in particular Skow's formulation of it, falls foul of the 'Two Times' problem, in which two times are posited to explain the special features of the temporal theory to which one adheres: time and 'super-time'. This is a serious violation of the Principle of Ontological Parsimony, which will be discussed in greater detail in Chapter 3 of this work. Moreover, one of these times is A-theoretic and the other B-theoretic. Such a position is metaphysically muddled and as such is unsatisfactory (Pooley 2013a, 332). Huw Price similarly argues that the moving spotlight is fatally flawed (Price 2011, 277–280). Unfortunately, further discussion of this option lies outside the scope of the present work and will be set aside from this point onwards. Here we will be engaging with just the two leading A-theories: presentism and the growing block. In fact, for our purposes we can just use the term 'A-theory' and capture all that is required to distinguish it from the block universe.

Henceforth, the term 'A-theory' shall be used as a blanket term to describe any theory in which time has the following properties: tensed truths are both real and fundamental; time is dynamic in the sense that it flows, with successive moments possessing the objective properties of *future, present*, and then *past*; there is an objective and universal present moment, at which point potential future events become real. The change in degree of the pastness of events is not merely a function of our changing perspective on reality; it reflects the way time truly is. The universal and objective present sharply divides the future from the past.

[7] That is (Cameron 2015) (Skow 2009, 2015).

In many ways, the B-theory and C-theory can be considered together. Their central claims, namely a denial of the existence of tensed facts and an objective present moment, commit each to the existence of a 'block universe' in which all moments, objects, and events coexist. The block universe of the B-theory and C-theory is static in that time does not objectively flow, and no particular time is ontologically privileged. The finer details of this universe will generally be filled in by the prevailing physical theory.[8] A B-theorist is committed to the claim that a complete account of temporal reality can be given, as Oliver Pooley writes, with 'an exhaustive catalogue of which events occur, how they are temporally related', and their direction (Pooley 2013a, 324). The C-theory is the same in all respects except that it lacks an inherent direction. If the block universe is correct, our experience of passage must be to some extent illusory.

The block universe may be illustrated by drawing an analogy with a spatial landscape. A complete description of that landscape can be given by stating all the components of the landscape and how they are related to each other. For example, there is no Objective East, though an oak tree may be east of a lake. Neither is metaphysically privileged – they are equally real and related to each other in a fixed way. This captures both the B- and C-series' claims about the fundamentality of temporal ordering relations. Our experience of passage in the block universe can also be explained using this spatial analogy. If you look out of a train window moving through the scene, the landscape seems as though it is flowing past you. This is not an ontological property of space; it is a phenomenological property of your perception. There is no sense in which the various spatial points you currently observe are any more real than those you observed previously. The perceived dynamism is a result of your movement through space as opposed to the space itself exhibiting flux. Though block theorists largely accept that we have prima facie experience of temporal passage, many of them argue that this perception has no ontological content. We turn to such discussions in Chapter 4.

[8] For example, whether spacetime is Galilean or Lorentzian.

Philosophers continue to disagree about which temporal series is more fundamental. Though the philosophy of time contains many subdebates, such as those just discussed, the finer details of these are orthogonal to the aims of this book. As such, unless temporal ordering relations become directly relevant, I will be considering the B- and C-theories together under the broader category of theories that subscribe to the 'block universe' model of spatiotemporal reality. Proponents of the opposing A-theory are committed to either a presentist or growing block metaphysic that grounds the truth of tensed claims and requires an objective moving present moment. What I am really concerned with here is temporal ontology, and so the key distinction upon which hangs much of the argumentation of the later chapters is between an A-theory and the block universe. To trace how the A-theory, B-theory, and C-theory came about, however, we must begin with McTaggart's argument for the unreality of time.

MCTAGGART'S ARGUMENT FOR THE UNREALITY OF TIME

Change as Essential to Time

McTaggart's focus was on the A-series and B-series, and much contemporary scholarship has followed suit. As such, much of the metaphysics of this chapter will draw the distinction between the A-series/A-theory and the B-series/B-theory. We will return to the language of the block universe later. McTaggart begins by arguing that change is essential to time. In so doing, he assumes that time *qua* time is equivalent to temporal passage (Oaklander 1996, 205). He goes beyond the claim that time is demarcated by the processes of change that occur within it to the stronger claim that without change time does not exist (McTaggart 1908, 459). If everything in the universe, from quarks to galactic super-clusters, froze, McTaggart claims this would constitute the cessation of time. This inextricable link between time and change is the hinge on which his conclusion of the unreality of time pivots.[9]

[9] Such an argument can be found in Aristotle's *Physics* (Bardon 2013) (Roark 2011) (Maudlin 2015).

McTaggart argues that change can only occur on an A-series.[10] He notes that events themselves do not change – events only change with regards to A-properties, namely first being future, then present, then past (McTaggart 1908, 460). The only conceivable B-series change, he argues, is if 'an event ceased to be an event, whilst another event began to be an event. But this is impossible … an event can never cease to be an event. It can never get out of any time series in which it once is' (McTaggart 1908, 459). B-series events tenselessly exist, with no ontological priority given to any event (i.e. no event is objectively *now*). *Earlier than* and *later than* relations obtain tenselessly and eternally. The assassination of Abraham Lincoln will always have happened in a theatre on 4 April 1865 and will always be in an *earlier than* relation with the moon landing. Thus, McTaggart argues, genuine change is impossible without the A-series. As it is the only series that can accommodate the type of change McTaggart believes is necessary for the existence of time, he concludes that time is only real if the A-series is real. This is the first stage of his argument.

The Self-Contradictory A-Series

The second stage of the argument is sometimes referred to as 'McTaggart's Paradox', as he appeals to the changing nature of tensed A-properties to show that the A-series is self-contradictory or paradoxical. If he is right, then A-time cannot be real, as nature abhors contradiction. He begins by pointing out that all events are in the future, become present, and then become past. As past, present, and future are incompatible determinations, no event can possess more than one A-property at any one time (McTaggart 1908, 468; Dyke 2002, 140–141). From this, he concludes that tense is paradoxical.

[10] Many B-theorists have rejected McTaggart's claim that change is incompatible with the B-series – *events* might not change, but *objects* do. This notion, often called qualitative change, will emerge in Chapter 7.

The obvious response is to point out that language is appropriately equipped to denote tense and that these properties are only incompatible when held simultaneously. There is no obvious contradiction in saying that some event *e is* present, *has been* future, and *will be* past. Michael Dummett acknowledges this obvious response, writing that 'one has a strong natural impression that McTaggart's argument is a sophism based on a blindness to the obvious properties of token-reflexive expressions' (Dummett 1960, 499). By token-reflexive, he means that the truth values of tensed expressions depend on the circumstances of their utterance.

McTaggart argues that this move advances us no further, however, as it, too, contains a contradiction (McTaggart 1908, 468). By explaining away the incompatibility of the three A-properties by saying some event *e is* present, *has been* future, and *will be* past, one must construct a second A-series in which to root these further tensed claims and which grounds their truth value. The same problem then arises when trying to account for the truth claims of the second-order A-series, in that a further A-series must be constructed to give the truth value of the second A-series' tensed claims. This process of constructing higher order temporal series must repeat ad infinitum, as there is no point at which one can ascend the hierarchy to a resolution of the contradiction.

One can draw out this contradiction in the following way: *past*, *present*, and *future* are predicates of the first level (McTaggart 1908, 468). To avoid the contradiction, one must reformulate 'was future' as 'future in the past'; this generates nine predicates of the second level. These second-level predicates then incur the same contradiction as the first-level predicates, and third-level predicates must be invoked to remove it. This is illustrated in Figure 1.1.[11]

This process repeats ad infinitum, creating an unresolved infinite regress, and so, the argument goes, the A-series is inherently contradictory.

[11] Figure reproduced from the one given in (Dummett 1960, 468).

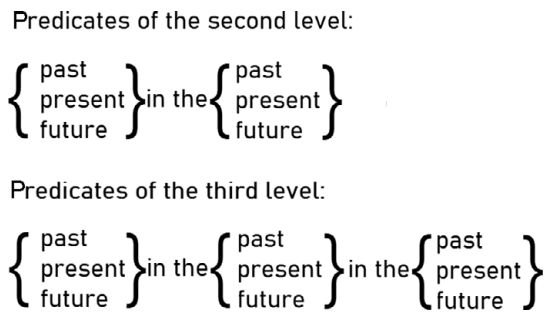

FIGURE 1.1

Despite a general consensus amongst opponents of the A-theory that McTaggart's argument is, as Adrian Bardon writes, 'both simple and devastating' (Bardon 2013, 81), there is an ongoing debate amongst some other metaphysicians as to whether the regress McTaggart identified is a vicious one.[12] On the one hand, there is a contradiction at each level of the regress; on the other hand, there is a way out of this contradiction at each level by ascending one level. In my view, the fact that the contradiction is never resolved is a compelling reason to deem the regress vicious. An unresolved contradiction is metaphysically troublesome to say the least, as there is no stopping point in the regress at which point an event can unproblematically possess an objective temporal property. As the A-series requires events to objectively and straightforwardly possess the temporal properties *past*, *present*, and *future*, an unresolved contradiction in the ascription of these properties renders McTaggart's regress vicious.

If the arguments of the preceding paragraphs are accepted, meaning the A-series is both essential to time and contradictory, then the unreality of time follows. A refutation of McTaggart's conclusion must reject one or both of these parts. As Heather Dyke notes, however, almost no one agrees with McTaggart's conclusion today. A-theorists tend to reject Part Two and B-theorists reject Part One. Both these options preserve the reality of time, although they disagree

[12] See (Smith 1986) (Mellor 1998, chapter 7) (Oaklander 1987).

about which description of temporal reality is more fundamental (Dyke 2002, 137). I endorse Part Two, that the contradiction in the A-series is genuine, but not Part One that would require us to accept the unreality of time. Rather, time can be preserved by one of the alternative tenseless theories. It is tense and passage, not time itself, that are unreal.

Against the Unreality of Time

William Lane Craig rejects McTaggart's conclusion about the unreality of time by rejecting Part Two of the argument, namely that the A-series leads to a contradiction and so cannot be real. His argument uses Alvin Plantinga's notion of a properly basic belief.[13] Plantinga is a founder and firm advocate of Reformed Epistemology, which involves commitment to the claim that religious beliefs are foundational (or, 'basic') and do not require evidential or inferential justification to be warranted.[14] Such 'basic beliefs' serve as the foundations for other beliefs; they do not require robust evidence in their support and are typically self-evident or apparent to the senses.[15] Plantinga appeals to Calvin's *sensus divinitatis* as the sensory faculty through which we develop basic beliefs about the existence and nature of God (Plantinga

[13] Craig develops several critiques of McTaggart's Paradox that cannot all be considered here, but all depend on his interpretation of McTaggart's Paradox as only problematic for a hybrid of A and B time (such as the moving spotlight). This interpretation has remained controversial (Craig 2000, chapter 6) (Craig 1998). For commentary on the latter, see (Oaklander 1999).

[14] Plantinga's epistemology emerged out of a critique of classical foundationalism. Classical foundationalism, espoused by Descartes and others, claims that beliefs are either 'basic' or 'non-basic'. Basic beliefs require no further justification, and non-basic beliefs are justified insofar as they are grounded on basic beliefs. These are analytically self-evident, incorrigible, or immediate to the senses, that is 'all bachelors are unmarried' with regard to the first, 'I am myself' with regard to the second, and 'I am perceiving blueness' with regard to the third.

Plantinga critiqued classical foundationalism on the basis that it classifies many beliefs that we typically take ourselves to hold with justification as irrational, and that it is self-referentially incoherent. His proposal widened the class of rational beliefs by developing further grounds upon which one might call a belief *properly basic*. Religious beliefs are included in this broadened category.

[15] That is of the kind provided by Natural Theology.

1967, 1983, 2000) (Plantinga and Wolterstorff 1983).[16] This process is analogous to the way we develop basic beliefs about the existence of other minds or an external mind-independent world, that is through our sensory faculties and rational judgements about what these faculties convey.

Craig develops the ideas within Reformed Epistemology to argue that our experience of temporal passage is a properly basic belief (Craig 2000, 133). We do not consciously adopt basic beliefs; rather we automatically accept them as a result of immediate experience. Properly basic beliefs function like mathematical axioms in that they form the irreducible basis for more complex noetic structures. These noetic structures are then rational if they are free of epistemic defect (Plantinga 2000, chapter 4). Foundational beliefs are not accepted on the basis of other beliefs but can be taken as epistemically sound.

Craig argues that the objectivity of tense and the reality of temporal becoming are properly basic beliefs. Essentially, our experience of events as 'irreducibly present' is so overwhelmingly compelling that arguments against it inevitably fail. Tim Maudlin makes a similar point when he argues that temporal passage is a 'fundamental, irreducible fact'. On Maudlin's view, time is ontologically primitive and thus not liable to further analysis. Attempts to describe it are therefore unnecessary, and no regress is generated (Maudlin 2007, 107). Craig calls belief in temporal passage an 'intrinsic defeater–defeater', by which he means 'a belief which enjoys such warrant for us that it simply overwhelms the defeaters brought against it without *rebutting* them or *undercutting* them' (Craig 2000, 165. *Emphasis added*). Here Craig discusses two types of defeater, each of which would remove one's justification for holding a belief.

A rebutting defeater is a piece of evidence that is inconsistent with some relevant belief. For example, imagine I believe that there is a man in a field 100 yards from me, but, on closer inspection, I realise that what I am seeing is actually a scarecrow. My belief that I saw a

[16] For a critical engagement with these ideas, see (Swinburne 2001).

man has been defeated by incompatible evidence that rebuts it. An undercutting defeater, on the other hand, is not incompatible with your belief; instead it undercuts your reasons for believing it in the first place. Plantinga gives an example in which you go into a factory and see a line of widgets that you believe to be red until an employee tells you that they are being irradiated by red and infrared light (a process that reveals hairline cracks). You do not learn that these widgets are *not* red; rather your reasons for believing they are red, namely your perceptual experience of redness, are undercut. Craig responds to McTaggart by claiming that our basic belief in the passage of time is so robust that it cannot be rebutted or undercut by any defeaters, that is it is a defeater–defeater. The contradiction inherent in the A-series, then, is no more than 'an engaging and recalcitrant brain teaser whose conclusion nobody really takes seriously' (Craig 2000, 165).

One feature that distinguishes Reformed Epistemology from the Classical Foundationalism it sought to reject, however, is that one *should* be able to change one's mind about a basic belief when presented with a defeater (Plantinga 2000, chapters 6 and 11). All sane individuals hold the basic belief that the external world exists.[17] Consider those in the matrix, however, who held the same belief about the reality of the world they inhabited. Their belief appeared to be warranted, as it was seemingly supported by experience and was not presented with any defeaters. Until, that is, they realised that their experiential reality was actually a simulation. Before this realisation, their belief in the reality of their world appeared to be basic; when presented with a defeater (viz. waking up and realising that they were plugged into a simulation machine), they rejected the belief. It was not, after all, properly basic.

Craig argues that experience of the passage of time is so compelling that it overwhelms any defeater, and therefore belief in the A-theory is still warranted. He is compelled to conclude that the

[17] Despite what some philosophers may have you believe!

contradiction McTaggart unearthed is in the use of tensed expressions that describe time rather than with time itself. Time passes, and any contradiction in our ability to describe this is a problem with language that carries no ontological weight. In essence, Craig rejects McTaggart's move from our inability to describe events in time without contradiction to the unreality of time itself, claiming that it is the persuasiveness of our experience, not the logic of McTaggart's argument, that should be trusted.

Unfortunately, this response cuts no ice. It is nonsensical to claim that any belief could *never* be defeated. Even the beliefs we hold to be utterly foundational to our sense of self and our place in the world should, at least in principle, be open to defeat if the appropriate evidence came along. There is an important difference between a belief being basic, and therefore not *requiring* propositional evidence to be justified, and the much stronger claim that some beliefs are based on experience so powerful that they *cannot* be defeated even in the face of overwhelming evidence.

Let us briefly return to those in the matrix. Their experience powerfully conveyed the reality of their world, in the same way that our experience powerfully indicates the reality of our external world. Absent defeaters, belief in the external world is basic. Yet when the right sort of evidence came along, those in the matrix had their belief defeated. It turned out not to be basic after all. Indeed, it would have been absurd for them to hold onto the belief in the reality of their simulated world in the face of contrary evidence. We must remain open to the possibility of defeat regarding even our most foundational beliefs, even if we hope and trust that that defeat will never come. In other words, although basic beliefs do not require evidence to be warranted, they should both be free of contradiction and not stand in opposition to available evidence. They are rational only in the absence of defeaters. So, the question is: is McTaggart's argument a defeater?

Basic beliefs should not generate contradictions. If basic beliefs are the foundations on which noetic structures are built, then logical soundness is crucial. Though basic beliefs are not required to be

accepted on the basis of any other belief, their internal logic must stand up to scrutiny. In my view, our experience of temporal passage is not compelling enough to override the unresolved contradiction McTaggart unearthed in the A-series, and therefore the argument is a *logical defeater*. Perception and experience are notoriously fallible, and McTaggart's argument cannot be dismissed on the basis of an experience that may, in fact, be illusory. In Chapter 4, I present the various possible explanations of temporal experience that do not require the truth of the A-theory. The success of any of these will undermine experience as a compelling reason to subscribe to the A-theory. Such arguments would be *undercutting defeaters*, insofar as they provide alternate explanations for temporal experience that do not require the reality of the A-theory. They undercut the phenomenological reasons for belief in the reality of temporal passage.

As Plantinga argues, 'defeaters depend on and are relative to the rest of your noetic structure, the rest of what you know and believe. Whether a belief A is a defeater for a belief B does not depend merely on my current experience; it also depends on what other beliefs I have, how firmly I hold them, and the like' (Plantinga 2000, 360). In Chapters 2 and 3, I argue that Einstein's relativity theories provide evidence that is compelling enough to warrant a rejection of the A-theoretic belief in uniform temporal passage and an objective *now*. This depends on other beliefs, particularly the following: (1) evidence is important in justification of beliefs about empirical matters (such as the nature of time), (2) our scientific theories are reliable ways of forming sound beliefs about the world, and (3) these beliefs are warranted enough to constitute knowledge. I argue that if the two are in conflict, then belief in the reliability of empirical evidence should be held more firmly than belief in our raw sensory experience. Therefore, if relativity undermines our phenomenological experience of temporal passage, then this should be taken seriously.[18] Thus, I argue that

[18] One can consider this position as analogous to the fact that humanity once held the belief that we were the centre of the cosmos. Heliocentrism and the scientific

Special and General Relativity together constitute a *rebutting defeater* insofar as they provide robust empirical evidence against the core features of the A-theory.

In the rest of Part I, I present a cumulative argument that Craig is incorrect in believing the A-theory to be a properly basic belief. I reject Craig's claim that belief in the A-theory is immune to defeaters, and in the chapters to come I present several defeaters that taken together are fatal. McTaggart's argument reveals a defect in the internal coherence of the A-theory, serving as a logical defeater (Chapter 1); the relativity theories constitute a rebutting defeater insofar as they provide evidence against essential components of the A-theory (Chapters 2 and 3); B-theoretic explanations of passage provide an undercutting defeater in that they provide an alternative explanation of temporal experience that does not require the reality of passage (Chapter 4). The rest of Part I, then, is an extended argument for the internal coherence and explanatory power of the block universe that can also be read as the presentation of defeaters that render belief in the A-theory unwarranted. Whilst the reader may feel that the A-theory has been discarded early on, each piece of evidence I present in favour of the block universe can also be read as a defeater for the A-theory.

TURNING TO TEMPORAL LANGUAGE

D. H. Mellor

Philosophers have also argued for the A-theory on the grounds that it is necessary to make sense of language (Craig 1996). Ordinary language is tensed, and for sentences to have a truth value, the argument goes, tense must be an objective feature of reality. 'Lincoln's assassination is in the past' is true only if there is some objective past event that acts as a truth-maker and renders the sentence true. D. H. Mellor undercuts this by offering a tenseless explanation of tensed language.

> evidence in its favour defeated this belief. We allowed it to do so because of our commitment to empirical evidence and the scientific method.

He agrees with Part Two of McTaggart's argument (the A-series is contradictory) but rejects Part One (the A-series is essential to time). Mellor's argument is widely regarded as representing the best hope for a tenseless analysis of tensed language for the B-theorist and C-theorist. Mellor was a B-theorist, so this section will be focusing on the B-theory. With minimal adaptation, similar arguments could be applied to the C-theory.

Mellor gives an account of how tensed sentences can have truth values despite time being fundamentally tenseless. For Mellor's argument to succeed, he must establish how tenseless truth-makers (i.e. features of the world that make sentences true on the correspondence theory of truth) are sufficient to determine the truth values of tensed sentences. In other words, if B-facts are sufficient to make tensed sentences true, then the A-theory is superfluous to requirements and the truth of the B-theory is consistent with our ordinary language usage. By truth, Mellor means whether a particular statement is a correct representation of the way the world actually is. By fact, Mellor means a language and agent-independent state of affairs. For example, it is a fact that the Sun is 8 light minutes away from Earth, and 'the Sun is 8 light minutes from Earth' is a true sentence expressing this fact. In this context, Mellor is arguing that B-facts are sufficient to account for the truth conditions of A-sentences (rendering the A-theory superfluous to requirements). As Mellor writes, 'if B-facts do this job [of truthmaker], A-facts do not; and if they do not, then they do not exist, since this is what they exist to do' (Mellor 1998, xi). This argument functions as an *undercutting defeater* insofar as it undermines the credibility of a central claim of the A-theory that the reality of tense is required to account for the truth conditions of tensed sentences.

Mellor's argument for a tenseless analysis of tensed truths hinges on the difference between *types* of words and sentences and *tokens* of them. A *type* in this context is a non-specific sentence of which there can be many distinct instantiations, relevantly similar to how 'cat' is a species of animal distinct from any individual cat. A *token* of a word or sentence is a specific instantiation, as my

beloved Raymond is a specific instantiation of the species 'cat'. Mellor gives the example of a sentence in his book – the sentence being the type, and each printed copy of it in each separate book being a token. Tokens can be events or things as well as sentences and are anchored to definite locations in time and space. If they have definite dates, then they should all have fixed truth values. The truth and falsity of tensed sentences, on this account, are properties of the *tokens* rather than the *types* and depend directly on how their position in a temporal series relates to that of the event that they are about. For example, the claim 'Abraham Lincoln was assassinated this week' is true iff it is uttered the week of Lincoln's assassination, and false if uttered during any other week (Mellor 1981, 42). On this token-reflexive account, a tensed sentence's relation to tenseless dates and instants is all that is required to ground its truth value.[19]

Mellor explains the formula used by tense logicians to study complex tenses systematically by writing them in a standardised way. Complex tenses denote A-series positions but can be reiterated ad infinitum with each reiteration potentially altering the truth value. The four-step formula for writing complex tenses is as follows: i) prefix a present tense *core* sentence with a sequence of tense operators indicating A-series positions; ii) shift the present moment to the A-series position indicated by the first tense operator in the sequence; iii) repeat with each successive operator; iv) determine whether the core sentence would be true if the present date did have the date the process indicates. The complex sentence is true if so, and false if not (Mellor 1981, 45).

For example, to say 'Abraham Lincoln was assassinated two weeks ago' one adapts the core sentence 'Abraham Lincoln is assassinated this week' to 'two weeks ago, Abraham Lincoln is assassinated this week'. Iff this sentence is uttered two weeks after Lincoln's assassination, then it is true. Any complex iteration of tense written in this way can be given tenseless truth conditions, thus dispensing with the need for tensed facts. Mellor calls this the Trojan Horse of

[19] See also (Dyke 2002).

tense logic, since once it is admitted 'all the topless towers of tense logic can rapidly be toppled to the tenseless ground' (Mellor 1981, 44). Without the need for tensed facts, the A-theory that requires the A-series to be fundamental loses yet more persuasive force. Not only has McTaggart shown it to be structurally incoherent, but if this argument holds out then the existence of tensed facts is metaphysically superfluous to account for the existence of tensed truths. If successful, then one need not posit the objectivity of tense to account for the truth values of tensed language. Before moving on, we must consider some key objections.

William Lane Craig's Response

These ideas have received extensive treatment in the literature, and it is not possible to discuss everything that has been published. In the rest of this chapter, I consider critiques of Mellor's argument mounted by William Lane Craig. Craig has written sharply and prolifically on the philosophy of time, and his views can be taken as exemplifying the A-theorist's best response to arguments such as Mellor's. Craig mounts a three-pronged attack on Mellor's argument: i) tenseless truth conditions cannot explain logical equivalence, ii) Mellor's B-theory cannot account for the truth conditions of un-tokened (i.e. unuttered) sentences, and iii) Mellor's B-theory conflates the truth conditions of tensed sentences with the truth-makers of tensed sentences (Craig 2000, 77). I will defend Mellor's argument by responding to each of these criticisms in turn.

Tenseless Truth Conditions Cannot Explain Logical Equivalence

Craig argues that simultaneous tokens of a tensed sentence turn out to express different facts, despite being distinct instantiations of the same sentence.[20] Craig illustrates with the following example: let *R*

[20] For an interesting exchange on this type of critique, see (Priest 1986) (Mellor 1986). For a more recent endorsement of the B-theory in spite of such criticisms, see (Beer 2010).

be one token of 'it is now 1980' and *S* be another, simultaneous, token of 'it is now 1980'. 'It is now 1980' = *R*, and 'it is now 1980' = *S*. Though these are logically equivalent statements, Craig claims that on Mellor's account they express different facts:

> [Mellor's] New B-Theory holds that ontology admits no tense; there are no tensed facts. Accordingly, it provides an analysis of tensed sentences which purports to clarify in terms of their tenseless truth conditions what are the tenseless facts which the tensed sentences state and which make them true. Tensed sentences state no other facts than these. But on the token-reflexive analysis, *R* and *S* state different facts.
>
> *(Craig 2000, 78).*

Mellor's truth-bearers are sentence tokens, rather than propositions or sentence types. Truth conditions express the conditions under which a sentence is either true or false. In making tokens the truth-bearers and giving them token-reflexive truth conditions, the truth conditions no longer express the conditions under which the *sentence* is true. Rather, they only account for the truth conditions of each *token*. Craig argues therefore that the token-reflexive analysis fails to provide adequate truth conditions for tensed sentences. Furthermore, insofar as it does not accommodate logical equivalence relations between sentences such as *R* and *S*, Mellor's account 'makes a nonsense of logic' (Craig 1996, 14).

But is not this the point of the token-reflexive analysis? Mellor intended to demonstrate that non-analytic sentences are true or false according to the relation between the B-series position of their utterance and the B-series position of their subject matter. In this analysis, it must be the token that bears the truth value. The sentence 'Socrates is alive' is true when uttered between *c*.470 and 399 BC and false if uttered at any other time. *R* and *S* are two distinct expressions of the same sentence type, which means they could in principle have different truth values. Though Craig argues that *R* and *S* are two logically equivalent sentences that appear to express different facts, this is not

the case. They have the same truth value when expressed in the same context, and in this instance, they express the same fact (i.e. the tenseless fact 'the year is 1980'), but not if expressed in relevantly different contexts. They are logically equivalent in all relevant ways.

Craig's objection is insubstantial. He claims that 'the token-reflexive theory has an internal logical incoherence, in that sentences stating the conditions under which two logically equivalent sentences are true are not themselves logically equivalent' (Craig 2000, 79). He argues:

> *R* entails *S*.
> *S* entails *S occurs* in 1980.
> Therefore, *R* entails *S occurs* in 1980.

Craig rejects this conclusion, pointing out that entailment concerns propositional content, not existence. The existence of *S* should not be entailed by the existence of *R*; it is perfectly reasonable that only *R* should be uttered and that *S* is not. The claim '*R* entails *S*' is intended to express that the propositional content of *R* entails the propositional content of *S*, not that the existence of *S* is entailed by the existence of *R*. Craig identifies two options here: (1) one must conclude that the truth of *R* does not entail the truth of *S* (since tokens are contingent entities and some worlds in which *R* exists do not include *S*). He argues that this is unfavourable as it does not accommodate logical equivalence relations and so makes a nonsense of logic. (2) one must conclude that the existence or occurrence of *R* does imply the existence of *S*, which would lead to the ontological proliferation of an infinite number of sentence tokens of 'It is now 1980' (since all are entailed by *R*) (Craig 2000, 79) (Craig 1996, 14–15).

Here Craig's critique begins to falter. Tokens are actual instantiations of sentence types and only exist when they are uttered at a distinct time and place. It is when, and only when, they are uttered that they have a truth value; therefore, if *S* and *R* exist, then *S*'s propositional content is entailed by *R*, which is logically unproblematic. Also, *S* does exist, as Craig's example indicates. If *S* does not

exist, then it holds no relations with *R* and its existence is not entailed. *S*'s existence is independent of the truth of *R*, and only once *S* is instantiated at a particular B-series point can it enter into logical relations with *R*. Craig once again fails to take the difference between types and tokens seriously – it is simply not the case, on Mellor's account, that sentence types have truth values. Any problems identified with the truth values of sentence types are red herrings.

The apparent 'ontological proliferation of an infinite number of sentence tokens of "it is now 1980"' are not real tokens. They are equivalent to possible worlds, of which there *are* an infinite number. On utterance, they have fixed truth conditions that are rooted in the B-relation between the token and its subject matter and can enter into relations with other tokens. There is no vicious regress generated by the mere possibility of an infinite number of tokens of the sentence 'it is now 1980'. The truth of *R* entails the truth of *S* only when *S* is uttered and becomes an actual token, at which point it does exist (unproblematically). The tokens are logically equivalent in that they express the same sentence and would be true or false by satisfying the same set of truth conditions. There is no incoherence in the idea of an infinite number of *possible* tokens, and the existence of an actual token *R* does not generate an infinite number of actual tokens through entailment as Craig claimed. Craig himself acknowledges that non-existent tokens could not possess a truth value in his second critique of Mellor (Craig 2000, 84). For these reasons, Craig's first critique of Mellor's B-theory fails.[21]

Truth Conditions of Un-Tokened Sentences

Craig argues that Mellor gives no account of the truth conditions of un-tokened sentences, specifically the sentence 'there are no tokens'

[21] Laurie Paul considers critiques of this ilk (specifically the version presented by Quentin Smith) and reformulates the tenseless theory of time by abandoning the reliance upon tokens, relying instead on the evaluation of sentence types with respect to a context rather than upon actual or possible utterances of tokens of the types (Paul 1997).

(Craig 1996, 18). In the Cretaceous Period, for example, there would have been no tokens to express this proposition and function as a truth-bearer. Then, the Earth was exactly as the sentence describes, viz. there were no tokens, but the token-reflexive analysis provides no way to satisfy the truth conditions of that proposition.[22] Quentin Smith also critiques the token-reflexive account on these grounds, writing that 'if a normal A-sentence is used on some occasion to express something true, what the A-sentence expressed on that occasion would have been true then even if it had not been expressed' (Smith 1993, 83). This point hinges on the claim that truth is independent of the language used to express it.

Craig and Smith argue that Mellor's token-reflexive account cannot make sense of the fact that the token 'there are no tokens' is false now, but true in the Cretaceous Period. This period is far in our geological past and was a period in which philosophy, language, and logic did not appear. Therefore, no tokens would have been uttered for which truth conditions could be given, and there is no way to say 'there are no tokens' was true for the Cretaceous Period.[23]

Heather Dyke responds to this criticism by distinguishing between two dimensions of truth – the ontological dimension and the semantic dimension. Tokens are intended to express something about the way the world really is; this is their ontological function. In other words, tokens are made true by their relation to certain facts – that is the token 'I am writing this sentence' is true now because it is simultaneous with the fact that I *am* writing it. It is false by the time you read the sentence. This also reveals tokens' semantic function, namely that a sentence token's truth value depends upon the meaning of its semantic constituents in whichever context they are produced. The success of the token-reflexive analysis depends upon its ability to show that we do not need an A-theory to account for the existence of

[22] B-theorist Jeremy Butterfield acknowledges this problem (Butterfield 1985, 70–74).

[23] Mellor acknowledges this problem. In *Real Time II*, he offers a new argument that claims that '*e* is present' is made true at time *t* by *e* being located at time *t* (Mellor 1998, chapter 3).

tensed truths. The connection between truth and reality gives the impression (expressed by Craig and Smith in their aforementioned critique) that truth is independent of the production of tokens (Dyke 2002, 149).

Dyke argues that Craig and Smith's claim that the token-reflexive account cannot account for the truth conditions of the sentence 'there are no tokens' is misleading in two ways. First, she argues that it fails to disambiguate between sentence types and sentence tokens; it is sentence tokens, not sentence types, that have truth values. The token 'there are no tokens' can never be true, so from a semantic point of view it is not unduly problematic. Second, Dyke argues that this critique equivocates between the semantic and the ontological dimensions of truth. There certainly *are* times when it is true that there are no sentence tokens, but there are no tokens of this sentence type that can be true (Dyke 2002, 150–151).

In the Cretaceous Period, no token existed to express the fact that there were no tokens. This is a semantic point. Ontologically, however, the world was such that there were no tokens. Thus, it is the case that if such a token were uttered then it would have a truth value reflective of the connection between the world and the utterance.[24] The token-reflexive account captures this ontological fact whilst acknowledging the semantic point that there were no tokens to express this truth at the time. By rejecting the claim that *sentence types* have truth values, and by disambiguating between the ontological and the semantic dimensions of truth, Dyke defuses this critique.

In fact, Craig's own presentism faces a related and rather serious problem. Presentism holds that only present objects and events exist. Craig also subscribes to a correspondence theory of truth whereby the truth of a sentence is determined by its correspondence with facts in the world. Holding these two propositions together, Craig's ontological and epistemological positions forbid him to speak meaningfully about

[24] It would, of course, be false, as the utterance of the token would make the sentence 'there are no tokens' false.

anything that does not currently exist. Though the B-theory cannot adequately account for the truth of the sentence 'there are no tokens' in the Cretaceous Period, Craig cannot even claim 'there was a Cretaceous Period'. He has no coherent way of outlining truth conditions for sentences that refer to the past, as presentism denies that there is a past that exists with which truth claims can correspond.

This objection to presentism is often referred to as the 'grounding objection' or the 'truthmaker problem'.[25] As Joshua Mozersky explains, the point of this objection 'is to rule out true propositions that "hang free" of reality: bare truths are unacceptable' (Mozersky 2011, 127). To ground true propositions, one needs existing truth-makers. As presentism rejects the existence of any non-present things and events, Craig's position invites a far greater wealth of problems regarding the truth claims of sentences referring to anything non-present, as the present is all that exists.[26] These epistemic concerns are far more serious for presentism than those that Craig identifies in Mellor's B-theory, in my opinion. As Simon Keller remarks, though this truth-maker objection does not refute presentism, 'it does show that presentism comes at a price. Whether or not presentism is plausible depends upon whether or not that price is worth paying' (Keller 2004, 85). This price is the inability to ground truth claims about non-present matters, and in my view, it is too high. Though neither side has offered a knock-down argument here, Craig certainly fails to offer a compelling alternative to Mellor on the matter of truthmaking. The debate, like many in philosophy, rages on.

Conflating the Truth Conditions of Tensed Sentences with the Truth-Makers of Tensed Sentences

Craig attacks the implicit assumption that 'the provision of tenseless truth-conditions is somehow relevant to tenseless facts' (Craig 2000,

[25] For further discussion, see (Markosian 2004) (Keller 2004) (Crisp 2007).

[26] Another option is so-called hard presentism that bites the bullet and denies that there can be any truths about the past (Dawson 2020).

87). Essentially, if tensed facts are not required to ground the truth claims of tensed sentences, then they are ontologically gratuitous. Craig claims that Mellor's assumption that 'what is stated as a sentence's truth conditions *is what makes the sentence true*' conflates truth conditions with truth-makers (Craig 2000, 87). A truth condition, Craig argues, is a semantic exercise, whereas a truth-maker concerns ontology. Craig gives the example of mathematical and logical truths, which are necessarily true, claiming that all necessary facts are mutually entailing. As such, 'one can give adequate truth conditions for any necessary truth by means of another, for example "'a square is quadrilateral iff a triangle is trilateral."'(Craig 2000, 88). Despite this, we would not wish to claim that what makes a square quadrilateral is the fact that a triangle is trilateral.

Craig gives counterexamples in which the truth conditions of sentences are independent of the ontological facts that make these sentences true or false. The first is modal logic, in which a statement is necessarily true iff it is true in all worlds, and possibly true iff it is true in some possible worlds. These state the rules of use for the proposition under consideration, but without ontological truth-makers we cannot know if the proposition is true or false. Possible world semantics alone cannot tell us what makes statements true or false. The second example Craig gives is the semantics of counterfactual propositions. In possible world semantics for counterfactuals, a 'would' counterfactual is true in some world *x* iff in all antecedent-permitting worlds that are most like *x*, the consequent is also true. A 'might' counterfactual is true in *x* iff the consequent is true in at least one of the antecedent-permitting worlds most like *x* (Craig 2000, 89). Though these conditions supply the rules of use for counterfactual propositions, they do not bear on the actual truth of a proposition. It is on these grounds that Craig challenges the B-theorist's 'implicit assumption' that the truth conditions of a statement are what make the statement true.

This ultimately fails to collapse the B-theorist's token-reflexive account of the truth conditions of tensed sentences, as it is only

tangentially relevant to the actual case of the truth conditions of tokens offered by Mellor and others. Mellor's account claims that for a tensed sentence to be true, it must hold a certain B-relation to a tenseless fact. These are the truth conditions. But the B-theorist has all they need contained in these truth conditions. The truth-maker is the *tenseless fact*. To completely separate truth conditions and truth-makers is to make an artificial bifurcation, which is useful only insofar as it illustrates the different components of what makes sentences true. Though they are two different parts, they are parts of a greater whole, namely the set of what makes a particular sentence true.

Craig attacks a straw man when he claims that Mellor's account does not supply truth-makers for statements. The truth conditions provide the semantic rules for what makes a sentence true, and the ontological truth-maker function is fulfilled by tenseless facts. The truth conditions for the sentence 'it is 1980' are the utterance's relation to the circumstances of the utterance, that is that it is uttered in 1980. Once a token of the sentence is uttered, what makes it true is the corresponding tenseless fact that the date is 1980, and the relation of the utterance to that fact. Both truth conditions and truth-makers are supplied by the B-theorist, and therefore Craig's final critique fails to extinguish Mellor's B-theory.

CONCLUDING REMARKS

In this chapter, I have presented some metaphysical arguments for the coherence of the block universe. My primary tactic has been to show that the B- and C-theories of time on which the block universe's temporal ontology depends are able to stand up to scrutiny. I introduced McTaggart's A-series/B-series/C-series distinction and his argument that there is an irresolvable contradiction inherent to the A-series. Though McTaggart's denial of the A-series is compelling, one need not go as far as he does and deny the reality of time altogether. The B-series and C-series are, I argue, reasonable alternative accounts of the ontology of time and have stood firm against critiques mounted by A-theorists such as William Lane Craig. The semantic and

metaphysical analysis provided in this chapter has shown that the A-theory contains fundamental structural flaws that render it internally contradictory. This logical defeater of the A-theory is the first in a series of defeaters that I present in this book. Together they comprise the cumulative case that belief in the A-theory is less persuasive than the alternative block universe.