# Effervescent Presentism:
## An Outline and Defence.

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# Acknowledgements

# Abstract

This dissertation is an investigation of presentism, the thesis that all and only present things exist. Though an increasingly popular topic, it is ill-understood. The investigation has three main aims. Firstly, to improve understanding of the presentist thesis by distinguishing, outlining, and exploring various plausible competing interpretations ('theories'). Secondly, to motivate presentism and weigh-up competing presentist theories against theory-choice criteria. Thirdly, to develop and defend a preferred, and novel, presentist variant: *Effervescent Presentism.*

What the presentist thesis amounts to depends on how key concepts employed in its statement are interpreted; distinct interpretations each specify competing description of temporal reality. Specifically, the focus is on how we understand *existence* and the A-determinations—*presentness*, together with its related notions of *pastness* and *futurity*.

The dissertation divides into three parts. In Part One, I establish a fixed, tensed, conception of existence avoiding the triviality charge against presentism, and permitting a robust distinction between mere temporal variation and metaphysical change. Then, having outlined a broadly pragmatic methodology, I provide some motivations for presentism, focusing on its explanatory virtues for the nature of causation. This justifies interest in the project, but also establishes a distinguishing criterion for presentist theories: how well they support those motivations.

In Part Two, I outline alternative presentist theories, and introduce potential theory-choice criteria to suggest plausible interpretative directions and preferentially distinguish theories. Part Three then introduces, develops, and defends effervescent presentism, in greater detail due to its preference and complexity. It delivers an understanding of presentness in terms of a law-based account of causal activity. This ties time intimately to causation, and consequently supports the presentist motivations from Part One and the need to unify time. The research should demonstrate the tenability of effervescent presentism, and its worthiness of wider consideration.

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# Introduction

This dissertation details my research in the philosophy of time, focused on the metaphysical thesis referred to by contemporary philosophers as *Presentism*:[1] that 'all and only present things exist'. In my experience, presentism receives a mixed reaction amongst non-philosophers. Most think it's obviously true. After all, 'exist' is the present tensed inflexion of the verb, and this naturally inclines non-philosophers, in addition to some professional philosophers, as we shall see, to conclude that any existent whatsoever is present on purely semantic grounds. They see little substance worthy of controversy or note in this innocuous little thesis.

Likewise, the associated thesis of *Temporal Dynamism*, that 'time flows'—whereby events change from being distantly future, to near future, then momentarily present, before receding ever further into near and distant pasts—also appears to be well-regarded by most non-philosophers. Yet, unlike presentism, this thesis is commonly understood as making a substantial claim about the nature of reality: that presentness, or reality, is irreducibly *dynamic*. Though, it's not always entirely clear what this amounts to, it's natural to combine temporal dynamism with presentism, whereby the *ordinary qualities*[2] of things themselves undergo real change. There is little doubt that, widespread acceptance of temporal dynamism amongst non-philosophers is inspired by the combination of, our shared temporal experiences, with the transient aspects of our own streams of consciousness. It's partly on this basis that presentism deservedly earns its credentials as the commonsensical conception of time. And this has perhaps been the main impetus behind interest in presentism.

Alternatively, non-philosophers acquainted with modern physics—and again, this is mimicked in the philosophical profession—manifest a tendency to dismiss presentism as evidently false. There is a prevalent prejudice that, since the A-determinations—*pastness*, *presentness*, and *futurity*—aren't manifest in fundamental physics, they must be illusory. And with the dismissal of A-determinations, there can be no temporal dynamism; since there would be no pastness, presentness, and futurity for

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[1] It has also been called 'nowism' and 'temporal solipsism', yet 'presentism' has become the preferred labelling. It seems appropriate, so I follow suit.

[2] As opposed to more theoretical qualities, like pastness, presentness, and futurity. Ross Cameron (2015, pp.48-49) complains that, when these qualities make no difference to ordinary qualities, they are 'metaphysical idlers'.

events to flow from and into. Instead, physicists emphasise analogies between time and space, intimately fusing the two in modern theories into a single four-dimensional structure, *Spacetime*, without tidy separation. This conception of reality, to contrast with temporal dynamism, is consequently often described as ultimately *static*. That is, there is a complete and unalterably accurate fundamental description of reality. For those so inclined, the elegance of simplicity, in combination with dogmatic metaphysical orthodoxy in physics, seems to have driven their dispelling of A-determinations.

It's perhaps, then, needless to remark, that contrary to initial appearances, presentism *is* contentious. Philosophers are thus confronted with a motivational challenge either to prove or disprove presentism's theoretical worth in light of increasing pressures to eliminate substantive readings of the A-determinations. Yet, despite this dialectical set-up, presentism isn't well understood—even among philosophers. As earlier mentioned, there is a tempting and widespread appeal to the thought that presentism is trivial. However, this seems wrong, since, as we've just seen, the thesis *is* contentious in a way trivialities usually aren't. Presentism therefore requires clarification by demonstrating, first its substantiality, then explaining away intuitions to the contrary (Chapter 1). This will be the initial and most important task in what follows; since, if this fails, the rest may be otiose. Even so, as Dostoyevsky's Ruzumikhin reminds us, 'Not one truth has ever been arrived at without people first having talked a dozen reams of nonsense, even ten dozen reams of it, and that's an honourable thing in its own way...' (1865-1866, p.242). So, perhaps, all isn't lost from initial failure.

But the clarifactory task doesn't end there. Central to any adequate understanding of presentism is how to interpret *presentness*, and the related notions of *pastness* and *futurity*. Yet, merely establishing presentism's substantiality doesn't settle the account of time, since it leaves open the nature of the A-determinations. And as we shall see, there are multiple ways of filling-in these centremost presentist details, each proffering distinct presentist theories. Hitherto, these core details of the presentist thesis have been widely neglected. I aim to treat this neglect by outlining, then exploring, several promising candidate ways of construing the A-determinations (Chapters 3-6). The importance of this objective, together with a history of neglect, justifies the large portion of this dissertation devoted towards it. The result will be several competing presentist theories.

Throughout this exploration of competing presentist variants, several potential good-making criteria will be identified to guide theory-choice. This will also assist our

taxonomy of theories, since the criteria will naturally indicate ways in which accounts of the A-determinations can be modified to yield more successful presentist variants. However, prior to undertaking this taxonomic task, further groundwork will need to be laid. In Chapter 2 I take up the motivational challenge of explaining what presentism offers over its rivals. Our results will justify our focus on it here. This will further prove instrumental for the devising and assessing of presentist variants, since it will illuminate the ends unto which presentism was initially proposed. Variants failing to meet those ends won't be fit for purpose. Moreover, grounding the select theory-choice criteria I appeal to will be an underlying pragmatist methodology that will be properly outlined and defended at the beginning of that chapter.

The final undertaking of this work will be to develop and defend my preferred, novel, presentist variant, which I've called *Effervescent Presentism* (Chapters 7-8). It will be given a more comprehensive study on account of its greater complexity, originality, and argued superiority. Effervescent presentism builds upon an understanding of presentness as the time of causal activity, where a law-based account of causal activity is provided. The result is an account of the A-determinations intimately bound to a sophisticated account of dispositions and natural laws. I shall be attempting to bring out the advantages of this account over its competitors. But, at the very least, I hope to demonstrate this new theory's tenability, and its worthiness of wider consideration. This is the dissertation's primary goal.

I follow Quentin Smith and L. Nathan Oaklander in stressing, 'The importance of the debate can hardly be overestimated, given the role played by time in numerous other philosophical issues. Not only is the problem of time profound and fascinating in its own right, it is one whose understanding and resolution is central to other philosophical questions of perennial interest.' (1994, p.xiv). Yet, besides the importance of settling our account of time for other philosophical topics, it should be noted that this relationship is reciprocated. It's not enough that a theory be internally superior to its competitors. It should also fit the contours of the world's metaphysical jigsaw, whatever shape that may take. Accordingly, I will endeavour to demonstrate how effervescent presentism can be situated within a wider metaphysical terrain. If there is any truth to epistemological coherentism, the tightness of fit will constitute further evidence in favour of my preferred theory.

# Part I

## What is Presentism?

I looked anxiously around me: the present, nothing but the present. Light and solid pieces of furniture, encrusted in their present, a table, a bed, a wardrobe with a mirror—and me. The true nature of the present revealed itself: it was that which exists, and all that was not present did not exist. The past did not exist. Not at all. Neither in things nor even in my thoughts. True, I had realized a long time before that my past had escaped me. But until then I had believed that it had simply gone out of my range. For me the past was only a pensioning off: it was another way of existing, a state of holiday and inactivity; each event, when it had played its part, dutifully packed itself away in a box and became an honorary event: we find it so difficult to imagine nothingness. Now I knew. Things are entirely what they appear to be and behind them… there is nothing.

—Jean-Paul Sartre, *Nausea*, 1938, p.140

# Chapter 1

## A Foundation for Presentism.

*Presentism* is the metaphysical thesis that 'all and only present things exist'. Call this the 'presentist thesis'. What it amounts to depends on how we interpret the concepts it employs. For our purposes, a *theory* is a way of understanding a *thesis*. That is, a thesis provides the skeletal structure to a theory; a broad declarative claim on a subject matter. A theory then "fleshes-out" that claim by providing an elaborative interpretation of that skeletal structure, which serves to precisify the thesis by specifying what it amounts to. Our project begins with this interpretive exploration of crucial expressions employed in the presentist thesis, each contributing to, and plausibly lending themselves as, candidate ways of understanding and characterising it. The result will be an array of presentist theories to be compared on their relative merits and demerits, against rival interpretations (theories), as plausible temporal metaphysics.

The first stage of this task will be elucidating the notion of *existence* and its relation to *presentness*. As noted in the Introduction, some have thought the relationship between these concepts too intimate for presentism to be the substantive and interesting thesis it should be. Despite initial appearances, I think this triviality charge against presentism is mistaken. This chapter's focus will be elaborating and refuting this charge. It will require delivering an account of existence that doesn't analytically settle the presentness of existents. And required caution must be taken so this account doesn't prejudge or bias later assessment of presentism. Ideally we should further offer a diagnosis and treatment of the source of confusion inspiring the charge.

Our solution to the triviality charge will then be employed to distinguish dynamic and static ways of construing change. This distinction is crucial to our being able to capture what is meant by 'time's flow', which I suggested in the Introduction supported a compelling common-sense inclination towards the non-philosopher's presentist skew. That is, many complain that the static conception of time—which treats time like space, without metaphysically privileged positions—doesn't account for 'real change'. And, of course, our complainant often takes such real change as manifestly evident in their experience. However, perhaps paradoxically, they have often struggled to distinguish 'real change' from a less controversial kind of change that even static

accounts of time permit. Our distinction between dynamic and static construals of change will allow us to express what is at stake in this debate. Ultimately, this chapter establishes the foundations that make the later dialectic possible by permitting crucial distinctions we otherwise couldn't make.

## §1. Tense Operators.

For ease of expression, we follow Arthur Prior in using tense operators to represent A-determinations. And to save repeating myself, details of relevant tense operators are outlined here, in one place, for later reference. By employing tense operators to express A-determinations, I mean that we shall represent *pastness*, *presentness*, and *futurity* by the operators 'It was the case that…', 'It is (now) the case that…', and 'It will be the case that…' respectively. Symbolically, we keep to convention by using '**P**(…)', '**N**(…)', and '**F**(…)', respectively to express past, present, and future tense operators. These operators may take any proposition as an argument and form a new one. From these operators, several others can be defined:

$$\ulcorner\mathbf{H}(\varphi)\urcorner - \ulcorner\text{It always has been the case that } \varphi\urcorner =_{\text{def.}} \ulcorner\mathord{\sim}\mathbf{P}(\mathord{\sim}\varphi)\urcorner$$

$$\ulcorner\mathbf{G}(\varphi)\urcorner - \ulcorner\text{It always will be the case that } \varphi\urcorner =_{\text{def.}} \ulcorner\mathord{\sim}\mathbf{F}(\mathord{\sim}\varphi)\urcorner$$

$$\ulcorner\mathbf{A}(\varphi)\urcorner - \ulcorner\text{It always is the case that } \varphi\urcorner =_{\text{def.}} \ulcorner\mathbf{H}(\varphi) \mathbin{\&} \mathbf{N}(\varphi) \mathbin{\&} \mathbf{G}(\varphi)\urcorner$$

$$\ulcorner\mathbf{S}(\varphi)\urcorner - \ulcorner\text{It sometimes is the case that } \varphi\urcorner =_{\text{def.}} \ulcorner\mathbf{P}(\varphi) \mathbin{\text{v}} \mathbf{N}(\varphi) \mathbin{\text{v}} \mathbf{F}(\varphi)\urcorner$$

It's also permissible that these operators appear within the scope of a quantifier and take ascriptions concerning that bounded variable as their argument to form new ascriptions concerning it. For example, we can take the sentence 'Something is a Dragon', '∃x(Dx)', and embed a past tense operator within the quantifier's scope, taking as its argument the predicate ascription 'Dx', to form the sentence 'Something *was* a Dragon', '∃x(**P**Dx)'.

Like the negation operator, tense operators are iterable. When this happens, tense operators should usually be understood *non-rigidly* as shifting their scope to pick out those states of affairs that are past, present, or future accessible relative to the temporal perspective(s) whose scope those operators lie within. Hence, which present is designated by the present tense operator, can shift when embedded within other tense operators. For example, '**PN**(there are dinosaurs)' requires not that 'there are dinosaurs' be presently true, but that 'its being presently true' *was* the case. This contrasts with

*rigid* tense operators, which always take us back to this, our own, temporal perspective. This understanding of the tense operators in '**PN**(there are dinosaurs)' *would* require the 'there are dinosaurs' be presently true. The past tense operator merely indicates that it *was* the case that the fact that 'there are dinosaurs' holds at the time designate by *our* present (understood indexically). We can signify this by subscripting rigid tense operators with an 'R' as follows: '**N$_R$**(...)'.

Tense operators might also be given a *semi-rigid* reading. Unlike non-rigid tense operators, they always take us back to a privileged temporal perspective, just as rigid operators do. But unlike rigid tense operators, *that* privileged temporal perspective needn't be *our own*. Rather, they should be assessed relative to—regardless of their embeddings within other operators—the *metaphysically privileged present* state of affairs. In our example, semi-rigid tense operators in '**PN**(there are dinosaurs)' *would* again require the 'there are dinosaurs' be presently true. It's just that whereas the rigid 'present' is indexical for *our* time, the semi-rigid 'present' tracks the *metaphysically privileged* time, regardless of whether *we* are there. We can signify this intended reading of tense operators by subscripting them with an 'S' as follows: '**N$_S$**(...)'.

Finally, the range of tense operators might be expanded to include metric tense operators. These enrich standard tense operators by including an *interval variable* representing how far future or past the operator shifts the evaluative perspective of the embedded proposition. For example, $\ulcorner \mathbf{F}_n(\varphi) \urcorner$ would be translated as $\ulcorner$It will be the case the interval *n* hence that $\varphi \urcorner$, and $\ulcorner \mathbf{P}_n(\varphi) \urcorner$ as $\ulcorner$It was the case the interval *n* ago that $\varphi \urcorner$ (see Prior, 1967a, Ch.VI). Metric tense operators permit more precise claims about when things happen. This is useful because we sometimes want to say, not just that things were or will be, but also how long ago or hence they are. For instance, I might reasonably worry about an exam taking place tomorrow. But it seems inappropriate to stress over an exam that won't take place until many years hence. Though both exams will come to be, just how soon before that happens, matters; it would be too exhausting to take on all our future worries at once.[3]

## §2. The Triviality Objection.

There has been a recent surge in the literature in those claiming presentism is either trivially true or obviously false (cf. Dorato, 2006; Lombard, 1999, 2010; Meyer, 2005,

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[3] Those worried about minimising logical expressions might treat ordinary tense quantifiers as special cases of metric tense quantifiers—where the interval is left as a variable.

2013; Savitt, 2006). The controversy is best described as concerning the status of 'is' in the following standard characterisation of presentism:

**Standard**: 'Everything is present'.

The problem is that we can interpret the 'is' in various ways, but according to objectors, none of the interpretations are useful to presentists. Many philosophers throughout history have lamented the ambiguity of the copula. Consider, for example, the following four interpretations of 'is' familiar from the works of Frege and Russell:

I.   Existential: This represents existential claims. For example, 'Socrates *is*'. Rendered as '$\exists x(x{=}\text{Socrates})$'.

II.  Identity: This represents identity claims. For example, 'Bruce Wayne *is* Batman'. Rendered as 'Bruce Wayne = Batman'.

III. Predication: This represents predicate ascription claims. For example, 'Socrates *is* wise'. Rendered as 'Wise(Socrates)'.

IV.  Generic Implication (Inclusion): This represents entailment claims. For example, 'A triceratops is an herbivore'. Rendered as '$\forall x(\text{Triceratops}(x) \rightarrow \text{Herbivore}(x))$'.

Yet, across these four disambiguations of 'is' there is an orthogonal further level of ambiguity residing in our interpretations: the *tense* of the 'is', or lack of it. A helpful disambiguation of 'is' along the temporal axis has been offered by Nicholas Rescher, and serves as the platform for Steven Savitt's (2006) version of the triviality objection:

The temporal equivocation of 'is' has, however, been little heeded. Yet it is quite clear that there are several very distinct possibilities:

(i) The "atemporal *is*" that means "is *timelessly*." ("Three *is* a prime number.")
(ii) The "*is* of the present" that means "is *now*." ("The sun *is* setting.")
(iii) The "omnitemporal *is*" that means "is *always*." ("Copper *is* a conductor of electricity.")
(iv) The "transtemporal *is*" that means "is *in the present period*." ("The earth *is* a planet of the sun.")

> In contrast to the atemporal 'is' of (i), the uses of 'is' at issue in (ii)-(iv) may all be characterized as temporal. (1966, pp.75-76)

Given interpretation (ii), **Standard** reads as 'Everything is (now) present'. On this interpretation, the occurrence of 'present' seemingly acts as no more than a mere pleonasm. It's unsurprising, then, that this has attracted the charge of triviality. The objector explains, of course if we restrict ourselves to what exists *now*, then everything is present. If this is what presentism amounts to, nobody should reject it. Presentism was meant to be a substantive thesis, yet interpretation (ii) makes its truth analytic. However, interpretations (iii) and (iv) appear to do little better. Under interpretation (iii), **Standard** reads as 'Everything is (always) present'. Though this interpretation isn't obviously incoherent, any variant of presentism emerging from it, our objector contends, is obviously false. Some things are *not* always present; there is change over time in what exists. Whilst interpretation (iv), wherein **Standard** reads as 'Everything is (in the present period) present', will either be trivial, if the period is wholly present, or obviously false, if it exceeds the present's extent. So this too brings no avail.

That exhausts Rescher's *temporal* interpretations of 'is', but what about the *atemporal* interpretation? On a narrow construal of interpretation (i), **Standard** reads as 'Everything is (timelessly) present'. *Prima facie*, the interpretation seems ill-formed. Consider, for example, the sentence, "The firing of the gun is (timelessly) an event which will take place tomorrow." Prior was dumbfounded by what sense can be made of this sentence: 'What place can a word like 'tomorrow' have in a strictly tenseless form?' (1957, p.106). Likewise, we might wonder what sense 'present' has when combined with the atemporal interpretation—sometimes called the *tenseless* interpretation—of 'is' in **Standard**. I'm sympathetic to Prior's bewilderment. Nevertheless, Savitt has offered one plausible broad interpretation of the tenseless copula so that it applies to temporal entities. His suggestion is captured in the passage below, wherein boldfaced verbs are tenseless:

> Suppose, then, that tenseless verbs apply to temporal as well as non-temporal entities. One might admit as meaningful or truth-valued sentences like 'Socrates **SITS** at t' or possibly even just 'Socrates **SITS**', along with sentences like 'Three **IS** greater than two'. But how is one to understand these sentences? One suggestion I find useful is that we think of the tenseless verbs in such sentences as like ordinary tensed verbs but lacking all temporal information (just as ordinary verbs lack spatial information), while

compatible or consistent with the addition of temporal information. On this understanding of tenseless verbs, the claims 'Isaac Newton **EXISTS** in 1666' and 'Isaac Newton **EXISTS**' are well-formed. (2006, p.114)

The thought is seemmingly that, if there were a time when something was, is (now), or will be, then it *is* in this tenseless sense, since this 'is' holds irrespective of temporal location. But unlike the detensed/omnitemporal 'is' (interpretation (iii)), this interpretation would be applicable to atemporal, as well as temporal, content. This broad construal of interpretation (i) at least yields a well-formed result for **Standard**, yet does no better than the detensed 'is', where, for analogous reasons, this interpretation of **Standard** appears manifestly false. If this is the story, and Savitt concurs, the tenseless 'is', in either of its narrow or broad senses, is no help to presentists. So none of Rescher's disambiguations of 'is' along the temporal axis are helpful to presentists. Or at least this is what our objector contends. We can formulate the resulting objection accordingly:

**A1**. **Standard** is neither trivial nor manifestly false. (Presentist Thesis)

**P1**. The 'is' in **Standard** must have one, and only one, of Rescher's four interpretations: (i), (ii), (iii), or (iv). (Interpretative Exhaustion)

**P2**. If the 'is' in **Standard** is interpreted with Rescher's (i), then **Standard** is manifestly false. (Atemporal)

**P3**. If the 'is' in **Standard** is interpreted with Rescher's (ii), then **Standard** is trivial. (Temporal)

**P4**. If the 'is' in **Standard** is interpreted with Rescher's (iii), then **Standard** is manifestly false. (Omnitemporal)

**P5**. If the 'is' in **Standard** is interpreted with Rescher's (iv), then **Standard** is either manifestly false or trivial. (Transtemporal)

**C1**. It's not the case that **A1**. (Presentist Antithesis)

By 'triviality objection', from now on, I shall mean this argument. The argument is a clearly valid *reductio ad absurdum*, and the above reasoning seemingly presents an airtight case for its soundness. But things aren't always as they seem. We shall now explore potential responses to the argument.

**§3. Responses.**

We will look first at a couple of popular responses to this argument before I offer my own explanation of where it errs. Since, seeing what is right and wrong about these responses was influential in forming my own response. I hope to separate their positives and negatives to persuade readers why my response is the correct way of answering the challenge.

§3.1. Existence *Simpliciter*.

Perhaps the most popular response to the triviality objection takes a leaf out of the modal realist's book. There is an analogous triviality challenge to presentism's modal analogue: *Actualism*. We can formulate a standard version of actualism accordingly:

> **Standard Actualism**: Everything is actual.

The worry is that we can either read the 'is' narrowly as meaning 'is (actually)', or broadly as meaning 'is (possibly)'. If we adopt the former interpretation, **Standard Actualism** appears trivial; whilst, if we adopt the latter interpretation, **Standard Actualism** appears manifestly false.

The influential philosopher David Lewis responded to this challenge by appealing to his conception of what there is *simpliciter*:

> When we quantify over less than all there is, we leave out things that (unrestrictedly speaking) exist *simpliciter*. If I am right, other-worldly things exist *simpliciter,* though often it is very sensible to ignore them and quantify restrictedly over our worldmates. And if I am wrong, other-worldly things fail *simpliciter* to exist. They exist, as the Russell set does, only according to a false theory. That is not to exist in some inferior manner—what exists only according to some false theory just does not exist at all. (1986a, p.3)

This notion of 'what there is *simpliciter*' is meant to be neutral between the narrow and broad readings of 'is' in **Standard Actualism**. Either *possibilia* exist in this neutral sense, or they don't, but neither disjunct is trivial or manifestly false. Those impressed by this response to the actualist triviality challenge have sought an analogous reply to

the triviality objection against presentism. For example, H. Scott Hestevold and William Carter give the following explication of existence *simpliciter*:

> **Existence *Simpliciter***: '*X* exists *simpliciter*, if and only if, *X* is among the things that the universe includes—if and only if *X* is real. That *X* exists *simpliciter* does *not* alone imply that *X did* exist, that *X* presently exists, nor that *X will* exist.' (2002, p.499)

Employing this conception of what there is *simpliciter* in **Standard** then gives us:

> **Standard *Simpliciter***: Everything is (*simpliciter*) present.

How does this help refute the triviality objection? The thought is seemingly that **Existence *Simpliciter*** offers an overlooked interpretative option. That is, this response rejects **P1**, that interpretations (i)-(iv) are exhaustive of the ways we can understand the 'is' in **Standard**.

But it should be clear, if this is the response, it won't satisfy our objector. To see why, consider Tim Button's analogous remarks explaining his crucial '*x* is real-as-of *y*' relation: 'The 'is' in '*x* is real-as-of *y*' is neither tensed nor tenseless. The relation '*x* is real-as-of *y*' is a primitive of no-futurism, and the verb it includes is just a part of that primitive.' (2007, p.331). Can we really make sense of his claim that the 'is' is neither tensed nor tenseless? Tense*less* just means without tense. So if a statement is not tensed, it must be tenseless. There simply is no third category! As Tallant explains, '…for Button to say that there is this third grammatical category that is lacking in tense, but not tense*less appears* to be to commit to a contradiction.' (2011, p.40). Tallant (*Ibid*., §3) continues by stressing that, if not strictly contradictory, adding a new grammatical category in this way isn't only hard to get a grip on, but also unprecedented.

If this is the right way to read the response, it feels like cheating. It offers an interpretation, supposedly distinct from any of (i)-(iv), yet doesn't explain how that interpretation can fail to be (i)-(iv). All we're really told is that it's a problem-free interpretation, and we're expected to take it for granted. This is essentially the riposte Ulrich Meyer gives to reinforce his version of the objection:

> No matter how we spell out the details of the proposal, an appeal to existence simpliciter does not expand the range of options. The only available disambiguations of

the presentist thesis are the trivially true [interpretation (ii)] and the obviously false [interpretation (iii)], plus perhaps some intermediate positions [i.e. interpretations (i) and (iv)] that provide different combinations of the unappealing features of [interpretation (ii)] and [interpretation (iii)]. (This could happen if our notion of existence simpliciter is more restrictive than temporal existence, but also more permissive than present existence.) (2013, p.69)

Yet perhaps this is *not* the right way to understand the response, for some, if not all, who give it. Theodore Sider's one of the most outspoken and clear proponents of the existence *simpliciter* response. He presses the point accordingly:

> The world has distinguished 'logical joints': candidate meanings for logical words that are special, just as distinguished groupings (for instance the electrons) are special. The language of an ideal inquirer must contain logical words for these logical joints, just as it must contain predicates for the more commonly recognized natural kinds. One of the distinguished logical joints is a distinguished meaning, call it existence, for the existential quantifier.[...] we can argue directly that the dispute between presentists and eternalists is genuine. Since the eternalist and the presentist both mean existence by their existential quantifiers, they mean the same thing by their existential quantifiers... (2006, pp.81-82)

*Eternalism*'s the anti-presentist thesis that all past, present and future things exist. This passage gives the impression that the intended objection, at least by Sider, isn't meant to be against **P1**, since no *new* interpretation of 'is' is being offered. Rather, which of interpretations (i)-(iv) is in fact employed in **Standard** isn't settled by us, but by the world. One of interpretations (i)-(iv) picks out a logical joint, and all participants in the temporal metaphysics debate intend to pick out that joint when discussing what there is. That is, this response to the triviality objection simply bites the bullet. It's freely admitted that, if **Standard** is true, then it's not a substantive thesis, it's trivial. Nevertheless, that **Standard** expresses a trivial truth, this respondent contends, is anything but trivial. It's from this further issue, whether nature's logical joints are best captured by interpretation (ii), that presentism gets its substance.

How then does this way of understanding the existence *simpliciter* response fare? Well, firstly, it assumes there is a logical joint of nature that one or other of the interpretations best carves-out. This is far from obvious. Sider does suggest there are some claims that can truly be made with the use of one interpretation of existence

*simpliciter* (interpretation (i)) for which no translation with another (interpretation (ii)) can be found. But he admits that it '...is not a conclusive refutation of the sceptic. The arguments just given that the presentist translations are false are metaphysically controversial; they turn on the difficult issue of whether a presentist ought to be a 'serious' presentist.' (*Ibid*., p.83).[4] And what Sider must show is, not merely that nature has a logical joint for existence, but, that it's better captured with one of interpretations (i)-(iv) than the others. Even realists about logical natural kinds can doubt this.

Let us concede this point to Sider to combat another worrisome issue plaguing this proposal. Suppose we were to discover, somehow, that nature's logical joints were tenseless. This would render **Standard *Simpliciter*** equivalent to:

> **Standard Tenseless**: Everything is (atemporally) present.

That is, the world renders the 'is' in **Standard** with interpretation (i). As we've seen, this interpretation renders presentism manifestly false. Yet, surely, presentists can complain that the thesis stated in **Standard Tenseless** isn't theirs. After all, why believe something manifestly false? Once the referential opacity is removed, it becomes evident that presentists and non-presentists cannot have meant the same thing by their quantifiers. One of either presentists or non-presentists will have their conception of reality warped by nature's joints into an absurdity. Or, more precisely, the response maintains that *what the presentist thesis amounts to* depends upon the world, nature's logical joints, and not (entirely) on us. Yet, this seems wrong. We develop theses to represent ways the world might be, independently of how it in fact is. Representations need to be transparent to us if they are to help guide our decisions.

There are some exceptions to this representational transparency, however, that may have made the response tempting.[5] These exceptions come in two forms:

> *Irrelevant*: When the opaque (world-dependent) aspect of the representation is irrelevant to our interest in the thesis, such that, how the world is in this respect doesn't affect the truth of the thesis.

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[4] 'Frivolous presentism' classifies presentist theories permiting the possession of properties by things at times which they don't exist. 'Serious presentism' denies this. For more on this distinction, see Bergman (1999) and Hinchliff (1988, 2010).
[5] Notably, these exceptions would be quite frequent if mental content externalism is true.

*Relevant*: When the opaque (world-dependent) aspect of the representation is relevant to our interest in the thesis, such that, how the world is in this respect does affect the truth of the thesis.

Clearly, in the case of *Irrelevant*, representational transparency isn't required, because how the world determines the opaque aspect of the representation is inconsequential to the truth of the thesis. When that aspect of the representation does matter for the truth of the thesis, as in *Relevant*, then the thesis is only helpful if there is some (implicit or explicit) supposition, or disjunct of suppositions, about how the world is in the relevant respect. The thesis we intend is then represented conditionally upon these suppositions being correct, and not represented otherwise. That is, if we were to believe a thesis with relevant world-dependent representational aspects, we would do so conditionally upon our representational suppositions with respect to the world being correct. And this must be so on pain of the absurdity that we don't know what we're consciously opinionated about. But, contra Sider, astute presentists and non-presentist do know what they are consciously opinionated about, regardless of how the world in fact is.

Still, we might maintain, contra Sider, that presentists and non-presentists do mean *different* things by their quantifiers, where the 'is' in the quantificational 'there is' corresponds to either one of interpretations (i)-(iv). Yet, like Sider, contend that the substance of the debate turns on, which of those interpretations carves at nature's logical joints, which exists *simpliciter*. This appears to be what Trenton Merricks was proposing when he wrote: 'I think presentists should, instead, say that *existing at the present time* just is *existing*. Thus, given presentism, if something exists, then, obviously enough, it exists at the present time. So, given presentism, since everything exists, everything exists at the present time. This is what is right about the standard definitions of presentism.' (2007, p.125). Despite their varied use of quantificational expressions, what stops presentists and non-presentists talking past one another is which of interpretations (i)-(iv) captures the 'is *simpliciter*' in **Standard *Simpliciter***. That is, presentists will accept, whilst non-presentists will deny, that interpretation (ii) pick out some privileged logical joint in nature.

If we can make sense of logical joints, then this might indeed be a substantive dispute of sorts. However, I'm not at all clear what this privilege amounts to. Moreover, I fear it's not that which has primarily been in contention between presentists and non-presentists. After all, why could an eternalist tensed realist, not accept that interpretation (ii) is privileged? Unlike the serious presentist, such an eternalist might reasonably be

permitted the possession of properties by things at times which they don't exist. Crucially, those equating 'is *simpliciter*' with 'existing at the present time', as Merricks proffers, when making claims about what exists *simpliciter* wouldn't thereby be making any interesting claims about the status of other times or their occupants, except perhaps the trivial claim that they don't exist at the present time. Yet, to make the substantive claims they want to make, presentists will need a notion of existence that isn't restricted in this way. Giving trivialities certain privileges doesn't lessen their benality; it merely elevates them in some privileging way.

The takeaway point from this response is that there must be an alternative interpretation from how we've so far understood (i)-(iv), if we're to make progress on this issue. And since interpretations (i)-(iv) seem undeniably exhaustive, the only option left is that there is an alternative way of understanding at least one of interpretations (i)-(iv). Indeed, that alternative way ought, ideally, to be neutral between presentists and non-presentists. This would allow for the common ground of dispute, the logical joint corresponding to the 'is' in **Standard**, that Sider informs us that both parties in this debate presume there to be.

§3.2. Tenseless Existence.

An alternative response to our objector has been provided by Thomas Crisp (2003, 2004a, 2004b). Crisp attempts to defend a detensed interpretation [interpretation (iii)] of **Standard**:

**Standard Detensed**: Everything was, is (now), or will be present.

And he takes **Standard Detensed** to be equivalent to the statement 'For every $x$, $x$ is present', wherein the quantifier domain is unrestricted, or restricted to the domain of all temporal things, '$D_t$' (i.e. things that existed, exist (now), or will exist). He recognises the objector's response to the detensed interpretation of **Standard** as claiming that it '…is trivially false and points to the Roman Empire as an obvious counter-example.' (2004a, p.18). But Crisp then makes a crucial distinction between *de dicto* and *de re* intensional statements.

A *de dicto* intensional statement gives an intensional operator, such as one of our tense operators, a wide scope with respect to the quantifier. For example, the assertion,

A.  It was the case that (for some *x*, *x* is the Roman Empire),

formally translated as '**P**∃x(Rx)', is *de dicto* because the past tense operator precedes the quantifier in the expression such that it contains the quantifier in its scope. The *de dicto* intensional statement is about a *proposition*, which roughly corresponds to its translation from Latin as 'about what is said'. A *de re* intensional statement, however, gives an intensional operator a narrow scope with respect to the quantifier. For example, the assertion,

B.  For some *x*, it was the case that (*x* is the Roman Empire),

formally translated as '∃x**P**(Rx)', is *de re* because the past tense operator succeeds the quantifier in the expression such that it's contained within the quantifier's scope. The *de re* intensional statement is about a *thing*, which corresponds to its translation from Latin as 'about the thing'.

Crisp happily concedes the manifest truth of such *de dicto* assertions, such as A, concerning the past or future, given **Standard Detensed**. But he claims presentists needn't be troubled by this concession. Presentists need only deny the truth of *de re* assertions, such as B, about non-present particulars. Yet, Crisp maintains there is nothing manifestly obvious about these *de re* assertions. This is the pivotal point, and is captured in the following passage:

> It's certainly no Moorean fact that the domain of temporal things is still populated with something non-present and identical with the Roman Empire. Were it a Moorean fact that eternalism—the view that our most inclusive domain of quantification includes past, present, and future entities—is true, I suppose it would be a Moorean fact that $D_t$ includes the Roman Empire. But it's not just obvious that eternalism is true: it's not just obvious that our widest domain of quantification still includes wholly past objects like the Roman Empire. If eternalism is true, we need serious argument to see that it is. (*Ibid.*, pp.18-19)

This response to the triviality objection falls neatly in line with Arthur Prior's view that the facts regarding what is no longer, or yet to be, aren't about anything in particular, they are 'general facts'. So long as the quantification occurs within a modality operator, there is no existential entailment, '...that $F\exists x\varphi x \supset \exists xF\varphi x$ is not a law.' (Prior, 1968a,

p.221). In particular, the response rejects **P4** of the triviality objection by denying **Standard Detensed** is *manifestly* false.

This type of response against the triviality objection has, however, been condemned as ineffective by Ulrich Meyer (2005). Meyer complains that this merely restricts the validity of existential generalisation—the inference from the fact that a particular *x* is F to something (in general) being F—to names whose referent is present, and that this is just to slip back into a tensed interpretation of the existential 'is'. We see this especially in the first sentence of the quoted passage where Crisp wrote that 'the domain of temporal things *is still* populated with something non-present' (emphasis added). Whether it's obvious that the quantifier domain 'is still' populated by that which is no longer, and perhaps not yet, present, depends on which interpretation of the 'is' we're employing. That the 'is' is followed by 'still' suggests Crisp intends interpretation (ii). If existential generalisation is permitted only for that which *is* in this sense, then Meyer is right to protest that we're back with the triviality charge of **P3**.

If, however, no restriction on the validity of existential generalisation to names whose referents are present is made, the interpretation of presentism appears to be impaled on the other horn of the dilemma as manifestly false. Meyer expounds this criticism, with no explicit reference to Crisp (2003, 2004a, 2004b), in the following paragraph:

> What is at issue [in the triviality objection], [the presentist] might claim, is whether names like "Caesar" have a referent. I seem to assume that the question has already been settled in his opponent's favor by using the existential generalization from JC ['Caesar crossed the Rubicon'] to "There is something that exists temporally." But suppose we follow this suggestion and permit existential generalizations only for names that presently have a referent. Then the notion of existence employed is really *exists now* (and not *exists temporally*), and we're back to the trivial ['Nothing *exists now* that is not present']. If we don't impose such a present referent condition then we do get ['Nothing *exists temporally* that is not present'], but we also get the above problems with JC. So the problem for the presentist arises independently of our views about reference. (2005, p.101)

Now, Crisp will undoubtedly want to repel this accusation that the existential 'is' isn't the triviality inducing tensed 'is'. That, though the quantifier's domain includes only present things, it's 'open' to non-present things. My inclination is that Crisp is right to appeal to this unrestricted (or at least relevantly restricted) quantifier to state presentism,

but that his associating this with the detensed or tenseless 'is' (interpretations (i) and (iii)) is a mistake. After all, the detensed and tenseless 'is' are defined such that they should include that which did or will exist. This aspect of these interpretations of 'is' prevents us making progress using them with respect to neutrality of our quantifiers. That is, rather than leaving open whether our quantifiers range only over that which is present, or over the non-present also, these interpretations analytically settle this dispute in favour of the more inclusive answer. All hope then rests on our being able to make greater headway with the tensed interpretation of 'is' (interpretation (ii)). As we shall see in the next section, I think we can.

What Crisp's response rightly highlights is that the disputed set of statements presentists reject and non-presentists tend to accept, aren't just any past and future tensed statement, but specifically *de re* past and future tensed statements. This shouldn't have been surprising, since presentism is typically intended as an *ontological* thesis: a thesis about what *things* exists. We need, then, an interpretation of the 'is' in **Standard** which we can use to sensibly reject certain seemingly true *de re* past and future tensed statements, such as B.

§3.3. A Tense Refinement.

It's my contention that the triviality objection errs with its claim that a tensed interpretation of 'is' will necessarily yield a trivial characterisation of presentism. That is, I wish to challenge **P3** of the triviality objection. This interpretation would render **Standard** with the following interpretation of 'is':

> **Standard Tensed**: Everything is (now) present.

This rendering of **Standard** seems the most natural in English. Indeed, I believe there is in fact little ambiguity between different senses of 'is' along the temporal dimension (along interpretations (i)-(iv)) in English.[6] Rather, the relevant distinction regarding the 'is' that should be made is between *what there is at the now*[7] and *what there is as of now*. The former gives us the sense of restricting our interest—restricting the quantifier domain—to what is temporally located at the now. Whilst, the latter has no such

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[6] I don't wish to deny that our language does, or could be developed so that it does, include the use of the tenseless 'is'. Indeed, I suspect that the tenseless 'is' might be commonplace when it concerns the 'is' of generic implication, the kind of 'is' that I fancy is employed in mathematics.
[7] If you don't like the phrase 'at the now', translate as 'at the present (moment(s))'.

restriction on our interest—no restriction to the quantifier domain—to that which is now, but merely concerns the constitution of reality *when* it's now. When the quantifier appears within the scope of past or future tense operators, as is customary, the *now* should be supplanted with *then*.

It's not the sense of 'is' that changes; the 'is' is typically univocal along the temporal dimension. Instead, it's the usually suppressed cues, 'at the now' and 'as of now', that distinguish between the varying domain interests of our quantifying expressions. It's the former (domain-restricting) cue that yields a trivial interpretation of presentism. But the latter (non-domain restricting) cue results in an interpretation of **Standard Tensed** which is neither trivial, since the domain isn't restricted to the present moment, nor manifestly false (like the detensed and tenseless interpretations of 'is'), because it's not stipulated that the domain does or doesn't include that which *existed* or *will exist*. That is, if those things that existed or will exist *exist as of now*, they won't be excluded from the quantifier's domain. If they don't *exist as of now*, then they will be excluded from the quantifier's domain.

To illustrate the distinction, consider the *Gorwing-Block Thesis*, according to which, all merely past and present things, but not merely future things, exist. The sense in which these past things exist isn't that they exist *at the now*. That would make the growing-block thesis manifestly false, since not all past things are present. Nor is it that they existed, since that would make its substantive claim a mere triviality. Rather, it's that those things that existed still exist *as of now*. Since, when it's now, not only do present things exist, but past things do also, or so growing-block theorists contend.

Several theorists have seized upon the "as of" modification of what there is, especially in the possible worlds literature. Of particular relevance, some philosophers of time have employed the "as of" modification of what there is in their attempts to develop a coherent *dynamic* account of time (cf. Button, 2006, 2007; Tooley, 1997).[8] But these former uses differ in telling ways with my own. The most important difference is that, whilst the "as of" modification suggests a *relativisation* of what there is to whatever metaphysical index the modification takes, my usage only permits one temporal index in a time series: to the objectively present time.[9] That is, I'm *not* using

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[8] Button (2006, 2007), to his credit, seems to have been careful in avoiding any locutions suggesting that the position he described is dynamic, whereby the position itself is describe as 'no-futurism' rather than a '*growing*-block theory'. Still, he doesn't explicitly deny that the position is dynamic.

[9] Though, if time were disunified, whereby there are multiple time series' (see Ch.2, §3.2.2 and Ch.7, §2.4.2), then there would be multiple presents, each belonging to those *distinct* time series', for which my usage of "as of" permits what there is to be *relative* to. In this way presentists can permit both disunified time—contra Prior (1967a, pp.198-199)—and branching time—contra to Le Poidevin's (1996) early

the "as of" modification to relativise what there is, but merely as a way of capturing all there is, in a way that doesn't trivially rule in or out former or forthcoming existents, as respectively the detensed and tenseless interpretantions of 'is', on the one hand, and the restricted tensed interpretation of 'is', on the other, explicitly do. It's through *absolute* change in what is objectively present that what is in the unrestricted quantificational domain changes. This is what is meant by *metaphysical change*, and how to understand a truly dynamic account of time and reality. By contrast, the relativisation strategy of Button and Tooley posits a plurality of temporal indicies for the "as of" modification to take, whereby reality *as a whole* doesn't change, and is thus not truly dynamic; those relativised facts are *fixed* for all time.

This links to another important difference between Tooley's account of the "as of" modification and my own. Tooley's unrestricted quantificational domain isn't of what is temporally relative, but what there is *simpliciter*. And what there is *simpliciter* for Tooley includes absolutely *all* states of affairs, including all those belonging to *some* domain of *what there is as of a time*, as well as those not belonging to *any* domain of *what there is as of a time*. So what there is as of a time on Tooley's account are merely restricted domains of what there is *simpliciter*.[10] They are restricted in two ways: i) they don't include states of affairs at times later than the time that the restricted quantification is indexed, and ii) they don't include atemporal states of affairs. In contrast, my account of *what there is as of present* isn't restricted in either of these ways. Indeed, it's not restricted at all, but rather corresponds to what there is *simpliciter*. And in this respect, Button's (2006, 2007) usage conforms to my own: "The no-futurist must therefore part company with Tooley, who claims 'there can be a complete and consistent description of the world that is not a description from any particular temporal perspective' (1997: 16)." (2007, p.327). For Button, what there is as of a time captures unrestricted quantificational domains, "for the total reality of moments 'differs' from moment to moment." (*Ibid*.). However, unlike my *ontological monist* account of reality, Button is offering an *ontological pluralist* account of time (cf. McDaniel, 2009, Manuscript). That is, there is a different sense of what there is corresponding to each

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contention—without having to give up '...the usual presentist assumption that everything that exists is simultaneous' (Le Poidevin, 2007, p.166), as Le Poidevin later contends that presentists must.

[10] Tooley does state that '...the concept of being actual as of a given time must be taken as primitive, and as incapable of being analysed.' (1997, p.37). However, he doesn't explain why actuality as of a time cannot be analysed in terms of a restriction on actuality *simpliciter* (either conceptually or metaphysically). As far as I can tell, it should be analysed in that way if 'actuality *simpliciter*' and 'actuality as of a time' are to be related in the ways he wants them to be. Accordingly, I suspect that Tooley isn't offering a *metaphysical* alternative to standard B-theory, or a version of growing-block thesis proper, but merely a *semantic* alternative for how to understand tensed expressions.

time, none of which has any more metaphysical privilege than any other. However, he never really provides any need for irreducible tense in these temporally relative realities (cf. Tallant, 2011, §5), and it seems to me that Tooley is right to think they are fundamentally tenseless.[11]

Where Tooley disagrees with tensed theorists is in that they believe, and Tooley doesn't, that what there is *simpliciter* changes. And it's because what there is as of a time all belong to what there is *simpliciter* for Tooley, that he *must* contend that those facts are tenseless, lest we arrive at J. M. E. McTaggart's (1908, 1927) conclusion that events are both past, present, and future, and not-past, not-present, and not-future, together.

Importantly, this distinction between restricting and non-restricting connotations of 'is (now)' is something even deflationists about tense can endorse; though they will want to offer a less substantive understanding of 'now' than tense realists do. This might be an indexical or token-reflexive sense of now, where 'now' means 'simultaneous with the time of the tokening'. If you don't believe there is any change in what exists as of now, then the subordinate clause, *as of now*, will become redundant when expressing the unrestricted quantifier. But as common-sense dictates, most people, though perhaps not most philosophers, think that '*when* it (the present) is, is important to *what* there is'; that what exists as of now changes. So this way of understanding the tensed 'is' (interpretation (ii)) is neutral with respect to presentism and its rivals.

We should want our logical vocabulary to be rich enough to capture the distinctions between the various metaphysical positions so that the debate can be adequately represented. Only given a neutral construction of the logical vocabulary can logic be of any help as an intellectual tool employed to help settle a debate. The privileged (fundamental) interpretation of the quantifier should therefore be reserved to express without restriction 'what there is as of now'. It's this sense of 'is', if any, that corresponds to what exists *simpliciter*; the missing interpretation delivering unrestricted quanitification (see §3.1). Whilst the interpretation of the quantifier as expressing 'what there is at the now' should be understood as derivative from the privileged quantifier, a

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[11] Button's justification appears to be the following: 'One cannot infer from the fact that no moment **is** [tenseless] special to the claim that no moment *is* [tensed] special. For no-futurists, the present moment *is* the last moment of time.' (2006, p.133). Yet, this just confuses what it means for there to be irreducibly tensed facts. Tense is only needed where the facts undergo metaphysical *change*. In Button's model, the facts about what is real relative to a time are unchanging. And the mere adding of metaphysically privileging A-determinations—pastness, and presentness—that fundamentally don't *change*, but instead are simply relativised to times, doesn't make the description *tensed*, even though, as of each time, one time may be metaphysically privileged.

mere restriction of its scope. To demarcate these two interpretations I will subscript the quantifiers with 'As' and 'At' respectively for the privileged and derivative interpretations. So we would formalise 'There is as of now a dinosaur' as '$\exists_{As}x(Dx)$'. Likewise, we would formalise 'There is at the now a dinosaur' as '$\exists_{At}x(Dx)$'. And whilst the latter is manifestly false, the former is anything but. This allows us to clearly disambiguate how the quantifier should be interpreted in each context, as well as elucidate other important theoretical distinctions.

So we're now positioned to give a substantive statement of presentism that isn't manifestly false, namely:

**Standard Tensed\***: Everything is (as of now) present.

**Standard Tense\*** is consistent with **A1**, and consequently, the triviality objection is mistaken. Moreover, we can give an explanation of why many smart people have made this mistake. It's because they confused **Standard Tense\*** with the subtly different:

**Standard Tensed@**: Everything is (at the now) present.

What is correct about **P3** is that **Standard Tensed@** is trivially true. What is incorrect about **P3** is that **Standard Tensed\*** is a substantive thesis.[12] Unfortunately, **Standard Tensed** doesn't disambiguate these two readings, and objectors have taken advantage of this by suggesting that **Standard Tensed@** is the only way to interpret **Standard Tensed**.

**§4. Change and Variation.**

Chief among the theoretical distinctions this new logical apparatus allows us to express is the difference between *metaphysical change* and *mere temporal variation*. At least since McTaggart (1908), there has been controversy over what counts as 'real' or 'genuine' change. According to McTaggart, '...if there is to be change it must be change of what occurs in time (for the timeless never changes), I submit that only one alternative remains. Changes must happen to the events of such a nature that the

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[12] Interestingly, this trivial understanding of presentism casts doubt on its commonsensical status, which several advocates (cf. Zimmerman, 2007, §7) think recommend it. Plausibly, it's **Standard Tensed@**, not **Standard Tensed\***, that common-sense recommends.

occurrence of these changes doesn't hinder the events from being events, and the same events, both before and after the change.' (*Ibid*., p.460). He submits that all that is permanent doesn't really change. This includes both what occurs at a time and the ordering of times. In his jargon, what he calls the 'B-Series' of time—a series ordering times using only B-relations, *earlier than*, *simultaneous with*, and *later than*— doesn't vary across times. So although a poker may be hot one moment and cold another, this fact is unalterable for all time. Real change, if there be such, must be an alteration in that besides which we've just presumed fixed; according to McTaggart, real change involves the transience of A-determinations.

Infamously, McTaggart thought that the transience of A-determinations was incoherent, and consequently, there could be no real change. Since he thought time demanded real change, he concluded that time itself was unreal: 'Without the A series then, there would be no change, and consequently the B series by itself is not sufficient for time, since time involves change.' (1908, p.461). Yet, our experiences appear to tell us otherwise. Though my experiences may be different at different times, and ordered with respect to each other, at least one of my experiences seems privileged: the experience I'm having now. And which of my experiences, amongst the many spread across my lifespan, possesses this privilege seemingly alters with time's vicissitudes, what we earlier described as time's apparent 'flow'.

Unsurprisingly, many, like McTaggart, have doubted whether things are as they appear to be with respect to time's flow. My present concern isn't with settling this debate, but rather about how to express what is at issue. Since, perhaps one of the biggest obstacles facing those who believed in real change is how to express it. To understand the problem, let us explore how presentists, as those typically ranked amongst those who believe in real change, would express their belief in it. For them, this real change is often ontological change. That is, what things there are changes with time's flow, since for presentists, only present things exist, and if the presentness of things is transitory, their existence will likewise be transitory.

Presentists will therefore want to express their commitment to real change, in, for example, the existence of humans, by stating that 'It is now the case that humans exist and it will be the case that no humans exist'. Formally, we can express this accordingly:

(1) $\mathbf{N}\big(\exists x(Hx)\big)\,\&\,\mathbf{F}\big(\sim\exists x(Hx)\big)$

However, many who don't believe in real change in the existence of humans would nonetheless happily assert (1). They would claim that (1) is made-true by there being humans simultaneous with the utterance, and no humans at a time later than the utterance. And indeed, those who don't, as well as those who do, believe in real change, could agree to the obtaining of these truth-conditions. This is because the quantifiers naturally read as being tensed (interpretation (ii)) due to their occurrence within the scope of the tensed operators. But then the truth-conditions of the first and second conjuncts of a token of (1) don't seem to conflict in the way we would expect real change to; the quantifiers look to be restricted to different domains. In particular, what makes a token of (1) true could plausibly obtain permanently, regardless of when we assess the claim from. The worry is that, if presentists cannot use (1) to express real ontological change, they simply won't be able to express it.

How can this be? The confusion arises from the same source that fuelled the triviality objection: the failure to disambiguate between the two readings of the tense 'is'. Once we've made the distinction between 'what there is as of now' and 'what there is at the now', we can simply distinguish the two conflated claims that (1) obscures, only one of which is committed to the contentious real change. Using our subscripted quantifiers from the previous section, we can disambiguate (1) thus:

$$(1^*) \ \mathbf{N}\big(\exists_{At}x(Hx)\big) \,\&\, \mathbf{F}\big(\sim\exists_{At}y(Hy)\big)$$

$$(1^{**}) \ \mathbf{N}\big(\exists_{As}x(Hx)\big) \,\&\, \mathbf{F}\big(\sim\exists_{As}y(Hy)\big)$$

To reiterate, the quantifiers subscripted with 'As' quantify over *what there is as of that now*, whilst quantifiers subscripted with 'At' quantify over *what there is at that now*. So (1*) reads as, 'It is now the case that there is at the now a human, and it will be the case that there's not at then a human'. Whilst (1**) reads as, 'It is now the case that there is as of now a human, and it will be the case that there's not as of then a human'. Statements like (1*) commit us merely to temporal variation, whilst claims like (1**) also commit us to metaphysical change as well as temporal variation. By 'metaphysical change' I mean change in what exists, or the qualities of existents, as of now. Whilst, by 'temporal variation' I merely mean that, what exists, or what qualities existents possess, varies between what there is at each time. Though, metaphysical change entails mere temporal variation, the reverse entailment doesn't hold. My contention is that real change just is metaphysical change of some sort or other.

So, consider eternalism again, understood now as the thesis that past, present, and future things exist as of now. (1\*) isn't something eternalists and presentists need disagree about. After all, those humans existing *at the now* may or may not continue to exist *as of* a future now, yet not *at* a future now. This would be an example of mere temporal variation. However, eternalists cannot,[13] whilst presentists can, accept (1\*\*). This would be an example of metaphysical change. All this thanks to our distinction between 'is (as of now)' and 'is (at the now)'. And as we will later see, this distinction between metaphysical change and mere temporal variation will be crucial to much of what follows.

Before leaving the subject of metaphysical change, it's worth mentioning an oddity regarding those accepting metaphysical change who nonetheless attempt to characterise their view with a tenseless or detensed reading of the copula. That is the clear hopelessness of the task they attempt. For that which is tenseless or detensed is permanent, fixed, unchangeable, by definition. Yet metaphysical change presupposes that what there *is* or the way things *are*, is temporary, and that is just another way of saying the italicised 'is' and 'are' are indeed tensed. You cannot escape a tensed reading of copulae if you believe in metaphysical change; metaphysical change necessarily denies us a complete, tenseless or detensed, description of reality.

## §5. Temporal Versus Existential Priority.

Underlying these issues resides an important difference between eternalist and presentist conceptions of the relationship between *time* and *existence*. This is a difference in priority. Eternalists think of time as posterior to existence, whereby time has an ontology. That ontology consists of the times and whatever temporal relations they may bear to one another. A comprehensive survey of all that exists will reveal all of time, a complete description. In contrast, presentists think it's existence that is posterior to time; that existence is subject to time's vicissitudes. Time has no ontology, but rather concerns the behaviour of ontology. Time just is the metaphysical change in which things exist and what they are like, and this isn't something that can be found by any inspection of that which exists, no matter how thorough. Hence, St. Augustine's comment that '...we cannot truly say that time exists except in the sense that it tends towards non-existence.' (c.397-398, Bk.XI, §17, p.231).

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[13] Assuming, contra the *Shrinking-Tree Thesis* (cf. McCall, 1994), that all futures come to be present.

I highlight these differing conceptions of the relationship between time and existence, here, to make an observation about the triviality objection. The objection is set up in a way that presupposes existence is subject to time; that there is no notion of existence not intimately bound up with time. The objector permits us the tensed notion of 'is', the 'is (at the now)'. We're then granted use of the 'is' under an 'omnitemporal' interpretation to mean 'was, is (at the now), or will be', with maybe an extra disjunct for the atemporal, as if we were being granted some alternative conceptual scheme. But this is no concession at all, since we can already say everything with the tensed 'is', 'was', and 'will be', that we can say with the omnitemporal 'is'. Yet, if 'is' just means 'is (at the now)', then, in some weak sense, presentists have already won. However, they aren't permitted to make the substantive claims they want to make; they must settle for triviality.

Eternalists want to claim that past and future times exist. Times are just further existents, and so 'what there is', in the unrestricted sense, cannot be taken to mean 'what there is at the now' by eternalists, or else they will have all times at once in the now. Nor do they intend to make the trivial claim that all times were, are, or will be. When they speak of what there is, the matter of when it is is irelevant, since what there is doesn't really change. The question of which is prior, time or existence, is one of the central points of contention between presentist and eternalist. To deny eternalists their way of speaking without argument merely begs the question against them. So the triviality objection offends presentism and eternalism equally. Indeed, the objection seeks to deflate the debate by denying any useful conception of 'is' upon which to frame it. I hope to have shown, among other things, that a perfectly comprehensible neutral conception of 'is' can be had upon which to found the presentist-eternalist dispute.

## §6. Ontic and Factive Presentism.

When outlining our accounts of the A-determinations and the resultant interpretations of the presentist thesis, we must take care not to confuse two closely related, yet distinct views, which Fine (2005, pp.298-300), unhelpfully, labels 'ontic' and 'factive' presentism. Factive presentism is more commonly known as 'tense realism'. In Fine's words, it '…is the view that reality is tensed; reality comprises tensed facts (and perhaps tenseless facts as well). Tense-theoretic realism is, in its own way, a form of presentism; for, insofar as reality comprises tensed facts, it must be oriented towards the present.

We might therefore call it *factive* as opposed to ontic presentism.' (*Ibid*., p.299). That is, it's a view about the nature of facts. In particular, that there are irreducibly tensed facts. By 'fact', I understand Fine as meaning whatever it is about the world that makes propositions true.

Ontic presentism, however, is the thesis which has and will primarily concern us, summarised above by the presentist thesis. It doesn't directly concern *facts*, but rather is a thesis concerning *what the facts are about or involve*. In particular, it's the thesis that whatever the facts are about, if they are about any existents at all, they are about present existents. Fine construes his distinction thus: 'Ontic presentism is an ontological position; it is a view about what there is. Factive presentism, on the other hand, is a metaphysical rather than an ontological position; it is view about how things are, quite apart from what there is.' (*Ibid*.).

Importantly, factive presentism doesn't entail ontic presentism. That is, factive presentism is permissive about non-present existence; it allows merely past or future existents. Indeed, Fine claims to find greater plausibility in factive presentism without ontic presentism. Yet, ontic presentists, at least, should be factive presentists, even if there is no strict entailment from the former to the latter either. As Fine notes, 'Ontic presentism, by contrast, does not really make sense except in the context of factive presentism. There is no strict implication from one to the other but, given that all the facts are tenseless, it makes no sense to restrict the ontology to presently existing things. Thus any argument against factive presentism is, *eo ipso*, an argument against ontic presentism.' (*Ibid*., p.300). Fine presumably denies strict implication because it's seemingly possible for ontic presentists to both, deny there is any metaphysical change, and accept a tenseless understanding of presentness.[14] This combination of views would be extremely unattractive.


§6.1. The Extended Presentist Thesis.


Aside from our caution not to confuse ontic with factive presentism, another reason for making this distinction here is to highlight the strictly ontological nature of the presentist thesis as so far construed. Many will undoubtedly complain that this way of construing the thesis doesn't do justice to what they meant by presentism. They would have us extend the presentist thesis to include, not only a statement about what there is,

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[14] Dainton's (2001, §6.8) *Solipsistic Presentism* is a version of ontic presentism that might meet these constraints.

but also the way they are. For example, when Trenton Merricks characterises presentism, he goes beyond the mere ontological claim: '*Presentism* is the doctrine that the present time is ontologically privileged. According to the presentist, all that exists, exists at the present time; *and an object has only those properties it exemplifies at the present time.*' (1995, p.523, second emphasis is mine). That is, not only is what things there are restricted, but property exemplification is similarly restricted to that presently obtaining.

Call this extension of the presentist thesis the 'extended presentist thesis'. We shall formulate it accordingly, so it doesn't reference times:

> **Extended Presentist Thesis**: All and only present things exist. And all and only present property exemplifications obtain.[15]

Like ontic presentism, factive presentism doesn't entail **Extended Presentist Thesis**. It's natural, though not compulsory,[16] for ontic presentists to extend their view in this way, since without this additional claim about property exemplifications, it's unclear how presentism helps endurantist theories of persistence[17] in the way Dean Zimmerman (2005) *et al*. intend it to.

Typically endurantists are forced to relativise, in some preferred way, property instances of enduring objects to times in order to avoid the otherwise incompatible property instances instantiated by an object at distinct times from conflicting.[18] But ontic presentism is meant to be able to remove the conflict without relativising property exemplifications to times. It does this by ensuring that, when, in an enduring object, a property instance of a future time succeeds its incompatible property instance of this time, that future property instance doesn't yet obtain (as of now). And when it eventually does, the property instance of this time will have ceased to obtain (as of then). Hence, the two incompatible properties will never be exemplified *together* in the same object. However, this will only be ensured by **Extended Presentist Thesis**; ontic presentism alone doesn't yield this favourable result.

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[15] 'Property' is used broadly here to include relations, and in a way that is neutral on the metaphysics of properties.

[16] In particular, ontic presentists adopting a nominalist or universals-based accounts of properties could consistently reject **Extended Presentist Thesis**.

[17] Roughly, *Endurantism* is the thesis that things persist by being wholly present at distinct times (see Ch.2, §4).

[18] For more on this so called 'problem of temporary intrinsics' see Lewis (1986a, pp.202-204).

Ontic presentism fails to deliver this result on its own partly because it permits present existents, if they endure, to also be past or future existents as of now. If they did so, we might expect past or future property exemplifications of that past or future existent to likewise obtain (as of now) in the past or future. That is, ontic presentism doesn't rule out that present existents are (as of now) multiply-located at past and/or future moments, just as they are in certain eternalist metaphysics (cf. Mellor, 1998).

Additionally, **Extended Presentist Thesis** would rule out *Frivolous Presentism*. Frivolous presentists allow for property exemplifications by things at times when they don't exist (as of then). Though, most presentists welcome the commitment to *Serious Presentism*, the denial of frivolous presentism,[19] others are inclined towards frivolous presentism (cf. Hinchliff, 1988, 2010). The latter kind of presentist would accept ontic presentism whilst rejecting **Extended Presentist Thesis**. For this reason, our investigation focuses on ontic presentism, though I will be mindful to consider **Extended Presentist Thesis** where I think it matters.

§6.2. *De Dicto* and *De Re* Tensism.

When considering Crisp's (2004a, b) response to the triviality objection, I applauded him for noting that (ontic) presentists aren't especially concerned with challenging *de dicto* tensed claims, only *de re* tensed claims. In particular, they are concerned to challenge whether there are (as of now) existents such that, it is not now the case that they exist. That is, whether there are (as of now) non-present existents. We can capture the thought formally by stating that, ontic presentists must reject all claims entailing:

(2) $\exists_{As}x\sim\mathbf{N}(x = x)$

So, consider our earlier examples of *de dicto* and *de re* tensed claims:

**A *De Dicto***: It was the case that (there is (as of now) an *x*, such that, *x* is the Roman Empire).

**B *De Re***: There is (as of now) an *x*, such that, it was the case that (*x* is the Roman Empire).

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[19] See, for example, Brogaard (2006, p.195), Crisp (2005, p.7), Davidson (2003), Markosian (2004, p.53), and Torrengo (2006, p.117).

Given that the Roman Empire is no longer present, **B *De Re*** entails (2), but **A *De Dicto***
doesn't, since we rejected the relevant Barcan Formula:

**Past Barcan Formula**: $\mathbf{P}\exists x \varphi x \rightarrow \exists x \mathbf{P} \varphi x$

That is, **A *De Dicto*** doesn't tell us whether the constituent of the fact that it expresses
*did* exist (as of now) in fact *presently* exists (as of now). And since the existence (as of
now) of that thing is left open, it doesn't conflict with (2). However, **B *De Re*** just is the
assertion that that thing *does* (presently) exist (as of now), and consequently, if the
existent were not also present, **B *De Re*** would entail (2).

Those endorsing **Extended Presentist Thesis** will be similarly unconcerned
with challenging *de dicto* tensed claims like **A *De Dicto***. Their dispute, too, will be
restricted purely to challenging *de re* tensed claims. But whereas ontic presentism
specifically challenges the ontological aspects of such *de re* tensed claims, as (2)
indicates, those endorsing **Extended Presentist Thesis** will seek also to challenge more
broadly metaphysical aspects of *de re* tensed claims in addition to the ontological
aspects. They will want to deny there are (as of now) any non-present property
exemplifications, as well as rejecting (2). We can again capture the thought formally by
stating that those endorsing **Extended Presentist Thesis** must reject all claims
entailing:

$$(3)\ \exists_{As} x \big( \Phi x\ \&\ \sim\!\mathbf{N}(\Phi x) \big)$$

Unlike ontic presentism or **Extended Presentist Thesis**, factive presentism doesn't
concern itself with making *de re* tense claims. Rather, it's about the nature and structure
of facts, not their constituents; it concerns itself with *de dicto* tense claims, and
particularly, the tense aspects of those factual claims. Though, factive presentism's
focus isn't to challenge the truth of *de dicto* tense claims, as ontic presentism or
**Extended Presentist Thesis** challenges the truth of *de re* tense claims, but rather
whether true *de dicto* tense claims accurately represent reality as *irreducibly* tensed. As
Fine explains, the factive presentist's '...interest is in the tense or aspect of the statement
rather than with its specific ontological or ideological content; we simply wish to know
whether the tense or aspect of the statement might be an impediment to its faithfully
representing the facts.' (2005, p.268).

It seems to me, then, that Fine's characterisation of the distinct interests of factive and ontic presentism as metaphysical and ontological respectively, doesn't best capture their difference in focus. After all, **Extended Presentist Thesis** is a broadly metaphysical thesis, yet, like ontic presentism, it doesn't tread on the toes of factive presentist concerns. Instead, the distinct interests are best represented simply as concerning *de dicto* tense claims, in the case of factive presentism, or a concern with *de re* tense claims, in the case of ontic presentism and **Extended Presentist Thesis**.

§6.3. Strong Factive Presentism.

Another inadequacy about Fine's terminology is that a more fitting thesis for the title 'factive presentism' would be the thesis that all facts are present facts. It can be captured nicely by the wide scope applicability *salva veritate* of the present tense operator. For any fact, a present tensed operator can be prefixed to the expression of that fact without altering its truth-value. Or, more succinctly, the thesis that the following entailment holds: $\ulcorner \varphi \vdash \mathbf{N}(\varphi) \urcorner$. Call this thesis *Strong Factive Presentism*. This would parallel one way of construing **Extended Presentist Thesis**. That is, if we construed it as the narrow scope applicability *salva veritate* of the present tense operator to *all* that which appears after the quantifier. So the following entailment would hold: $\ulcorner \exists_{As}x(\Phi x) \vdash \exists_{As}x\mathbf{N}(\Phi x) \urcorner$. Strong factive presentism permits only present facts, whilst factive presentism, as construed by Fine, is inclusive of past and future facts. Indeed, it's because of this overabundance of facts that he needs to either relativise truth or fragment reality to avoid their conflicting with one another.[20]

Moreover, by endorsing the tense reading of the 'is' above, some might think I've already committed myself to strong factive presentism. However, this is a mistake, since factive presentism requires not just that there be tensed facts, but that those facts are *irreducibly* tensed. If the implicit 'now' in the tensed reading of the copula is given a tenseless reading, such as is proposed by token-reflexive semantics (cf. Mellor, 1981, Ch.2), then factive presentism may yet be false. In other words, the tensed readings of 'is' needn't be irreducibly tensed; they may well be tenseless. What makes the 'is' irreducibly tensed is metaphysical change. Metaphysical change denies us a complete, fixed, once and for all, description of reality. That is, given metaphysical change, when

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[20] That is, if factive presentism permits past and future tensed facts as well as present tensed facts, it faces a version of McTaggart's (1908, 1927) A-series paradox. As Mellor rightly notes, '...facts are no better at being at once both and not both past and present, present and future, and so on than events are.' (1981, p.95).

we describe how reality *is*, the best we can do is state how reality *is* as of now, and not for all time, since how reality *is* as of any moment itself changes with temporal vicissitudes.[21]

We can reasonably assume, then, that whether the tensed 'is' is irreducibly tensed or not will be determined by extrinsic factors: whether or not metaphysical change occurs. This makes it plausible to suppose that the view that the logical joint(s) that the 'is' helps represent, especially our quantifiers, will be intrinsically the same, whether or not metaphysical change occurs. These reasonable assumptions will maintain the virtuous neutrality of those logical joints between eternalists and ontic presentists.

Finally, it should now be clear why the proposals by Merricks and Sider from Section 3.1, of reducing the debate between presentists and non-presentists to a dispute about which interpretation of the quantifier is joint-carving, won't do even when we add our disambiguated interpretations of the tensed 'is' into the mix. For, firstly, both presentists and non-presentists alike can accept the additional 'is (as of now)' interpretation. But also, and crucially, whether or not the quantifier is tensed turns on the redundancy of the *de dicto* readings of the present tensed operator. That is, it concerns whether or not strong factive presentism is true. But ontic presentists aren't primarily making a claim about the fundamentality of *presently existing*, but rather the *de re* claim about *whether those existents are presently such-and-such*. They have both subtly conflated the issue in this way.

Since, for the most part, metaphysical change will be conducive to the versions of both ontic presentism and **Extended Presentist Thesis** that we will be considering, we will commit ourselves to factive presentism for the purposes of this investigation. Moreover, since past and future facts would conflict with present facts if they were ever all real as of any now, we will be assuming, for the most part, *strong* factive presentism. This assumption, though it rules out the absence of metaphysical change, still leaves open whether or not ontic presentism or **Extended Presentist Thesis** are true. That is, no questions are begged over whether there are (as of now) any non-present existents or

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[21] Note, none of the positions described by Fine (2005, 2006), including both his standard version and non-standard versions—*external relativism* and *fragmentalism*—of tense realism involve metaphysical change. It's therefore hard to see what justification can be given for contending that the tense aspects of reality are genuinely irreducible to the tenseless aspects on his positions. That is, Fine seemingly squeezes out the tense from his 'tense realisms' by finding ways to give a complete, once and for all-time, description of reality, whether that be by fixing the A-determinations (as in his standard tense realism), temporally relativising aspects of that description (as in external relativism), or compartmentalising aspects of that description into fragments (as in fragmentalism).

property exemplifications. For ease of use, from here on, 'presentism' and its variants will mean ontic presentism, unless stated otherwise.

**§7. Conclusion.**

we've now established what should be held fixed in our interpretation of the presentist thesis, namely, our understanding of the quantifier expressions. This was precisified in **Standard Tensed\***. Before considering what varies between distinct interpretations of the present thesis—accounts of the A-determinations—and now that we've a rudimentary understanding of the thesis, it will be instructive to explore what motivates it. This will be the focus of the next chapter.

# Chapter 2

## A Cause for Presentism.

As theses go, presentism isn't very popular amongst philosophers. I think that one of the primary reservations they have had towards it is the want of good motivations for believing it. It's my estimation that philosophers haven't been much impressed by the case made so far. This has often rested on rather precarious grounds, such as common-sense (cf. Zimmerman, 2007), mere prejudice (cf. Prior, 1977, pp.282-284), or quantitative parsimony (cf. Bourne, 2006; Tallant, 2013). Many are deeply suspicious about such motivations, which, if not completely misguided, lack security and weight.

My intention in this chapter, then, is to bolster the case for presentism. I will begin by briefly outlining and justifying the broadly pragmatic methodology that will serve to guide theory-choice throughout the remainder of the dissertation (Section 1). Then, after introducing some preliminary groundwork (Section 2), I will outline what I take to be a strong and secure motivation for presentism: that presentism alone can explain certain fundamental features of causation—primarily, the shared direction of time and causation (Section 3), its conservational character (Section 4), and temporal locality (Section 5). Along the way, we will be minded to highlight other features of causation that presentism helps explain. Finally, I will respond to a general problem that threatens our present enterprise: the problem of transtemporal causation (Section 6). By the end, we will have gained deeper insight into presentism, and will hopefully have begun to show that, contrary to popular opinion, when presentism is better understood, it's in many ways preferable to its competitors and worthy of investment.

### §1. A Pragmatic Methodology.

When choosing theories, ultimately, what we're doing is deciding what to believe. A question we must ask, then, is: what sort of considerations should guide our choice of beliefs? And to answer this question, we must reflect on what beliefs are for. Clearly, whatever purpose beliefs serve, they ought to serve an *instrumental* purpose—that is, they ought to serve *us*—since, even if they served some other transcendental purposes, besides the utter mysteriousness of such purposes, it's doubtful they would provoke our

care or interest for them; it's only in so far as beliefs serve us that we regard them. But if that it so, how do beliefs serve us? Following well-cooberated orthodoxy, the obvious way beliefs serve us is, in combination with our desires, as a guide to our actions. I will assume, then, that the purpose of beliefs is to guide our actions, and in particular, to guide them towards achieving whatever ends we desire.

§1.1. The Norms of Belief.

This doxastic aim should place certain normative constraints on what we believe. That is, we *ought* to believe things only in so far as serve they serve that aim. There have been three main kinds of norms of belief that philosophers have proposed: norms of *truth*, *knowledge*, and *reason*. These norms can be merely *restrictive*, whereby we ought *only* to believe those propositions that are true, known, or reasonable, respectively depending on the norm. Or they may be merely *prescriptive*, whereby, if a proposition is true, known, or reasonable, respectively depending on the norm, then we ought to believe it. But given that each of believing, disbelieving, and withholding belief, have consequences for what intentions we form for actions or inactions, each with significant consequences for satisfying our desires, it would be surprising if there were not a combination of both restrictive and prescriptive norms.

However, what is clear, despite the *prima facie* appeal these three kinds of norms each have, the norms are mutually inconsistent. To illustrate, consider the case where I leave my doll on my desk before leaving my flat this morning. Unbeknownst to me, my mischievious flatmate Sallyanne does something unusual and moves my doll from my desk into the dollhouse. When I come home that evening, given I want to find my doll, where should I look for it, the desk or the dollhouse? Since my beliefs guide my actions, I will inevitably look where I believe it's located. And if my actions are to successfully fulfil their ends, my beliefs ought to conform to certain norms. But which norms should they conform to? The reasonable thing for me to do would be to believe my doll is still on the desk. For, given what I know, I've most reason to believe it's there. Yet, this will guide my actions unsuccessfully towards their desired ends. Though, it might be submitted in defence, that although reasoneable beliefs would unsuccessfully guide my actions in this *particular* case, that is because the situation is unusual. And in more usual situations reasonable beliefs would successfully guide action, and thus *generally* be successful guides for action.

The truth norms, however, would impress us to believe all and only that which is true. So I ought to believe, contrary to reason, that the doll is in the dollhouse. The problem with this is that it provokes what John Gibbons (2013, Part III) calls the 'natural reaction': that such norms cannot 'get a grip on us'. For, we lack, at least for the most part, *direct* access to truth; any access we have to truths is *indirectly* earned through reasoned consideration of our sensory input. And beliefs we might hold contrary to what is reasonable, would be only coincidentally true, a lucky fluke or accident. But if beliefs rely purely on luck to guide actions, they won't be instrumental guides for actions that improve the likelihood that those actions will be successful. For, we would be just as successful by byassing belief and acting randomly (if that were possible). And it seems unfair to hold people to account on the basis of what they had no means of doing better.

Does the situation improve with norms of knowledge? It seems the knowledge norms would demand me to withhold belief about where the doll is, and thus defy reason, because I lack warrant for believing the doll is in the dollhouse. Accordingly, I should be to some extent indecisive about where to look for my doll. But again, since we lack direct access to the truth component of knowledge, the same natural reaction afflicting norms of truth is applicable equally to the norms of knowledge. Consequently, the norms of truth and knowledge usually get grounped together as *objective* norms, in contrast with the norms of reason, which is a *subjective* norm, and thus, in some sense, accessible to us. Moreover, even when the norms of reason agree with the norms of truth, they both may conflict with the norms of knowledge. For example, suppose that after my doll was displaced in the dollhouse, a nearby earthquake causes it to fall out of the dollhouse (placed precariously on a shelf above the desk) and onto the desk. In this case, believing what is both reasonable and true would bring about successful action. However, since my justification would be defeated, I would lack knowledge (at least on most accounts).

It seems then that subjective norms are all that we can actively conform to, even though reason is an imperfect guide. However, two main considerations are often offered in defence of objective norms. Firstly, that we need norms of truth to rule out Moore-paradoxical beliefs such as:

**Ommissive-MP**: It's raining, but I don't believe it.
**Commissive-MP**: I believe it's raining, but it's not.

But it's simply mistaken to think doxastic norms of truth are required to explain why we cannot believe these. Rather, this is explained, firstly by the fact that there are *consistency* constraints on *representation*: what is inconsistent fails to represent anything. Secondly, beliefs require taking a certain attiude to a representation. So we cannot believe what cannot be represented. Thirdly, belief in either of **Ommissive-MP** or **Commissive-MP** requires taking the belief attitude respectively to their first or second conjuncts. Finally, given doxastic norms of reason, we should obey the conjunction-introduction logical rule, so that, if we believe '$p$' and '$q$', then we should believe '$p$ and $q$'. Accordingly, in the case of **Ommissive-MP** or **Commissive-MP**, reason would compel us to believe on their basis that 'it is and is not raining'. But we cannot do that, because it fails to represent anything. And by *modus tollens*, we ought to surrender both **Ommissive-MP** and **Commissive-MP**. None of this requires doxastic norms of truth or knowledge!

The second consideration often offered in defence of objective norms is that, whilst objective norms cannot be *motivational*, they can be *evaluative*. So, if we believe something that isn't true, it's appropriate to criticise us. Yet, I think this just misses the point of what is problematic about objective norms. We lack direct access to the truth, so we cannot use truth even to evaluate norms, we can only use reasoned belief. All we can criticise is a failure to consider certain reasons: those accessible at the time of belief, and those accessible at the time of evaluation.


§1.2. Pragmatic Reasoning.


So our beliefs should conform to norms of reason. But reasons are of varied sorts, and we must question which are admissible. The best way for our beliefs to guide our actions successfully is if they accurately represent reality. For, it's ultimately reality that determines the successfulness of our actions. Thus, the kinds of reasons that should move us to belief are reasons for believing the proposition is true. Yet, not all kinds of reasons for *believing* a proposition is true are reasons for the truth of the proposition itself. In particular, when we've little or nothing to lose by believing a proposition, $p$, is true, but much to gain in doing so, then this will be a kind of reason for believing $p$ is true, even though it's not a reason for the truth of $p$ itself. In such cases, it's worth betting on $p$'s being true, because such beliefs could guide our actions to more successful outcomes, and at least wouldn't hurt their chances of success. These sorts of reasons for belief are called *pragmatic reasons*.

As it happens, our evidence-base massively underdetermines theory. That is, there are a great many theories compatible with the experiences we have, each of which we possess an equal amount of reason for the truth of each of those theories themselves. This is perhaps especially the case in metaphysics, where we often must decide between several empirically adequate theories. The result is that underdetermination leaves such reasons woefully inadequate to support decisive beliefs about the world to guide action. For, our evidence-base is seemingly adequate with the world evolving in any number of radically diverse ways. In such cases, if any progress is to be made, it's by appeal to pragmatic reasons for believing one of those empirically adequate theories is preferable.

Yet, not all pragmatic reasons for belief equally serve the action-guiding aims. Crucially, some things must be true if beliefs are to be able to fulfill their action-guiding role. For example, arguably, we must believe there are such things as actions, and that we can act, if our beliefs are to be able to guide our actions. If we didn't believe these things, we wouldn't act (on our beliefs), and the beliefs would therefore not perform their action-guiding role. So there is much to be gained and nothing to lose by believing these things. These are what we might call *functionally essential beliefs*.

More interesting cases of functionally essential beliefs are beliefs in grounded uniformities within nature or real modal connections of varying strengths between things. In order for our beliefs to guide our actions, we need to be able to extrapolate from our evidence-base to new cases. And we can only be permitted to reasonably do this if there are certain structures of reality forming uniformities in nature or predictable connections between things. Otherwise, whatever our beliefs about that exceeding our evidence-base are, they will be detached from any underlying metaphysics, and left to the fortunes of chance; such unprincipled beliefs wouldn't make the success of our actions more likely, so they are unhelpful as guides. It seems, then, that we've much to gain from believing there are such uniformities or modal connections, and nothing to lose if we're wrong. If correct, these uniformities or modal connections allow us to *explain* one kind of event in terms of another, so that the presence of the latter allows us to predict the former. If incorrect, they can hardly worsen our predicament of how to act in the present given that the relevant facts are inexplicably *brute*. And if our evidence no longer supports them, they can be discarded.

However, this leaves an important question about which uniformities or modal connections to believe in. For, though the belief in there being such uniformities or modal connections *generally* is functionally essential for beliefs, no *particular* uniformities or modal connection is. My answer is primarily holistic in nature. In so far

as a *system* of beliefs leads to less facts being left inexplicable, that system of beliefs is preferable. I thus advocate the following substantive constraint on theorising:

> **Minimising Inexplicability**: *Ceteris paribus*, a theory is preferable over its rivals to the extent that it is committing to less inexplicable facts.[22]

Note that I use 'less' rather than 'fewer' here. This is no grammatical error. It's to account, firstly, for potential differences in our concerns and interests over certain facts, and secondly for the degree to which a fact is explained or left inexplicable.

On an individual level, though a theoretical posit can be used to explain facts, they also bring with them further facts that need explaining. Therefore, we should posit facts just when they explain more facts than the inexplicable facts they introduce into our total theory (system of beliefs). Not just any explanations will be satisfying. For, if the explanation ultimately raises more questions than it answers, it won't provide us with a more complete understanding of reality, and will thus fail to offer any further guidance to our actions. On my understanding, then, conforming to **Minimising Inexplicability** is just what it means to *theorise*. And if we don't follow **Minimising Inexplicability**, then we're no longer theorising, we're merely fantasising. That is, our theoretical posits become detached from their purpose of providing guidance for action. Ideally, those posits should be such that we have some access (even if only indirect potential or partial access) to their presence. Otherwise, our ability to take advantage of those beliefs towards guiding our actions would be significantly diminished.

That our beliefs are supported by such pragmatic considerations is evidenced by our finding them *compelling*, even when we know they aren't reasons for the relevant propositions *themselves* being true. This is authentic because we lack conscious control over believing; so the fact that such reasons *compel* belief is defeasible evidence that they speak towards its aims. It's unsurprising, then, that those who have systematically denied there are such uniformities or modal connection have failed to uphold their sceptical stance in practice. For example, it explains what prevented Hume (1739, Bk.1, Pt.IV, §.VII), in his more sober moments, from believing his own philosophy, which denied any such uniformities or modal connection.[23]

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[22] Note that a maximising-explanations principle, which states that a theory that explains more is preferable, would be no good as a theoretical virtue since the easiest way to maximise-explanations is to multiply the explananda. But there is no virtue in explaining that which needn't have been explained.
[23] There seems to be a strange assumption amongst many philosophers that what we believe in the philosophy room stays in the philosophy room. This parallels a distinction made between theory and pre-

This is the methodology I adhere to, for better or worse, throughout the remainder of this dissertation. I've certainly given a more detailed defence of my method here than most metaphysicians are usually inclined to for a work of this sort. But my method of theory-choice is both unorthodox and central to my decision-making. Yet, even if some remain sceptical about this approach, I think many of the results will speak to the concerns of alternative approaches. If that is the case, you should still be able to take something away from this work. In the remainder of this chapter, I will focus on motivating presentism over its rivals on the basis of explanatory superiority.

## §2. Variation and Temporal Metaphysics.

We begin by making some important distinctions, and outlining rival temporal metaphysics. Foremost, we must distinguish two kinds of variation: *metaphysical change* and *mere variation*. We define them as follows:

> **Metaphysical Change**: Where reality itself alters in either what there is or the way things are.

> **Mere Variation**: Where reality includes differences between metaphysical indicies in either what there is or the way things are.

We made a distinction of this sort in Chapter 1, Section 4. And it's noteworthy that, given what was argued there, a distinction of this sort is necessary to distinguish between the rival temporal metaphysics that shall concern us.

Though the two kinds of variation may take a temporal form, they are meant to be temporally neutral. For example, no temporal connotations should be read into the word 'alters'; the description doesn't presuppose that the changes to reality are temporal changes and the indicies needn't be times. As is much emphasised in the literature, change isn't an exclusively temporal phenomena; there may, for example, be spatial and worldly change. Please resist whatever urges you may have to read a temporal connotation into these descriptions of variation. Nevertheless, the reason why it's perhaps especially natural to give a temporal connotation to metaphysical change, where

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theory. I don't understand this distinction. It seems to me that there is only more or less well developed theories. And if a belief is good enough for the philosophy room, it should be more than good enough outside of it. If you cannot believe something in practice, then you simply cannot believe it!

change is to reality itself rather than its constituents, is, as will be explained, because all metaphysical change must be temporal.

Presentists will likely subscribe to a *Dynamic Conception of Time*. That is, what things exist and/or the way they are, undergoes metaphysical changes over time. For presentists, this typically means that some present things cease to be, at least the way that they presently are, whilst new things, or ways things will be, come into being, and therein (perhaps temporarily) inherit presentness. Call this complication of presentism *Dynamic Presentism* (cf. Dainton, 2001, §6.10). Typically, presentists will also disallow a plurality of times into any stage of reality. Accordingly, they disallow any mere temporal variations (where the metaphysical indicies are times).

This contrasts with a *Static Conception of Time*, whereby there are no metaphysical changes to temporal reality. The most popular of these is *B-Theory*. B-theory is a combination of two claims: i) all past, present, and future things exist (Eternalism), ii) all *facts* about what is past, present, and future are temporally relative (Internal Relativism); there are no such absolute facts.[24] According to B-theory, there are no temporal metaphysical changes to what things exist (Permanentism) or the way they are (Static-Time Thesis). Likewise, B-theorists invariably postulate a plurality of real concrete times and admit mere temporal variation between them.

Rather than venture into unnecessary details, I shall simply list some *Intermediate Views* between dynamic presentism and B-theory:

> **Growing-Block Thesis**: All merely past and present, but not merely future, things are real. Present events are the most recent additions to reality (cf. Broad, 1923, Ch.2).

> **Shrinking-Block Thesis**: All present and merely future, but not merely past, things are real. Present events are the next subtractions to reality (cf. Rea, 2003, p.248).

> **Shrinking-Tree Thesis**: All past, present, and future things are real, but there is a linear-past and a branching-future. Present events are those immediately preceding branching (cf. McCall, 1994).

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[24] Fine (2005, 2006) calls this *Internal Relativism* to contrast it with *External Relativism*, where *truths*, rather than *facts*, are temporally relative.

> **Moving-Spotlight Thesis**: All past, present, and future things are real, but present things have some metaphysical privilege (cf. Schlesinger, 1980).

> **Degree Presentism**: All past, present, and future things are real, but present things are *more real* than merely past and future things (cf. Smith, 2002).

The last three of these are committed to eternalism. Yet, none offer an entirely static conception of time. Instead, each are, in their own ways, committed both to mere temporal variation and temporal metaphysical changes, even if metaphysical changes are only in what is past, present, or future. Theories taking A-determinations as irreducibly real are collectively called *A-Theories*. This brief taxonomy should provide a sufficiently wide sample to ground considerations in our forthcoming discussion.

## §3. The Shared Direction of Time and Causation.

It has been widely documented, and is manifestly apparent, that:

> **Shared Direction**: Time and causation share a common uniform direction.[25]

This fact is too improbable to be mere coincidence, and consequently cries out for explanation. Yet, if time and causation are distinct aspects of reality, a *satisfying* explanation cannot simply stipulate in our account of causation or time that causes precede their effects. Rather, there must be some non-temporal aspect of causation preventing its occurrence being anything but transtemporal: some mechanism intimately binding time and causation together in this way. I think dynamic presentists alone can give a fully satisfying explanation of **Shared Direction**.

We begin by elaborating what this presentist explanation is to help understand where rival temporal metaphysics fall short (Section 3.1). After considering some topological worries for that explanation (Section 3.2), we will explain why non-presentists aren't entitled to that explanation, and why alternative explanations seem doubtful (Section 3.3). Finally, we will consider and reject those accounts reducing either one of time or causation to the other, thereby deflating the substance of **Shared Direction** that otherwise demands explanation (Section 3.4).

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[25] Some contend that there are cases of simultaneous causation. However, these aren't very convincing, and can be more plausibly interpreted so that effects succeed their causes (cf. Mellor, 1998, Ch.10, §3).

§3.1. The Presentist Explanation.

Dynamic presentists give an account of causation in terms of metaphysical change. To understand how, it will be useful to distinguish two different conceptions of causation: what Ned Hall called *dependence* and *production*.[26] Dependence is the conception of causation, typically captured by counterfactual theories of causation, where '…event *c* is a cause of (distinct) event *e* just in case, had *c* not occurred, *e* would not have occurred.' (2004, p.225). Production, however, is harder to characterise. According to Hall, the productive conception of causation is such that '…we evoke it when we say of an event *c* that it helps to *generate* or *bring about* or *produce* another event *e*.' (*Ibid.*). Clearly this is sketchy, but the important point is, as Forbes notes, '…that Hall has argued that there is more to causation than counterfactual dependence.' (2010, p.60). Hall reinforces his distinction with several cases. Here is one:

> Sue is piloting a bomber on a mission to blow up an enemy target, and Bill is piloting a fighter, miles ahead of Sue, attempting to intercept any enemy aircraft. An enemy, sent to shoot Sue's aircraft down, is intercepted by Bill and the enemy is shot down. This happens such that Sue can't see it, and Bill maintains radio silence. In fact, Sue does not get any evidence this has happened. Sue successfully bombs her target. What's more, had Bill not shot down the enemy, Sue would not have successfully bombed her target. Thus, Sue's bombing is counterfactually dependent on Bill's shooting. (2004, p.229)

Though Sue's bombing counterfactually depends on Bill's shooting, in line with dependence causation, it seems wrong to say Bill caused Sue's bombing in the sense that Bill *brought about* Sue's bombing, in line with productive causation.

It's this productive conception of causation that I contend is intimately bound with metaphysical change. Now, I noted that productive causation has proved harder to characterise. But this is primarily because those who have tried have done so without the resources of metaphysical change. For, it seems to me that, production, the bringing about of some state of affairs or other, just is the *mechanism* of metaphysical change. That is, productive causes function to instigate metaphysical changes, and if not thwarted, they thereby bring about their effects *through* metaphysical change.

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[26] My discussion of Hall (2004), here, is indebted to Forbes (2010, Ch.3).

This elucidation of productive causation has two values. Firstly, it provides the *basis* for dependence causation. That is, *dependence* is a form of modal connection between things. But there are many distinctive forms of dependence. For example, there are varying *strengths* of modal connections corresponding to greater or lesser degrees of dependence, such as *necessity*, *sufficiency*, and *tendency*. And there is a demand to explain *how* those dependencies hold, *that* they hold, and *why* they hold with just that character or strength. That demand comes from the pragamatic considerations we gave in Section 1.2, whereby explanation in these places would better allow us to extrapolate from old to new cases. Part of the theoretical role productive causation plays is to help provide the explanada for the formermost of these three explanandum: *how* those dependencies hold. And that explanation will be further insightful for *why* they hold with the character or strength they have, which will in turn be indicative for when other dependencies hold and our ability to extrapolate from our present experience-base to future experiences.

Importantly, this basis for dependency causation in productive causation will allow us to distinguish between causal and non-causal dependencies on the one hand, and between *fundamental* and *derivative* causal dependencies on the other. So, referring back to Hall's example, though Sue's bombing *depends* on Bill's shooting, that dependence is merely a derivative causal dependency, because it's not an instance of productive causation. But these non-fundamental causal dependencies are nonetheless grounded in patterns of productive causation. And discerning which dependencies are fundamental, and which are derivative, in this way, will help our predicative capacity for new cases—it's the *fundamental* kind of dependencies that we should expect to hold with any consistency across a variety of situations old and new.

The second value this elucidation of productive causation has is in its contribution towards helping explain **Shared Direction**. It's to this that we shall now turn. This explanation proceeds in three stages, and productive causation will be integral to that explanation.

*§3.1.1. Stage One: The Non-Simultaneity of Causation.*

That productive causation is the mechanism of metaphysical change gives dynamic presentists a non-temporal aspect of causation—namely, metaphysical change—to explain **Shared Direction**. Note my earlier emphasis that the two kinds of variation be characterised as temporally neutral. Yet, despite this temporal neutrality in conception,

it should be clear that metaphysical change can only happen over time. To see why, suppose the contrary: that metaphysical change happens at a time. In that case those changes would contradict what was already the case at that time. It would require those changed events both to be and not be at an instant. So, for example, if the fact that $x$ is $F$ at time $t$, undergoes metaphysical change at that moment such that it's also *not* the case that $x$ is $F$ at $t$, we're faced with a flagrant contradiction.

Some may complain that when metaphysical change alters what is the case at a time, the altered facts are *supplanted* by those changes, so that the facts at the time *before* the metaphysical changes are different from the facts at that same time *after* those changes. Yet, as my emphases reveal, this merely divides that time into two: the time as of a meta-earlier and meta-later meta-time. And those changes undergone to what occupies the time over the introduced meta-times see that "time" cease to play its theoretical role as time.[27] For example, the entailment '$\mathbf{N}p \rightarrow \mathbf{FPN}p$' will fail because if the facts at a time can change, there will be nothing to stop what happens at that time being different according to distinct presents. At the very least, all my complainant could show is that change happens over meta-times, whereby the meta-times are distinct stages of reality, meta-before and meta-after metaphysical change.[28] Perhaps I overstress here an altogether obvious point: that there can be no metaphysical change in what occurs at a time. But given that some have recently (and mistakenly) defended this poition (cf. van Inwagen, 2010; Hudson and Wasserman, 2010; Hudson, 2014, Ch.5), it's worth highlighting that it is untenable.

Similarly, some might enquire why metaphysical change must occur over time rather than over spaces or worlds. For any of these locations, they are either constituents of reality or designate states or stages of reality as a whole. Metaphysical change refers to changes of the latter kind, where reality itself changes. But why must that change be temporal? Our contention was that reality as a whole cannot both be and not be in a particular state. Therefore, changes to reality as a whole must *supplant* the original state of reality. That is, metaphysical change requires the *giving way* of one overall state of reality to make way for another. Such giving way of one state to another, a *successor*, is a uniquely temporal characteristic. It's for this reason that metaphysical change requires

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[27] Essentially, certain constitutive axioms of second-order change (see Ch.3, §3.2) will fail (see the problem of temporal unity in Ch.6, §2.3). I lack the space to argue this point in any detail here. If need be, make this a promissory assumption.

[28] You shouldn't get suckered into McTaggart's temporal regress, here, by contending that those meta-times reside *within* reality, and are thus also subject to metaphysical changes. Otherwise, we will no longer be dealing with metaphysical change, as was assumed *ex hypothesi*. Instead, those changes at a time over meta-time would be mere temporal variations.

time, though those changes may be to how reality is at a space or world. And it's this feature of time that gives it order, asymmetry, and direction, features notably missing from structures of worlds, the latter two also missing from spatial structure.

So, metaphysical change must involve the bringing about of a new moment to harbour those changes to reality. These moments aren't to be construed simply as *constituents* of reality, but as *stages* of reality, taken as a whole, such that no two are realised together. However, all we've thus far established is the non-simultaneity of productive causation. And that this is in virtue of the effects of those productive causes being brought about through metaphysical changes, which are strictly non-simultaneous changes. We therefore call this first stage of the dynamic presentist explanation the *non-simultaneity of causation*. Yet, it's not enough merely to show that causation is non-simultaneous, since this leaves two possible temporal directions that causation might take: *past-wards* and *future-wards*. Dynamic presentists must now explain why causation follows only a future-ward direction from cause to effect.

*§3.1.2. Stage Two: The Common Direction of Time and Causation.*

To explain this shared direction, we must first acknowledge that metaphysical change, in itself, lacks temporal direction. Otherwise we couldn't maintain that it's temporally neutral. However, metaphysical change does have a direction of its own: it's always a change *from* one state *to* another. Call the former state *the altered*, and the latter *the alteration*. For dynamic presentists, it's in virtue of metaphysical changes that reality alternates between distinct moments; it's through metaphysical changes that new moments come to be. We can then ask: does this direction of metaphysical change map onto time's direction, and in what way? I think dynamic presentists can plausibly make the case that it does, such that metaphysical change is always future-wards.

The key to obtaining this result resides within the presentist's privileging of the present as that *from* which all metaphysical changes proceed. It's present things that are altered, simply because, given presentism, there is nothing else to be altered. We can then say that, whatever metaphysical changes happen to present things, those changes are always future-wards from that changed. That is, the new moments metaphysical changes bring about always harbour the alterations *from* the former present, and consequently always proceed in a future-wards direction, from one state, *the altered*, to another state, *the alteration*. Dynamic presentists can thus conclude that the future-

wards direction of time *just is* the direction of the metaphysical changes to present reality, and that these are the only kinds of metaphysical changes.

We must finally consider whether temporal locations harbouring the effects of productive causes always (temporally) succeed them. If so, then causation must share a common direction with time. Thankfully, dynamic presentists can appeal to the asymmetric dependence of effect on productive cause to achieve this result. That is, an effect comes about *in virtue of* being produced by its cause, whilst the cause isn't brought about in virtue of its effects. The reason for this is that productive causes, because they involve metaphysical change, must also bring about distinct temporal locations to harbour their effects. The effects, at least in a linear temporal topology, cannot then bring about their causes, because those causes won't be at those new times, but will instead reside at former times (stages of reality). So it's in virtue of the presentness of productive causes that their effects come about. However, if the reverse were true, if effects were present, we shouldn't expect their causes to come about, simply because causes don't exist in virtue of their effects.

Given that productive causation is inextricably bound to metaphysical change, and metaphysical changes come about in virtue of the causes, rather than the effects, we can conclude that metaphysical changes proceed *from* productive causes *to* their effects. And since the future-wards direction just is this direction *from* altered *to* alteration, all effects must therefore *succeed* their productive causes. That is, causation must follow a future-ward direction from productive cause to effect. Call this result the *common direction of time and causation*. It establishes a fixed temporal direction for productive causation. However, it falls short of establishing *the* direction of time and causation: a *unique* direction they always pursue. That is, there might be many future-wards.

*§3.1.3. Stage Three: The Unique Direction of Time and Causation.*

For this final explanatory task, dynamic presentism relies on its *temporal monism*: that reality only ever consists of one time at any given stage. Specifically, given temporal monism, there is no time order *within* any stage of reality, no mere temporal variation. Accordingly, there is no demand to explain why new moments are brought into reality at the temporal locations they assume. If there is only one moment as of any stage of reality, which is just the collective consequences of the metaphysical changes to reality, there can be no disparity regarding when *in* reality those changes occur. That suggests the following constraint:

**Immediate Monism**: The immediate effects of co-present productive causes must occur co-presently.

This holds because there are no other moments for the immediate effects to immediately occur at. Likewise, mediate effects of co-present productive causes can occur at distinct moments to each other, but only in virtue of there being a chain of intermediary effects between the productive cause and each of its mediate effects, such that:

i)   each link in the chain of intermediary effects are effects of the original productive cause and earlier links, whilst also productive causes of later links, (definition of 'chain of intermediary effects')

ii)  each link occupies at most one moment as of any stage of reality,[29] (from 'temporal monism')

iii) each link occupies distinct moments from its earlier and later links,[30] (from 'non-simultaneity of causation')

iv) there is no interceding moment between productive cause and mediate effect without a link. (from 'real influence restriction')

The justification for iv) is that, if there were an interceding stage of reality, between a mediate effect and its productive cause, lacking any intermediary effects, it would be entirely inexplicable how or why the mediate effect came about. This is because, as of that stage of reality (lacking an intermediary effect), there would be no influence or trace of the productive cause left in reality to act as the mechanism of metaphysical change bringing about that mediate effect. But according to the sensible *Real Influence Restriction*, only real things can affect metaphysical changes. If the mediate effect were to come about in this situation, it wouldn't be due to any influence of the productive cause, and accordingly not genuinely an effect of it. Therefore, there couldn't be a mediate effect of a productive cause that had a broken chain of intermediary effects leading up to it. Assuming, then, a non-branching temporal topology, we can affirm the following constraint on mediate effects of productive causation:

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[29] Though, links might endure over many stages of reality.
[30] This presupposes a linear temporal topology and will need qualification.

**Mediate Monism:** For every mediate effect of co-present productive causes, each of their intermediary effects shares a common time as one of the intermediary effects of any other mediate effects of those co-present productive causes, up to the succeeding time of the mediate effect temporally most proximate to the time of occurrence of the productive causes.[31]

So, to illustrate, consider knocking over the first in a chain of dominos, whereby this will be a mediate productive cause of the knocking over of the last member of that chain. Its chain of intermediary effects will involve the knocking over of the other dominos in the chain of dominos. **Mediate Monism** states that the effects of all other productive causes co-present with the with the knocking over of the first domino, at all interceding time between those effects and their productive causes, will themselves have intermediary effects co-present with the knocking over of the other dominos in the chain of dominos, up to the time of that knocking over of the last domino in the chain of dominos, to be knocked over. Note, productive causal relations are individuated, in part, not just by their productive cause and effect, but also by these chains of intermediary effects, if such there be. Crucially, it's temporal monism that secures the uniqueness of the direction of time and causation encapsulated by **Immediate Monism** and **Mediate Monism**. And this is by ensuring all effects progress through a chain of single moment stages of reality.

*§3.1.4. Summary.*

This completes the dynamic presentist explanation of **Shared Direction**. It relied on three important aspects of the dynamic presentist picture discussed. Firstly, that the *non-simultaneity of causation* is established non-trivially, via a non-temporal characteristic of causation. This showed us that causation is a transtemporal relation, different in character from non-temporal dependencies. Secondly, that there is a *common direction of time and causation*, which followed from two non-trivial facts. That, given presentism, all metaphysical changes are to the present, so metaphysical changes are always in a future-ward direction. And, productive causes bring about their effects through metaphysical changes, so the direction from productive cause to effect is from

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[31] If *co-presentness* has a degree of metaphysically indeterminacy, in accordance with prevailing interpretations of relativistic physics, then **Immediate Monism** and **Mediate Monism** hold on every precisification of times into unique temporal foliations/orderings relative to each inertial reference-frame.

altered to alteration. Therefore, productive causation inherits the common direction of time and metaphysical change. The final aspect relies on *temporal monism*: that as of any time, there is but one. This established a unique direction for shared progression.

§3.2. Topological Caveats.

We've now a complete and comprehensive dynamic presentist explanation of **Shared Direction**. Before considering how rival temporal metaphysics fare, let us briefly examine a couple of topological concerns. The first primarily concerning the common direction of time and causation, and *Circular-Time*; the second concerning the unique direction of time and causation, and *Branching-Time*. We examine these in turn.

*§3.2.1. Circular-Time.*

In circular-time, all events are each past *and* future; each earlier *and* later than all events (including themselves). It's called 'circular-time' because it conjures an image of time circling back on itself. Importantly, on certain reductive characterisations of times, for example, as sets of events or propositions, presentism palpably permits circular-time. The worry this then incurs is that, if time were circular, new moments brought about by productive causes via metaphysical change would be both past-wards and future-wards. In that case, productive causal dependence wouldn't be asymmetric and consequently causation would lack direction. Moreover, since metaphysical changes take us both *from* altered *to* alteration and back, it seems metaphysical change cannot be asymmetric either. Accordingly, time itself would seemingly lack direction.

These are general worries circular-time raises for all temporal metaphysics that can support it.[32] However, dynamic presentism has the advantage of accounting for both time and causation's direction, even in this most inhospitable environment. The solution follows from the *Metaphysical Privilege of the Present*, given the intimate role of presentness in productive causation: that only present things can be productive causes. The presentist justification for this intimate connection is obvious: given presentism, only present things exist, so all productive causes must be present. Call this intimate role of presentness in productive causation the *Presentness of Productive Causes*.

It's unobvious how rival temporal metaphysics metaphysically privileging presentness can adequately explain the presentness of productive causes. Indeed, it

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[32] It's doubtful that either growing-block or shrinking-tree theories could support circular-time.

seems as though those theories, would be committed to productive causes at non-present times, lest, contrary to earlier remarks, there be change at a time over meta-time. Since, if that event is no longer a productive cause when non-present, it's not genuinely the same event that was present (see the 'Dead Past Dilemma' of Section 2.3.2). But how does the presentness of productive causes help give direction to time and causation in circular-time? To answer this I enlist the diagrammatic assistance of figure 1:
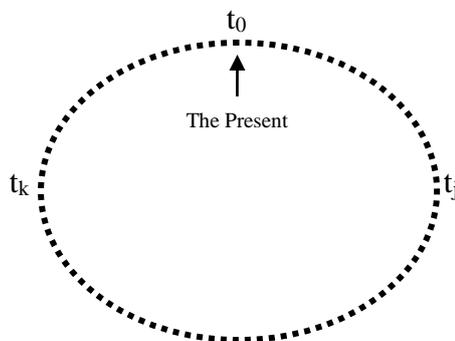


Figure 1: A depiction of a circular temporal topology. Three dots, representing times, have been labelled, $t_0$, $t_k$, and $t_j$. The foremost's represented as present.

Restated, the concern is that, if time has a circular topology, each of times $t_0$, $t_k$, and $t_j$, in figure 1, will be both past-wards and future-wards of each other. Additionally, productive causes at each of those times may have their mediate effects at each of those times. So how can dynamic presentists point us in the right direction?

Given the presentness of productive causes, presentists can meaningfully frame this question from the privileged perspective: present reality. They can then ask, which of the effects at $t_0$, $t_k$, and $t_j$ of productive causes at $t_0$, do those productive causes bring about first? If they first bring about effects at $t_j$, then given the real influence restriction, those effects will appear as intermediary causes of effects at $t_k$, even when effects at $t_0$ aren't amongst those intermediary effects. Likewise, if they bring about effects at $t_k$ first, those effects will appear as intermediary causes of effects at $t_j$, even when effects at $t_0$ aren't amongst those intermediary effects. This is important, since, as earlier noted, mediate causation is individuated partly by its chain of causal intermediaries, and this establishes a direction, and an asymmetry, in these chains of causal intermediaries, and therefore in productive causation. So, if effects at $t_k$ are causal intermediaries of effects at $t_j$ when effects at $t_0$ aren't, then the intermediaries determine the direction from productive cause to effect as clockwise in figure 1. Otherwise, effects at $t_j$ would be intermediary causes of effects at $t_k$ when effects at $t_0$ aren't, so the direction from productive cause to effect would be anticlockwise in figure 1.

Likewise, we can similarly distinguish the direction of metaphysical changes. Where metaphysical changes *from* $t_0$ *to* $t_k$ must proceed via $t_j$, the future-wards direction is clockwise in figure 1. And where metaphysical changes *from* $t_0$ *to* $t_j$ must proceed via $t_k$, the future-wards direction is anticlockwise in figure 1. This asymmetry establishes which metaphysical changes must occur first to get from the present to any other time, which the metaphysical changes *sequentially* bring about. Since temporal direction just is the direction of metaphysical changes from the present, we can now distinguish temporal direction towards whichever metaphysical changes proceed most immediately. And because productive causation is the mechanism of metaphysical changes, the alteration must lie in the future-wards direction of the altered in virtue of the productive causes at the altered time bringing about their effects at the alteration time. So even in circular-time, dynamic presentists can guarantee **Shared Direction**. This deals nicely with our first topological concern.

Before leaving our discussion of circular-time, it's worth clarifying a couple of further issues. Firstly, circular-time allows productive causes to bring about mediate effects at their own times. Superficially, this seemingly permits instantaneous causation, which we ruled out at the first stage of the presentist explanation of **Shared Direction**. However, this causation isn't *instantaneous*, since it proceeds via a chain of intermediaries that fill the entire temporal loop. Productive causes can only bring about their effects at their own time if they proceed via a chain of intermediate effects instigating metaphysical changes all along the way.

Secondly, if time were circular, a productive cause could not *alter* what happen*ed* at that stage of reality, but merely *affect* it by initiating the chain of causes that brings it about. Given that the tenability of circular-time for dynamic presentists was premised upon a reductive characterisation of times, where times are individuated by their members, if, in the future, you alter a time's members, it ceases to be that same time, and time breaks free from its circular topology. So we needn't go back on our claim that there cannot be metaphysical change, and hence causation, *at* a time, but only *over* time.

*§3.2.2. Branching-Time*.

Time has a branching topology when there is no unique past or no unique future. We won't trouble ourselves with past-wards branching here, because it doesn't obviously affect our discussion, and I cannot fathom how it could arise in our dynamic presentist

terrain. However, a future-wards branching topology complicates the dynamic presentist explanation of **Shared Direction**, since it presupposes a plurality of times for the effects of productive causation to be situated.

To fully comprehend the implication of a future-wards branching topology for the dynamic presentist explanation, we must first understand what a future-wards branching topology involves given presentism. After all, the intuitive way of outlining presentim has it that, as of any present, there is a single all-encompassing time. How, then, can a branching temporal topology be accommodated here? Again, I enlist diagrammatic assistance below:
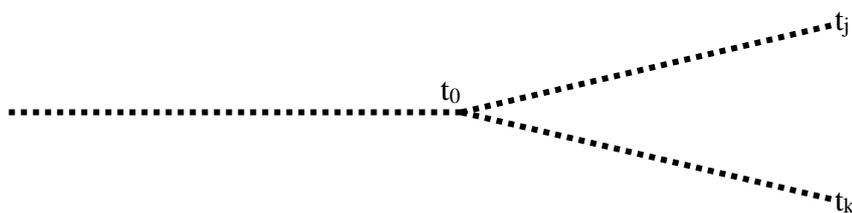


Figure 2: A depiction of a future-wards branching temporal topology. Three dots, representing times, have been labelled, $t_0$, $t_k$, and $t_j$.

In figure 2, time branches future-wards immediately after $t_0$. The initial enigma confronting dynamic presentists is how times after $t_0$ on the $t_j$ branch are related to those on the $t_k$ branch. It's evident that they bear no *Direct Temporal Relations* to one another. We cannot say either that they are earlier, later, or simultaneous with each other; when either of $t_j$ or $t_k$ is present, the other is neither in its past, present, nor future. Reality thus lacks the requisite structure to capture those facts, and consequently, they are *entirely* metaphysically indeterminate. However, $t_j$ and $t_k$ may bear *Indirect Temporal Relations* to each other. Namely, that when either of $t_j$ or $t_k$ is present, the other *was* in *a* future.[33]

What this means is that, for dynamic presentists, after $t_0$, it's not just time that fissions, but reality itself. This is because, for each time after $t_0$ on the $t_j$ branch, there is no fact of the matter whether it's co-present with $t_k$, or any other times after $t_0$ on that branch. Yet, presentists maintain that only co-present things co-exist. Accordingly, there will simply be no fact of whether $t_j$ and $t_k$, or any other times between branches,

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[33] I assume that those former future-tense facts were determinate as of any times up to, and including, $t_0$. There may be no indirect temporal relations then either if, as per some open-future models, you think that future contingents are metaphysically indeterminate.

co-exist. Two ways of understanding this disunity of time and reality after $t_0$ present themselves:

**Branch-Relative Reality**: Reality divides into *branch-relative realities*,[34] so that there are no facts about what is absolutely real, but only relative-to-a-branch or *unified present*.

**Branch-Fragmented Reality**: Reality divides into *branch-fragmented realities*, so that reality is irreducibly incoherent, but is composed of isolated, mutually incompatible, but internally coherent, branch-fragments or *unified presents*.

Think of unified presents as simply collections of co-present facts, whereby co-presentness is an equivalence relation. The division here parallels Kit Fine's (2005, 2006) distinction between his non-standard temporal realisms, *External relativism* and *Fragmentalism* respectively.[35] However, unlike Fine, the relativisations or fragmentations of time I'm discussing are only between times bearing no direct temporal relations to one another. Fine extends his treatment even to times that do bear such relations, but does so at the cost of rejecting metaphysical change between times. Consequently, none of the views he outlines there offer a dynamic conception of time (for this consequence of temporal relativisation, see Ch.1, §3.3).

My preference is for **Branch-Relative Reality**, since, if there are no facts regarding whether fragments co-exist, I think there couldn't be any relations between them in virtue of which they constitute the same reality. It's useful to be minded here that, as argued in the previous chapter, Section 3.3, for presentists, *existence* is existence *as of* a present, and not merely existence *tout court*. That is, existence as of the present stage of reality. It's not unreasonable to think on such a view that multiple unified, but mutually disunified, presents would entail multiple realities (for more on presentist temporal disunity, see Ch.7, §2.4.2).

Where does this leave us with respect to the dynamic presentist explanation of **Shared Direction** within a future-wards branching reality? Firstly, **Branch-Relative Reality** secures the temporal monism of dynamic presentism. That is, as of each present, there is only one time. Nevertheless, at the moment of branching, $t_0$ in figure 2,

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[34] Compare Markosian's (2013, pp.136-137) *truth on a route*.
[35] I don't understand Fine's (2005, §11) preference for fragmentalism on the basis that it's non-committal to times amongst the fundamental constituents of reality. It's unobvious why external relativists could not adopt a reductive conception of times.

there is no unique future-wards direction. Though, they *are* all future-wards directions, since they are both brought about through metaphysical changes as consequences of productive causation. This is manifested by the fact that branches wouldn't proceed in a contrary direction, revisiting old times in reverse, but instead run in a parallel direction to each other; the same current pushes downstream through each distributary. And this is the datum that demanded, and has now received, explanation. However, it means that we must qualify both of **Immediate Monism** and **Mediate Monsim** (see §2.1.3.) in our explanation so that they hold only when the mediate effects are on the same branch.[36]

§3.3. The Non-Presentist Explanatory Deficit.

We've now defended and strengthened the dynamic presentist explanation of **Shared Direction** against topological worries. My contention is that *only* dynamic presentists have an explanation of **Shared Direction**. I must, therefore, now argue that no satisfying explanation is forthcoming given rival temporal metaphysics. Let us first begin with the prospects for a B-theoretic explanation before considering intermediate views.

*§3.3.1. The Problem for B-Theory.*

The demand for an explanation of **Shared Direction** has not gone unnoticed by B-theorists. For example, D. H. Mellor remarks: 'The question for us is how *B*-theorists can explain the correlation between causal and temporal order.' (1998, p.107). Since B-theorists reject metaphysical changes in their embrace of a static conception of reality, they lack the dynamic presentist resources to explain this phenomenon. They must find their own explanation if they are to have any. However, despite recognising the problem, I contend that no satisfying B-theoretic explanation can be had.

It seems to me that B-theorists have before them an insurmountable task. After all, time, given B-theory, is a dimension exactly similar to space. Yet, as Mellor notes, 'Causes and effects are often in the same place [...]. And when an effect is not where its causes are, it may be north or south, west or east, above or below them. The cause-effect relation has no preferred spatial direction. Why then does it have a temporal one?' (*Ibid.*, p.106). We're owed an explanation of this causal asymmetry between time and space. But this leaves a conundrum: how can there be a temporally independent aspect

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[36] I trust that the reader can undertake this simple task.

of causation determining that causation cannot explain variation along spatial dimensions, but can nonetheless do so along temporal dimensions? I proffer that there cannot be. A B-theoretic explanation is doomed to fall at the first hurdle: explaining the non-simultaneity of causation.

I shall explore briefly one attempt, that of Robin Le Poidevin (1991, Chs.6-8), to illustrate this point. Having identified our constraints on what a satisfying explanation of **Shared Direction** should be like, he fails to satisfy his own criteria: that there must be a non-temporal aspect of causation preventing its instantaneous occurrence. He implicitly presupposes that causation only occurs along a temporal dimension. So, for example, in his Chapter 6 proof that causation must be non-simultaneous he makes essential appeal to the following principle:

> **Reciprocity Principle**: 'If a causal interaction with some item A at time t causes B's being G at t' (where B was not G immediately before) then it is a necessary part of the causal interaction (which any complete account of A's causal action will include reference to) that A is F, for some F such that A is not F at some time between t and t'.' (*Ibid.*, p.88)

The underlying thought is that **Reciprocity Principle** demands that qualities are conserved over time. But then, simultaneous causal interactions, where t=t' in the principle, would breach conservational laws, since it would demand that the A is both F and not F at the same time. Yet, besides the fact that causation actually often coheres to **Reciprocity Principle**, it's difficult to see why we should believe it *must*.

Moreover, **Reciprocity Principle** clearly presumes causal interactions occur along a *temporal* dimension; Le Poidevin is assuming qualities are conserved over time, and not over space, in causal interactions. However, no reason is supplied for why this conservation cannot occur merely over space, whereby conservation would be strictly simultaneous. At best, all Le Poidevin manages to show is that, if causal interaction conserves qualities over time, then they cannot be simultaneous. The challenge, however, was to give an account of causation that, without presupposing its non-simultaneity, nonetheless entails it on the basis of some temporally independent aspect. So the challenge of explaining why causation is non-simultaneous isn't met.

In Chapter 7, Le Poidevin switches focus to explain why causation is an asymmetric relation. He does so via the dependence conception of causation. I won't challenge his result here, that causation is asymmetric on this conception. Rather, I

think that result, if achieved, in the absence of the non-simultaneity of causation, is insufficient. Since, even if you could explain causal asymmetry, this does nothing to explain why causal relata might not spread out merely through space rather than time. Hence, Jonathan Tallant's remarks that, '[W]e have fixed and permanent asymmetric relations that stand between the timeless instants. We have a full and complete account of the phenomenology of temporal passage. We have accounts of causation, change and persistence; none of which require the reality of time.' (2008, pp.123-124). And, as already explained, given B-theorists insist time is a dimension like space, there simply cannot be any reason to think causation is strictly transtemporal.

A *fortiori*, B-theorists lack the resources of metaphysical change to clarify productive causation. That is, given B-theory's eternalist commitment, both cause and effect exist as of any time, it's then incomprehensible what is meant, over and above dependence causation, of one event bringing another into existence. Indeed, left entirely obscure, it's hard to see how B-theorists can lay any claim to productive causation at all, let alone employ it to explain **Shared Direction**. B-theorists must therefore rely on dependence causation to shed light on time. However, I fear this offers little reprieve. Dependence relations aren't distinctive of time or causation. It's difficult to comprehend how any *mere* dependence relation could adequately distinguish causal from non-causal kinds of dependence. And it's no use postulating causal primitives if, given depleted resources, we cannot grasp their conception. Dynamic presentists make the distinction by appealing to another aspect of causation: the productive aspect. But, since a B-theoretic conception of productive causation is equally obscure, it cannot bring further clarity in distinguishing causal from non-causal dependence.

So it seems B-theorists are unable to explain **Shared Direction**. Furthermore, B-theory seems strangely inadequate to support any serious conception of causation as a distinctive kind of dependence. And given that the favoured way for B-theorists to distinguish time from space was by its special status as the causal dimension, B-theory looks dangerously close to collapsing into temporal eliminativism. It's a stretch to introduce temporal primitives if there is nothing distinguishing them from their spatial cousins.

*§3.3.2. The Problem for Intermediate Views.*

A satisfying B-theoretic explanation appears hopeless. How then do other non-presentist temporal metaphysics fare? Firstly, intermediate views typically fail to support any

connection between metaphysical changes and productive causation (see §3.2.1.). This is especially so for those, particularly, moving-spotlight theorists and degree presentists, rejecting metaphysical change besides changes in A-determinations. When this is the case, those theories are no better off than B-theory with regards to **Shared Direction**.

However, some intermediate views subscribe to more substantive metaphysical changes. Firstly, there are those construing metaphysical change as purely *productive*. The main variety of this view, that involves only the coming into being of new events, is growing-block thesis. Alternatively, there are those taking metaphysical change to be purely *destructive*. These include both shrinking-tree and shrinking-block theses. In contrast, dynamic presentism is compatible with both productive and destructive metaphysical change. They might also understand metaphysical change as *transformative*, where the same stuff is recycled and remoulded, not destroyed and (re)produced, through metaphysical change. For example, when a clay statue is destroyed, but its constituting stuff, the lump of clay, survives and takes on a new form. As I will later explain, only dynamic presentists can accept transformative metaphysical change (see §4).

For metaphysical change to be the means through which productive causation brings about effects, it must be construed as partly either productive or transformative. This is because productive causation explains why some events depend on others: by bringing them about. But if no events could be brought about by productive causation through metaphysical change, as would be the case if metaphysical change were purely destructive, then this dependency of effect on cause couldn't be explained. The datum demanding explanation isn't restricted to omissive effects, nor the simple disintegration of reality, causal connections included. Consequently, purely destructive metaphysical change cannot elucidate productive causation. Moreover, since the shrinking of reality is itself unrelated to causal order, we would likewise lack an explanation of why things get destroyed in the order which they do. Consequently, those intermediate views supporting only destructive metaphysical change don't significantly improve upon the B-theoretic predicament.

This leaves growing-block thesis as the only remaining alternative. Interestingly, Michael Tooley (1997, Ch.4) argues that growing-block thesis is required to explain why the probability of an effect's occurrence is raised by the occurrence of its cause, whilst the probability of a cause's occurrence isn't raised by the occurrence of its effect. However, I think Tooley is wrong about this, and that an asymmetric dependence of effects on causes suffices to explain that datum, and doesn't require acceptance of

growing-block thesis. But this is perhaps an encouraging sign. Nevertheless, I've concerns about whether growing-block thesis can be consistently combined with a construal of productive causation as a mechanism for metaphysical change. If it cannot be, then it too won't be entitled to productive causation to explain **Shared Direction**.

To help elucidate that concern, we must recognise the commitment of growing-block thesis to two temporal levels: *Time* and *Meta-Time*. Time captures mere temporal variation *within* reality. Growing-block thesis is committed to *No-Futurism* about time: that all merely past and present, but not merely future, things exist. Meta-time captures changes to the shape of time. Growing-block thesis is committed to *Temporal Dynamism* about meta-time: what is past, present, and future changes. This is represented diagrammatically below:
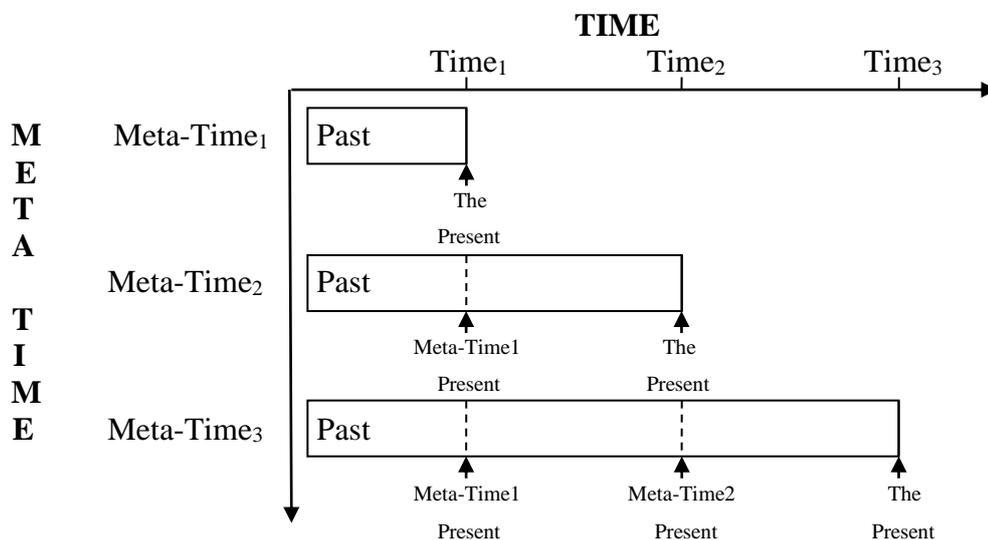


Figure 3: The diagram depicts a growing-block model of time. The horizontal axis represents times existing as of certain meta-times, with the present represented by the right side of the block of times. Times to the left of the present are past, and the vertical dashed lines dissecting blocks are meta-present meta-past presents. The vertical axis represents meta-time, descending from meta-earlier meta-times to meta-later meta-times.

My concern is that growing-block thesis faces the *Dead Past Dilemma*. The first horn assumes the presentness of productive causes. On this view, when a productive cause continues to exist as merely past, it stops being a productive cause. A growing-block view like this has in fact recently been defended by Peter Forrest (2004, 2006) and Graeme Forbes (2010). However, not only would the presentness of productive causes

be inexplicable, but the view is also unstable, since it involves changing what happens at a time over meta-time. And, as noted earlier, changing what happens at a time over meta-time breaks certain constitutive axioms of time, such that what the model construes to be "time" ceases to play that theoretical role, and becomes something else entirely. In particular, those things which were productive causes when present, but are now no longer productive causes in the meta-present past, aren't as they were when they were present. Accordingly, such "past" events were never present, and an event cannot be past having not first been present.

Consequently, the temporal dimension would collapse into a non-temporal dimension, akin to something like space, and meta-time would remain as the sole temporal level, no longer a *meta*-time, but the only time. Assuming, as is standard, that this growing-block theorist is a meta-presentist about meta-time, the view would collapse into a form of presentism, where things only come into existence, never ceasing to be present. Though, they may lose their powers to function as mechanisms for productive causation—this loss of power remains inexplicable. And what was meta-past becomes simply past, as former stages of reality—those containing fewer existents.

The second horn instead assumes the pastness *or* presentness of productive causes, and that productive causes in the present remain so when wholly past. In that case, it's hard to understand in what sense those productive causes are genuinely purely past. Consider Irwin Lieb's following insightful remarks about the nature the present:

> What is the present? The most obvious answer is that the present is the time when things change, act, and persist, when there are events or occurrences, when causes cause, and when things become what they are and have ceased to be what they were. The present is so different from the past and future—there are no occurrences in them—that it seems obviously to be the time of activity. It seems sophistry to argue that it is not. (1991, p.15)

What is meant to be distinctive about the present is that it's when 'causes cause'; that is, the time of activity. But on this horn, the past seems plentifully active; no less so than the present. So the distinction between meta-present past and present on this horn seems illusory; there is only present. Again, assuming this growing-block theorist is a meta-presentist about meta-time, the view collapses into a version of presentism where things only begin and never cease to be. Though, this time, they maintain their powers to function as mechanisms for productive causation.

If, contrary to our assumption, a growing-block theorist were not a meta-presentist about meta-time, then two main options remain. Firstly, they might have been meta-eternalists about meta-time (cf. Tooley, 1997). In that case, the temporal collapse would be to eternalism rather than presentism. Secondly, they might have been meta-growing-block theorists about meta-time. In that case, the temporal collapse wouldn't be to presentism, but to the growing-block thesis. However, this latter option doesn't solve the underlying problem; the same dilemma arises for this new growing-block thesis. Since this option doesn't answer the underlying problem, any regress here will, aside from amplifying the rate of ontological increase, be vicious. Accordingly, this latter option can reasonably be eliminated.

Therefore, any reasonable growing-block theory will collapse into presentism or eternalism. I collectively brand these versions of temporal collapse, following the combination of growing-block thesis with productive causation, as the *Accruing-Present Thesis*. And reserve the titles *Steadily Accruing-Present Thesis* and *Exponentially Accruing-Present Thesis* respectively for the resultant accruing-present theses of the dead past dilemma's two horns. So, growing-block thesis won't be entitled to the explanation of **Shared Direction**. Though, accruing-present thesis may yet support that explanation. However, since amongst these theses that the growing-block thesis collapses into, only presentism has shown itself to be fruitful in explaining **Shared Direction**, we will concern ourselves now with presentist versions of these theses: *Accruing-Presentism*, *Steadily Accruing-Presentism* and *Exponentially Accruing-Presentism* respectively.

There are several problems afflicting an accruing-presentist account of **Shared Direction**. We've already noted the inexplicability of restricting productive causes to reality's accruing edge as per steadily accruing-presentism. Similarly, exponentially accruing-presentism must explain why the effects of productive causation don't (as is manifestly evident) occur in the same new location, but at a multitude of new locations. And again, no plausible explanation is forthcoming. But there are additional problems, affecting accruing-presentist thesis more generally. Namely, it introduces a number of further inexplicable facts resisting explanation:

A.     Why older and newer parts of the accruing-present cannot freely interact.

B.     Why the effects of productive causation occur at a *new* location, rather than scattered across pre-existing locations.

C.      Why the effects of productive causation occur *together* at a *single* new
        location.

D.      Why the single new location of the effects of productive causation occurs
        where it does in relation to the rest of the present, i.e. at reality's accruing-
        edge, rather than beginning or middle.

To keep things simple, let us assume these new locations are times, as is consistent with
exponentially accruing-presentism. The underlying problem is that this accruing-
presentism is committed to two temporal levels. Firstly, there is *time*, which as of any
stage of reality includes those things past (but not merely past, also present) and present,
but not merely future. Secondly, there is *meta-time*, along which reality's constituents
accrue with metaphysical changes. We must then explain why they share the same
direction. However, seemingly nothing could guarantee that metaphysical change along
meta-time, instigated by productive causation, accords with time's order. Indeed, it
could be that productive causation brings about metaphysical change in the reverse
direction to time, so that productive causation brought about a *shrinking*,[37] rather than
*accruing*, present.

        So, though exponentially accruing-presentism may capture the shared direction
of *meta*-time and causation, it seems unable to explain **Shared Direction**. Moreover,
given the temporal pluralist commitment of exponentially accruing-presentism, it
crucially conflicts with the temporal monist aspect of the dynamic presentist
explanation. So, there would be no accounting for why productive causation follows a
unique temporal direction. In these ways, then, accruing-presentism is unable to provide
a satisfying explanation of **Shared Direction**.

§3.4. Unsatisfying Explanations.

Some may complain that my constraints on a satisfying explanation of **Shared
Direction** are too strong. I don't think I've been unfair in my demands. Indeed, as we
saw, Le Poidevin (1991, Ch.5), a thoroughgoing B-theorist, fully accepted the B-
theoretic challenge in the context of giving an account of tenseless change over time.
Nevertheless, some will want to give a satisfying explanation of **Shared Direction**
without appealing to a non-temporal aspect of causation, by downgrading the reality of
either causation or time respectively. This will typically take one of two forms: Humean

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[37] The shrinking here is from time's future towards its past, contrary to orthodox shrinking-block thesis.

causation and the reduction of time to causation. Let us now outline the problems with these approaches.

*§3.4.1. The Problem for Humean Causation.*

Humean causation downgrades the nature of causation to regularities in patterns of events across the spacetime manifold of particular human interest. In particular, David Hume claimed causation consists only in those constant conjunctions of event kinds where we '...find like objects always existing in like relations of contiguity and succession.' (1739, p.205). We then simply *project* necessary causal connections between events of those kinds. These constraints of contiguity and succession, upon which constant conjunctions we project "necessary connections" between, are mere stipulations. They don't point to any deep facts about reality, because, on this view, causation is non-fundamental.

Ignore here the tenability of Humean causation itself.[38] Notably, it doesn't fit well with views positing the permanence of what and how things are as of all time. This includes B-theory, moving-spotlight thesis, and degree presentism. They require an *overt* way to distinguish time from space, which they have been at pains to stress are like in kind. It's no help simply positing transient qualities of non-reflexive pastness, presentness, and futurity, since, as Craig Bourne (2002, 2006, Ch.1) has explained, these would transcend experience, lest there be change in what happens at a time over meta-time, which we've already rejected. Typically, the strategy has been to distinguish time as the causal dimension. However, if we were then to discern causation via first noting the *succession* of constant conjuncts, this strategy for distinguishing time would be circular.

Similarly, Humean causation doe not fit well with views positing the temporariness of what and how things are as of all time. These include all other views mentioned. Humean causation couldn't illuminate productive causation, or explain the occurrence and kind of metaphysical change. Moreover, change in reality's constituents might bring change in constant conjunctions, especially if past or future tensed facts are presently indeterminate. This would result in making causal ascriptions problematically temporally sensitive. Ultimately, however, Humean causation simply denies the data that I'm attempting to explain, rather than offering any satisfying explanation of it.

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[38] Though, given the methodology outlined in Section 1, it seems we should regard this position as grossly implausible.

Humean causation is an entirely different kind of phenomena to the genuine causation that has been our focus. Some may deny the reality of genuine causation, but this, I submit, is a heavy cost.

*§3.4.2. The Problem for Reducing Time to Causation.*

What then of the prospects of reducing time to causation? On this view, it's stipulated that causes precede their effects, and that fundamentally there is no more to time than this. Since the view downgrades time's metaphysical status, it will be untenable in combination with those theories positing dynamic conceptions of time. This path only opens its doors to B-theory. Rather than explain the non-simultaneity of causation, it presupposes it. But having established the non-simultaneity of causation, there would then be nothing to guarantee that particular causal relations shared a unique temporal direction. That is, there would be nothing filling the lacuna left by stages two and three of the presentist explanation of **Shared Direction** (see §§3.1.2-3.1.3). Seemingly, nothing would prevent causal relations pointing in all different directions along the criss-crossing dimensions of the manifold world. Without temporal restrictions on which events could affect others, any event in the timeless manifold should be *able* to causally relate to any others. Yet this is manifestly not the case. Causal relations conform to a common direction. No full explanation of the temporal restrictions on what events can causally interact, especially counterfactual restrictions, would be forthcoming.[39]

 Moreover, given the presupposed absence of metaphysical change on this account, it cannot be used to enlighten productive causation. It will be hard then to distinguish causal dependence from other kinds of dependence, since one of its most distinctive characteristics is that it's transtemporal. Yet, since temporal facts would depend upon causal facts, they couldn't then be employed, without circularity, to distinguish which dependencies are or aren't causal. Additionally, there would need to be some explanation of temporal relations between non-causally related events; temporal, unlike causal, relations are ubiquitous. Every event is temporally related to

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[39] Admittedly, appeal to formal features of causal chains, such as irreflexivity, asymmetry, and transitivity, might allow some progress. But this progress would be limited, and the formal features themselves are merely stipulated. After all, the intuitive explanation of why causation has some of the formal features it seems to have appears to be temporal in character. For example, asymmetry seems plausible *because* of our inability to affect the past. This is why circular-time causes problems here. Likewise, irreflexivity seems plausible, in combination with transitivity, *because* we think time's linearity prevents causal-loops. And transitivity, if accepted, is often employed to explain the influence of causes at a temporal distance. But if there are no temporal restrictions, nothing stops this influence being direct.

every other, whilst causal relations between events are sparser. It seems unlikely that causal facts will be robust enough to support temporal facts. Finally, like with Humean causation, this reductive account of time simply denies the data I'm attempting to explain, rather than offering any satisfying explanation itself. The temporal reductionist might eliminate time from their fundamental metaphysics, but I once again submit that there are heavy costs to doing so.

## §4. The Conservation of Presentism.

Two issues that our discussion of **Shared Direction** highlighted, and haven't yet been fully explained, are, given dynamic presentism: i) what happens to the productive causes after bringing about their effects, and ii) in virtue of what do things cease to be. I suggest dynamic presentists elucidate these issues by appealing to an *Endurantist* theory of persistence:

> **Endurantism**: A thing, *x*, persists iff *x* is *multiply-temporally-located*, and at each time *x* is located, it is then *wholly present* and *temporally unextended*.[40]

For presentists, a thing is multiply-temporally-located, if it survives metaphysical changes to reality, even if it's unaffected by them. That is, a thing gets to be multiply-temporally-located, not as of any present, but by existing as of *many* presents.

A productive cause can survive/endure metaphysical changes, if nothing brings about its destruction. However, unlike accruing-presentist thesis, its survival secures it a place at the most recent temporal location. But it must be submitted that not all things survive time's vicissitudes. We must recognise that productive causes may destroy, as well as produce. It's therefore in virtue of the affectations of productive causation that things cease to be. Yet, as was noted earlier (see §3.3.2), typically when that happens, they aren't completely annihilated, as follows from destructive metaphysical change. Often the stuff constituting that destroyed survives the destructive affectations, and is recycled in the effects of productive causation. Such transformative metaphysical change ensures that whatever fundamentally constituted an entity survives through metaphysical changes brought about by the affectations of productive causation in some form or other. The very same affected stuff, or at least its constituents, survives/endures

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[40] I use 'temporally unextended' over 'three-dimensional' because things with greater/fewer spatial dimensions should nevertheless be able to endure.

those changes, not merely some distinct replica or copy bearing certain special relations. It's evident then that transformative metaphysical change presupposes endurantism.

Crucially, however, transformative metaphysical change has the potential to explain the conservational character of natural laws, and a special kind of conservational law: *laws of inertia* (see Section 4.2). Therefore, if we can show that only presentism is consistent with endurantism (see Section 4.1), we then place presentism in the priviledged position of potentially supporting this explanation. It's to these ends we now proceed.

§4.1. Enduring Presentism.

The claim that only presentism is consistent with endurantism is controversial. To understand why, we must begin by noting a feature distinctive of non-presentism, which presentists can plausibly deny, and which we can draw into conflict with endurantism. That feature is *temporal pluralism*: that multiple (non-erstaz) times are real. Secondly, we must first distinguish two ways of understanding *part*. The distinction I want to make is between *substantial* and *non-substantial* parthood. The former parts are independent from the composites they help compose, or should at least be treated as entities in their own right.[41] Whilst the latter parts merely describe a thing's fully occupied spatial or temporal region regardless of whether or not that region corresponds to any substantial part of it. John Heil outlines the distinction as follows:

> A simple substance cannot have parts that are themselves substances—substantial parts. A simple substance might, however, have non-substantial spatial or temporal parts. Suppose a simple substance is square, for instance. Then it has a top half and a bottom half. If the square is four inches on a side, then its surface comprises sixteen distinct regions, each of which is one inch square. (1998, p.41; cf. 2003, pp.100-101, 134-136, 173-175)[42]

Given this distinction, let us now consider the endurantist's claim that a thing is 'wholly present' at a time.

Understanding 'wholly present' as *substantially whole*, the claim amounts to a thing having all its *substantial parts* at each time it persists. Though this might initially

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[41] I add the second disjunct in case there are genuine instances of *hological essentialism*, whereby wholes are necessary for the existence of their parts (cf. Dainton 2000, p.185).
[42] Lowe (1998, p.116) suggests a similar distinction.

seem to entail that a thing's substantial parts don't vary over time, if composition is temporally relative, as any temporal pluralist endurantist might suppose, it can be coherently maintained that an enduring thing can vary between times in what are all its substantial parts, and so vary between times in its substantial parts whilst remaining substantially whole (contrary Merricks, 1999). However, if this is so, given enduring things are multiply-temporally-located, that substantial whole wouldn't be temporally unextended. Since a thing is temporally unextended only if it lacks any temporally extended *non-substantial parts*. And multiply-temporally-located things occupy a temporally extended region. For a thing occupying a temporally extended region must have temporally extended non-substantial parts; its exact occupation just is the sum of the regions it occupies. It is, after all, simply absurd to say a thing is exactly located at a subset of the region it occupies; no special primitives could improve our understanding of this, they would merely change the subject. So a thing occupying a temporally extended region must have temporally extended *non-substantial* parts, and thereby the *substantial whole* must be temporally extended too.

Alternatively, 'wholly present' could be understood as *non-substantial whole*, whereby the claim becomes that, at each moment a thing persists, all of its substantial parts fit into that temporally punctual region. That is, all of that thing's substantial parts at each time cannot have non-substantial parts including regions of other times. If a thing were wholly present in this sense, it would clearly qualify as temporally unextended. Yet, given enduring things are multiply-temporally-located, the substantial parts of a thing at each time would have non-substantial parts including regions of other times. So they simply aren't wholly present in the sense of being *non-substantially whole* at a time. Given temporal pluralism, multiply-temporally-located things cannot be both wholly present and temporally unextended. It seems then that temporal pluralists have the following options forced upon them:

1) Accept multiply-temporally-located wholly present things, but that they are temporally extended. (Temporally-Simple Persistence)
2) Accept multiply-temporally-located temporally unextended things, but that they are only partly present. (Perdurantism)
3) Deny there are multiply-temporally-located entities. (Eliminativism)

Neither temporal pluralist option is a tenable fit with endurantism. Both 1) and 2) are straightforwardly inconsistent with endurantism because the persisting entities aren't

either not temporally unextended or not wholly present respectively. Meanwhile, 3) only maintains consistency with endurantism under the assumption that nothing persists. Since, given that no entities are multiply-temporally-located, they cannot endure. It appears, then, that endurantism is just short of incoherence. However, despite initial appearances, a fourth option saves endurantism: dynamic presentism.

As mentioned earlier, dynamic presentism offers a different way of understanding multiply-temporally-locatedness: surviving metaphysical change. Things aren't multiply-temporally-located as of any now, but rather are so in virtue of belonging to different stages of reality. This means that, as of any present, a thing isn't temporally extended, and therefore substantially wholly present, non-substantially wholly present, and temporally unextended. So I agree with Merricks' (1999) conclusion that endurantists are committed to presentism, though I arrive there by different means.

§4.2. Presentism, Conservation, and Inertia.

One significant consequent of this result is that endurantism, and hence presentism, alone is able to go any distance towards providing anything like a satisfactory explanation of two pervasive kinds of natural laws: *conservational* and *inertial*. In the first instance, to rub salt into sore wounds, endurantist dynamic presentism may *partially explain*, rather than merely stipulate, why causation tends to conform to Le Poidevin's **Reciprocity Principle**: by construing metaphysical change as purely transformative. Since the very same stuff is simply recycled and reformed through transformative metaphysical changes, nothing extra is fundamentally added or subtracted. And because productive causes bring about their effects through metaphysical changes, they can only bring about those changes conservatively, by simply recycling and remoulding what there is. This places certain metaphysical non-causal constraints on what natural laws there could be, and does so by identifying the underlying mechanism behind the **Reciprocity Principle**.[43] In particular, the underlying endurantist mechanism here, makes the distinction between conservational and non-conservational non-arbitrary, so that the absence of non-conservational change becomes less mysterious.

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[43] Note, however, that presentism doesn't necessitate the **Reciprocity Principle** since it's consistent with both productive and destructive metaphysical change.

However, if persistence were non-endurantist in nature, as it must be for non-presentists, then things would persist either by being temporally simple, or in virtue of a series of distinct non-persisting substantive temporal parts or stages. In the former case, entities persist by occupying an extended temporal region whilst having no substantive temporal parts in any of its sub-regions. (This is the first temporal pluralist option from the previous section: *Temporally Simple Persistence*.) Meanwhile, in the latter case, entities persist by occupying an extended temporal region via having a series of distinct non-persisting substantive temporal parts or stages throughout that temporal region. Call this *B-Variance Thesis*, because it describes temporal variance in persisting things as variance *between* temporal parts or stages, rather than *within* them. (This is disjunctive between the second and third temporal pluralist options from the previous section.) It contrasts with *W-Variance Thesis*, which is inclusive between endurantism and temporally simple persistence, since it describes temporal variance in persisting things as variance *within* that thing, and not merely *between* distinct non-persisting things.

Given temporally simple persistence, since things exist at times by having a non-substantive temporal part there, it's hard to see what possible metaphysical non-causal constraints there could be on the size, shape, and character of the other non-substantive temporal parts of that thing. For example, there is no reason why it couldn't be more or less massive between times. Similarly, for B-Variance thesis, there again is seemingly no metaphysical non-causal constraints on temporal parts or stages at one time made by temporal parts or stages at another. After all, temporal parts or stages are entirely distinct from one another. What this teaches us is that neither B-Variance thesis nor temporally simple persistence themselves place any non-causal constraints on how things temporally vary. And consequently, they cannot help in explaining **Reciprocity Principle**, the conservational character of natural laws, or, more broadly, any characteristic of natural laws.

The second kind of natural law endurantist dynamic presentism helps explain is inertial laws. These are where things remain unchanged unless affected. Since productive causation is the mechanism of metaphysical change, and metaphysical change is the only kind of temporal change dynamic presentists permit, then where there is no productive causation, things remain unaltered, even if surrounding things undergo changes. In this way, endurantist dynamic presentism explains inertial laws. However, given that other accounts of persistence require that persistence involves distinct temporal stages, or either substantive or non-substantive temporal parts, being located at distinct times, it again becomes unclear why these stages or parts should in any way

reflect their successors or predecessors, even when those predecessors are unaffected. So endurantist dynamic presentists may boast further explanatory virtues in relation to conservational and inertial laws.

## §5. Temporal Locality.

As we've seen, a deep connection holds between time and causation. But it runs deeper than **Shared Direction**; the temporal shackles on causation are of a tighter fit. In particular, causation appears to obey what Le Poidevin calls the *Principle of Locality*, '...which denies unmediated action at a temporal or spatial distance. According to Locality, the immediate effects of a cause are felt in the immediate spatio-temporal vicinity of that cause. All other effects must be brought about via those local effects.' (2011, p.458). We might formulate the temporal component of this principle thus:

> **Immediate Temporal Locality**: A cause, $c$, cannot *immediately* bring about an effect, $e$, if $e$ is at a temporal distance to $c$.

However, denial of immediate causation at a temporal distance shouldn't entail that all immediate causation is simultaneous, as Le Poidevin implies. This isn't the datum. Rather, we should understand this as meaning that causes can immediately bring about effects only at immediately succeeding times. That is, there can be no time between a cause and its immediate effects, such that a cause at one moment, $t_1$, can immediately bring about its effects at a distinct moment, $t_2$, only if there are no interceding moments, earlier than $t_2$ and later than $t_1$. Nevertheless, there may well be a temporal distance between adjacent times. Only then is this principle of temporal locality manifestly tenable and intuitive. So we should revise the above principle accordingly:

> **Immediate Temporal Locality\***: A cause, $c$, can *immediately* bring about an effect, $e$, where $e$ is at a temporal distance to $c$, only if $e$ is temporally adjacent to $c$.

Some might complain that this is tantamount to denying any immediate causation. After all, they will contend, time has a *dense* topology: that between *any* two distinct moments, there is a third, later than the earliest and earlier than the latest. And this prevents events ever being temporally adjacent. However, this isn't quite true. Events

can be temporally adjacent in a dense temporal topology if the closest temporal boundaries of the events are such that, one of the events has a *closed temporal boundary* whilst the other an *open temporal boundary*. An event has an open temporal boundary when it doesn't include its temporal boundary points and a closed temporal boundary when it does. When this is the case, events can be temporally adjacent (not separated by interposing times) even when temporal topology is dense.

Similarly, some might complain that **Immediate Temporal Locality\*** only constrains causation under the assumption that there is any *direct* or *unmediated* causation. But, as Le Poidevin explains, 'if immediacy is defined in terms of the absence of any state of affairs between cause and effect, there may be no genuine cases of immediate causation. That is, causation may be *dense* in the sense of there being, between any two causally connected events or states of affairs, a third event or state of affairs...' (1991, pp.87-88). Indeed, Bertrand Russell's (1912-1913) famous critique of causation was predicated on this directness of causation. In particular, he objected that contemporary physics seemingly doesn't posit direct causation, but instead posits functional relations. However, as John Mackie (1980, Ch.6) clarified, there is a natural way of understanding causation as a function, what he called 'functional causation', that subsumes commonsensical direct causation, which he called 'neolithic causation'.

It would, therefore, be useful if we can formulate a version of temporal locality that wasn't wedded to unmediated causation. And in fact there is a similar locality principle holding for *indirect* or *mediated* causation, where indirect causation at a temporal distance proceeds via causation at smaller temporal distances. We can formulate this more precisely as:

> **Mediate Temporal Locality**: A cause, $c$, can *indirectly* bring about an effect, $e$, where $e$ is temporally distant to $c$, only if it does so via bringing about effects, $d_1,...,d_n$, whereby $d_1,...,d_n$ temporally succeed $c$ and precede $e$.[44]

Together, **Immediate Temporal Locality\*** and **Mediate Temporal Locality** entails the following broader principle:

> **Temporal Locality**: A cause, $c$, can bring about an effect, $e$, whereby $e$ is temporally distant to $c$, only if it does so via bringing about effects, $d_1,...,d_n$,

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[44] If time is circular, then $d_1,...,d_n$ are temporally nearer in the future of $c$ than $e$.

whereby $d_1,...,d_n$ temporally succeed $c$ and precede $e$, or $e$ is temporally adjacent to $c$.

Importantly, **Temporal Locality** appears to hold without exception, and thus screams out for explanation. But what could that explanation be?

§5.1. Ratio Ontologica.

Upon pondering what might explain the causal oddities encapsulated by **Temporal Locality**, it becomes quickly evident that potential explanations will be contingent upon our temporal metaphysics. As Le Poidevin notes,

> …where the temporal aspect of Locality is concerned, the A-theorist is at something of an advantage. For we can ask what grounds Locality: what guarantees its truth. Why is it that the causally immediate effects of a cause cannot be felt years later? It is not obvious what the B-theorist can say to this, other than 'that's just the way things are'. But the A-theorist can give a more informative answer: only the present can directly impinge on the present. This is not just a restatement of Locality in tensed terms: it is the affirmation of a deeper metaphysical fact about time itself. (2011, p.459)

Though I must temper my agreement with these remarks over some issues, to shortly be explained, there is at least one point here that should be uncontentious: B-theorists are at a loss when it comes to explaining **Temporal Locality**. They seem committed to treating the principles as brute facts. For, if all events, whenever they occur, are equally real, then it's inexplicable why events cannot have their effects at any temporal distance whatsoever. A similar point has been made by George Schlesinger, who wrote:

> ...it seems that the transientist has an advantage over those who subscribe to the static theory of time. The former is able to make use of a premise that few would wish to find fault with: namely, that nonexistent particulars are powerless to act. Subsequently, by maintaining the openness of the future, the transientist is able to offer a clear, vivid explanation of why future events cannot influence current happenings. The Russellian, by contrast, who can do no better than cite it just as a primitive, is incapable of explaining why position in time, which has nothing to do with existence, nevertheless plays a crucial role in determining what can be the cause of what. (1994, p.280)

In particular, Schlesinger points to the fact that the nonexistent are powerless, to explain why, given growing-block thesis, future events cannot impinge on present events. His insight provides the rudiments of an ontological explanation of **Temporal Locality**. However, it's clear that this explanation will be unavailable to those making no ontological distinction between A-determinations; eteranlists are deprived of an explanatory tool.

That also means matters are unequal for different A-theories. After all, moving-spotlight thesis, shrinking-tree thesis, and degree presentism appear to be in no better standing than B-theory, since they too are eternalist. They would need to explain what prevents temporally distant coexistent events acting upon each other without the aid of temporal intermediaries. And like B-theory, no coherent explanation is forthcoming. Moreover, growing-block thesis, which Schlesinger appeals to, only gives a partial explanation of the temporal constraints on causation; it goes only some way towards explaining **Shared Direction**, as we saw above (cf. Mackie, 1980, Ch.7). Likewise, it fails to wholly explain **Temporal Locality**, and, in particular, why past events cannot, for example, directly bring about later events at varying temporal distances. And similarly, shrinking-block thesis does no better, because it fails to explain why future events cannot directly bring about earlier events at varying temporal distances.

My contention, then, is that only dynamic presentism can provide a satisfactory explanation of **Temporal Locality**. And it's not that 'only the present can directly impinge on the present' as Le Poidevin proffered. Rather, for dynamic presentists, productive causation should be construed as the mechanism for metaphysical change. They shouldn't think of causation as present events impinging on other present events, as this would causally isolate each present. Instead, causes bring about their effects through metaphysical changes which partly constitute new presents.

We've already seen how this dynamic presentist account of productive causation secures the non-simultaneity of causation, since causation involves metaphysical change, and there cannot be metaphysical change at a time. Acts of productive causation must then serve to bring about the events constituting succeeding moments. And given the temporal monism of dynamic presentism, productive causes can only immediately bring about those effects at an immediately succeeding moment, since at later times it's no longer part of reality to exert its immediate influence. Similarly, productive causes can only indirectly bring about temporally distant events by bringing about a chain of effects spread across all interceding moments. Only then can its influence survive time's

vicissitudes to affect the bringing about of the state of affairs of that temporally distant moment harbouring its mediate effects.

We have, then, here, an elegant explanation in presentism of **Temporal Locality**. Events aren't laid out in reality at varying temporal distances such that we're then owed an explanation of why causal dependencies between events are restricted by these severe temporal constraints. The order of explanation is reversed: causation explains why things are temporally distant at all. We start with events at no temporal distance, and through productive causation they bring about metaphysical changes, giving way to new moments containing events which themselves bring about metaphysical changes, giving way to even newer moments, and so on. Causation at a temporal distance is never unmediated by events earlier than the effect and later than the cause, because causal products are, by conception, constituents of the one and only succeeding moments of reality the causes helped bring about.

§5.2. The Spatial Analogue.

An objector may note that there are spatial analogues to the principles of temporal locality. Yet, the spatial analogue of presentism, *Hereism*, that all and only things here exist, is implausible. This objector will contend that, if this is our motivation for believing presentism, we would be equally motivated in believing hereism. By parity of reasoning, if we accept presentism to explain temporal locality, we're rationally compelled to accept hereism to explain spatial locality. Likewise, if we don't accept hereism to explain spatial locality, we shouldn't accept presentism to explain temporal locality. In considering this objection, let us start by listing the analogue principles:

> **Immediate Spatial Locality**: A cause, $c$, can *immediately* bring about an effect, $e$, where $e$ is at a spatial distance to $c$, only if  $i$s spatially adjacent to $c$.

> **Mediate Spatial Locality**: A cause, $c$, can *indirectly* bring about an effect, $e$, where $e$ is spatially distant to $c$, only if it does so via bringing about effects, $d_1,...,d_n$, whereby $d_1,...,d_n$ are spatially closer to $e$ than $c$.

Together these imply:

**Spatial Locality**: A cause, $c$, can bring about an effect, $e$, whereby $e$ is spatially distant to $c$, only if it does so via bringing about effects, $d_1,...,d_n$, whereby $d_1,...,d_n$ are spatially closer to $e$ than $c$, or $e$ is spatially adjacent to $c$.

There are some notable dissimilarities between **Mediate Temporal Locality** and **Mediate Spatial Locality**. The former situates intermediate effects, $d_1,...,d_n$, as temporally succeeding $c$ and preceding $e$. Given time's linearity, we should expect all mediating causes to succeed their effects. The latter, however, is more permissive about where intermediate effects may lie. This is partly because space has, at least, three dimensions, which permits many more ways for the chain of intermediate effects to approach $e$. Indeed, the spatial principle even allows that the chain of intermediate effects pass through intermediate effects spatially further away than $e$, so long as for any indirect intermediate effect, $c_n$, in that chain, there is a distinct intermediate effect, $c_{n+m}$, later in that chain, that is as (if spatially adjacent/coincident to $e$) or more proximate to $e$ than $c_n$. It even allows for intermediate causes to be spatially coincident with $c$, in accordance with the fact that, 'Causes and effects are often in the same place...' (Mellor, 1998, p.106).

Moreover, compared to its shared temporal direction, causation has no privileged spatial direction. There is no spatial analogue of precedence or succession. The best we can do is *closeness*. But closeness has no direction. It's this difference underlying the following disanalogies Lee Smolin notices between time and space:

> The world is presented to us as a series of moments. We have no choice about this. No choice about which moment we inhabit now, no choice about whether to go forward or backward in time. No choice to jump ahead. No choice about the rate of flow of the moments. In this way, time is completely unlike space. One might object by saying that all events also take place in a particular location. But we have a choice about where we move in space. This is not a small distinction; it shapes the whole of our experience. (2013, p.92)

So we see the spatial shackles on causation are worn more lax than their temporal counterparts. This may go some way towards explaining why, as Le Poidevin remarks, '...spatial Locality is less firmly entrenched than temporal Locality. At least, those cases where violations of Locality are contemplated are thought to involve unmediated action only at a spatial, rather than a temporal distance (Lange 2002: 260–63).' (2011, p.459). Though, it cannot be the whole story. That must wait for now.

I agree with the objector that **Spatial Locality** likewise demands explanation. But whilst the ontological explanation of hereism in the spatial case may be implausible, this shouldn't dissuade us from employing the ontological explanation of presentism in the temporal case, which is plausible. Yet, the objector will seek to charge me with irrationality here, since they contend that parity of reasoning should compel like verdicts. However, this is where their argument breaks down, because there is no parity of reasoning: hereism *cannot* explain **Spatial Locality**.

A big part of the presentist explanation of **Temporal Locality** is metaphysical change. We suggested productive causation obeys **Temporal Locality** because it's the mechanism of metaphysical changes that bring about the new reality-wide moments and in virtue of which things are temporally distant at all. It ensures that temporal passage, like motion, must be *fluid*: it cannot skip interceding moments. And that causes can bring about temporally distant effects only via maintaining their influence in reality through all interceding times up to the moment of the effect. Without this intimate connection between metaphysical change and causation, there is no presentist explanation of **Temporal Locality**. Yet, whilst there cannot be metaphysical change at a time, there can be metaphysical change at a spatial location over time. Nor need metaphysical changes bring about spatial locations. So causation is dependent on time in a way it cannot be on space. It presupposes time, it doesn't presuppose space.

Moreover, there is no analogue of metaphysical change for space; otherwise, space would have a privileged direction corresponding to that analogue. But it doesn't. And if there were, *per impossibile*, metaphysical change along a spatial dimension, it would cease to be spatial. It would have transformed into a temporal dimension. After all, what more is there to distinguish time from space than its being the dimension of metaphysical change? Yet, without metaphysical change, or anything similar, a hereist explanation of **Spatial Locality** seems inconceivable. So we reject this objection from analogy to the presentist explanation of **Temporal Locality**. However, we still lack an explanation of **Spatial Locality**. It remains, for now, deeply mysterious. I think there is a different sort of explanation available here, which we will return to (see Ch.7, §2.4.3).

**§6. The Problem of Transtemporal Causation.**

One objection to my contention that dynamic presentism best explains certain fundamental features of causation is that it cannot coherently account for causation at all. This is the *Problem of Transtemporal Causation*, summarised by John Bigelow:

Causation is existence symmetric: if an event exists and it is a cause of some other event, then that other event exists; and if an event exists and it is caused by some other event, then that other event exists. Some present events are caused by events which are not present. And some present events are the causes of other events which are not present. Therefore things exist which are not present. (1996, p.40)

Since causation is a transtemporal, existence-symmetric, relation, causation presupposes the co-existence of multiple times. However, it's assumed that the presentist's present consists of a single time. Therefore, the objector claims that presentism and causation are incompatible.

One recent response states that present entities can only directly affect or be affected by contemporaneous entities. Whilst direct causation may be existence-symmetric, assuming indirect causation isn't irreducibly real, but instead reducible to sequences of direct causal relations, we lack a parity of reasons to hold that indirect causation is existence-symmetric. It's then argued that effects which are non-contemporaneous with their causes can be brought about indirectly via causal chains of direct contemporaneous causation. This view is defended by Ned Markosian, who explains:

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, 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 the adjacent of each pair of events in the chain will be contemporaneous for at least some period of time. (2004, p.60).

However, Markosian's account of causation really only evades, rather than answers, the problem. If Markosian is right, causation is fundamentally simultaneous, and this is an unacceptable conclusion. He avoids the problem of transtemporal causation only by making all causation intratemporal.

Just why Markosian's presentist account of causation is unsatisfactory is made clearer by attending to Graeme Forbes' shrewd advice:

Presentists believe in the continual popping into and out of existence of events, whereas the Growing-Block view allows for coming into existence, but not popping out of existence. Both views need to say more about this coming into existence. I say this extra ingredient of causation, this generating, bringing about, or producing, is what explains events coming into existence. Causation is generating new events, producing them and bringing them about. Though Presentists needn't think there is a link between causation and events coming into existence, they must admit that ontological change is a feature of both views worthy of explanation. At the very least, an inability to explain this phenomenon of ontological change is a cost to a theory committed to it. (2010, p.62)

Dynamic presentists are committed to metaphysical change, and consequently require an explanation of why it occurs when it does. But it's not merely the occurrence that requires explanation. We also require an explanation of the *ways* this metaphysical change happens and its apparent selectiveness. These dynamic presentist *explananda* are brought out by John Mackie:

The dictum that 'the universe needs to know where to go next' may require some explanation and defence. I am suggesting that there is some truth in the notion that what happens next *flows from* what is already there. The immediate future is, so to speak, *extruded* by the present and the immediate past. (1980, p.225)

…if we are right to see the future as flowing from the present we are justified in expecting that there will be some *ways* in which it flows. (*Ibid.*, p.226)

Now if there were nothing in the notion of what happens next flowing from what is there already, it would be a surprising coincidence that worms should be distributed through the four-dimensional scene in the selective way that they apparently are, whereas if there were something in this notion, the actual distribution is just what we should expect. (*Ibid.*, pp.227-228)

The only plausible candidate to play this explanatory role of the occurrence and character of metaphysical changes is productive causation. Yet, since Markosian's account of causation posits fundamentally only simultaneous causation, it cannot explain the coming about of new existents. His account of causation is utterly divorced from metaphysical change.[45]

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[45] A similar complaint can be extended to Barry Dainton's (2001, §6.11) *Compound Presentism*, where an extended present, consisting of multiple times, is introduced to solve the problem of transtemporal

Instead, I propose dynamic presentists respond by denying causation is an irreducibly real *relation* between cause and effect. Indeed, this isn't quite as strange as it might first appear; it has been denied for independent reasons in several accounts of causation. Consider, for example, the following remarks encapsulating agreement with this point held in two of the most plausible and well-developed accounts of causation:

> ...what makes '*c* causes or affects *e*' true is *not* a causal relation between *c* and *e*. But then since this relation is if anything what, by linking *c* and *e*, makes '*c* causes or affects *e*' true, it is nothing. So even if there are universals, there is no such universal as a relation of causation holding between particulars. (Mellor, 1995, p.161)

> Causation should not then be understood as a relation between two events, but rather as what makes an event occur… (Mumford and Anjum, 2011, p.23)

I think that this is what it takes to give a plausible dynamic presentist account of causation. The details of such an account may be worked out in many ways. I've my own preferences, but this isn't the place to discuss them.

## §7. Conclusion.

We've seen dynamic presentism champion several distinctive and, I think, rather weighty explanatory virtues relating to the nature of causation. Firstly, its commitment to metaphysical change allows us to elucidate and demystify productive causation. Secondly, it alone can provide a satisfying explanation of **Shared Direction**. In the process we showed that B-theory will struggle to distinguish causation from other sorts of dependence, and that growing-block thesis is threatened with temporal collapse. Thirdly, it provides an intuitive solution to the problem of providing a satisfying explanatory account of the direction of time and causation within a circular temporal topology. Fourthly, it alone provides satisfying explanatory insight into **Reciprocity Principle**, the conservational character of natural laws, and laws of inertia. In the process we showed that only presentists can accept endurantism. Lastly, it alone can provide a satisfying explanation of **Temporal Locality**. In combination, I think this provides strong motivation for believing, or at least seriously considering, presentism.

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relations. This only supports causal relations when they are present, but does nothing to explain why just those relations come about.

Moreover, we've shown that the main obstacle to this dynamic presentist account of causation is surmountable, and how it may be most adequately surmounted. Interestingly, these motivations are partly empirical, and presuppose no absolute relation of simultaneity.[46] Such motivations are intimately wedded to the constitutive aims of theorising: **Minimising Inexplicability** (see §1.2). And consequently lends them a degree of security not found amongst many *a priori* motivations. I believe Smolin (2013) is right to think presentism is no enemy, but a much neglected ally, of science. The above illustrates its usefulness. But it's only the tip of the iceberg. I've shown what a presentist explanation looks like. Yet presentism can illuminate many other aspects of reality, including: persistence, occasional identity, temporal limitations on experiences, experience of succession, absence of intermittent existence, and I'm sure countless other phenomena escaping my attention. These topics must wait for another occasion. My hope is that these motivations significantly shift the balance in favour of presentism. Rarely has a metaphysical thesis had so much going for it!

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[46] For all I have claimed, co-presentness may be subject to varying degrees of metaphysical, rather than epistemic, indeterminacy, increased with space-like distance, as is consistent with relativistic physics.

# Part II:

## The Varieties of Presentism.

There are presents different shapes and sizes,
Presents with their own surprises.
Presents that we cherish dearly,
Presents growing fewer yearly.
And though more presents come and go,
Presents flowing to and fro.
We're told: In each and every present savour,
That transitory present's flavour.
Because even presents we most treasure,
Are presents we can't keep forever.
Yet I wonder: Will our presents antiquated,
Survive through all the present ages?
Since presents worn by wear and tear,
Are sometimes broke beyond repair.
So, tend your presents from reprovement,
With a little upkeep and improvement.
And pray those presents fare you well,
This prospect only time will tell.

# Chapter 3

## Primitive Presentism.

In Chapter 1 we arrived at a fixed interpretation of *existence* that could serve as backbone for a substantive and interesting presentist theory. Yet, it's the other main concept in the presentist thesis—*presentness*—that will determine how that thesis "fleshes out". Indeed, presentness should be central to any presentist theory; that theory's mantle built about whatever core account of it is proffered. Where an account of this central notion is lacking, the theory is hollow; no matter how pretty the packaging, in the end, it's the *present* that truly counts. So complained Bede Rundle, that, '...linking 'present events' to 'are real' does not determine just what is to fall in the scope of 'the present'—a very elastic term—nor does it tell us what events can be reckoned co-present with a given event...' (2009, p.90). I share Rundle's lament, for it's this issue of substance that has been most neglected in the delineation of presentist theories. My aim here is to investigate this nucleus of presentist theories, and argue convincingly towards the preference of one such account of presentness. Additionally, I examine the related notions of *pastness* and *futurity*, ensuring that an account of these notions complements the account of presentness.

It's curious why this issue has been neglected. Prominent contibuting philosophers seemingly recognise it. For example, Theodore Sider remarks that, 'General statements of presentism—viz., "everything is present"—raise further issues— viz., how should we understand 'present'?' (2006, p.75, n.2). However, despite acknowledgement, the issue has scarcely been followed up by investigation. Perhaps this is testament to its difficultly. Or maybe it reflects a consensus that our notion of presentness is transparent, that there is only one suitable candidate for the job. Dean Zimmerman once claimed that, "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…" (1996, p.117). My guess is that many share Zimmerman's view that there is simply "no other obvious candidate to play the role of 'being present'". If this attitude is responsible for the silence, I hope to upset that doxastic affinity and

precipitate discordance. A little imagination shall reveal a plethora of reasonably plausible candidates for the role.

I don't wish to dictate how others use their terms. There are perhaps many different things that have been meant by 'presentness', and in what follows I hope to bring some candidates into focus. Nor, for that matter, do I claim there is only one way of formulating presentism.[47] We may define and use our terms any which way we. This point is nicely elaborated by Helen Steward in the following passage:

> There cannot, of course, be any very deep philosophical objection to someone's defining a category of entity for some purpose or other and deciding that the term […] serves as well as any other to name the category thus defined, though one might be able to argue that the term is confusing or inappropriate if the entities in question are very different from those which the term ordinarily designates. (1997, p.19)

But not just any way of using terms are of comparable interest for theory-construction. Some way(s) better capture *reality's structure*.[48] This improves their accuracy. Indeed, it would be odd if reality's structure somehow depended upon how we choose to define or use our terms. And we should be weary of Steward's caveat that some ways of using terms may be 'confusing' or 'inappropriate', but how so?

Presumably, when we change the subject of a term, but cling to its old connotations via a use of the same representatives. These old connotations can be misleading distractions. We must be especially minded, then, to retain focus on our subject. Since, if we drift too far from our subject, we risk losing what was interesting and relevant about it. And when constructing theories about reality, we cannot ask reality to settle these issues for us. That would lend us no further insight into reality's structure. Our theorising must foremost be both transparent (see Ch.1, §3.1) and relevant. By 'relevant', I mean theorising should proceed with conceptual priority, whereby concepts approximate our subject of interest. That is, concepts employed must be constrained so as to preserve why we care about the issue in the first place. These conceptual schemes can then be tested against reality for fit.

Different accounts of presentness, when plugged into the generic presentist thesis, yield distinct presentist theories. These must then compete to offer the most

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[47] This is contrary, for example, to Mason's take on the task of delineating presentism: '...I proceed until I reach the ultimate definition [of presentism] and, I believe, the only correct definition. That final definition is the only one in the series to capture what has been meant by 'Presentism' in the recent literature. Therein lies its truth. It is what we have meant all along.' (2003, p.108).
[48] 'Structure' is used here in roughly Sider's (2011) sense.

convincing construal of temporal reality. This same point was made by Marcello Fiocco when he wrote:

> *Presentism* is a controversial and much discussed position in the metaphysics of time. The position is often glossed as simply the view that *everything that exists is present*. This gloss, however, does not in itself characterize a single view. There are different interpretations of "to exist at present," so that one who attempts to provide an account of the nature of temporal reality must—if he is to address such relevant issues as the ontological status of entities before and after this moment, the truth-value of statements about such, and the semantic grounds for these statements—adopt more general metaphysical theses to complement any bald claim about present existence. Since the adoption of these more general theses yields distinct views, there are several incompatible views of the nature of temporal reality consistent with this familiar gloss. (2007, p.161)

It's important advocates and opponents of presentism alike be sensitive to the different accounts of presentness (and presentism) in play when critically assessing a presentist position, and that they be careful not to conflate or run together theories whose similarities stop at the surface or are in other ways superficial. There has been a tendency in the literature to speak too loosely of presentism and tar the generic family of theory with the same brush, whose application is better reserved for a proper subset of that theoretical family.[49]

Another motivation for canvassing various accounts of presentness is that those accounts may in some sense be complementary, in that they might help us grasp what the interesting notion(s) of presentness is (are).[50] It often happens that the various accounts of a notion act out their theoretical role(s) in similar ways, with similar theoretical impact. The main task, then, is to work out which account is primary, or fundamental, such that it can be used to explain why other accounts seemed plausible or authentic role-players, if they ever did. Moreover, the successes and failures of an account may be instrumental towards illuminating what form more satisfactory accounts might take.

In the remaining chapters we will be outlining and exploring some competing interpretations of the A-determinations with respect to the presentist thesis. To assess these interpretations we will highlight several good-making criteria along the way that

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[49] Fiocco (2007, p.165) makes this point later in the same paper.
[50] The interesting notion(s) being those that, when plugged into the presentist thesis, offer a plausible account of reality's structure relevant to our interests.

draw out costs and benefits of those interpretations. These will suggest themselves throughout the course of our study and point towards ways of developing alternative accounts. A summary of these good-making criteria is provided in the Appendix. So let us now take up this herculean task. We will find that no sooner do we sever this hydra's serpent heads than new ones sprout in their place. And let us not forget that 'serpent' is an anagram of 'present'. This is surely no coincidence!

David Lewis helpfully proposed the following trichotomy of how to proceed in accounting for any purported fact:

> An effort at systematic philosophy must indeed give an account of any purported fact. There are three ways to give an account. (1) 'I deny it' - this earns a failing mark if the fact is really Moorean. (2) 'I analyse it thus'—this is Armstrong's response to the facts of apparent sameness of type. Or (3) 'I accept it as primitive'. Not every *account* is an *analysis*! A system that takes certain Moorean facts as primitive, as unanalysed, cannot be accused of failing to make a place for them. It neither shirks the compulsory question nor answers it by denial. It does give an account. (1983, p.352)

We've already eliminated option 1. That leaves options 2 and 3, which we will be exploring the prospects of for the remainder of this dissertation. This chapter takes up Lewis's third form of account for the A-determinations: taking them as primitives.

## §1. A Primitive Approach.

The standard place to begin accounting for any facts is to take them as primitive. So shall we start by taking the A-determinations as metaphysical primitives: as *ideological* rather than *ontological* commitments. Call the resultant presentist variant *Primitive Presentism*. In considering primitive presentism Guiliano Torrengo wrote:

> ...what does the presentist mean by 'present' in (P) ['Only *what is present* exists']? She is surely attributing a certain *tensed* property to whatever exists, but how should we undertand this tensed property? Many presentists take it to be primitive notion of their theory. What time is the present time, and thus what facts are present facts? The facts that are happening *now*, at present—and no further explanation is needed. (2014, p.111)

As Torrengo indicates, in one sense, a primitive account is the simplest we can give. But it's not cheap: 'A theory with a more complex ideology posits a fuller, more

complex, world, a world with more structure. Thus ideological posits are no free lunch.' (Sider, 2011, p.18). Yet, though a primitive account is simple in what it posits, contrary to what Torrengo's claim, the account isn't completed by the positing: further explanation *is* needed. We need to ensure that we understand these ideological posits. This understanding comes in two parts. Firstly, there needs to be some sense that can be made of the primitives. Secondly, we should be able to provide a transparent epistemology of its corresponding concept. And without understanding, we cannot employ them in theorising. Of course, the two are intimately related.

Torrengo's other claim is also questionable; it's also unclear if 'many' presentists are primitive presentists. However, I can understand why he might think so. For example, Ned Markosian, a prominent presentist, often writes as if there is a primitive presentness 'property': '...it's not just Socrates and my future grandchildren— the same goes for any other putative object that lacks the *property of being present*. All such objects are unreal, according to Presentism.' (2004, p.48; my emphasis). But we get no clear presentation of whether this property should indeed be understood as primitive or not; we're simply left guessing. And this is the norm. So it's difficult to adjudicate this matter with any authority.[51] But perhaps Neil McKinnon's following remarks are indicative of one reason why some presentists might take the A-determinations as primitive:

> ...it would be nice to loosen some of the ties between presentism and existence. Some presentists have believed in non-existent Meinongian objects. Talk of non-existent objects in a presentist setting ought to be demonstrably different from talk of non-existent objects in an eternalist setting. We might even want to allow for worlds where nothing exists, but there 'are' non-existent objects. If so, we break the usual necessary connection between presentism and existence. (2013, pp.16-17)

And he refers to Routley (1980) and Hinchliff (1996) as examples. However, by far the clearest proponent of primitive presentism I've come across is Peter Ludlow, who, in his book-length defence of presentism, explicity treats the A-determinations as "...primitive tensed expressions 'PAST', 'PRES', and 'FUT'." (1999, p.101; cf. Ludlow, 2004). Nevertheless, the real value of the forthcoming discussion isn't whether anyone advocates the position, but rather to see what its merits and defects are. It's through understanding this that we stage and set the groundwork for the reductive

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[51] Indeed, this is a symptom of the problem with how presentism is typically treated in the literature that I'm trying to address.

accounts to follow. And if they should fail, then as non-reductive accounts, they may breathe new life into primitive presentism.

Accordingly, we shall begin by drawing out the need for primitives (Section 1.1) and how we comprehend them (Section 1.2). This should suggest our first theory-choice criteria (Section 1.3). Following from the conclusions drawn in Section 1, we will then explore our conceptual grasp and epistemology of the A-determinations in Section 2. That will begin by bringing the relevant conceptual A-determinations into focus (Section 2.1), exploring whether they can get a grip on us through our experiences (Section 2.2) or their theoretical roles (Section 2.3), finally exploring some conceptual difficulties (Section 2.4). This work will be further valuable for our assessment of alternative accounts in terms of conceptual fit. Finally, in Section 3 we will explore some of the additional facts that the posited primitive A-determinations bring as baggage. That discussion will begin by distinguishing two kinds of facts/changes: first- and second-order temporal facts/changes (Section 3.1). Following this distinction we highlight several important axioms of second-order change that primitive A-determinations raise, and seek explanation (Section 3.2). Lastly, we look at the relationship between presentness and existence (Section 3.3). So, without further ado, let us begin this undertaking.

§1.1. Unmade Truths.

According to *Truthmaker Theory*, for every truth, there is some entity that makes it true (cf. Armstrong, 1997, 2004). Yet, some argue that things can be a certain way without something making them that way. Although truthmaker theory might have initial appeal, it becomes quickly clear that merely positing entities for every truth will be explanatorily unsatisfying, if not unstable. We need *Ideology*, primitive facts, as well as *Ontology*, to build an adequate model of the world, just as a house needs mortar as well as brick. As Sider explains:

> It is very difficult to abide by [Truthmaker Theory's] restrictive conception of fundamentality. And in fact, truthmaker theorists in practice almost never abide by it (not that they all intend to). What in fact happens is that by making ineliminable use of certain bits of ideology, they smuggle in fundamental facts beyond those allowed by their theory. (2011, p.157)

One example of this ideology smuggling that Sider discusses, concerns negation:

> A similar smuggling route is employed by those who reject the existence of fundamental facts involving negation or universal quantification, and in their place posit negative or "totality" states of affairs. These smugglers tend to make ineliminable use of canonical names like "the state of affairs of not-$\psi$" or "the state of affairs of $a_1...\ a_n$'s being all the objects", which suggests that facts like "There exists a state of affairs not-$\psi$" or "There exists a state of affairs of $a_1...\ a_n$'s being all the objects" are fundamental facts, thus violating their own view. (*Ibid*., p.158)

And replacing canonical names with truths of the form '$x$ makes-true that...' doesn't help, since, if they too are fundamental, they will also violate the austere tenets of truthmaker theory. Finally, suppose truthmaker theorists successfully ground all truths in ontology. We can ask how satisfying that theory would be. Sider paints a bleak picture, considering first *Monistic* truthmaker theory, which posits a single truthmaking entity, 'the Cosmos':

> According to this monist, fundamental reality consists merely of the existence of a single thing, the Cosmos, *X*, so that the only fundamental fact is a fact asserting the existence of *X*. Now, suppose we ask her to give us *ultimate explanations* of various matters. We want her to explain to us, in terms that require no further explanation, why there are cities, why no one can eat candy without smiling, and why electrons repel one another. To such questions she will always give the same answer: because of *X*. But this is manifestly *un*explanatory. You cannot give satisfying explanations without citing detailed laws or patterns or mechanisms. But no detailed general laws or patterns or mechanisms can be given by someone whose fundamental conception of reality is so unstructured, consisting of the existence of a single entity. (*Ibid*., p.159)

He then extends this point to *Pluralist* truthmaker theory, which posits multiple undifferentiated entities:

> The position of the nonmonistic entrencher is unsatisfying for the same reason, albeit not *quite* so unsatisfying. Ultimate explanations always terminate in the citation of entities; but since a mere list of entities is so unstructured, these "explanations" cannot be systematized with detailed general laws, patterns, or mechanisms. (*Ibid*., p.160)

Taking the moral from this story, we can ask: in virtue of what does a property play its theoretical role? Truthmaker theorists merely posit an entity, namely, a higher-order property for this explanatory task. But introducing this new entity is no explanatory help; it merely shifts the bump in the carpet. For, now we're faced with the equally perplexing question: in virtue of what does this higher-order property play *its* theoretical role? And, following the scruples of our pragmatic theory-choice principle, **Minimising Inexplicability** (see Ch.2, §1.2), if an entity's introduction doesn't improve our ability to explain the world, we shouldn't posit it. That is, though entities can be used to explain facts, they also bring with them facts that need explaining. Therefore, we should posit entities just when they explain more facts than the unexplained facts that their existence raises in your theory.

So, it's wrongheaded to understand every truth as grounded in ontology. Still, from a theoretical point of view, accepting additional ideology seems at least no better than the addition of ontology. Yet, so long as those committments are playing some useful theoretical work according to **Minimising Inexplicability**, we should willingly accept them.

§1.2. Primitive Comprehension.

So what does it take to make sense of primitives? According to Sider:

> We generally "understand" philosophical concepts to the extent that we know what role they play in our thinking.[...] This is not to say that all there is to meaning and reference is inferential role. Meaning and reference may well be determined by external factors that transcend inferential role (see section 3.2). So even if structure's inferential role is richly specified, the concept may nevertheless fail to refer to anything. But that's true of any philosophical concept: the world may simply fail to contain anything—or any unique thing—fitting the inferential role associated with the concept. My hope is that this unhappy possibility is not realized. (*Ibid*., pp.11-12)

I agree that theoretical role significantly contributes to our conceptual understanding, and that this is insufficient. We can, after all, concoct any number of inferential roles, and terms corresponding to them, if we please. But this provides no reason to believe they are coherent, correspond to anything interesting about reality's structure, or that they are more or less deserving of the nominal connotations they are ascribed. This point is somewhat analogous to the point Scott Shalkowski was making when stating:

Formal facts on their own have nothing whatever to do with truth, much less logical truth and logical consequence. Syntactic specifications of the elements of a language, along with formation and derivation rules, constitute nothing more than the delineation of a game. Here are the pieces; this is how to build things with them; that is how to move them about. Devoid of interpretation, we can go no further. What can be "proved" on the basis of other things is completely uninteresting without some substantial constraints on syntactic form and the rules of derivation. (2004, p.65)

However, Shalkowski presents the problem in neutral terms, not elaborating what these 'syntactic constraints' are. But as the quote suggests, Sider (see also 2009), however, following in the footsteps of Lewis (1983, 1984), takes the world to fix our concepts: this has come to be known as *Reference Magnetism* (see Ch.1, §3.1). Yet, whilst this might give sense to our terms, fix our concepts, it comes at the cost of conceptual transparency. And this is no good for theorising. After all, what use can ensuring our terms make sense be if the cost is our inability to properly employ them? We elaborated the problem with this approach in Chapter 1, Section 3.1.

However, if inferential role is insufficient for conceptual understanding, what extra is needed? I think we need some idea of the *mechanics* of just how the concept's correspondents would play their theoretical roles. The greater clarity and detail of our ideas on this matter, the better our conceptual understanding. Until we can envisage this, we haven't grasped the concept; up to that point, all we have is empty word-associations; perhaps we've been successfully inducted into a language game, but we're no better then than the correspondent in John Searle's (1980) 'Chinese Room', merely manipulating symbols according to rules. It's constitutive of a concept that it represents some such potential worldly correspondents as playing the theoretical roles that encapsulates it; there are no incoherent concepts. This prevents, for example, there being a concept corresponding to Arthur Prior's *tonk* whereby:

['Tonk's'] meaning is completely given by the rules that (i) from any statement P we can infer any statement formed by joining P to any statement Q by 'tonk' (which compound statement we hereafter describe as 'the statement P-tonk-Q'), and that (ii) from any 'contonktive' statement P-tonk-Q we can infer the contained statement Q. (1960, p.39)

So our first task will be ensuring that we do indeed have a good understanding of a primitive conception of the A-determinations. Before beginning this investigation, it will be instructive to explain when a primitive account of a fact is appropriate. In particular, we've already mentioned a primitive approach is a standard starting place for the accounting of facts. This is partly because of the easiness of giving a primitive account. For, all it requires is *some* conceptual grasp. Though, the adequacy of the account will be determined to some extent by how well we understand the relevant concepts.

But especially, a primitive account should be held hostage against a class of rival reductive accounts. In particular, if we're already committed to the reductive base of a satisfactory reductive account, then that reductive base will already be playing the theoretical role, whether the primitives are there or not. The position has been filled; indeed, there was never any vacancy. And adding primitives will only serve to double-up the job. Yet, our economics of theorising outlined by **Minimising Inexplicability** (see Ch.2, §1.2) forbids such thriftiness. Therefore, if the theoretical roles are played by something else we're already committed to, we shouldn't then be primitivists. As Sider notes:

> The Quinean thought about ontology is sometimes put in terms of indispensability: believe in the entities that are indispensable in your best theory. The analogous thought about ideology may be similarly put: regard as joint-carving the ideology that is indispensable in your best theory. This is fine provided "indispensable" is properly understood, as meaning: "cannot be jettisoned without sacrificing theoretical virtue". (2011, p.17)

In this respect, a primitive account is like a theoretical safety-net or understudy that steps in when all else fails. And it's only installed when there is already need for some performance. Since we're now taking for granted that A-determinations do in fact correspond to some aspect of reality, there is a need; the show must go on.

§1.3. Theory-Choice Criteria.

In the previous sections we mentioned several factors requiring consideration when assessing primitive presentism. These factors might usefully be generalised into theory-choice criteria. So what are they? Well, we noted that crucial to any primitive account

of certain facts is that we've a good conceptual understanding of its primitives. But also in non-primitive accounts, there is likewise a need for good conceptual understanding of the *other* primitives underlying it. And we need a reasonable epistemology of those concepts' correct application. For, if we don't know how and when we can apply a concept, in theory or practice, then even if well understood, we would be impotent to put it to use. Analogously, suppose we've a sophisticated tool that, when used correctly, performs some particular function or other. If we cannot discern how to operate it, it will be just as good as the next piece of junk.

Moreover, it's doubtful we could have grasped any understanding of a concept without an epistemology of its applications to accompany it. Indeed, the degree to which a concept's understood, the firmness of our grasp, is surely to some extent relative to our ability to appropriately apply it across a greater and more diverse range of situations or contexts. Though, we may to a greater or lesser extent be unaware of what the relevant situation or context is. But clearly, our understanding and epistemology of concepts are intimately related. This suggests the following potential theory-choice criterion:

> **GM1.** An account of the A-determinations is *ceteris paribus* preferable to the extent that we understand and can apply the account's primitives.

We also mentioned that, we should reject a primitive account of some fact(s) whenever the theoretical work those primitives are intended for, is already done by things we're otherwise committed to. The motivation behind this was **Minimising Inexplicability** (see Ch.2, §1.2). From this principle, two more potential theory-choice criteria can be derived to guide our survey. The first is simply a restatement suited to present concerns:

> **GM2a.** An account of the A-determinations is *ceteris paribus* preferable to the extent that it's committing to less inexplicable facts.

The second makes explicit a consequence of the principle specifically for primitives. In particular, when a primitive, $P$, makes no unique explanatory contribution to a theory, $T$, we should prefer the alternative theory, $T^{-P}$, that otherwise resembles $T$, but lacks $P$. This is because $P$ doesn't pull its weight in $T$, adding to, whilst doing nothing to reduce, the inexplicabilities of reality. This, at least, is the most straightforward, and least controversial, way **Minimising Inexplicability** impacts on our ideological

commitments. Yet, this is a great distance short of the cruder ideological parsimony that garners widespread support. That is, a *numeric parsimony* of ideology: *ceteris paribus*, the fewer primitives the better. But any reasonable support for this numeric ideological parsimony has eluded me. For example, I see no good reason to prefer that the theoretical roles played by two distinct relatively simple primitives, be played by a single complex primitive. All this is perfectly clear, so why the support? I suspect a conspiracy of convenience plagues this issue. As such, I propose the following criterion to guide theory-choice:

> **GM2b.** An account of the A-determinations, *T*, is *ceteris paribus* preferable to another, *T\**, to the extent that *T* posits a subset, or less, of the metaphysical primitives of *T\**, without increasing inexplicability.

I'm sceptical whether a stronger or broader constraint on positing primitives can be reasonably made. For example, I worry that it would rely on assigning relative costs to distinct primitives, and that these costs would be incommensurable. This would leave an insurmountable epistemological barrier that would render such theory-choice criteria beyond our capabilities. In fact, it's unclear to me what the identity or individuation conditions for primitives could be such they are either countable or distinguishable. I add the 'less' disjunct for just this reason. Bearing these criteria in mind, then, let us explore the prospects for a primitive account of presentness.

## §2. Primitive Understanding.

At the beginning of his famous discussion of time, St. Augustine wrote: 'What, then, is time? If no one asks me, I know what it is. If I wish to explain it to him who asks me, I do not know. Yet I say with confidence that I know that if nothing passed away, there would be no past time; and if nothing were still coming, there would be no future time; and if there were nothing at all, there would be no present time.' (c.397-398, Bk.XI, §17, pp.230-231). The first three sentences of this passage are often quoted to evidence time's perplexity. But as the following sentence reveals, it wasn't perplexity Augustine sought to convey. He could recite what, for him, were simple truisms about time. Yet, these descriptions would be little help to them who had not already grasped the concepts. It seems to me it's this ineffability of time's nature that impeded his explanation. But if the A-determinations cannot readily be explained, how do we

conceptually grasp what they involve? And is our grip on them as firm as ordinarily supposed? In this section we will explore our understanding of the A-determinations, and some reasons for primitivists to be concerned about these questions.

§2.1 The Metaphysical Present.

One reason for thinking we've grasped, and possess a reasonable epistemology of, the primitive A-determinations is that we frequently use and agree upon their applications in everyday discourse. Indeed, tense is nearly ubiquitous in natural language. Yet, there is reason to believe the notions of pastness, presentness, and futurity manifested in natural language aren't quite the same as those employed by presentists; these natural language notions are typically context-sensitive in a way the presentist's notions cannot be. For example, in a marathon, we might claim of a runner, *R*, given the salience of the present hour, that *R* is *presently* fastest. Whilst at the same time, but in a different context, we might acknowledge, given the salience of the present minute, that *R*'s *presently* second fastest. There is no contradiction here. Rather, relative to the differing contexts of use, 'presently' modifies differently the designation of who is fastest. This point has been neatly elucidated by Neil McKinnon:

> While doing metaphysics, the presentist's sense of 'present' is not one whose temporal extent varies according to context. If it were, then what exists could vary from context to context. I take it that the presentist prefers not to conclude that we can talk things in and out of existence merely by shifting contexts. So, the presentist must have in mind a special, fixed sense of the present—the *metaphysical present*, if you like. What, then, is the scope of the metaphysical present? (2003, p.307)

It's this notion of *Metaphysical Presentness* that needs to be understood and taken as primitive, not the context-sensitive notion of common usage. And clearly, related remarks can be made for pastness and futurity.

A tempting response to this contention, that the presentist's conception of presentness is distinct from the context-sensitive ordinary language notion, takes an analogy with other context-sensitive concepts, such as *flatness*. In different contexts we use 'flatness' with different levels of strictness, being more or less permissive about which things count as flat. However, when explaining what is *really* flat, there is a tendency towards pushing flatness to its logical extreme, including perhaps only that

corresponding to Euclidean planes. Likewise, could we not push the context-sensitive notion of presentness to *its* logical extreme defining what is *really* present? Real presentness would thus accord to some ultra-thin time-slice.

This response misses its mark on at least two fronts. Firstly, presentists are unlikely to posit substantival times, since they would be theoretically redundant. Rather, it should be events, rather than time-slices, that are the primary subjecst of A-determinations. Yet, the complaint could easily be adapted to accord real presentness only to ultra-brief events. Secondly, and more seriously, there appears to be no conceptual barrier either to a temporally extended present or to metaphysically present events being temporally extended. Indeed, variants of presentism with a temporally extended present (cf. Schlesinger, 1991; Dainton, 2001, §6.11; Hestevold, 2008), and present events being temporally extended (cf. Craig, 2000; Merricks, 2007, pp.124-125), have been proposed for various reasons. Though they may have problems, these accounts don't strike me as conceptually confused. This complaint, thus, undercuts one important source of confidence for thinking we've a fix on the primitive presentists' conception of the A-determinations.


§2.2. Temporal Experience.


Those of an empiricist mindset will impress that our grasp of the A-determinations must ultimately be rooted in experience. For example, Jonathan Tallant once remarked: 'Our grasp of what it means to say that 'time is real' derives, at least in part, from the nature of our *experience* of time. It is from our experiencing so-called temporal passage that we come to form some idea of what time might be.' (2007, p.150). But, if the A-determinations are primitives, then they cannot be the *objects* of our perception. Though, that doesn't mean they cannot help shape the *character* of experiential contents. Nevertheless, it's unobvious through which aspects of experiential content pastness, presentness, and futurity would reveal themselves. Quentin Smith once wrote:

> It seems intuitively obvious that what I am doing now is more real than what I did just one second ago, and it seems intuitively obvious that what I did just one second ago is more real than what I did forty years ago. And yet, remarkably, every philosopher of time today, except for the author, denies this obvious fact about reality. What went wrong? How could philosophers get so far away from what is the most experientially evident fact about reality? (2002, p.119)

Yet, unless Smith's experiences are distinctively different from my own, nothing went wrong; the content of our experiences don't reveal themselves with pastness, presentness, or futurity. There are no special auroras of presentness, diminutions of pastness, or augmentations of futurity. Indeed, given the temporal asymmetry of causation (see Ch.2), we cannot experience what is future, or at least not whilst it's still future. And the time-lag between distal percepts,[52] if there are such unique items, and our perceptual experiences of them, nigh on ensures the pastness of all events we experience; the exception lies in the epistemic possibility of immediate acquaintance.

*§2.2.1. The Temporal Character of Experience.*

Still, we might look instead, not at experiential contents, but at the character of experiences themselves. Consider, for example, D. H. Mellor's following remarks:

> Being present seems to be essential to any experience, i.e. essential to its being an experience. To give only the *B*-times of my experiences, without saying which of them I am having *now*, is to leave out precisely what makes them experiences. Once over, a pain is no longer a pain, since nothing can be a pain, or an experience of any kind, unless it is present. A past pain can only be a pain in the dispositional sense that it would be a pain if it were present. But as it is, it is a retired or Emeritus pain. It is no longer in business as the real experiential article, which is why I am glad of its pastness; for its becoming past has stopped it being painful. (1998, p.40)

If Mellor's right, it's an experience's presentness that impresses itself on us. Painful experiences pain us not when past; though they may haunt us in memory. And following St. Augustine's (c.397-398, Bk.XI) well-trodden path, we may take our conception of pastness as derived from memories of 'real experiential articles'. The memory of the retirement of that and other experiential articles then give cause to think our now real experiential articles will likewise retire, giving way to new ones. The regularities recorded and memorised may even justify an anticipatory attitude. From this is borne our conception of futurity. Or so the story goes (cf. Tallant, 2007, p.154).

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[52] If you think *direct* percepts are never distant, but instead some sort of *sense data*, then understand 'distal percepts' as referring to the indirect percepts, if such there be, that are latent, rather than manifest, in perceptual experience.

Yet, we must interrogate whether the *presence* of experience does indeed bear such a close relationship to *presentness*. For, why is it that the presence of experience ostensibly signifies presentness? The reason is seemingly that we need to explain why we don't experience everything at once. Presentism offers a good explanation: our experience is temporally limited because only these experiences, the present ones, *are* (as of now) real. However, non-presentist W-Variance accounts of persistence (see Ch.2, §4.2) are in particular trouble here. The distinct experiences will be owned by the same person, yet we know them to be experienced in isolation. But it does no good merely to temporally relativise the experiential variances in whichever preferred way W-Variant theorists see fit. That is, after all, the usual strategy for reconciling the incompatible qualities that a thing survives with:

**Indiscernibility of Identicals**: $\forall_{As}x\forall_{As}y \to [x = y \to (\Phi x \to \Phi y)]$

Unlike standard incompatible properties, subjects of experiences bear an intimate relation of *acquaintance* with their experiences. This acquaintance with our experiences is the phenomenal feel of what it's like to be the subject we are; for example, the pang of pain, or the wispy blueness of a summer sky. And what we are, according to non-presentist W-Variance theorists, is a temporally simple persistent. So we must ask what it's like to be temporally simple. Yet, introspection reveals we're only ever directly acquainted with the experiences we have at just one of the many times we exist. Moreover, what it's like to be me changes in character. How can this be? A temporal relativisation strategy serves only to make the transitory features of the entity a permanent (though temporally relativised) way that thing is; it bears those temporally relativised characteristics always. So what it's like to be me shouldn't change, because the temporally simple persistent I'm meant to be doesn't change. It stands to reason that a temporally simple persistent that has its experiences relativised to times must nevertheless be acquainted with the combined temporally relativised experiences of what it's like to be itself, at once and always. And this isn't the case.

But although W-Variance thesis comes unstuck outside of presentist terrain, its alternative, B-Variance thesis (see Ch.2, §4.2), offers an alternative way of accounting for the presence of experiences without privileging them with presentness. On this view, our experience is temporally limited because only these experiences, the ones this temporal part or stage possess, are all the experiences this temporal part or stage will ever be directly acquainted with. Accordingly, regardless of when (past, present, or

future) the experiences are, the experience of this temporal part or stage will have presence then. For all these experiences tell us, we could be the unfortunate inhabitants of an eternalist spacetime block, inexorably caged at our spacetime locale forever and always. Perhaps, then, all they familiarise us with is some indexical notions of what is and isn't here. But this isn't what presentists understand A-determinations to be. It's unclear, then, how such experiences inspire a presentist conception of pastness, presentness, and futurity; they neither demand a presentist explanation, nor manifest A-determinations in content or character.

To add to these worries, it's sometimes said that our experiences present us with a *specious present*: an extended duration which an experience is considered by its subject to have presence. As the name assumes, the presence of experience cannot correspond to metaphysical presentness, since the former, but not the latter, has duration. Thus, Barry Dainton delivers the following conditional: '...if experience is confined to the present, and the present is durationless, it seems experience must be literally instantaneous.' (2000, p.120). But experiences cannot be instantaneous, since we could never notice something so fleeting. This was what Gustav Bergmann was getting at when he remarked: 'With things literally instantaneous I simply am not acquainted.' (1960, pp.44-45). Of course, this doesn't immediately follow, since, as noted in the previous section, we could reject the second conjunct of the antecedent of Dainton's conditional: the present may well have duration.

*§2.2.2. Experiencing Succession.*

Nevertheless, a specious present suggests another way we might be acquainted with A-determinations. If the presence of experiences is durable, then is it possible that we might also experience change? Well, there is perhaps good evidence to suggest we do indeed directly experience change and succession. Consider the phenomenological difference in our observations of the different hands of an analogue clock in motion. Seemingly, we directly *observe* the second-hand's motion, yet merely *notice* the hour-hand has moved, by comparing our current experience of its position with memories of its former positions that have co-presence with that current experience. Noticing changes is much more arduous than the observation, and requires committing to memory many details of the original observation, then conducting a pair-wise analysis of it with the details of current experiences. In this way, many subtle changes, and sometimes even robust changes, can go unnoticed, or take longer to discern. (Think how

difficult 'spot-the-difference' puzzles can be where the images are presented in juxtaposition.) Observing change, however, immediately impresses those noticeable changes upon us.

Supporting this phenomenological difference between observing and merely noticing change, psychologists have craftily found ways to blind our observations of change. In these cases of *change blindness*, observers fail to observe changes to a scene when a blank screen is inserted briefly between before-change and after-change images. Consequentlt, they suffer greatly in their ability to notice even major changes to the scene (cf. Rensink, 2000). On this basis, I think there is good reason to think we do indeed experience change. But this doesn't yet explain how we do so. What has, I think, prevented others from submitting to this view is their inability to give a sensible account of how. And experience of change presumably requires a change of experience; but we don't experience the changes of experiences, only the experiences themselves.

To answer this enigma, we need to have an enduring simple act of experiencing and distinguish it from its contents, which undergo changes under the scope of that very same experiencing.[53] So consider an experience of the perfect harmonic cadence below:



| **Chord**: | G Major | (Perfect Cadence) | C Major |
| **Time**: | Time$_1$ | (Succession) | Time$_2$ |
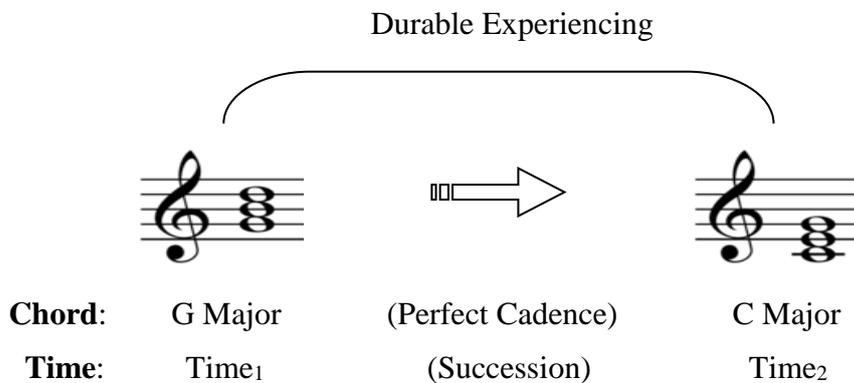
Figure 4: The above diagram represents our durable auditory experiencing of the perfect harmonic cadence from the G Major to C Major tertian chords.

As the diagram represents, the durable experiencing encompasses a change in content between Time$_1$ and Time$_2$. Despite diagrammatic appearances, the experiencing cannot be complete at one moment, both contents having co-presence, since succession involves one thing, then another, not both things together. We don't experience the two

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[53] Note that the act of experiencing isn't necessarily an act of attending, since we may be unaware of some aspects of the experience. Think, for example, of how we sometimes attend to things, before unnoticed, when reflecting back on old experiences.

contents together with some special "temporal" relation of succession between them. No B-theoretic story works here; it simply betrays the phenomology that the experiential contents are experienced in isolation from each other. As Bede Rundle points out, '...it is precisely the idea of change or transition *from* the one state *to* the other that it ['earlier/later ordering'] fails to capture.' (2009, p.32). Instead, we need real metaphysical change of experiential content during the enduring simple act of experiencing. And seemingly only presentism can deliver the requiste *supplantation* of experiential contents within the same experiencing.

If this model of experiencing change is correct, and I suspect something like it must be, then perhaps our conception of A-determinations is borne out of this phenomology. That is, our conceptual grasp of the A-determinations comes out of our directly experiencing the hiring and retiring of experiential contents. Yet, though I submit that this may indeed immediately acquaint us with real metaphysical change, it's unclear to me to what extent it provides experience of A-determinations. Given what was argued in the previous section, there appears to be no distinctive quality of pastness, presentness, or futurity in these experiential contents that rise and give way. I'm fairly confident the experienced retiring or passing away of experiential content would give us all we need to grasp a pure form of pastness; and that the experienced hiring or coming forth of experiential content would give us all we need to grasp a pure form of futurity.

Nevertheless, when things endure, pastness and futurity overlap with presentness. And even given presentism, neither pastness nor futurity, by themselves, entails non-existence; there is meant to be more to pastness and futurity than temporary non-existence. So what is it that makes that which exists present? It's tempting, perhaps, to think of things only participating in presentness at the first moment of their being, forever before future, and forever after past. Yet, this seems wrong, or at least not obviously right. Firstly, it would rule out *tout court* things that never had a first moment of being, from ever participating in presentness. It would also deny things the possibility of enduring in the present, contrary to a standard presentist account of persistence. And it's simply not evident in the enduring simple acts of experiencing whether what was either being succeeded or succeeding, participates in pastness, presentness, or futurity. Rather, seemingly all such experiences acquaint us with is metaphysical change.

Interestingly, a conceptual grasp of metaphysical change may well be sufficient to engage in the kind of debate Timothy Williamson (2013) and Daniel Deasy (2014) have been proposing we have, *instead* of the standard metaphysical debate over whether

there are past, present, and future existents. This debate is primarily between *Permanentism*, the thesis that 'always everything is always something' (Williamson, 2013, p.4), and versions of *Temporaryism*, the thesis that denies this. In particular, Deasy distinguishes three versions of temporaryism: *Transientism*, *Pastism*, and *Futurism*. Transientism states that things both begin and cease to be. Futurism states that things only cease to be. And pastism states that things only begin to be.

It's significant, then, that both Williamson and Deasy claim not to understand the debate over whether there are past, present, and future existents. Indeed, they would have us surrender that debate in favour of their preferred permanentism-temporaryism debate.[54] Deasy intends permanentism, transientism, pastism, and futurism, to correspond roughly to eternalism, presentism, growing-block thesis, and shrinking-block thesis respectively. Despite the label, I take it that accruing-present thesis (see Ch.2, §3.3.2) corresponds to Deasy's pastism. Yet accruing-present thesis doesn't determine whether past, present, or future things exist, since presentists and eternalists alike can accept it. Likewise, consider Prior's descriptions of the following, rather esoteric, presentisms:

> We might, indeed, attempt to argue on physical or metaphysical grounds that tables and chairs and horses and men are not genuine individual continuants but only collections of these, the real continuants being certain ultimate 'simples' which exist throughout all time and merely get rearranged in various ways. Or we might argue that there is only a single genuine individual, the Universe, which gets John-Smithish or Mary-Brownish in such-and-such regions for such-and-such periods. (1965, p.94)

In both cases, all individuals are sempiternal, and accordingly all past and future things would be present. The main difference between the proposals is whether there are many existents or one. The first position was similarly expounded by Simon Keller (2004) under the guise of *Atomic Presentism*. It noticeably meshes well with the presentist explanation of conservation outlined in Chapter 2, Section 4. We can call the second view *Monist Presentism*. However, the theoretical utility of A-determinations, and the distinction between them, would become much diminished given their indiscriminate and unchanging applicability to existents.

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[54] For example: 'Thus the proposal is to abandon that debate as hopelessly muddled, and to get on with the clearer permanentism-temporaryism debate...' (Williamson, 2013, p.25), and '...*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, [futurism,] or transientism).' (Deasy, 2014, p.135).

Both atomic and monist presentisms could conserve permanentism. This suggests the permanentism-temporaryism debate is somewhat orthogonal to the debate over whether there are past, present, and future existents. Just because the permanentism-temporaryism debate is successful doesn't mean we should readily give up on the debate over whether there are past, present, and future existents. So I object to Williamson and Deasy's proposal to *replace* the debate over whether there are past, present, and future existents with the permanentism-temporaryism debate.[55]

On closer examination, we seem compelled to conclude, then, that experience doesn't make evident any clear conception of pastness, presentness, and futurity. It's primarily for this reason I take it, that several philosophers have recently complained about the comprehensibility of presentism given its conceptual underpinnings by the A-determinations. For example, Timothy Williamson proposes '...to abandon [the eternalism-presentism] debate as hopelessly muddled...' (2013, p.25) and that '...it is better to make a fresh start with fresh terminology and clearer distinctions' (*Ibid*.), on the grounds he doesn't understand what is meant by "presentness": 'There is a widespread feeling of dissatisfaction with the eternalism-presentism distinction. One may be given this explanation: the presentist holds that everything is present, while the eternalist holds that not everything is present. If so, what is it for something to be present?' (*Ibid*., p.24). Perhaps, however, this is unduly pessimistic. Consideration of the A-determinations' theoretical roles within a presentist theory may provide further clues about their primitive natures.

§2.3. Theoretical Roles.

According to Sider, 'Philosophical terms *can* be unclear: when they have been given no clear theoretical role to play.' (2011, p.12). What we need from primitive presentism, then, is a clear outline of the role A-determinations play in that theory. So what are the theoretical roles of A-determinations within primitive presentism? Well, presentists will likely want to secure the following inferential roles for presentness: $\ulcorner \exists x \mathbf{N}(\varphi x) \vdash \exists x(\varphi x) \urcorner$ and $\ulcorner \exists x(\varphi x) \vdash \exists x \mathbf{N}(\varphi x) \urcorner$. But we might worry that this makes presentness redundant, in which case presentness wouldn't be playing any theoretical role; and if there is no job to

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[55] Indeed, if what I wrote in Chapter 1 is correct, then an interesting conception of existence—that of existing as of now—and ontological change, would presuppose some account of presentness. Thus, the success of the permanentism-temporaryism debate will depend upon making sense of the A-determinations. Moreover, it's difficult to understand the difference between *beginning* and *ceasing* to exist without their being grounded in the temporal direction given by pastness and futurity.

fill, we needn't employ any special primitives to play the empty role. I take it that it's roughly this worry that Williamson was having when he wrote:

> On a less loaded account, what is present is simply what there presently (unrestrictedly) is. But on standard accounts of the logic of 'presently', its insertion makes no difference in truth value, at least when not in the scope of a temporal operator. If there is a Roman emperor then there presently is a Roman emperor. Therefore, since whatever is is, whatever is presently is: if there is something, then there presently is such a thing. So on this understanding, presentism is trivially true and eternalism trivially false. Thus being present had better be presently doing something harder than just being, otherwise the dispute is silly. But what is that harder thing, if a dispute about whether everything does it is as fundamental to temporal metaphysics as the dispute between presentism and eternalism is supposed to be? (*Ibid*., pp.24-25)

According to Williamson, then, presentists are just being 'silly' if they fail to assign any serious work to presentness. Yet, this is a little quick. After all, the two-way entailment between presentness and existence doesn't necessiate redundancy; they could be metaphysical rather than conceptual entailments, and those entailments might be merely contingent. Moreover, we saw in Chapter 1 that, in order to build a substantive and interesting interpretation of the presentist thesis, presentists should understand *existence* as *existing as of now*. Our account of existence therefore presupposes an account of presentness. So we cannot simply get rid of presentness without losing our grip on existence. But this hardly sheds any light on presentness. Instead, it rather worryingly seems to contaminate existence with unclarity.

    As for pastness and futurity, the inferential roles they play would be determined by whichever system of tense logic is preferred. However, we would still have the worry of what these inferential roles have to do either with the way the world is or our pre-account conceptions of the A-determinations. We can concoct any number of inferential roles, and terms corresponding to them, but this gives us no reason to believe they correspond to any aspect of reality, or that they are deserving of the nominal connotations they are ascribed. Indeed, similar inferential systems are commonly ascribed to other modal logics, but with different semantics. They share inferential patterns, yet their meanings are distinct. It's far from clear, then, how inferential or theoretical roles are going to deliver everything we need. In fact, it seems more plausible, in this case at least, that we ascribe the inferential roles we do on the basis of our conceptions, rather than the other way round. Still, it may be retorted that, even if

we cannot give a precise answer to *how* we grasp the A-determinations, it may nevertheless be the case that we do. So let us now apply a little pressure on this contention.

§2.4. Conceptual Potholes.

Though we may well have a good grasp of the context-sensitive notions of pastness, presentness, and futurity, it's unclear whether the same can be said about the metaphysical notions. In this section we will explore cases where our conceptual grasp seems insufficient to adequately determine correct application. These conceptual potholes will be used to draw out conceptual limitations, and put pressure on primitive presentism's capacity to satisfy **GM1**. In particular, we will investigate three cases of potential conceptual inadequacies that blur the lines and contours of the primitive presentist picture. These are small costs perhaps; still, it's prudent to tally the charge before deciding on the purchase.

*§2.4.1. The Extent of the Metaphysical Present.*

Let us start on somewhat familiar ground. In Section 2.1 above, we noted that there appears to be no conceptual barrier to either a temporally extended present or temporally extended events being wholly present. Indeed, several contemporary philosophers have countenanced or advocated these epistemic possibilities. And they have been considered in relation to a wide range of issues, such as, the rate of passage, the unity of time, transtemporal relations, providing time enough for events to participate in presentness.[56] Yet, if we do countenance temporally extended presentness, we're left with an awkward question about just how far we can stretch the application of presentness. Many will likely object to the legitimacy of applying metaphysical presentness to the entire B-theoretic block-universe. And if presentness consumed the entire block-universe, save one time, that would seem little better. But then it seems as though any candidate extent exceeding some unspecified vague threshold will be conceptually unpalatable.

That is, granting our conception of metaphysical presentness permits it some extent, it faces a sorites paradox. Take any duration of the metaphysical present (base

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[56] For some discussions of this issue, see Gale (1971), Schlesinger (1991), Harré (1996), Craig (2000), Dainton (2001, §6.11), McKinnon (2003), Hestevold (2008), and Tallant (2010).

case). Our conception of the metaphysical present is surely not so fragile that we cannot conceive extending its duration by a moment (inductive step). Yet, if the inductive step is iterated to each extended duration, we reach the seemingly absurd conclusion that the whole extent of time could be metaphysically present. And though we may stipulate some precisified maximum extent for our vague notion of metaphysical presentness, any such stipulation would appear to be arbitrary.

Alternatively, others might think our conception of metaphysical presentness cannot survive its having an extension. Still, even then I wonder how this conflict between the disagreeing parties could be satisfactorily adjudicated. Our understanding of presentness doesn't seem competent enough to settle this issue in any principled way. And if this is so, our choice will inevitably fall upon arbitrary stipulation rather than drawing out genuine characteristics of that worldly feature we're trying to conceptualise.

*§2.4.2. Presentness and Relativistic Physics.*

Against a backdrop of relativistic physics, I suspect many would quickly lose whatever grasp they had upon how to apply the metaphysical notions of the A-determinations. From which inertial reference-frame should we privilege our judgements? And how should we decide which of the many candidate co-presentness relations foliating spacetime should guide those judgements? Which carve nature's present joints? Should we be guided by the cosmic-time of General Relativity; claim that those individuals sharing the same universe-wide planes of homogeneity are co-present (cf. Bourne, 2006, Ch.7; Hawley, 2009, pp.513-514)?[57] Or should we take advantage of Special Relativity's light-cone structure; claim that for any individuals $x$ and $y$, $x$ is co-present with $y$ iff $y$ lies on the surface of $x$'s past light-cone (cf. Godfrey-Smith, 1979; Hinchliff, 1998; Saunders, 2002)?[58] Is our understanding of the A-determinations so proficient that we can be sure which way to foliate spacetime in order to carve at nature's present joints?

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[57] Cosmic-time uses universe-wide planes of homogeneity to define absolute simultaneity whereby each hypersurface of homogeneity equates to a distribution of matter in every region of spacetime that has the same values of density and pressure. New universe-wide planes of homogeneity emerge with corresponding changes in pressure and density as the universe expands.

[58] The light-cones form part of the invariant structure of Minkowski spacetime. Each spacetime location has its own past and future light-cones. A reference body $x$ lay at the origin (here-now), where both past and future light-cone's apex meets forming an 'X' shape. The events on the surface of $x$'s light-cones are those events wherein light-rays travelling at $c$ ($299,792,458\mathrm{m/s}^{-1}$) can just reach $x$ from them (past light-cone), or where light-rays travelling at $c$ can reach them from $x$ (future light-cone). Such events are 'light-like' related to $x$. Events falling outside the light-cones of $x$ are 'space-like' related to $x$.

Many interrogatives are raised here deserving answers. It's unclear to me that adequate responses to these conundrums will be easily forthcoming for primitivists. My impression is that these puzzles strain our understanding of the metaphysical present, or at least put an additional strain on our understanding of co-presentness for space-like related things or events. Kit Fine was seemingly making a similar point when he stated that, '...the presentist believes in tensed facts. But what, in the light of [Special Relativity], should he take a tensed fact to be? Without an answer to this question, he is not even in a good position to state an alternative criterion for being real, since any alternative criterion must presumably be tensed and hence must already presuppose some alternative conception of tense.' (2006, p.410). The underlying thought here is that, in light of relativistic physics, our scientific measures of absolute simultaneity are undermined, and no longer serve as an epistemic guide to co-presentness. This epistemic source of knowledge deemed unfit, and given the close link between epistemology and understanding discussed above, it becomes unclear what remains of our understanding of metaphysical presentness.

*§2.4.3. Exotic Presents.*

Further challenges to our understanding of the primitive A-determinations come from the conceptual possibilities of certain exotic presents. Consider, then, the following conceptual possibilities:

> **Static Present**: There is no change in what things are present or in the qualities and relations of those things.

> **Empty Present**: There are no present things.

Some philosophers have acknowledged the conceptual or epistemic possibility of a static or unchanging present, either with or without a static past and/or future: a static factive presentism, either with or without a commitment to ontic presentism (see Ch.1, §6). For example, a presentist static present position has been outlined by Dainton (2001, §6.8) under the guise of *Solipsistic Presentism*: that only the present is real, and is unchanging. The epistemic possibility of solipsistic presentism might be motivated by consideration of Betrand Russell's (1921, pp.159-160) sceptical hypothesis that the world might have only just come into being with everything presently as it is.

A more general static present position, not committed to ontic presentism, has been delineated by Fine (2005, 2006):

> …all that the realist need add to the anti-realist's 'static' account of the universe is the fact that a given time is present. And how could this solitary 'dynamic' fact be sufficient to account for the passage of time? Indeed, the realist's conception of time is compatible with a view in which reality is frozen on the present, at [*sic.*] it were, with there being no genuine passage but merely different static relationships of things in the past and the future to things in the present. His conception of temporal reality, for all that he has said, may be as static or block-like as the antirealist's, the only difference lying in the fact that his block has a privileged 'center'. (2006, pp.405-406)

It strikes me, however, that this latter view is untenable, since it violates certain inviolable constitutive axioms for A-determinations. Consider, for example, how the pastness or futurity of something seemingly entails that it *was* or *will be present*. We can express these axioms formally as follows:

AXIOM$_1$: $\mathbf{P}(\exists_{At}x(\varphi x)) \rightarrow \mathbf{P}(\exists_{At}x\mathbf{N}(\varphi x))$

AXIOM$_2$: $\mathbf{F}(\exists_{At}x(\varphi x)) \rightarrow \mathbf{F}(\exists_{At}x\mathbf{N}(\varphi x))$

Indeed, seemingly it should be a valid inference to introduce a present tense operator to the innermost embedded sentence within any number of tense operators. As Prior explains, '...when we have got inside all other tensing to the 'kernel' of the complex, *its* tense will have to be the present.' (1967a, p.15; cf. Smith, 1993, pp.77-78). If this is right, and I very much think it is, then no sense can be made of a static past or future, since they would never bask in presentness.

Some have even thought it plausible that there be *many* such static presents. I have in mind, here, the *Many-Worlds Presentist* positions expounded by Bigelow (1991), Schlesinger (1991), Dainton (2001, §6.9), and Parsons (2003) among others. These positions posit a plurality of worlds containing only a static present, which are ordered into a time-like series. Nevertheless, the conceptual possibility of a static present is contentious, and difficult to decide. It remains questionable whether our conception of metaphysical presentness can survive the move to such exotic metaphysics. On the other side of the dialectic, Hestevold and Carter *stipulated* in their account of presentism that the present cannot be static:

Static time is inconsistent with Presentism because Static Time implies that there is no irreducibly tenseless sense in which something can *presently* exist or occur—that there can be no ontologically privileged present. By rejecting an ontologically privileged present, the Static-Time defender would claim that your birth, your reading this essay, and your death *all* tenselessly occur (though not simultaneously). (2002, p.494)

These contrary stances suggest our grasp of the primitive A-determinations is insufficient to competently settle the conceptual possibility of a static present.

Similar remarks can be made about the conceptual possibility of an empty present. It's likely some philosophers will find this conceptual possibility plausible. For example, it's easy to imagine how a variation on Sydney Shoemaker's (1969) *gedankenexperiment* could be modified to act as an intuition pump for this possibility. Instead of distinct regions of the universe remaining static through regular periods of time, the things within those regions would cease to exist for regular periods of time. In this way, there might be three regions of the universe, *A*, *B*, and *C*, whereby: i) things within region *A* cease to exist for a year every three years; ii) things within region *B* cease to exist for a year every four years; and iii) things within region *C* cease to exist for a year every five years. This would lead to a regular sequence of things ceasing to exist over sixty year cycles, wherein everything ceases to exist for a year in the sixtieth year of that cycle. Nevertheless, like many controversial thought-experiments, intuitions conflict. And one reason why intuitions might conflict here is precisely over whether we think an empty present is conceptually possible.

Once more, it's unobvious how to settle this issue. And I'm unconvinced that our level of understanding of the primitive A-determinations is sufficient for us to competently adduce a favourable result one way or the other. These issues are important because they have implications for certain modal entailments of primitive presentism. Vacillation experienced over such questions isn't merely an epistemic matter on the primitivist account, since no new evidence could help settle such matters. That is, it's not a matter of mere ignorance over the extension of metaphysical presentness. The question is rather of how we can apply our conception of presentness if the world were thus and so. I submit that the most plausible explanation for our inability to adjudicate these issues, when all other facts are settled, is a deficit in understanding.

The above cases seem to suggest our understanding and grasp of the unanalysed A-determinations is in certain ways vague and incomplete. Of course, this news may be

unsurprising to most, since it seems quite likely that our grip on most, if not all, concepts is bound to be vague and incomplete to some extent. What is really at issue is to what extent our grasp on our conception of the A-determinations is vague and incomplete. We've presented some reasons for thinking our grasp is limited in certain ways. Yet, it's hard to accurately measure or compare conceptual grasp; and what is most important is that our grasp is adequate for the services it's employed. I fear this cannot be demonstrated, but rather requires honest reflection. One of the benefits of conducting a survey of plausible accounts is that, even if reductive analyses fail, understanding what they are, and why they fail, may well bring our concepts into sharper focus. They may aid our ability to fill-in these conceptual potholes.

## §3. Relating Primitives.

One important consequence of giving a primitive account of what a given concept represents is that, the behaviour of that corresponding primitive cannot be explained. How that primitive can and does interact with other features of reality, especially other primitives, must be swallowed brute and whole. In this way, a primitive account can seem quite unsatisfying. In particular, part of the purpose of theorising's to shed light on conceptual ties. But a primitive account essentially surrenders these ends, and gives up the game. This section will draw out two ways that a primitive account of the A-determinations is unsatisfactory along these lines.

### §3.1. First- and Second- Order Change.

By taking the A-determinations as primitive, the apparent interconnections between them are left wanting of explanation. To help elucidate what is at stake, here, it will be useful to make some distinctions. The first is between two kinds of temporal facts:

> **First-Order Temporal Facts**: Facts about what obtains *at* a time.

> **Second-Order Temporal Facts**: Facts about the distribution of A-determinations.

First-order temporal facts are those temporally relative facts that obtain at the time they are relative to. That is, they are facts solely concerning the way things are at that time,

irrespective of how things are at other times. For example, the fact on the 14<sup>th</sup> March 2015 at 11:02am, that *I am writing these words*. I will take for granted, primarily for demonstrative ease, that these facts aren't in themselves tensed, in some metaphysical sense, even if we, perhaps unwittingly, use a tensed language to discriminate them. Second-order temporal facts are the irreducible facts about what is past, present, or future. For example, the fact that *It is now the case that I am writing these words*.

Time is intimately tied up with changes in the temporal facts. Given the two kinds of temporal facts, there are two standard ways temporal facts can change:

> **Standard First-Order Change**: Temporal variation in what obtains at distinct times.

> **Standard Second-Order Change**: Change in what A-determination an event has, from being in the distant future, to the near future, to the present, to the near past, and further into the distant past.

**Standard First-Order Change** corresponds to the differences between the facts obtaining at distinct times. For example, a poker may be hot at time $t_1$ and cold at time $t_2$. The fact about the poker's hotness/coldness undergoes standard first-order change between $t_1$ and $t_2$, because the facts concerning the poker's hotness/coldness differs at those times. Some claim that standard first-order change is partly constitutive of time; that time requires standard first-order change. There is a strong and weak reading of this. The weak reading is that there cannot be *temporal vacua*; that there cannot be successive times without standard first-order change during the interval between those times. This allows for distinct times to be nonetheless identical in their first-order temporal facts. The strong reading is that, for any distinct times, there must be standard first-order change, some difference in the first-order temporal facts, directly between them. The weaker view is typically motivated by the contention that for time to progress, it must do so via standard first-order changes between successive times. Without standard first-order change over an interval, there cannot be temporal extension. The strong view, however, is typically motivated by the contention that times, like sets, are identified and individuated by their members.

Meanwhile, **Standard Second-Order Change** corresponds to temporal passage: the inexorable flow of things from distant future, through the present, and into distant past. McTaggart (1908, 1927), along with many so called *A-Theorists*, take standard

second-order change to be fundamental to time. Whilst *B-Theorists* deny this. That is, unlike McTaggart, both agree that time is real; they just disagree about its fundamental nature. Those taking facts about the A-determinations as irreducible (A-theorists) often take standard second-order change to be *essential* to time. Those who deny this (B-theorists) will deny that standard second-order change is *essential* to time.

§3.2. The Axioms of Second-Order Change.

The above distinction between the two standard forms of change raises the question of, what it's in virtue of that changes to reality are restricted to just these two standard forms. Since our concern is with the A-determinations, we're particularly concerned with why nature is constrained so that it maintains the systematic relationship between the A-determinations through **Standard Second-Order Change**. These constraints can be captured through a series of axioms of second-order change. We encountered two earlier in Section 2.4.3:

$$\text{AXIOM}_1: \mathbf{P}(\exists_{At}x(\varphi x)) \to \mathbf{P}\big(\exists_{At}x\mathbf{N}(\varphi x)\big)$$
$$\text{AXIOM}_2: \mathbf{F}\big(\exists_{At}x(\varphi x)\big) \to \mathbf{F}\big(\exists_{At}x\mathbf{N}(\varphi x)\big)$$

That is, whenever it was or will be the case that something's $\varphi$-ing, it respectively entails that *formerly* or *eventually* it's *presently* $\varphi$-ing. Both axioms seemingly represent absolutely inviolable connections between A-determinations: they are *constitutive* characteristics of time. And this inviolability cries out for explanation. Yet, if the A-determinations are metaphysically basic, the connections must be taken as brute posits.

Similarly, we think that, unless we're situated at time's inception, something must have been future, if it's present, and must have at some time been present and at another time been future, if it's past. We also think, unless we're situated at time's end, something will be past, if it's present. In addition to our previous two axioms, these connections are supported by the following two:

$$\text{AXIOM}_3: \exists_{At}x\mathbf{N}(\varphi x) \to \mathbf{HF}\big(\exists_{At}x\mathbf{N}(\varphi x)\big)$$
$$\text{AXIOM}_4: \exists_{At}x\mathbf{N}(\varphi x) \to \mathbf{GP}\big(\exists_{At}x\mathbf{N}(\varphi x)\big)$$

Again, these interconnections are seemingly inviolable, and cry out for explanation. But a primitive account concedes that there is none. So we're starting to tally up a whole volley of brute facts of which we would rather not multiply beyond necessity towards the displeasing of **GM2a**; arguably the account surrenders these costs too easily.

A similar kind of criticism is seemingly what Craig Bourne found worrying about Priorian Presentism when he wrote:

> We can represent times as sets of present-tensed propositions. Suppose *p* is a true present-tensed proposition. Now, merely from considering the truth-value links which must hold across times, the following set of true present-tensed propositions must also hold of that time: {*p*, **FP***p*, **PF***p*,…}. But what guarantees that a later time preserves these links? Given the present time represented by {*p*, **FP***p*, **PF***p*,…}, there must be a later time represented by {**P***p*, **PFP***p*, **PPF***p*,…}. But how can a Priorian presentist even guarantee this, let alone explain it? Of course **PFP***p* must hold in the future, if *p* holds presently: every adequate theory of time must have this as a consequence or be rejected. But there is no mechanism in this version of presentism to guarantee it. (2006, pp.45-46)

Though, Bourne's concern here focuses on how the interconnections between A-determinations can be 'guaranteed'. I take it that it's an option that such interconnections are brute facts. My complaint is thus placed on the lack of explanation for those interconnections.

What is perhaps more worrying, however, isn't the *constitutive* axioms of standard second-order change, but those axioms that appear to be *contingent*. So, for example, consider the following pair:

$$\text{AXIOM}_5: \mathbf{P}(\exists_{\text{At}} x \mathbf{N}(\varphi x)) \rightarrow \mathbf{PP}(\exists_{\text{At}} x \mathbf{N}(\varphi x))$$
$$\text{AXIOM}_6: \mathbf{F}(\exists_{\text{At}} x \mathbf{N}(\varphi x)) \rightarrow \mathbf{FF}(\exists_{\text{At}} x \mathbf{N}(\varphi x))^{59}$$

These axioms are often taken to characterise time's *density*. Density is a structural property of ordered sets such that, between any two distinct members, there is a third distinct from both. Typically, time's density is taken to be a merely contingent, rather than constitutive, characteristic of time. But if that is so, we must be able to explain

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[59] Though all these axioms employ the restricted sense of the quantifier ('there is *at the* now'), given the necessity of presentism, some presentists might endorse the stronger entailments where the unrestricted sense of the quantifier is employed ('there is *as of* now').

these variable connections holding between A-determinations. Yet, it's unclear how primitives can vary in their relations to other primitives in this way. I understand change amongst things, but am sceptical that I comprehend what change within or between such primitives amounts to.

This also hints that we may have been uncharitable to Bourne in letting primitive presentists off so easy by appealing to brute facts. Consider the following additional remarks he makes in support of the former complaint:

> ...there cannot be *any* transtemporal relations to link times together on this view: other times don't exist; and it is hard to see how the ontological content of the present time can in itself legislate how other distinct entities, other times, can be comprised. Yet somehow it must. For if the content of the present time does not legislate this, what, according to this view, does? And it must be because it is so incredible to think that there could be missing tensed facts from, or additional tensed facts in, various times. The truth-value links have somehow to be a feature of how the facts are structured (as they are on the tenseless theory of time, for example, and as they are on the view I present below). But because no mechanism is in place to preserve the truth-value links and the possibility of a violation of them is opened up, this version of presentism should be rejected. (*Ibid.*, p.46)

We noted in Section 1 that inferential role is insufficient for conceptual understanding; we require some additional idea of the mechanics of just how the concept's correspondents would play their roles. We may worry that we've no idea what primitive mechanism could play the guarantors role. After all, the facts that are being accounted for are merely facts as of any given stage of reality. Indeed, given factive presentism, all facts are present facts, including primitive facts. But as Robin Le Poidevin remarks, '…surely, no *purely present* fact about the world could determine which topological structure the time series has.' (1991, p.55). Perhaps '*purely* present' is the key here, though it nevertheless highlights a potential area of unclarity. These worries once again threaten our conceptual grasp of the A-determinations.

§3.3. Making a Present of Existence.

Finally, a primitivist account of the A-determinations appears to leave the truth of the resultant presentist theory, primitive presentism, explanatorily mysterious. What is so special about primitively present things that reality's inhabited by them solely? The

only potential explanations that seem to offer themselves for the truth of primitive presentism are mere coincidence, or the obtaining of some brute, yet inexplicable, connection between *presentness* and *existence*. Given that the account is thus lacking in explanatory potential for presentism, the resulting presentist variant would be less defendable.

It would be preferable if we could find an account that helps better illuminate the apparent connection between presentness and existence. This provides us with another good-making desideratum for choosing between our accounts of the A-determinations.

> **GM3.** An account of the A-determinations is *ceteris paribus* preferable for presentists to the extent that it facilitates explanatory potential for the connection between presentness and existence.

All that remains now is to see if we can improve upon the primitive account of the A-determinations in this and other respects.

## §4. Summary.

A primitive account of the A-determinations sets the benchmark for other accounts to improve upon. We saw that, against truthmaker theory, we need more than ontology in our model of the world. But if that additional ideology is to be tenable, we need a reasonable epistemology and understanding of the corresponding concepts for those primitives. In the case of primitive A-determinations, we've looked at reasons to doubt we have an adequate epistemology, either through experience or theoretical roles. We also saw some reasons to think that our concepts of the A-determinations are vague and incomplete in various ways: the conceptual possibility of an extended present, presentness in relativistic physics, and the conceptual possibility of certain exotic presents. Finally, we explored some of the factual baggage that the A-determinations and presentism bring, and the inability of primitive presentism to explain them: in particular, certain axioms of second-order change and the relation between existence and presentness. These highlight the primary areas that reductive accounts of A-determinations should improve upon. It's to this that we now turn.

# Chapter 4

## Redundant Presentism.

Having considered the primitive account of the A-determinations in the previous chapter, the challenge becomes whether we can imporive upon it. In the following chapters we will be outlining and assessing several offerings towards Lewis's (1983, p.352) second form of account for the A-determinations: reductive analyses. The most obvious, and perhaps simplest, suggestion takes presentness to be redundant. It also appears to be the most popular account of presentness. This chapter therefore focuses on developing and evaluating a redundancy account of presentness. We begin by contrasting the account with an existence account of presentness (Section 1). Then, after elaborating the redundancy account (Section 2), we assess its motivations (Section 3). But since the account's tenability depends on the shape of reality. So we end by developing some new means of assessing its success and weighing it up against them (Section 4). Let us proceed, then, without further delay.

### §1. Existence Presentism.

So what does the redundancy account involve? In its crudest form, it equates presentness with existence. This view has received concerted support most clearly from William Lane Craig (1997) and Jonathan Tallant (2012, 2014) under the guise of *Existence Presentism*. Let us keep this trend and call the corresponding account of presentness the 'existence account of presentness'. The account essentially turns the '*...is present*' ascription in the presentist statement that 'Everything that exists (as of now) is present', into a mere pleonasm, just as we saw in Chapter 1 with the triviality objection. We can state this analysis more formally as:

> EXISTENCE: There is as of now some $x$, such that $\mathbf{N}(x \text{ exists}) =_{\text{def.}}$ There is as of now some $x$, ($x$ exists).

The most obvious motivation for adopting this account is to explain the presentist link between *presentness* and *existence*; a reductive analysis of the former in terms of the

latter immediately satisfies **GM3**. An especially strong statement of existence presentism was offered by Dean Zimmerman:

> Markosian has pointed out to me that there could be a sort of uncertain presentist, someone who is not absolutely sure that there are no non-present objects but who suspects that there aren't. And this person might, he suggests, be willing to countenance a difference between being present and existing. But I would say that, since 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), this uncertain presentist is merely waivering between real presentism—which has no room for a special quality of 'being present'—and the non-presentist 'policeman's bullseye' view mentioned above—which does have room for such a quality, but is probably also incoherent, and in any case is not a version of presentism. (1996, p.118, n.8)

Yet, adopting a primitive account of presentness makes you no less a 'real presentist'. The claim that "no *real* presentist has any reason to believe in a special quality of 'being present'" has yet to be demonstrated. And absence of reason for a position doesn't alter its nature.

As it stands, the existence account of presentness seems ill-conceived. Only things exist. And an approach equating existence and presentness is geared towards treating presentness as a property of things. Thus this account ignores the fact that A-determinations apply equally well to property instances, or propositional valuations, etc., as well as things. And so long as we aren't truthmaker theorists (see Ch.3, §1.1), it seems like there will some non-ontological aspects of reality which A-determinations apply to. But whereas the notion of presentness naturally applies to these other categories, existence doesn't. It seems like a simple category mistake to speak of a property instance *existing*, but not a category mistake to speak of the *presentness* of a property instance. Accordingly, we need a broader category for our reduction.

## §2. Redundancy Explained.

Perhaps the category mistake inspiring existence presentism came about from the ontological focus of the presentist thesis, such that it obscured wider issues in the minds of its proponents. Had the debate centred round the extended presentist thesis, maybe a broader construal of presentness would have gained dominance. Nonetheless, the existence account isn't entirely without merit, and does appear to be getting at a more

promising account. This account equates presentness with *reality*. The category of reality is broader than existence, in that even property instances, propositional valuations, and other non-ontology, are in this sense real. Reality encompasses the whole ideological and ontological tapestry of the world.

This was the analysis favoured by Arthur Prior under the guise of the 'redundancy account of the present':

> ...a 'no-present' theory analogous to the Ramsey-Ayer theory of truth has almost everything to be said for it [...]. Nor do these two 'vacuity' or 'omnipresence' theories—the one about 'truly' and the other about the present—constitute a mere parallelism. They are in a sense the same theory—in the sense that they merely assert the vacuity of one and the same phrase, 'It is the case that...' or 'It is true that...', considered against different non-vacuous contrasting phrases. (1967b, pp.32-33)

The present tense operator's redundancy applies both to its wide and narrow scopes supporting both factive and ontic presentisms. This marries-up with Prior's (1967a, p.15) contention that whatever is at the innermost kernel of tense operators be present tensed. He gives the following simpler statement of this claim in a later article: '…the present simply *is* the real considered in relation to two particular species of unreality, namely the past and future.' (1970, p.289). We will follow Prior in calling this the 'redundancy account of presentness'.

I suspect that many subscribing to the existence account of presentness do so because they fail to distinguish it from the redundancy account. For example, in the same paper Zimmerman makes the above statement of existence presentism, he states: 'to be present *just is* to be real or to exist.' (1996, p.117). This suggests that *reality* and *existence* are interchangeable concepts. But this isn't so; existence is just one (perhaps rather large) aspect of reality. This is made most evident in the *Ontological Nihilist* world where reality comprises of no existents (cf. Turner, 2011). I will assume, then, that it's the broader redundancy account that existence presentists had in mind.

Like the existence account, the redundancy account transforms the presentist thesis into a trivial truth. Though, unlike the existence account, it's not quite pleonastic. We can state the reductive analysis more formally as:

> REDUNDANCY: There is as of now some $x$, such that $\mathbf{N}(\varphi x) =_{\text{def.}}$ There is as of now some $x$, $(\varphi x)$.

Presentist theories adopting either existence or redundancy accounts of presentness would then have the following form:

REDUNDANT PRESENTISM: $\Box\mathbf{A}\forall_{As}x\left(\exists_{As}y\mathbf{N}(x = y)\,\&\,\bigl(\exists_{As}y(x = y) \leftrightarrow \exists_{As}z\mathbf{N}(x = z)\bigr)\right)$ [60]

It's debatable whether, if presentism were true, it should be so *necessarily* and *always*. However, the two classifications seem appropriate on both existence and redundancy accounts of presentness, given they ensure existence applies only where presentness does. And even if you believe in contingent or occasional identity, it's difficult to conceive how the same primitive structures of reality could alter between worlds or moments. (Though, admittedly, I've no clear grip on the identity and individuation conditions of primitives; they don't appear to be identifiable in the same way as *things*. Yet, it's perhaps natural to suppose they are individuated or partly constituted by their theoretical roles. And this might reasonably be thought to cement their equivalence.)

Thomas Crisp nicely summarises what relevance the 'Always' operator has in the statement of presentism in the following remarks:

> To put the thesis most accurately, we need the "ALWAYS" operator: presentism is the claim that it's *always* the case that, for every x, x existed, exists, or will exist only if x is a present thing. Else, for a brief moment, presentism is true in a Broad/Tooley style growing block universe with a first moment (see Broad 1923, pp.53-84; Tooley 1997). (2004a, p.19, fn.6)

Though the always and necessity operators are clearly applicable to redundancy presentism, it's less clear whether they should be applied to other presentist variants centred round alternative accounts of the A-determinations. After all, Crisp provides no explanation of why presentism shouldn't be considered true at the first moment of a Broad/Tooley style growing-block universe. Indeed, the suggestion that the presentist

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[60] The bi-conditional here captures the logical form of the conditions for a thing's presentness as stated in REDUNDANCY. We shall employ this strategy of showing how this biconditional evolves according to different accounts to help remove any ambiguity that may come across in English, especially as the accounts grow more complicated. However, the analyses of presentness that precede these logical expressions of their corresponding presentist theory are what is essential, and the less diligent reader may chose to skip the latter, for the purposes of ease, without serious ellipsis of content.

thesis demands an always operator prefixed to it is odd coming from Crisp, since he has no problem with presentism being contingently true: 'The reasons I know of for being a presentist offer no reason at all for thinking presentism is a necessary truth.' (2003, p.215). The standard view, however, is that expressed by Sider: 'A presentist thinks that everything is present; more generally, that, necessarily, it is always true that everything is (then) present.' (1999, p.2).

## §3. Motivating Redundancy.

I think that a driving thought behind this reductive analysis has occassionally been a supposed lack of conceptual room between presentness and reality. Consider, for example, the analogue motivation for a redundant account of *actuality* summarised by Lewis: 'Actualism, the thesis that everything is actual, is not some metaphysical thesis that one is free to affirm or deny; it is a trivial analytic truth. Its denial is unintelligible.' (1986a, p.97). Yet, the redundancy account of presentness itself does permit mere *conceptual* ground for presentness and reality to come apart, so long as the two categories in fact remain metaphysically inseparable. To make this kind of motivation plausible, redundant presentists would need to explain the illusions of conceptual possibility that have ensnared a great many philosophers, presentists and non-presentists alike. Moreover, I suspect that any such strategy of conceptually equating presentness and existence along these lines would reduce presentism to a banal tautology, hardly worthy of attention. Consequently, I will evade this motivation.

However, those favouring the reductive analysis without its corresponding conceptual analysis will owe us some alternative explanation for believing the two categories are metaphysically identical. Perhaps the most obvious advantage to be gained from this identification is that it would explain the coincidence of existence and presentness given presentism, immediately satisfying **GM3**. And by identifying presentness with reality, the account cuts costs on primitives posited compared with the primitive account of the A-determinations, with ostensibly no explanatory expense; gains over the primitive account with respect to **GM2b**.

Similarly, the redundancy account offers small savings over the primitive account with respect to **GM2a**, in that it can be used to explain some of the axioms of second-order change outlined in Chapter 3, Section 3.2. In particular, it can illuminate both $AXIOM_1$ and $AXIOM_2$. Like primitive presentists, redundant presentists will construe pastness and futurity, and accordingly both past and future tense operators, as

primitive, though the innermost embedded expressions they prefix to are, in virtue of the redundancy of presentness and the present tense operator, present tensed. Expressions embedded within past and future tense operators tell us what did or will obtain. And given the equivalence of presentness and reality on this account, predicate ascriptions made within the scope of past or future tense operators are respectively about what was or will be *present*. So it automatically follows from the pastness or futurity of there being some things at a time that they are present then. Nevertheless, the redundancy account doesn't elucidate the other axioms of second-order change.

However, perhaps things aren't as straightforwardly advantageous as they initially appear to be. In an article defending the existence account of presentness, Craig mitigates his conclusion thus:

> ...I think we would be hasty to embrace the strict identity of presentness and existence. For in the absence of some argument, we have no reason to regard timeless existence as impossible. In particular, we have no good reason to think that God cannot be timeless sans creation, and, of course, many philosophers think a host of abstract objects exist timelessly. We cannot therefore rule timeless existence out of court by a definition. Rather presentness is properly construed as a mode of existence. There are two modes of existing, timeless existence and temporal existence, and presentness is identical with this second mode. There are two ways of exemplifying properties: timelessly or presently. On a presentist ontology, to exist temporally is to be present. (1997, p.68)

Craig distinguishes *timeless* and *temporal* existence, and identifies presentness only with the latter. But how should we understand this distinction between the two modes of existence? On the primitive account, the division could be cast in terms of the A-determinations: temporal things as those to which they apply, timeless things as those to which they don't. However, the same move is unavailable for the redundancy account, since it would be circular. If present existence is analysed in terms of temporal existence, we cannot then analyse temporal existence in terms of present existence. But how else can we draw the distinction between temporal and timeless existence?

Some might be tempted to understand timeless existents as those that necessarily, if they exist, always exist. But it's unobvious that this gets things right. For example, some ways of construing God (cf. Prior, 1962), and propositions (cf. Brogaard, 2012), are such that, necessarily, if they exist, they exist always, but are nonetheless temporal. Similarly, a popular way of construing properties, takes them be *transcendent universals*, that is, existing beyond their instances. But then they look to

be permanent entities that nevertheless engage with temporary existents. Of course, presentists could deny the temporality or existence of such things. Still, it might prove costly to do so.

The most obvious way to handle the distinction between temporal and timeless existence would be to treat it as primitive. But I suspect that this primitive distinction will be even less tractable and comprehensible than primitive presentness. The distinction seemingly parallels the notoriously ill-understood distinction between *abstract* and *concrete* existence (cf. Lewis, 1986a, §1.7). Indeed, if we follow E. J. Lowe, the abstract-concrete distinction may well just be the temporal-atemporal distinction: 'Concrete entities differ from abstract entities in being occupants of space and/or time and consequently in possessing spatial and/or temporal properties and relations. That is to say, all and only concrete entities exist either both in space and time or at least in time.' (1998, p.155). Nevertheless, whatever gains over the primitive account were made with respect to the amount of primitives, would be forfeited with these additional primitives. And without them, there is a worry that the redundancy account would suffer an explanatory deficit—*ceteris* wouldn't be *paribus* in **GM2b**. We wrote too soon of this advantage. Indeed, there is a lesson here: savings in one place may incur subtle costs in others. This requires care and vigilance.

Alternatively, if we opt to abolish this distinction and claim that all reality is temporal reality (cf. Smith, 1993, Ch.6; Tallant, 2014, §2.5.1), we must then explain away all those paradigm cases of timeless entities, such as numbers, God, propositions, and universals. Though, I'm sure many would take on this burden willingly, even without the added incentive. You could go about this by either arguing that those entities aren't in fact timeless, or by denying they exist (in any sense). A third option would be to deny that any sense can be made of a timeless reality.

## §4. The Ontological Grounding of Presentness.

One *prima facie* worry about the redundancy account that I suspect many will find initially tempting is that, if presentness just is what is real, then surely presentism is trivial. This is meant to be a bad because presentism was supposed to be a substantive and interesting thesis. What could possibly explain the influential range of objections that presentism receives, if it were trivial? This concern is wrongheaded, and subtly equivocates between the tiviality of an existent's presentness and the triviality of the redundancy account of presentness. For whilst the redundancy account of presentness

treats the presentness of existents as trivial, that reductive analysis itself is far from trivial. It's the very success of the reducative analysis that is being drawn into question when someone objects to or defends redundant presentism.

This response, however, inspires another critical enquiry. In particular, we must ask what the reductive base must be like for the analysis to succeed. In answering this interrogative there is a worry that either tacit employment of the notion of presentness will be needed, making the account circular, or alternatively, that the analysis will be arbitrarily stipulative, suggesting subject change rather than carving out reality's present joints.[61] This worry takes an analogous form to an objection Scott Shalkowski (1994) gave to attempts at reducing alethic modality. For example, he neatly summarises his critique of David Lewis's (1986a) attempted reduction of modality to a plurality of spatio-temporally isolated concrete worlds, *Genuine Modal Realism*, as follows:

> What I have argued is that even if there are possibilia, they can serve as the ontological ground for modality only insofar as (1) each individual meets the modal condition of being possible, and (2) the set of them meets the modal condition of being exhaustive. The first condition insures that the reductive base is not too big in containing impossibles and the second insures that it is not too small in omitting some genuine possibles. These conditions determine which objects may be admitted to the reductive base, and as admission conditions they are not subject to the prior existence and nature of possibilia. If the modal realist's ontology fails to meet these two conditions, the resulting reduction of modality is just as arbitrary as the reduction in terms of impossibilia or bottle caps in Hackensack. If the modal realist's ontology meets these conditions, a reduction of modality in terms of possible worlds and their constituents is circular. (1994, pp.678-679)

Similarly, we may question how we can ensure that the reductive analysis captures *all* and *only* present things, without circular appeal to presentness. That is, how are we to ensure that the reductive analysis doesn't merely stipulate non-present existents, like (past) dinosaurs, as present, or fails to be exhaustive in casting certain present things as non-present? This sort of objector contends that this can only be done via tacit employment of primitive presentness in the analysans: where the reduction of presentness to reality is in fact a reduction to present reality. And that is no reduction at

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[61] This latter point highlights why Carnap's (1956) explicative frameworks failed to do justice to metaphysical questions. It's trivial what an explicative framework states about questions of, for example, morality; what is interesting is whether *our* concepts *pick out* 'right' and 'wrong' as they are *in reality* (cf. Juhl and Loomis, 2010, p.158).

all. So, just as in the modal case, it's claimed that nothing non-circular can be said to justify the redundancy analysis of presentness: the analysis will be either arbitrarily stipulative, or circular.

This objection highlights a couple of good-making criteria for our analyses:

**GM4.** An analysis should be non-circular, in that it employs no use (even tacitly) of the analysandum in the analysans.

**GM5.** An analysis should be non-arbitrary, in that the analysans, in some sense, offers a suitable analysis of the analysandum.

**GM4** should be a necessary criterion for any successful *reductive* analysis. **GM5**, however, raises an issue of warrant for accepting an analysis, and under what conditions an analysans would provide a suitable analysis of the analysandum. This needs further elaboration. Yet, it should at least be clear that the redundancy account of presentness doesn't fall victim to **GM4**, in the same way that, despite Shalkowski's protestations, Lewis's (1986a) reductive analysis of modality doesn't fall similarly victim.

Ross Cameron pressed this point accordingly with respect to genuine modal realism:

> It's not that there can't be any modal restrictions on the nature or number of worlds for Lewis's account to work; it's that any such modal restrictions must themselves be amenable to the Lewisian analysis. All modality must be amenable to the Lewisian analysis for the analysis to provide a thorough reduction of the modal, *a fortiori* any modal facts about the space of worlds themselves must be so amenable. (2012, p.6)

And John Divers (1999) has argued that the problematic *advanced-modalizing* statements (i.e. higher-level modal statements), proposed by Shalkowski, about the modal restrictions on the number and kinds of worlds, are themselves subject to a possible world analysis. Consequently, no tacit appeal to primitive modality is required. Indeed, the type of analysis offered for the advanced-modalizing statements is a redundancy account, analogous to the redundancy account of presentness:

> Whenever the possibility operator expresses a *non-trivial* semantic function on quantificational sentences it is, indeed, always that of altering the scope of formerly world-restricted quantifiers. So in cases where the quantifiers were not formerly world-

restricted, the possibility operator has no semantic effect on the content of the sentence within its scope. The possibility operator is semantically redundant in such a context, a semantically vacuous expression on a par with "It is the case that". (*Ibid*., p.229)

In this way, the redundancy account of presentness yields an even more straightforward answer to the challenge that it doesn't fulfil **GM4**, since it applies ubiquitously to all statements; there is no need to distinguish advanced and ordinary tensing.

§4.1. Warrant and Arbitrariness.

What about **GM5**? Shalkowski (1994) claimed that the only way to satisfy **GM5** is by appeal to the analysandum itself. This is misguided, since, if true, it would ensure that *any* analysis whatsoever would either be lacking warrant or that the warrant would be circular. Cameron has recently critcised setting such stringent criteria for the warrant of an analysis for just this reason:

> I think this [Shalkowski's] objection is mistaken and relies on a misunderstanding of the nature of analysis. Suspicion should be raised by the fact that, if the objection is successful, it's hard to see how any reductive analysis could be possible. Consider a proposed reductive analysis of the Φ-facts in terms of the Ψ-facts. A condition of success is that the analysis be materially adequate: there had better be the right kind of correspondence between the Φ-facts and the Ψ-facts. But unless our concept of Ψ implicitly involves an appeal to the concept of Φ, what can ensure this? But of course, if our concept of Ψ does so involve the concept of Φ, the reduction must fail. (2012, p.7)

But some constraints on analysis need be made in order to avoid illicit subject change or arbitrariness. One popular constraint is that an analysis preserves our pre-theoretical or Moorean beliefs about the analysandum. Yet, this distinction between pre-theoretical or Moorean beliefs, and theoretical or non-Moorean beliefs, is bogus. There are no sharp or interesting boundaries here. All beliefs are theory-laden, even if that theory isn't overt in our thoughts or otherwise incohate.

Underlying this appeal to pre-theory is the equally pernicious theory-choice principle of *Commonsensicalism*. According to commonsensicalism, *ceteris paribus*, a belief is rationally preferable to its exclusive alternatives to the extent that it better accords with common sense. But there is no good reason to think that commonsensical beliefs should count for anything in our theorising; common opinion is no guide to

accuracy. Indeed, the falsity of commonsensicalism is itself commonsensical. For example, we find it in the acerbic remarks of F. Scott Fitzgerald's Dick Diver when he confesses, 'I never understood what common sense meant applied to complicated problems—unless it means that a general practitioner can perform a better operation than a specialist.' (1934, p.276). And, of course, I'm not the first to note this. Theodore Sider also frustrated by the unreasonable influence of commonsensicalism, which he confusingly calls 'Mooreanism', writes, '...on the face of it, Mooreanism is utterly implausible. Why should the inherited prejudices of our forebears count for *anything*?' (2013, p.248). Of course, an explanation of the widespread acceptance of certain claims demands explanation. But this is a different subject—psychological rather than philosophical—which demands satisfisfaction regardless of whatever considered account we settle upon.

A better constraint on analysis along these lines would be that it preserves our beliefs about the analysandum prior to, or irrespective of, the analysis. In fact, the more theoretically well-grounded our beliefs about the analysandum are, the more weight should be put on this criterion. We can phrase this good-making criterion thus:

> **GM5a.** An account of the A-determinations is *ceteris paribus* preferable to the
> extent that it preserves our beliefs prior to, or irrespective of, the account.

Assuming well-labelled primitives, the primitive account will almost trivially excel on this criterion. However, it's less clear how the redundancy account fares. The problem with the redundancy account of presentness, as with the genuine modal realist account of possible worlds, with respect to **GM5a** (or the modal equivalent), is that we're largely ignorant of the extension of the analysans in each case. And to be warranted in believing the analysans corresponds to our pre-conceived intension of the analysandum, there should be some independent reason(s) favouring a belief that the analysans captures a suitable range of things. This is seemingly the kind of issue that's more recently been vexing Shalkowski:

> The salient difference between the model-theoretic account of logical necessity and the
> discovery of legitimate reductions is that in the latter cases we can track the phenomena
> to be reduced independently of their respective reductive basis. For instance, we have
> known for millennia about the common phenomenon of combustion. What was not
> known was the nature of common combustion, that is, oxidation. As investigations

continued, scientists gradually developed a theoretical and experimental framework within which we came to understand combustion as oxidation. Part of what legitimized the theory that common combustion is oxidation is that claims about the existence and nature of oxygen were incorporated into physical theory on the basis of much more than the need for an explanatory mechanism for combustion. If our only access to the process of oxidation were the mere fact that combustion occurs, then the explanation of combustion via oxidation would be an empty explanation. Thus, we can see that the model-theoretic account of logical necessity, in the context of the kind of anti-essentialism under discussion here, is empty. (2004, p.72)

Shalkowski is here identifying a specific feature about modality making reductive analysis problematic. As the quoted example indicates, non-circular warrant for an analysis *is* possible. It's just hard to see where that warrant will come from in the modal case. Cameron's criticism is going to be ineffectual against Shalkowski's more recent stance. How fares, then, the reductive analysis of presentness?

Unfortunately, there appear to be similar concerns about how to assess its success. As argued in Chapter 3, Section 2.4, it's somewhat unclear when it's appropriate to apply our concept of presentness; it seems too overly malleable to place any decisive constraints on what the reductive base must be like to justify a redundancy analysis. However, we might at least be able to place some considered constraints on what the reductive base will be like by consideration of how best to resolve relevant philosophical puzzles indicative of the overarching structure of reality. For example, some might think that certain historical figures, like Socrates, exist, because we can seemingly refer to them.[62] And if that is right, some might think the redundancy account will score poorly against **GM5a**. Alternatively, it might be thought that the number of existents is sparser, and have a closer correspondence to our pre-analysis notion of presentness, in order to avoid certain problems of persistence (cf. Zimmerman, 2005), or escape McTaggart's paradox (cf. Percival, 2002). Those persuaded by these sorts of issues might then rate the redundancy account more highly with respect to **GM5a**.

Unsurprisingly, it's often philosophers falling into the latter category that find the redundancy account persuasive. Unfortunately, given the range of considerations bearing upon our scoring of **GM5a** for the redundancy account, it will be overly burdensome to give a thorough assessment here. Nevertheless, the criterion is

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[62] Though, our making singular statements about Socrates is an incredibly weak reason for believing he exists (as of now). Our utterances haven't the power to magic things into existence.

instructive in illuminating what sort of beliefs we should have about reality if we're to find the redundancy account attractive.

*§4.1.1. Presentist Without a Cause.*

We noted in the Introduction that motivations for presentism can be instrumental towards our assessing presentist variants. In particular, we suggested that presentist theories unable to support motivations for presentism wouldn't be fit for purpose; they wouldn't meet the ends for which they were initially proposed. This good-making criterion can be stated more formally as follows:

> **GM6.** An account of the A-determinations is *ceteris paribus* preferable to the extent that it preserves and supports presentist motivations.

In Chapter 2, we outlined a series of compelling motivations for accepting presentism. There we contended that presentism served as an explanatory virtue towards accounting for certain characteristic features of causation. Let us now ask: how well are these motivations *preserved* and *supported* by redundant presentism?

The answer isn't especially encouraging. As noted at the end of the previous section, our considerations of how best to resolve relevant philosophical puzzles are indicative of the overarching shape of reality, and in turn determine whether or not the analysis is tenable. Included in these considerations are the reality-shaping issues of Chapter 2 used to motivate presentism. But if these considerations are used to justify the reductive analysis, that is, to determine the plausible accuracy of redundant presentism, then redundant presentism cannot, on pain of circularity, be used to *explain* the shape that reality takes as a result of resolving those puzzles. In short, redundant presentism wouldn't *explain* the shape that reality takes. Nevertheless, it may reasonably still be taken as a *consequence* of those considerations. Indeed, redundant presentism could still, unlike its non-presentist rivals, *preserve* the motivations of Chapter 2, in virtue of *consistency* with the shape of reality there delineated. However, it cannot lend any further *support* to it. It's the beneficiary, rather than donor or mutual reciprocator, in this theoretical relationship.

Accordingly, the redundancy account of presentness undercuts some potential motivations for presentism. Of course, we've yet to demonstrate that other accounts of the A-determinations support the shape of reality delivered by the presentist motivations

of Chapter 2. But at the very least, a non-redundant account will permit presentism to make some theoretical contribution to the shape of reality, and thus potentially play some explanatory role. Otherwise, there is the temptation to join Williamson in dismissing presentism as pointless: '...being present had better be presently doing something harder than just being, otherwise the [presentism-eternalism] dispute is silly.' (2013, p.25; see Ch.3, §2.3). Just how much better the primitive account is at contributing towards an explanation of reality's shape is unclear. This depends on what reality-shapes fit through a primitive presentism hole. But as was stressed last chapter (§2.4), the applicability of presentness, especially at its conceptual limits, are hard to pin down.

§4.2. The Force of Presentness.

Another constraint we might place upon analyses with regards to **GM5**, is that the analysans captures the analysandum's *force*. What do I mean by 'force'? This will perhaps be easier to convey by example. Consider a moral philosopher seeking an analysis of morality. This philosopher naïvely suggests that morality be analysed in terms of the commandments of a colleague. By happenstance, the analysis scores well with respect to the moral equivalent of **GM5a**; the colleague's commands tend to preserve our beliefs about moral facts prior to, or irrespective of, the analysis. Perhaps, unbeknownst to this naïve philosopher, the collegue's commands are covertly hooked-up to moral truths in some supernatural way.

Something seems intuitively amiss about this analysis, and it should be reflected in the selection criteria for weighing-up the relative success of analyses. If all that our assertions about right and wrong amounted to were the commands of our fictitious philosopher's colleague, we wouldn't be so interested in morality; we would think it irrelevant to our decision-makings, and in other ways morality wouldn't move us in the ways we usually take it to. Why should we care about morality if this were all it amounted to? What I suggest has gone wrong here is that, although the analysans delivers a suitable extension, and perhaps intension, for the analysandum, it fails to capture what was pertinent about it. It's that which is pertinent about an analysandum, which is responsible for the interest, relevance, and explanatory role we give it, that I call its force. And it's this discrepancy between the force of analysandum and analysans that explains what went wrong in the sample case.

Indeed, it's this same discrepancy of force that afflicts the Divine-Commandment account of morality, whereby morality is analysed in terms of God's commands. In this case, we exchange the naïve philosopher's colleague for God. As I understand, this kind of objection constitutes one horn of the infamous Euthyphro dilemma. Consider, for example, Simon Blackburn's recounting of that dilemma:

> ...you might hope to understand the moral law in terms of orders or commands [...], in the case of morals the account gets off the ground only if the lawgiving God is not arbitrary, but wills the right things. His or Her fiat is unable to generate real laws of morals or reason unless we suppose that He or She is tuned to the good or the right, in which case we face the same problem: what kind of fact is that?[...] *And there is also a problem of motivation. For why should I be motivated, except perhaps by fear, to conform to this* [God's] *alleged legislation? Yet it is not fear that keeps me reasoning as I do or even obeying the principles that I do. It is the belief that this is the way to do things, the only way that makes sense.* (2005, p.110; my emphasis)

Blackburn raises many concerns here, however, I emphasise the last few sentences because the concern there appear to be exactly that of whether the analysans captures the analysandum's force.

Consider another case to get extra clear: genuine modal realism. This seems like a prototypical case of an analysis, in this case of modality, lacking the right force. For example, imagine a conversation between a metaphysician and their philosophically naïve friend. The friend contends that a certain state of affairs is possible, whilst the metaphysician thinks otherwise. The metaphysician retorts, "But there are no spatio-temporally disconnected things corresponding to that state of affairs." The friend, quite rightly, will be bewildered as to the assertion's relevance. They might reasonably respond, "Why should I care whether there are spatio-temporally disconnected things corresponding to that state of affairs? I only said it was *possible*."

When I'm concerned with what is or isn't possible, I'm not concerning myself with more stuff. And I should be believed when I earnestly proclaim this. As Takashi Yagisawa explains when objecting to Lewis's (1986a) genuine modal realism: 'If possible worlds are just spatiotemporal individuals, albeit maximally large ones, what is or is not the case at such an individual does not seem relevant to what is or is not possible.' (2010, pp.152-153).[63] You don't have to be a Jedi to sense the force here.

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[63] Likewise, it's seemingly an issue of inadequate force underlying the Humphrey objection to counterpart theories of *de re* modality. In particular, that Hubert Humphrey, despite caring greatly about the fact *he*

Indeed, as Shalkowski's remarks in the following passage indicate, it's quite probably the misjudged force of genuine modal realism, rather than its ontological extravagance, that explains the notorious 'incredulous stare' inevitably besetting the uninitiated when introduced to this analysis:

> Initially, Lewis was greeted mainly with the infamous incredulous stare. Given the formal similarities between the nearly universally accepted account of logical truth and logical necessity and Lewis's account of necessity, the incredulity should not have been due to the mere trade of modality for quantification. It had to be the trade of modality for *possibilist* quantification that caused incredulity. It was Lewis's ontology that was troubling, not the structure of his account of necessity. (2004, p.66)

When an account fails to capture the accounted's force, we can rightly complain that the subject has been changed. This gives us another good-making criterion to weigh-upon:

> **GM5b.** An account of the A-determinations is *ceteris paribus* preferable to the extent that it preserves the *force* of the A-determinations prior to, or irrespective of, the account.

Again, the primitive account will almost trivially excel on this criterion, assuming well-labelled primitives. However, I think that the redundancy account, like divine-commandment theory and genuine modal realism, fares less well.

Firstly, the question arises of why our notions of presentness and reality are distinct.[64] The answer is seemingly that presentness has some further force behind it, and it's this discrepancy in force that makes the notions non-equivalent, and undermines the reductive analysis. The kind of force presentness has, and reality lacks, is that of the contrast between pastness and futurity. The notion of reality contrasts with the more coarse-grained notion of unreality. But this contrast lacks the same significance as the contrast between pastness and futurity, and, consequently, mere reality won't move us in the same ways presentness does. For example, the latter makes salient reality's transient and fleeting nature.

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might have won USA's 1968 presidential election, '...could not care less whether someone *else*, no matter how much resembling him, would have been victorious in another possible world.' (Kripke, 1980, p. 45, fn.13).

[64] Perhaps it could be retorted here that presentness is our term for temporal reality. This, of course, will involve conceding a distinction between temporal and timeless reality. However, as a response, this isn't entirely adequate against the more general complaint that follows.

More generally, A-determinations are meant to be intimately connected with time. However, if presentness just is reality, it's unclear what it has to do with time after all. There is seemingly no obvious objections to the possibility of real timeless worlds given presentism and its motivations. Yet, surely our concept of presentness won't extend to timeless reality; that would be an ugly contortion of our conception of presentness. And as we shall shortly see, other accounts better capture this force.

## §5. Summary.

In this chapter, we outlined the redundancy account of presentness, and distinguished it from the similar existence account. Several motivations for that account were suggested. However, we found that on closer inspection, these were not quite so clear when considering the temporal-timeless distinction. The final section explores how to assess the success of the analysis, and suggests two criteria: how well it captures both our pre-account beliefs and the force of the analysandum. Whether the redundancy account satisfies the first was deemed contingent on the shape of reality. But it proved in many ways inadequate in capturing the analysandum's force. We also noted there that, whilst the redundancy account proves capable of preserving Chapter 2's motivations for presentism, it cannot further support them. These shortcomings point towards how we might improve upon the account.

# Chapter 5

## Mutable Presentism.

The previous chapter highlighted some drawbacks to a redundancy account of presentness. Redundant presentism gave presentness no explanatory role and divorced it from an intimate relationship with time. Moreover, many *prima facie* advantages of the account dissolved or strained under scrutiny. We need to add further constraints on what gets to be present. But what sort of constraints should we go for? A natural progression of thought, I think, is to insert an element of dynamism into the analysis of presentness. This would reaffirm its relationship with time, and open up explanatory potential. The obvious way to introduce dynamism is adding some form of mutability to presentness. This chapter explores several different accounts proposed to do just that.

### §1. The Neverlasting Present.

Consider again the proposal mentioned in Chapter 3, Section 2.2.2, made by Daniel Deasy 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, [futurism,] or transientism).' (2014, p.135). The corresponding temporal-ontological thesis to presentism is meant to be *Transientism*: things undergo ontological change such that they both begin and cease to exist as of now. Along these lines, a tempting account of presentness brings presentism in line with transientism. Seemingly something like this corresponds to how E. J. Lowe characterises presentism:

> ...for the purposes of this discussion it matters very much what we take presentism to *be*.[...] My version of presentism deserves the name 'presentism' because it does insist on the ontological primacy of present reality and the objective status of temporal passage. But it repudiates the reification pf time and 'times', including 'the present moment'. Instead, its focus is on the fundamental reality of *change*, which it conceives to be in all cases *existence* change—that is, the *coming into* or *going out of* existence of entities of one kind or another, where these latter notions are taken literally and with serious ontological import. (2013, pp.133-134)

> The presentist (my kind of presentist, at least) says that when 'time passes' *the content of reality itself* changes—entities *come into* and *go out* of existence. (*Ibid*., p.146)

On the account considered here, presentness is reductively analysed as corresponding to those existents that undergo ontological change, both coming into and going out of existence. We can represent this more formally as follows:

> CHANGE: There is as of now some $x$, such that $\mathbf{N}(x$ exists$) =_{\text{def.}}$ There is as of now some $x$, $x$ exists, and $\mathbf{P}($as of then, $x$ doesn't exist$)$, and $\mathbf{F}($as of then, $x$ doesn't exist$)$.

When plugged into the presentist thesis, this yields the following presentist theory:

> CHANGE PRESENTISM:
>
> $$\Box \mathbf{A} \forall_{As} x \left( \exists_{As} y \mathbf{N}(x = y) \& \left( \left( \exists_{As} y(x = y) \& \mathbf{P}\left(\sim\exists_{As} y(x = y)\right) \& \mathbf{F}\left(\sim\exists_{As} y(x = y)\right) \right) \leftrightarrow \exists_{As} z \mathbf{N}(x = z) \right) \right)$$

The necessity and always operators are negotiable. Perhaps the first question striking those entertaining this account is why I opted for a conjunction, rather than a disjunction, between past and future tense clauses. The reason relates to a motivation for the account—to capture a set of mutually exclusive metaphysical positions roughly corresponding to the standard positions in the temporal-ontology debate: the presentist, growing-block, shrinking-block, and eternalist theses. So whilst transientism corresponds to presentism, pastism, futurism, and permanentism correspond respectively to the growing-block, shrinking-block, and eternalist theses. Recall, pastism is where things only come into being, futurism is where they only cease, and permanentism is where they always are. Nevertheless, none of the account's problems that we will explore turn on whether there is a disjunction, rather than a conjunction, between the past and future tense clauses.

    Still, it might be asked, why care to make presentism mutually exclusive with pastism, futurism, and permanentism? The reasoning is that, accounts of presentness from previous chapters allow presentism to be consistent with each of its alternatives.

For example, the atomic and monist presentisms of Chapter 3, Section 2.2.2, and the static, many-worlds, and empty presentisms of Chapter 3, Section 2.4.3, despite their exotic natures, appear consistent also with the alternatives to presentism. It thus seems unlikely that presentism, so construed, is getting at wha is essentially in dispute between its advocates and opponents. This is seemingly what was bothering Trenton Merricks when he remarked:

> ...standard definitions [of presentism], even though they get at something important, fail to get at what separates presentism most fundamentally from eternalism. I say this, in part, because eternalism itself is arguably consistent with the claim that everything exists at the present time. After all, eternalism is, at least arguably, consistent with nothing ever existing; so eternalism is consistent with nothing existing that does not also exist at present; so eternalism is consistent with the claim that everything exists at the present time! (2007, pp.119-120)

We have then, here, what appears to be another good-making criterion for consideration: that an account is preferable to the extent it helps illuminate what presentists have found attractive about their position in contrast to non-presentists, and thus brings to prominence what is fundamentally contentious in that dialectic. We could spell this out as follows:

> **GM7.** An account of the A-determinations is *ceteris paribus* preferable to the extent that it captures what is fundamentally in contention between competing temporal metaphysics.

Motivating this good-making criterion is the thought that, if an account's better able to capture what's fundamentally in contention between different temporal metaphysics, then it's more probable that it reflects a more fundamental aspect of reality than its competitors. And even if the change account of presentness doesn't carve a joint in reality bearing as close a resemblance to our pre-account conception, it bears enough resemblance to play many of its theoretical roles, and perhaps play them better.

§1.1. The Price of Change.

It's perhaps needless to mention that CHANGE comes at a cost. We must now ask what that price is, and whether it's worth paying. The first cost to tally is the manner in which

the account procures its successes with respect to **GM7**. It simply excludes the problematic exotic presentist scenarios (or at least most of them) by fiat rather than via deep considerations. (Though, it doesn't quite achieve these ends, because it fails to exclude an empty present.) Similarly, its implications stretch to topological commitments, ruling out a beginning or end to time.[65] Since, if time had a beginning, things existing then wouldn't have been such that they didn't exist. Likewise, if time had an end, things existing then wouldn't be such that they won't exist. I suspect many will think excluding some of these positions from the presentist camp wrong and conflicts with our pre-account beliefs. To this extent, the change account invites criticism with respect to **GM5a**.

Similarly, though the account was designed to capture the dynamic force of presentness, rekindling the intimate connection presentness should bear to time, it fails here too. Since, the force of presentness is such that A-determinations are applicable to all and only temporal things. Yet, presentness construed under the change account lacks this force, because it rejects its applicability to a class of temporal things, including *sempiternal*—always existing temporal entities, as opposed *eternal*, timeless entities— and imperishable entities, as well as other timely entities which always did or will exist. Indeed, this is why atomic and monist presentisms were expelled from the presentist camp. To this extent, the motivation for the change account, to improve upon the redundancy account with respect to **GM5b**, backfires.

Besides these problems of conceptual fit, the change account seems simply arbitrary. Why would how things were or will be affect (non-causally) how they are as of now? Such extrinsic characteristics of presentness would make it too flimsy to care about. Consider intrinsic duplicates whereby one will endure throughout time, whilst the other satisfies the criteria for presentness in CHANGE. This seems possible, yet the difference between the duplicates appears entirely coincidental. Accordingly, the difference doesn't seem like a good candidate for getting at any deep reality structure. It would be very odd indeed if we had to wait long into the future to discover whether something fits its present natural joints. We've no good reason to think reality is hostage to such arbitrariness. Accordingly, it seems unlikely that the change presentism would be getting at what is really in contention between most presentists and their opponents. Thus, it looks as though it won't deliver on another of its promises, scoring comparatively badly with respect to **GM7**.

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[65] Well, not quite, since it leaves open that nothing exists at the first and last moments. But this commitment is bad enough.

Moreover, the issue of arbitrariness raises a more serious worry: what could conceiveably justify the truth of change presentism? If presentness reduces to such arbitrary conditions as those stipulated in CHANGE, it wouldn't be conducive to principled explanation. Firstly, it would do little better than the redundancy account in supporting motivations for presentism (no improvement with respect to **GM6**), at best only sufficing for consistency with the motivations developed in Chapter 2. But unlike the redundancy account, the relationship presentists want between presentness and existence will be strained and mysterious. That something did and will not exist is just an implausibly coincidental and arbitrary condition to underpin ontology in the way presentists want presentness to. The change account thus scores poorly on **GM3**.

Finally, presentists are frequently pressured to explain what grounds or makes-true facts about the past or future, given the absence of merely past or future existents (cf. Sider, 2001, Ch.2, §3). However, since the change account analyses presentness partly in terms of pastness and futurity, change presentists must equally explain what grounds or makes-true facts about presentness. Of course, any presentist will need answers to what makes-true facts about the past or future, and these could explain what makes-true facts about presentness. However, suppose, as seems reasonable, that a presentist accepts the openness of the past or future, and that those open past or future facts are presently unsettled (cf. Cameron, 2011, §§5-6). On this account, when a fact is metaphysically unsettled, it's metaphysically indeterminate whether it obtains (cf. Barnes and Cameron, 2009). Consequently, it may be unsettled whether an existent is present, and thus, unsettled whether presentism is true. This is a rather unattractive package. For, if presentism can be unsettled, we should have little reason to think it necessarily, or even always, obtains. And this again challenges the change account with respect to **GM3**.

**§2. The Possibility of Change.**

One promising way of responding to the change account's defects, whilst preserving its motivating ideas, is to add a modal or dispositional element into the analysis. Instead of a thing's presentness depending on whether it did and will not exist, it would depend on the *possibility* that it did and will not exist, given that these possible present states of affairs consist of all and only the existents actual as of now. This could be precisified accordingly:

MODAL CHANGE: There is as of now some $x$, such that $\mathbf{N}(x \text{ exists}) =_{\text{def.}}$ There is as of now some $x$, $x$ exists, and for the collection of all and only the things that actually exist as of now, it's possible that (they exist as of now, whilst $\mathbf{P}$(as of then, $x$ doesn't exist), and $\mathbf{F}$(as of then, $x$ doesn't exist)).

The resultant presentist theory adducible from this account can be stated accordingly:

MODAL CHANGE PRESENTISM:

$$\Box \mathbf{A} \forall_{As} x \left( \exists_{As} y \mathbf{N}(x = y) \& \left( \exists_{As} y(x = y) \& \exists_{As} Z \left( (x \in Z) \& \Diamond \left( \forall_{As} z (\exists_{As} X(z \in X) \& (X = Z)) \& \exists_{As} y(x = y) \& \mathbf{P}(\sim\exists_{As} y(x = y)) \& \mathbf{F}(\sim\exists_{As} y(x = y)) \right) \right) \right) \leftrightarrow \exists_{As} z \mathbf{N}(x = z) \right) \right)$$

Again, both necessity and always operators prefixed to this formula are negotiable. Though, it's likely that advocates of this presentist variant would want to assent to both, in order to preserve a satisfying explanation of the connection between presentness and existence. However, they will need to justify these stronger readings of the theory. The formula also employs a plural quantifier binding the plural variables 'Z' and 'X'. It's this that enables the possibility operator to take us to all and only those possible worlds where all and only things that are actually now exist there.

Perhaps a version of this presentist variant is what Philip Percival had in mind when writing:

> ...on my understanding (at least), [presentism] couples the thesis that everything that exists is picked out by the phrase 'everything that presently exists' with the thesis that pastness and futurity are significant operations on existence, in that (i) what exists might not have existed before and might not exist subsequently' and, more contentiously, (ii) what exists might include neither what did exist nor what will exist. (2002, p.106)

And Neil McKinnon also gives expression to a similar account of presentness:

> What if, instead of taking 'present' [...] as a modifier of 'entities', we take it as a modifiers of 'exists' [...] On this sort of picture presentists operate with a tensed understanding of existence, while eternalists appeal to a tenseless understanding.[...] a

relevant difference between tensed and tenseless existence would be that *tensed existence allows for the possibility of entities coming into and passing out of existence*, whereas, on a tenseless understanding, it doesn't make sense to say that the inventory of the world could alter. (2013, p.22; my emphasis) [66]

But this presentist variant is interesting in its own right, regardless of Percival or McKinnon's approval.

Now we've outlined the modal modifications to the change account, we must explain how they help. Firstly, given the reasonable assumption that the constituents of the first and last moments of time aren't necessarily collectively situated then, the modal change account avoids the absurdity of denying that such constituents were ever present. Of course, it's less obvious that constituents of a first and last moment of time wouldn't necessarily collectively be situated then if collectively situated at all. But it has enough plausibility to allow modal change presentists enough wriggle-room here.

Moreover, the modal change account allows presentists to reinstate many of the exotic presentisms, eliminated by fiat by its predecessor, as possibilities. For example, a static presentism becomes potentially possible, since, though what is present may not actually change, it might of. It's less clear what the prospects are for atomic, monist, or many-worlds presentisms on this account. Though strictly consistent with the account, each typically presupposes their sempiternal entities are necessarily permanent. And this threatens to undermine that any serious construal of these forms of presentism would accept this account. Nevertheless, they wouldn't be trivially inconsistent with modal change presentism; they would be eliminated by considered argument, if at all.

In this way, the modal change account could distinguish between presentist and eternalist forms of permanentist atomism and monism, as well as ontologically static worlds, singular or many. Those where existents may undergo and have undergone ontological change are presentist realities. Those where these possibilities don't obtain are non-presentist realities. The modal change account can thus carve a more exclusive set of alternative temporal metaphysics,[67] just like the change account, but without making the boundaries between alternative positions quite so arbitrary. Accordingly, the modal change account is more convincingly preferable with respect to **GM7**.

Relatedly, the account makes presentness a less arbitrary affair. A thing's presentness is no longer hostage to history; it depends on its own modal properties. This

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[66] McKinnon's final position corresponds to the extended version of the account (see §2.3): '...it makes better sense to define presentism in terms of tensed instantiation than tensed existence.' (2013, p.23).
[67] Only '*more* exclusive' since modal change presentism still supports an eternally empty present.

non-arbitrariness creates room to make the presentist connection between presentness and existence potentially explicable and principled. And in doing so, the modal change account makes gains over its predecessor with respect to **GM3**. It also proves better at capturing the force of presentness by making perspicuous its relationship to pastness and futurity, and hence illuminating its relationship with time. Though the change account made progress here, making presentness a transitory affair, it went too far; the force of presentness was never that present things are transitory, but that they are interwoven into the temporal flux. The modal change account delivers a more nuanced and compelling understanding of the force of presentness, and resultantly creates a distinct advantage over preceeding analyses with respect to **GM5b**.

Moreover, along these lines, the modal change account comes closer to satisfying our pre-account conception of what sort of things should have presentness. In particular, the change account ran into trouble by denying presentness to a certain class of temporal entities, including sempiternal and imperishable things. Whilst the modal change account still denies that those entities which are *essentially* sempiternal or unperishable are ever present, it seems more reasonable to deny the possibility or temporality of this more restricted class; an improvement with respect to **GM5a**. Yet, this is less clear cut than it initially appears, since it also raises its own difficulties here. For example, suppose an existent currently satisfies the modal change criteria for presentness; it currently could have failed to exist in the past and future given the actual collection of existents. However, at a later time, once the future has become settled in various respects, the possibility of its ceasing to exist has disappeared—perhaps it's the last existent standing, so no forces remain to destroy it.

Oddly, this entity would seemingly change from being temporal—to which A-determinations readily apply—to atemporal—to which A-determinations are inapplicable. And besides William Lane Craig, who thinks, '...God exists changelessly and timelessly prior to creation and in time after creation.' (1978, p.503), I take it that this is quite a recalcitrant result. Of course, advocates of this account may plead that, in the broadest sense of necessity, it's still possible for such lone existents to undergo change. But this story complicates further as the account develops.

§2.1. Developing Modal Change.

An initial complaint with the formulation of the modal change account draws upon the fact that, the analysis allows that the things existing in those possible worlds where they

both did and will not exist, together with the corresponding collection of actual existents, may not be as they actually are there. And the *way* things actually are is plausibly crucial to whether they can cease to exist and have not existed, and their persistence conditions more generally. For example, a thing's properties and relations may determine whether it falls under a *Sortal Concept*. Sortal concepts provide criteria of identity or principles of individuation for those things satisfying them.

Some think that there are certain sortals, so called 'substance sortals', such that, if an individual satisfies that sortal at any time, it must satisfy it at all times it exists (cf. Brody, 1980, Ch.4, §1; Wiggins, 1980, p.24). Substance sortals contrast with 'phase sortals'—which provide synchronic identity criteria—and 'essential sortals'—which provide transworld identity criteria. Assuming substance sortals are inessential to things satisfying them (they aren't essential sortals, cf. Mackie, 2006, Ch.8), there might be variance in a thing's properties/relations between worlds crucial to its persistence conditions. The worry is then that an existent might satisfy the possibility conditions (specified in the possibility operator's scope in MODAL CHANGE PRESENTISM), not because of a possible world where it exists as it actually does, but because of a possible world where it has different properties, falls under different substance sortals, and thus has different persistence conditions from those it actually has.

Those attracted to the modal change account are attempting to capture whether something presently existing depends upon whether it can, given things are exactly as they actually are, cease to be and have begun to be. This notion of possibility, restricted to how things actually are, is what we often mean to get at in everyday contexts (cf. *Ibid.*, pp.156-157). Call this kind of restricted modality, *Temporal Modality*. Temporal modality is perhaps best represented by a branching-worlds model. However, rather than break with convention, I shall keep within the boundaries of modal orthodoxy. We can outline the modified version of the modal change account accordingly:

> MODAL CHANGE*: There is as of now some *x*, such that **N**(*x* exists) =$_{\text{def.}}$ There is as of now some *x*, *x* exists, and it's possible that (there exists as of now all and only those things existing as of the actual now as they are then, whilst **P**(as of then, *x* doesn't exist), and **F**(as of then, *x* doesn't exist)).

What this amounts to when incorporated into the presentist thesis is the following, increasingly complex, presentist variant:

MODAL CHANGE* PRESENTISM: $\Box\mathbf{A}\forall_{As}x\Big(\exists_{As}y\mathbf{N}(x = y)\&\Big(\exists_{As}y(x =$

$y)\&\exists_{As}Z\Big(\forall_{As}x(x \in Z)\&\lozenge\Big(\forall_{As}z\big(\exists_{As}X(z \in X)\&(X = Z)\&\forall_{As}\Phi(\Phi z \leftrightarrow$

$[\lambda y.@\Phi y]z)\big)\&\exists_{As}y(x = y)\&\mathbf{P}\big(\sim\exists_{As}y(x = y)\big)\&\mathbf{F}\big(\sim\exists_{As}y(x = y)\big)\Big)\Big)\leftrightarrow$

$\exists_{As}y\mathbf{N}(x = y)\Big)\Big)$

We've had to complicate our logic further, here, with lambda abstractions, predicate quantifiers, and actuality operators. But, complexity aside, this should formally capture the complications expressed in MODAL CHANGE*. Importantly, it now seems less plausible that the troublesome lone entity, discussed at the previous section's end, can cease to exist. Since, if collectively actual existents must be just as they actually are in the possible world where they did and will not exist, then, under reasonable assumptions, natural laws will hold there also. We could also have other less elaborate examples, like an entity now travelling at light's speed away from all else, such that it will never again contact anything that might affect it. This entity seemingly might then start as temporal, but *become* atemporal, on this account. And this is implausible.

*§2.1.1. An Inconvenient Truth: Supervenience on Being.*

There is a worry that this modal change* account might collapse back into the change account given certain plausible presentist assumptions. This relates to the *Truth-Supervenes-on-Being Objection* against presentism: that presentism conflicts with the plausible principle that there cannot be factual change without a corresponding change in being. But since contingent past and future truths appear to float free from changes in present being, there is pressure on presentists to deny that principle. Let us formulate the principle more formally like so:

> **Truth-Supervenes-on-Being**: Any difference in what is true is necessarily accommpanied by a difference in the realm of being: in ontology, properties, or relations (cf. Bigelow, 1988, pp.130-133; Lewis, 1992, pp.215-219).

This principle is related to the truthmaker principle rejected in Chapter 3, Section 1.1. Yet, **Truth-Supervenes-on-Being**'s weaker and has greater plausibility. What is seemingly motivating it is that *contingent facts* should be reflected in being. After all, it's unclear what changing of primitive facts absent corresponding changes in being would involve. And this lack of comprehension should make us take this principle more seriously. Indeed, given the vast literature on this topic, it seems others are similarly suaded (cf. Sider, 2001, Ch.2, §3; Keller, 2004; Crisp, 2007; Davidson, 2013).

Many responses target what Crisp calls the 'temporal recombination principle':

> **Temporal Recombination**: 'Things could have been just as they are at present (same things presently in existence, same fundamental properties and relations presently instantiated) and have been different [in what past and future things did or will exist, and/or what fundamental properties and they instantiate then].' (2007, p.105)[68]

For example, positing presently located Lucretian past- and future-directed properties (Bigelow, 1996), or distributional tensed properties (Cameron, 2011), preserve presentism's compatibility with **Truth-Supervenes-on-Being**, by rejecting **Temporal Recombination**. And now we get to the point. If presentists reject **Temporal Recombination**, the modal change account collapses into the change account, since the rejection of **Temporal Recombination** implies that for the present state of affairs, there is necessarily only one way things were and will be: the actual way. Consequently, the modal change account wouldn't improve upon the change account.

To correct this inadequacy we must limit the kinds of instances of actual properties and relations that are held invariant across worlds in the possibility clause of MODAL CHANGE*. In particular, the kinds of instances of actual properties and relations which must be as they actually are needs to be limited so as not to include *Past-* and *Future-Directed* properties. Call the remaining properties and relations *Present-Directed*. There is, however, a problem with this proposal. Namely, ordinary properties and relations seem not to be purely present-directed. For example, the properties we're most immediately acquainted with are causal powers, since it's through

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[68] If truth/falsity are fundamental properties, the bracketed clauses must be supplemented thus: 'ignoring the present distribution of truth, falsity, and fundamental properties that entail them […] where a property F entails a property G, iff, necessarily, something has F only if it has G.' (Crisp, 2007, p.107, n.8).

such properties that things impress themselves upon us. And causal powers are seemingly, to some extent, past- and/or future-directed.[69]

Moreover, according to several theorists, such properties are strictly token-identical to categorical properties (cf. Mumford, 1998; Heil, 2003), grounded in categorical properties (cf. Armstrong, 1997), higher-order properties possessed in virtue of categorical properties (cf. Prior, Pargetter, and Jackson, 1982), or perhaps the only or main kinds of properties things have (cf. Mellor, 1974; Bird, 2007). But even if all these positions are mistaken, and there is a genuine categorical-dispositional property dualism (cf. Molnar, 2003), to restrict the class of actual properties and relations that must be preserved across possible worlds to satisfy the conditions in MODAL CHANGE*, to non-dispositional properties, would be too great a restriction; it would see MODAL CHANGE* virtually collapse back into MODAL CHANGE.

Nor would it help greatly if we restrict that class of possible worlds so that the kinds of instances of properties/relations which are just as they actually are, to partly present-directed properties. Since the kinds of past- and future-directed properties and relations needed to respond to the truth-supervenes-on-being objection plausibly should be at least partly present-directed (cf. Cameron, 2011, §2). That is, plausibly the real or fundamental properties of a thing should be those that make a difference to its intrinsic nature (in some suitable yet here undefined sense). The options, then, for how modal change* presentists can respond to the truth-supervenes-on-being objection will thus be inconveniently limited. Of course, this would be unproblematic if modal change* presentists can offer an uncostly alternative response to the truth-supervenes-on-being objection. Nevertheless, its collapse to a change account under any form of past-wards or future-wards determinism will, I supect, itself be an inordinate cost for some.

*§2.1.2. Extending Modal Change.*

A further worry for the modal change* account is that, like the existence account, it offers an overly narrow conception of presentness. The account doesn't capture the fact that A-determinations apply equally to property instances, or propositional valuations, etc., as well as things (see Ch.4, §1). Yet, like the existence account, the change account

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[69] Note that 'tensed', 'past-direct', 'present-directed', and 'future-directed' are *descriptions* of properties. Those same properties may fall under different descriptions. And if ever they don't match the past or future, then the *descriptions* 'past-directed' and 'future-directed' aren't respectively correctly ascribable to those properties, since these description are *factive*.

can be easily broadened to apply presentness not just to existence, but to reality more generally. We could do so accordingly:

> MODAL CHANGE**: There is as of now some $x$, such that $\mathbf{N}(\varphi x) =_{\text{def.}}$ There is as of now some $x$, $(\varphi x)$, and it's possible that (there exists as of now all and only the things existing as of the actual now with all their same properties and relations that they actually have, whilst $\mathbf{P}$(as of then, it's not the case that $(\varphi x)$), and $\mathbf{F}$(as of then, it's not the case that $(\varphi x)$)).

Likewise, this broader understanding of presentness can be plugged to the extended presentist thesis thus:

> MODAL CHANGE** EXTENDED PRESENTISM:
>
> $$\Box\mathbf{A}\forall_{As}x\left(\exists_{As}y\mathbf{N}(x = y \ \& \ \varphi y)\&\left(\exists_{As}y(x = y \ \& \ \varphi y)\& \ \exists_{As}Z\left(\forall_{As}x(x \in Z)\& \ \Diamond\right.\right.\right.$$
>
> $$\left(\forall_{As}z\left(\exists_{As}X(z \in X)\& \ (X = Z)\& \ \forall_{As}\Phi(\Phi z \leftrightarrow [\lambda y.\,@\Phi y]z)\right)\& \ \mathbf{P}\left(\sim\exists_{As}y(x = \right.\right.$$
>
> $$\left.\left.\left.\left. y \ \& \ \varphi y)\right)\& \ \mathbf{F}\left(\sim\exists_{As}y(x = y \ \& \ \varphi y)\right)\right)\right) \leftrightarrow \exists_{As}z\mathbf{N}(x = z \ \& \ \varphi y)\right)\right)$$

But this extension of presentism fixes no problems from the previous section and actually breeds additional problems into the account. The troublesome class of essentially sempiternal or imperishable entities might be such that some of their accidental property instances are changeable, whilst others aren't. This would have the bizarre consequence of construing some, but not all, of that entity's property instances are present/temporal, and others as non-present/non-temporal. And this may impugn the account's success with respect to **GM5a**.

§2.2. The Circularity Charge.

Another objection to consider is that all change and modal change accounts are implicitly circular, and thus unsuitable for reductive analysis. This relates to the fact that it's constitutive of pastness and futurity that what is past or future is then present. That is, pastness and futurity presuppose presentness—see Axiom$_1$ and Axiom$_2$ of Chapter 3,

Section 3.2. There would be no pastness or futurity without presentness; a thing is only past or future if it's at some moment present.

But if a thing's presentness depends upon what past and future presents were, will, or could be like, as in the change and modal change accounts, then presentness must already be presupposed in the reductive conditions to which it was meant to be analysed; presentness has been tacitly smuggled into the analysans through pastness and futurity. Accordingly, the change and modal change accounts fail to satisfy the no-circulary criterion **GM4**; the change and modal change accounts therefore fail in their reductive agenda. However, these non-reductive conditions may still place constraints on a primitive account of presentness, and thus bolster our understanding of primitive presentness (**GM1**) and its connection to existence (**GM3**).

## §3. A Contingency Plan.

This result needn't end this line of analysis. An alternative way of capturing what is driving the change and modal change accounts, links presentness to *contingency*. This suggests the following, much simpler, analysis of presentness:

> CONTINGENCY: There is as of now some $x$, such that $\mathbf{N}(x$ exists$)$ $=_{def.}$ There is as of now some $x$, such that $x$ exists contingently.

If something exists contingently, it possibly doesn't exist. The link between CONTINGENCY and the modal change account is made by the following conditional:

> **C2MC**: If an existent possibly doesn't exist, then it would also be possible both for it to have not existed and to eventually cease to exist, given the total state of affairs of present actuality.

This doesn't immediately follow, since it's conceivable that for some things, if they exist, they must exist always, despite their contingency. Perhaps natural laws or essentially indestructible things are like this. Indeed, there is little reason to think all substance sortals are essential sortals; some might be *accidental sortals*, giving merely intra-world, but not inter-world, principles of individuation for that satisfying them.

So it might be that for some sortal, if a thing satisfies it, its principles of individuation determines that the satisfier always exists, yet, the satisfying of that sortal

is contingent. Nevertheless, despite perhaps a sparse array of potential counter-instances to **C2MC**, it seems quite plausible that **C2MC** will *mostly* hold true. Indeed, in cases of the problematic class of essentially sempiternal or unpersihable entities, their failure to uphold **C2MC** only highlights the greater inclusiveness of the contingent account to accommodate them. And this can only be a good thing. It's in virtue of this that it seems reasonable to suggest that CONTINGENCY will be attractive to those who found either the change or modal change accounts attractive. We could then spell out the corresponding variant of presentism accordingly:

CONTINGENCY PRESENTISM:

$$\Box \mathbf{A} \ \forall_{As}x \left( \exists_{As}y\mathbf{N}(x = y) \& \left( \left( \exists_{As}y \ (x = y) \& \Diamond \left( \sim\exists_{As}u(x = u) \right) \right) \leftrightarrow \right.\right.$$

$$\left.\left. \exists_{As}z\mathbf{N}(x = z) \right) \right)$$

Like redundant presentism, contingency presentism holds necessarily, if at all. Since, either there are necessary existents—in which case contingency presentism is false in all worlds—or not—in which case it's true in all worlds. Also like the redundancy account, the contingency account will be hostage to whether the range of contingent existents aligns well with our pre-account coneption of presentness. For, it's seemingly conceivable that there is a B-theoretic world entirely populated by contingent existents. We would need to be mistaken in conceiving such worlds are possible, if the analysis is to have plausibility—lest the analysis fall seriously into repute against **GM5a**.

§3.1. Beyond Redundancy.

In many respects, then, the contingency account is in a similar situation to the redundancy account, where what applies to the latter applies equally to the former. However, there are notable differences. In comparison to the redundancy account, the contingency account does a little better at capturing the force behind ascriptions of presentness, and hence with respect to **GM5b**. It does so by capturing the mere happenstance of an event's presentness. Though, it still doesn't quite capture the transitoriness or fleeting character of presentness. The contingency account also appears to do well with respect to **GM3**. Indeed, if something like **C2MC** explains the modal change presentist's belief that all things could undergo change, then the contingency

account would seemingly hook onto a more fundamental fact about the connection between presentness and existence than the redundancy account. It's not just their necessary co-extensiveness, but that this results from a certain characteristic, namely contingency, of the latter.

Furthermore, in Chapter 4, Section 3, we noted that the redundancy account was pressured to take the temporal-timeless distinction as primitive. The worry was that we couldn't use presentness to reductively analyse temporal reality as reality to which it sometimes applies, since that would make the account circular; after all, presentness was there reductively analysed in terms of reality itself. And no alternative reductive account of temporal reality seemed unproblematic. Interestingly, one of those accounts was to analyse timeless reality in terms of necessity, and temporal reality in terms of contingency. This of course mirrors the contingency account here under consideration. Indeed, if contingency presentism were successful, then the constituents of reality would be contingent. Does this help the prospects of reductively analysisng the temporal-timeless distinction in terms of the contingency-necessity distinction?

Well, temporal reality should consist of that portion of reality with which presentness sometimes applies. The problem with using the redundancy account of presentness to analyse temporal reality was that it couldn't be used to discriminate kinds of reality; it applies indiscriminately. Of course, the analysis itself could be restricted, but not by the analysandum, lest the analysis be circular. But the contingency account offers an independent way of dividing up reality such that both temporality and presentness coincide. And since we need already have an account of contingency and necessity, unlike the redundancy account, the contingency account can have both *presentness* and *temporality* without paying the primitive price—savings with respect to **GM2b**. Indeed, seemingly both contingency analyses, of presentness and temporality, will stand or fall together.

However, though the contingency account binds presentness and temporality more neatly in this way, it inevitably does so at a cost. That is, the increased theoretical strength of the analysis is also the source of its heightened vulnerability. There are more ways that the contingency account can fail than the redundancy account. In particular, the redundancy account wouldn't fail, where the contingency account would, if there were any necessary temporal existents. So, for example, a theist contingency presentist would be barred from accepting God's temporality. This might seemingly conflict with several characteristics of the classical conception of God, such as omnipresence, creator and sustainer, omniscience encompassing transitory facts, and the personal relationship

between God and man, such as recipiency of petitionary prayer. Moreover, it would stand uneasily with points of doctrine, such as the Christian belief that God created the world over six days, or that Jesus, a timely individual, is God incarnate.

Likewise, for non-theists, Berit Brogaard (2012) has given a book-length defence of the temporality of propositions, despite their status as necessary existents; a position she calls, following Mark Richard (1981), *Temporalism*, in contrast with its negation, confusingly called *Eternalism*. As she makes clear, presentists need to be temporalists about propositions:

> That eternalism has become as popular as it is, is rather astounding. For eternalism [about propositions] comes with metaphysical baggage: It is available to metaphysical eternalists, that is, to those that hold that past, present, and future are equally real. If (semantic) eternalism is true, then presentism is out of the loop. A presentist might wish to hold that 'Bush is president' means 'Bush is president at $t^*$,' where $t^*$ is the time of speech, but she cannot take 'Bush is president at $t^*$' to be true when $t^*$ is no longer. (2012, pp.6-7)

If propositions are understood as necessary entities, then contingency presentists are in trouble. Though, at least one presentist, Crisp (2007, p.99), contends that there can be eternal propositions. However, I suspect that Crisp is confused, probably as a corollary of his mistaken contention that the copula is tenseless, which we detailed in Chapter 1, Section 3.2.

Conversely, it's also unclear that all contingent things will fit our pre-account conception of temporality. The following difficult question that John Heil poses is particularly pressing for contingency presentists: 'If you thought that properties were Platonic, transcendent universals existing apart from space and time, you might think, as well, that properties exist 'necessarily', or, as Leibniz would have put it, in every possible world. The idea is difficult to evaluate. Why should an entity's existing, but not in space and time, mean that the entity could not fail to exist?' (2003, p.127, fn.1). Heil draws our attention to the seeming lack of reason ordinarily provided for supposing that many typically atemporal and transcendant entities, if they exist, exist necessarily. Yet, if such entities do exist, since they are atemporal, they cannot exist presently.

This opens up another way that the contingency account is more vulnerable to refutation than the redundancy account. Moreover, not only is the contingency account more vulnerable in these ways, but there are perhaps less independent reasons to think reality *is* restricted to contingent existents corresponding roughly to our pre-account

conception of presentness. And even if the case can be made, it would be inherently more risky, since it would rely on successful arguments for the conclusion that reality is restricted to those existents fitting the redundancy account, and then a further case against necessary (at least temporal) aspects of reality to meet the additional constraints of the contingency account.

§3.2. Extended Contingency.

Like the previous accounts, we can extend the contingency account to reality more generally. This would yield the following analysis of presentness:

CONTINGENCY*: There is as of now some $x$, such that $\mathbf{N}(\varphi x)$ =def. There is as of now some $x$, such that contingently ($\varphi x$).

And likewise the following interpretation of the extended presentist thesis:

CONTINGENCY* EXTENDED PRESENTISM:

$$\Box \mathbf{A} \forall_{As} x \left( \exists_{As} y \mathbf{N}(x = y \ \& \ \varphi y) \& \left( \left( \exists_{As} y (x = y \ \& \ \varphi y) \& \Diamond \left( \sim \exists_{As} y (x = y \ \& \ \varphi y) \right) \right) \leftrightarrow \exists_{As} z \mathbf{N}(x = z \ \& \ \varphi z) \right) \right)$$

Similarly, the following broader conditional capturing the link between each of CONTINGENCY* and MODAL CHANGE** is needed:

**C2MC\***: If a thing is actually Φ, but it's possibly not Φ, then it would also be possible that it has been and will be such that it's not Φ, given the total state of affairs of present actuality.

Developing the contingency account in this way opens up the same potential mismatch problems between a thing and its characteristics that we found for the extended modal change account (see §2.1.2). For example, something might necessarily exist, so by the contingency account must be timeless, yet, despite this, possess properties accidentally. Since these property instances are contingent, then by CONTINGENCY*, they are

present. Thus, according to CONTINGENCY*, this timeless thing would have some property instances temporally. And this consequence will undoubtedly be repellent.

To avoid such consequences, contingency presentists might weaken the conditions for presentness and temporality, such that a thing is present, together with all its property instances, just in case at least one of its intrinsic[70] property instances is contingent.[71] We could then reformulate the account accordingly:

CONTINGENCY**: There is as of now some $x$, such that $\mathbf{N}(\varphi x)$ =$_{\text{def.}}$ There is as of now some $x$, such that, either contingently ($x$ exists) or there is as of now some intrinsic property, $\Phi$, such that contingently ($\Phi x$).

And modify the interpretation of the extended presentist thesis thus:

CONTINGENCY** EXTENDED PRESENTISM:

$$\Box \mathbf{A} \forall_{As} x \left( \exists_{As} y \mathbf{N}(x = y \ \& \ \varphi y) \& \left( \left( \exists_{As} y \left( x = y \ \& \ \varphi y \ \& \ \exists_{As} \Phi \left( \Phi y \ \& \ I\Phi \ \& \ \Diamond \right. \right. \right. \right. \right.$$

$$\left. \left. \left. \left. \left. \left( \sim\exists_{As} z (x = z \ \& \ \Phi z) \right) \right) \right) \right) \leftrightarrow \exists_{As} z \mathbf{N}(x = z \ \& \ \varphi z) \right) \right)$$

Whereby 'I(...)' stands for '...is intrinsic'. Yet, the reformulation doesn't completely remove the problem. For suppose a necessary existent were to lose its last accidental intrinsic property instance. Then, on this account, that existent and all its property instances would *become* timeless (non-present). But this is equally absurd, if not more so, since now we have timeless existents flanking the temporal relation of becoming. And this time there is no obvious fix. Note, introducing past and future tense operators to account for the existent at some time having a contingent property, it would make the analysis vulnerable to the same implicit circularity charge as its predecessors.

It seems like contingency presentists would be best off simply rejecting possible instances of the problematic class. And admittedly, in this case, the class of problematic

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[70] The restriction to intrinsic, rather than extrinsic, property instances here, is so that things don't automatically qualify as present whenever the world is infected by even the slightest degree of contingency. This would prevent any intra-world division into timeless and temporal, and thereby undermining that distinction's theoretical utility.

[71] Similar modifications could be made to the extended change and modal change accounts to sift out temporal-timeless mismatch between things and their property instances. I make the point here only to avoid repetition.

instances will perhaps have shrunk into further obscurities, that their denial may seem altogether reasonable.

## §4. Summary.

We've outlined and developed several accounts of presentness that attempt to build upon the success of the redundancy account by injecting an element of transitoriness or happenstance into some aspect of the analysans. This was meant to better capture the force of presentness and get at some deeper point of contention between presentists and their opponents. The first attempt was the change account, which analysed presentness in terms of actual temporariness using past and future non-occurence of a thing or property instance as conditions for their presentness. It was heavily criticised primarily for its arbitrariness and likely mismatch with our pre-account conception of presentness. Yet, despite its failings, it directed us towards the more promising modal change account.

The modal change account imbued the change account with a modal construal of that transitoriness, decreasing its strength from *actual* to *potential* (given actual circumstances) transitoriness. This lessened both the arbitrariness and mismatch that afflicted the change account. However, it was threatened with collapse back into the change account, and we uncovered that both change and modal change accounts were implicitly circular: appeal to past and future circumstances in the analysans presupposed some application of presentness. So we had to surrender the reductive ambitions of these accounts, demoting their theoretical utility to potential non-reductive constraints on a primitive account.

Finally, we tried to capture the mere happenstance of presentness, without appeals to pastness and futurity, in contingency by connecting contingency with the non-reductive conditions of the modal change account. This contingency account bore a closer resemblance to the redundancy account than its predecessors. So we merely highlighted significant points of difference. Though the contingency account made improvements over the redundancy account, primarily with respect to capturing the force of presentness, it did so at the cost of increased risk/vulnerability. This seems about as far as this road will take us; if we want to get further, we will need an alternative route. We explore one such pomising alternative in the following chapter.

# Chapter 6

## Ersatz Presentism.

An alternative account of the A-determinations takes inspiration both from B-theory and from *Ersatz Modal Realism* in the parallel modal metaphysics dispute. Ersatz modal realism is a form of *Actualism*: the thesis that all and only actual things exist. It aims to capture modal facts through the realm of *abstracta*. Entities from that realm are typically construed as actual, though they *represent* possibilities (and perhaps impossibilities). The abstract entities are used to construct world-spaces across which modal properties are assigned. Possibilities are world-relative, and captured by accessibility relations holding between worlds, whereby each world represents a single possibility. One is then reflected in the realm of *concreta*. That is the actual world.

Similarly, *Ersatz Presentists* aim to capture temporal facts through the realm of *abstracta*. Abstract entities are construed as timeless or present, though they will *represent* times (sometimes potential as well as actual), and are used to construct time-spaces across which A-determinations are assigned. How A-determinatons are distributed across time-spaces is time-relative, each time representing a single moment in history. One is reflected in the realm of *concreta*. That is the present time.

At this point ersatz presentists take a leaf out of the B-theorist's book, analysing A-determinations in terms of the fixed *Ersatz-B-Relations* of *E-Earlier-Than*, *E-Simultaneous-With*, and *E-Later-Than* holding between ersatz-times. These ersatz-B-relations are *not* the ordinary B-relations of B-theory, since they don't entail that the abstract entities themselves are earlier than, simultaneous with, or later than, each other. Nevertheless, ersatz-B-relations between ersatz-times *represent* times standing in the fixed temporal order. This temporal order is then bore out by real temporal passage within the realm of concreta.

Ersatz presentism has become a popular, and perhaps dominant, form of presentism in recent years (cf. Bourne, 2006; Crisp, 2007; Markosian, 2004, §3.10). In this chapter we will explore to what extent this ersatz-temporal-framework can be employed to reductively analyse A-determinations. We begin by outlining the reductive analysis (Section 1), before exploring and assessing three potential motivations (Section 2): improved understanding (Section 2.1), ideological parsimony (Section 2.2), and

temporal unity (Section 2.3). Finally, we raise some special problems for the account (Section 3).

## §1. Reductive Ersatzism.

Those adopting a framework of ersatz-times to represent temporal reality needn't employ that framework for reductive purposes. For example, Arthur Prior readily accepted ersatz-times and B-relations, but only as *constructions*: '...I find myself quite unable to take 'instants' seriously as individual entities; I cannot *understand* 'instants', and the earlier-later relation that is supposed to hold between them, except as logical constructions out of tensed facts.' (1968b, p.232). Nevertheless, many ersatz presentists *do* seek to employ the ersatz-framework towards more heavy-duty metaphysical work, rather than merely as a representational tool. So, we find Thomas Crisp stating that, 'the work done in a presentist metaphysic by primitive tensed properties like *being past*, *being present*, and *being future* can be done equally well by the B-theoretic *earlier than* relation.' (2007, p.106), and follows this up with reductive analyses of the A-determinations in terms of that primitive. Likewise, Craig Bourne contends that, '...the interesting debate really concerns whether there is something special about the present, not whether one scale [A-series versus B-series] is more fundamental than the other...' (2006, p.9). And then proceeds to offer reductive analyses of the A-determinations in terms of his ersatz-B-relations.

Yet, even if the ersatz-framework had not previously been used towards these reductive ends, the constructions bring a wealth of resources worth considering in their own right to what extent they might aid our project. So let us now explore how to develop this proposal. Firstly, we must explain what ersatz-times are, and how they are constructed. The standard answer has been that they are *maximal consistent sets of propositions*—'maximal' in that for every proposition, *p*, a time-set includes either *p* or ~*p*, and 'consistent' in that for no *p* is there a time-set including both *p* and ~*p*. More strictly, some have restricted the class of propositions included in ersatz-times so that they soley concern that time. For example, Bourne makes the following distinction:

> I distinguish present-tensed propositions that contain either **P** or **F** operators, which I shall call 'embedded propositions' (*e*-propositions), from those that do not, which I shall call 'unembedded propositions' (*u*-propositions). (Compare, for example, the *e*-proposition: It is now the case that it was the case that Socrates is sitting (i.e., **NP***p*),

with the *u*-proposition: It is now the case that Socrates is sitting (i.e., **N**p), or simply: Socrates is sitting (i.e., *p*).) (*Ibid*., p.53)

He constrains ersatz-times to maximal consistent sets of *u*-propositions. The *e*-propositions are then made true-at-a-time in virtue of ersatz-B-relations holding between ersatz-times.

Inspired by B-theoretic *token-reflexive semantics* of tense, ersatz presentists can then offer the following analyses of the *truth-at-a-time* conditions for A-determinations.

**Past Truth-at-a-Time**: '**P**p' is true-at-a-time *t* iff '*p*' is true according to some ersatz-time e-earlier-than *t*.

**Present Truth-at-a-Time**: '**N**p' is true-at-a-time *t* iff '*p*' is true according to some ersatz-time e-simultaneous-with *t*.

**Future Truth-at-a-Time**: '**F**p' is true-at-a-time *t* iff '*p*' is true according to some ersatz-time e-later-than *t*.

Having stated these truth-at-a-time conditions, ersatz presentists have only to offer an account of when propositions in a time-set are satisfied; they need only explain when any particular ersatz-time *obtains*. When a particular ersatz-time obtains, what is true-at-that-time would then be *absolutely true*. And ersatz presentists have a straightforward answer: an ersatz-time obtains when accurately representing concrete reality or reality more broadly. We can formalise this accordingly:

ERSATZ-PRESENT: There is as of now some *x*, such that **N**($\varphi x$) =def. There is as of now some *x*, such that, i) $\varphi x$, ii) there is as of now a proposition, *p*, and an ersatz-time *t*, such that *p* represents *that there is as of now some x such that φx*, and *p* is a member of *t*, and iii) there is as of now an ersatz-time *t'*, such that *t'* accurately represents (concrete) reality, and *t* is e-simultaneous-with *t'*.

ERSATZ-PAST: **P**(There is as of now some *x*, such that $\varphi x$) =def. There is as of now a proposition, *p*, and an ersatz-time *t*, such that i) *p* represents *that there is as of now some x such that φx*, and *p* is a member of *t*, and ii) there is as of now

an ersatz-time *t'*, such that *t'* accurately represents (concrete) reality, and *t* is e-earlier-than *t'*.

ERSATZ-FUTURE: **F**(There is as of now some *x*, such that *φx*) $=_{def.}$ There is as of now a proposition, *p*, and an ersatz-time *t*, such that i) *p* represents *that there is as of now some x such that φx*, and *p* is a member of *t*, and ii) there is as of now an ersatz-time *t'*, such that *t'* accurately represents (concrete) reality, and *t* is e-later-than *t'*.

Given these reductive analyses of the A-determinations, we can offer the following interpretation of the presentist thesis:

ERSATZ PRESENTISM:

$$\Box \mathbf{A} \forall_{As} x \left( \exists_{As} y \mathbf{N}(x = y) \& \left( \exists_{As} y \left( x = y \& \exists_{As} p \left( \exists_{As} c \left( Rpc \& (c: \ulcorner \exists_{As} z (y = z)\urcorner) \right) \& \exists_{As} t_j \left( Tt_j \& (p \in t_j) \& \exists_{As} t_k \left( Tt_k \& St_j t_k \right) \right) \right) \right) \leftrightarrow \exists_{As} z \mathbf{N}(x = z) \right) \right)$$

Where 'R(...,...)' stands for '...represents...', 'c:(⌜...⌝)' for 'c has content:...', 'T(...)' for '...is an ersatz-time', and 'S(...,...) for '...is *e*-simultaneous-with...'. Similarly, we can characterise the corresponding extended presentist thesis accordingly:

ERSATZ EXTENDED PRESENTISM:

$$\Box \mathbf{A} \forall_{As} x \left( \exists_{As} y \mathbf{N}(x = y \& \varphi y) \& \left( \exists_{As} y \left( x = y \& \varphi y \& \exists_{As} p \left( \exists_{As} c \left( Rpc \& (c: \ulcorner \exists_{As} z (y = z \& \varphi z)\urcorner) \right) \& \exists_{As} t_j \left( Tt_j \& (p \in t_j) \& \exists_{As} t_k \left( Tt_k \& St_j t_k \right) \right) \right) \right) \leftrightarrow \exists_{As} z \mathbf{N}(x = z \& \varphi z) \right) \right)$$

Like the redundancy account, the success of the above analyses, and resultant presentist variant, will depend on the possible extent of concrete reality. For, if concrete reality were as B-theorists describe it, the account of ersatz-times would lack plausibility. As Crisp explains:

> ...my definition of times won't work on just any metaphysic. The B-theoretic eternalist will find it odd to think of my times as "abstract representations of an instantaneous state of the world." She'll think that my times look more like abstract representations of the whole of history. She'll think, that is, that my times look more like abstract possible worlds than like abstract times. But given an A-theoretic or a dynamic view of time—the view that, necessarily, what exists and what is true are constantly changing—my definition is fine. (2007, p.100)

Indeed, despite the complications added by the additional representational machinery of the ersatz-temporal-framework, at heart, the account is strikingly similar to the redundancy account. Since, once again, if the analysis is successful, then the presentness of existents becomes trivial. Given their similarities, it would serve us best to highlight the differences, and what motivates them. Only then will we understand what is at stake.

## §2. Motivating Ersatzism.

We've now outlined the account's essence, but why should anyone accept it? After all, the analyses appear simply to exchange one set of primitives—the A-determinations—for another—the ersatz-B-relations. Exploring potential aims of giving the above analyses will help us assess to what extent they are successful. On my understanding, there are three main potential sources of motivation: i) that we better understand the primitive ersatz-B-relations than A-determinations (Understanding); ii) that it requires fewer primitives (Parsimony); and iii) that ersatz-B-relations are better able to account for time's unity (Unity). We shall explore these motivations in turn.

### §2.1. An Ersatz Understanding.

In Chapter 3, Section 2, we raised concerns about our grasp of the primitive A-determinations. Perhaps on the basis of those concerns, some may believe they have a better handle on the B-relations than on the A-determinations. After all, the former have been subjected to precise mathematical treatment in the study of temporal geometry (chronometry). Moreover, some might complain, though they appreciate the consequences of past and future tensed facts, they are unclear about what such facts are or how they work. Whilst they broadly understand how *relations* can constrain and

intimately bind relatas, they are unclear about what is going on with primitive past or future tensed facts.

And this isn't merely a matter of obsessive ontologising or truthmaking. For, we might distinguish *brute* from *grounded* primitives, where the former have no ontology, but the latter do; it's just that ontology's *character* which is primitive in the latter case. So, to illustrate, whilst a trope might ground (and thereby locate) a character that a thing has, that trope's character cannot be simply reducible to the thing, otherwise they wouldn't be distinguishable from othe tropes or things (generally)—that grounded character must be primitive. Brute primitives, however, have no such grounding, and must thereby be non-localised facts about reality, such as perhaps negative, mathematical, or modal facts. Some might be inherently more wary of these unlocalised brute primitives, since it is unclear where such facts reside. And seemingly, B-relations require instances of grounded primitives, whilst A-determinations would standardly employ instances of brute primitives. Why think this is advantageous? Well, by grounding primitives in ontology it makes some significant aspect of those facts altogether more familiar and comprehensible. And this will help theorists grasp what is meant to be going on; it helps to demystify, to some extent, the primitive facts.

Yet, this doesn't do full justice to the complaint; even when presentists couch their primitive A-determinations in ontology, such as tensed *properties*, the complainant typically remains unsatisfied. In particular, tensed properties, unlike B-relations, are required to point beyond their instances; just how property instances at one time can impact on the state of another, is a far murkier affair than how a relation, concerning things at both times, impacts upon its relata. I suspect that it's primarily understanding of this mechanical element that is deemed questionable for A-determinations, and more perspicuous for B-relations. However, it's typically thought that presentists aren't entitled to B-relations, since they are existence-symmetric, requiring the reality of each relata, and predominantly transtemporal. Therefore, if B-relations hold between all times and their occupants, all must co-exist, contrary to standard presentist sentiment.

But whilst B-relations don't fit comfortably into a presentist conception of reality, ersatz presentists are nevertheless impressed by the clear temporal regimentations they afford. Inspired by this, ersatz presentists believe that, by modelling ersatz-B-relations on B-relations, the former holding between ersatz-times in the way the latter were meant to hold between concrete times, they can hijack what was good about B-theory. I take it that it's essentially this kind of thought process underlying Bourne's contention that, '...all theories take it as a brute fact that it was the case that *p*;

the [ersatz presentist] advantage over Priorian presentism [i.e. redundant presentism] is that these other theories have an account of what this fact looks like, be it an *E*-related [i.e. ersatz-B-related] abstract structure or an *earlier than*-related concrete one.' (2006, p.65). If right, ersatz presentists will claim improved comprehensibility of their primitives over rivals; gains with respect to **GM1**.

Still, I doubt things are quite so simple. There are two main forms of objection to this motivation I wish to consider. Firstly, whether our grasp of the B-relations is all it's cracked-up to be (Sections 2.1.1.1-2.1.1.3). In particular, concerns are raised about two aspects of the character of B-relations: its residence (Sections 2.1.1.1-2.1.1.2) and its nature (Sections 2.1.1.3). Secondly, whether ersatz-B-relations are sufficiently similar to standard B-relations to make plausible that, an adequate grasp of the former can be inherited through grasping the latter (Section 2.1.1.4). Let us now explore these objections in detail.

*§2.1.1. Timely Relations.*

We're often presented with formal, geometric, and mathematical models of time laying down things and times along a temporal dimension, ordering them from earlier to later. I shall take for granted that the *syntax* of at least some of these models is beyond reasonable reproach. Yet, we must be careful about how we interpret the *semantics* of those models. What is it that is being modelled? And like most representations, such models permit of multiple interpretations; it's not a given that their formal structure depicts fundamental B-relations. This is partly what Michael Dummett was labouring at when he wrote:

> We can, of course, make a static three-dimensional representation of the course of events over a finite period of time on a changing two-dimensional surface. But it makes no sense to suppose that that course of events is identical with some static three-dimensional configuration. This is evident from the fact that there is an element of convention in the three-dimensional representation: we lay it down that the axes are to be chosen in a certain way, that such-and-such an axis represents time, and that such-and-such a direction along this axis represents the direction earlier-to-later; *these conventions cannot be shown in the model*. This remains true even if there in fact is such a three-dimensional configuration. (1960, pp.501-502; my emphasis)

Merely *labelling* parts of our models, so as to give them temporal connotations, tells us little about what those elements in fact accord to, or whether what they accord to deserves those connotations. And though perhaps the B-theoretic picture more closely resembles those models, we needn't give a B-theoretic semantics. However, for current purposes, suppose we do. What would the world need to be like for the semantics of those models to be captured by B-theory?

B-theorists contend that there really are relations holding between times and/or things, such that they have a temporal character. So we need to ensure we really do comprehend what it means to say a relation has temporal character, and the earlier/later than temporal character in particular. Yet, it's often difficult to adjudicate genuine, as opposed feigned or mistaken, understanding. But we must guard ourselves from unquestionably accepting all manner of metaphysical obscurities and novelties because they are presented in the good company of formal rigour and otherwise clear presentation. This is insufficient for genuine understanding. Neither does the difficulty of discerning genuine understanding entail that such disputes will end in an impasse. There is a frequent dismissivism about complaints of incomprehension; it's easy to assign fault in the complainant's compotency. But progress can often be made by making more precise exactly what is impeding the complainant's understanding. We will attempt to do just this.

§2.1.1.1. Internal and External Relations.

There are two ways relations can have character corresponding to two broad kinds of relations: *internal* or *supervenient* relations, and *external* or *non-supervenient* relations. The character of the former kind is determined entirely by its relata. Consequently, some doubt that internal relations are anything over and above their relata. For example, David Armstrong wrote: 'If, as I further contend, what supervenes is not ontologically more than what it supervenes upon, then, once given their terms, internal relations are not additions to the world's furniture.' (1997, p.87). In contrast, the character of external relations isn't entirely determined by their relata.

Historically, relations, as a category, have been neglected, at least until recently. Again Armstrong explains the situation:

> ...an explicit and ungrudging acceptance of the category and sub-category of *relation* is
> a relatively recent phenomenon. This was carefully documented by Julius Weinberg in

his 1965 book. In a monograph *An Essay on Facts* (1987, ch.2) Kenneth Olson shows again how both ancient and medieval philosophers constantly tried to assimilate relations between objects (fathering, say) to relational properties (being a father, and being a child) of the related objects. (*Ibid*., p.4)

This historical fact may seem quite strange to modern philosophers. We're so used to a positive metaphysics of relations, that it might initially be hard to fathom how we could have managed without them. Yet, on reflection, the position of the ancient and medieval philosophers isn't so strange. Once more, Armstrong elaborates: '...both Greek and Scholastic metaphysics found it very difficult to focus upon relations, and constantly tried to assimilate the holding of relations to the possession of relational properties by the related terms. But it seems that this assimilation is right for the case of *internal* relations.' (*Ibid*., p.92). It's difficult to define *Relational Property* as corresponding to any specific kind of property. For example, we cannot simply define it as a property things have in virtue of bearing some relation to a non-part of it, as Humberstone (1996) does. Since, this fails to characterise some prototypical relational properties, such as *not being within a mile of a tiger*, as we would be missing the second relata. *A fortiori*, it wouldn't do for our purposes to reductively analyse relations in terms of relational properties, if the latter were in turn reductively analysed partially by relations. This analysis would clearly be circular.

Rather, I don't recognise relational properties to be a distinct *kind* of monadic property, but rather a distinct *mode of description* of monadic properties. That is where relational *predicates* pick out monadic property instances by their bearing on the state of reality without the instance—where 'without' is ontologically, rather than spatially, without, so that it includes no parts of a thing. I contend that the assimilation of internal relations to facts about the relata was itself quite reasonable. After all, if a relation is nothing over and above its relata, then facts about its character must fundamentally be facts about the character of its relata. So the recent innovation of relations is really just that of *external* relations.

If the above reasoning is correct, we only need relations as a metaphysical category if there are external relations. And for B-theorists, temporal relations are meant to be external relations *par excellence*. The very same events can both be related and fail to be related by a B-relation, though not together of course. Therefore, the temporal character of B-relations must be over and above their relata. Indeed, since the relata seemingly place no constraints on what B-relations may hold between them, the

temporal character of B-relations must consist *entirely* in the relation itself, independently of the relata.

§2.1.1.2. Relating Temporal Character.

So B-relations are external relations where their temporal character consists entirely in the relation itself, and not in the relata. What is so bad about that? Yet, we've still not explained why ancient and medieval philosophers had trouble abiding external relations. I suspect that they didn't understand how relations could have some character not residing in their relata. For, if a relation's character doesn't reside in its relata, it's unclear where it does reside. Note that, though properties have, or perhaps are, a certain character, they reside in their instances, or perhaps their instances partake in them. Either way, a thing's having of a property bestows that character upon the thing, and thereby locates it. This isn't so for external relations, or that aspect of their character external to their relata, since that character strictly fails to reside in their relata, so must reside elsewhere. But where else can they reside? Unaccommodated, the character will reside nowhere. And accommodation is scarce!

To help understand the worry, consider an analogous worry for *Mereological Nihilism*, the thesis that only *simple* (partless) things exist. One problem for mereological nihilism is its ability to accommodate *emergent properties*, which, in this context, are properties dependent upon, but undetermined by, fundamental reality. For example, on some interpretations of Quantum Mechanics, entangled systems are characterised as possessing properties dependent upon, but irreducible to, the intrinsic or spatiotemporal properties of their constituent subsystems (cf. Maudlin, 2011). Likewise, some have doubted the unified qualities of consciousness can be reduced to facts residing at the micro-physical level (cf. van Inwagen, 1990, p.118; Merricks, 2001, p.89). They are properties over and above the characteristics and relations between the simples. But if such emregent properties aren't had by simples, then where are they instantiated? The charge against mereological nihilists is that they lack the ontological resources to accommodate the instantiation of such properties. Call this the *Emergence Problem for Mereological Nihilism* (cf. Caves, 2014, Ch.5).

One response to this problem is that emergent properties aren't instantiated by any single thing, but by a plurality (*Ibid*., §5.3). So whilst the emergent property is something over and above the collective properties/relations of the plurality's simples, it nevertheless resides in the plurality. If we ask where the emergent property's character

resides, we're inevitably told, 'in the plurality'. Accordingly, Richard Caves writes: 'I've also been asked: "Where is the intrinsic character of the plurality, given that the plurality does not compose some further object?" To this I merely reply that the intrinsic character of the simples is where the simples are, given that the intrinsic character of the 'plurality' just is the intrinsic character of the simples taken collectively.' (*Ibid*., p.130, fn.25).

Yet, this response is unsatisfactory. For, the character of a property must reside in its instances, lest it not be instantiated there. And lest it not be a genuinely emergent property, its full character cannot reside in any members of the plurality, nor the different aspects of its character distributed throughout the plurality's members. But then, where else *in* the plurality can the character reside? I know not where, so I don't understand how plural instantiation solves the problem; though plural logic provides the syntactic tools through which to model plural instantiation of emergent properties, the semantics of the proposal is nonsense.

Returning to the worry about where the character of external relations reside, again, the concern is, here too we're presented with the same kind of nonsense: the character seemingly has nowhere to reside. Call this the *Accommodation Problem for External Relations*. Though, if successful, it doesn't automatically entail that there are no external relations, it suggests that if there are any, they will be *dull* (without character). A potentially dull kind of external relation might simply place constraints on what is possible by delimiting what relata can satisfy it. Call external relations of this sort, *bare structures*. B-relations aren't meant to be dull; they aren't bare structures. So we've established our first hurdle on the track to comprehending B-relations.

§2.1.1.3. Character Assassination.

I anticipate that some won't appreciate the accommodation problem for external relations, and won't foresee objection to simply situating the character purely in the relation. Though, we might wonder, if characters can float free of things in properties or relations, then why do we need things at all? However, perhaps some will better comprehend the character of the external relation not situated in their relata as character *it* inherits from a higher-order property. This would play on the relation's status as a distinct *thing*.[72] It's unclear to me that this entirely settles the matter. A property or

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[72] We wouldn't want to say that those properties inherit *their* character from further higher-order properties, since that would start an infinite regress where the source of character is constantly deferred.

relation is often taken to inherit its location from its instances. But where would its character be situated if not in those instances? It's no use retorting that it has that character in Platonic heaven, for if it merely resides there, outside the causal-temporal order, it would be impotent. Nevertheless, I appreciate that some may feel uneasy about this complaint, and wouldn't stake my entire case on it. After all, as mentioned earlier, comprehension judgements are tricky to adjudicate.

Suppose then that external relations *can* have character not situated in their relata. We need then ask whether we genuinely understand what it would mean for an external relation to have a temporal character like *succession*, *earlier than*, or *later than*.[73] In particular, care is needed to avoid presupposing A-determinations in our accounting for that character. Otherwise, B-relations won't be genuine external relations; they will supervene on their relata, perhaps in combination with some bare structural relations (lacking temporal character), such as McTaggart's (1908) neglected *C-Relations*—strictly non-temporal ordering relations, such as orders the number-series.

Importantly, in Chapter 3, Section 2.2.2, we saw that, if we indeed do experience succession, as there argued, it's not *as* a relation, but as real metaphysical change of experiential content during an enduring simple act of experiencing. If accurate, this clearly presupposes A-determinations, and won't do for any account of the B-relations understood independently of them. Certainly we don't experience the two succeeding experiential contents *together* bearing a relation with the temporal character of succession. In this way, temporal experience is quite unlike spatial experience. Indeed, insofar as our experiential contents appear *together* in a simple act of experiencing, such that they are *structurally related*, that structure has no distinctive character, spatial or otherwise; it seems purely geometrical, unembellished. And relatedly, though perhaps more telling of my imaginative failings, I cannot conceive that our experiential contents could be structurally related in any other *kinds* of ways. My confidence in this assessment stems partly from the previous section's results in combination with phenomenological judgement and imaginative limitations. The points are interlinked, and mutually supportive.

Of course, understanding often outstrips experiential presentation. And there may yet be relations with temporal character beyond that revealed before the mind. Still, just as it seemed incomprehensible that an experience of temporally successive experiential contents could be of a relation imbued with the mysterious character of temporal succession, so does it seem unfathomable what this much talked about relation

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[73] I exclude *simultaneity* here because I assume it's characterised by *lack* of temporal character.

of B-succession between events is meant to be. By maintaining that B-relations are fixed external relations, as B-theorists do, we rob any potential temporally successive character they might have of its most defining aspect: the *flow* or *passage* from succeeded to successor. Instead, in these frozen temporal waters, we're left merely with a series of brute static ordering-relations, and then told they have a temporal character. But mere use of terms does little to convince of their correct applicability. Titles must be earnt. Yet, what has been done to earn it? What does this special ingredient add to the theoretical mix? From what I can tell, the answer to both is nothing. And what makes no genuine theoretical contribution is beyond the bounds of comprehension. If correct, then B-theorists are quite literally, and misleadingly, talking gibberish!

§2.1.1.4. From B- to E- Relations.

Suppose, however, that the above comprehension failings are my own; that B-relations are in fact intelligible, and more so than A-determinations. Could ersatz presentists then claim a superior grasp of their primitives? No, they aren't yet on the home-straight; there is still another hurdle they must surmount. They must make the conceptual transition from B-relation to their ersatz counterparts. After all, the relevant relations holding between ersatz-times cannot be B-relations, since that would betray presentist commitments by situating abstracta in the past and future. Accordingly, we find Bourne proffering the following elucidation:

> The *E*-relation is not the genuine *earlier than* relation since it does not relate spatio-temporal objects, but it does *represent* the *earlier than* relation in the way it relates times. The properties of the *E*-relation match whatever we take to be the properties of the genuine *earlier than* relation. This allows presentists to have a time series related by 'earlier than' without being committed to the existence of real, or rather concretely realized, *relata*, something anathema to presentism. Ersatzer presentism thus bypasses the problems that other presentists get into when they do not take such relations as basic, and try to define them in terms of tenses (see, e.g., Oaklander (2002); Mellor (2003: 236–7)). (2006, pp.54-55)

So, if we take Bourne at his word, ersatz-B-relations merely *represent* actual B-relations. It's thus surprising that he asserts at the passage's end that, by virtue of providing representations, no account of the *represented* is required. Neither can the represented be the B-theorist's B-relations—for reasons he mentions in, and I explained

before, the passage—nor grounded, even partly, by A-determinations—without making reductive analyses of the A-determinations in terms of them circular. This, in addition to the kind of work Bourne wants his ersatz-B-relations to do, suggests that we cannot take his words sincerely without drawing his position into absurdity.

One reason why ersatz-B-relations cannot be mere representations is that representations aren't factive; representations can misrepresent as well as capture the facts. As Crisp makes clear:

> ...the idea is that there are *many* ersatz B-series. But then there is this question: What differentiates the *actual* history of the world—the ersatz B-series representing the way history actually unfolds—from the merely possible ones, the ones representing how history could have unfolded?[...] I think the presentist should hold that there is one and only one ersatz B-series, all right, but that it does not include *all* the abstract times among its members. It counts among its members only *some* of the abstract times— those that did, do or will represent the world. (2007, p.104)

If we can use ersatz-times and ersatz-B-relations to represent multiple times-series', how do we use them to privilege actual history? Crisp tells us there must be only one ersatz-B-series. But if so, ersatz-B-relations forming the ersatz-B-series must be more substantial and discriminating than any mere representational construction.

Yet, if ersatz-B-relations aren't *mere* representations of B-relations, we need some further explanation of what they *are* and how they relate to B-relations. So what else have ersatz presentists to say about ersatz-B-relations? Crisp contributes the following clarification:

> ...what is this *earlier than* relation ordering the members of an ersatz B-series? I'm inclined to answer that it requires no further explanation as it's the relation we learned at mother's knee when we learned that last Tuesday is earlier than today. Maybe you reply: no, the relation learned at mother's knee is a relation that holds between concrete things (events, times or maybe spacetime points), not *abstract* times. I reply that this isn't obvious; not much hangs on our dispute though. My purposes are served well enough by supposing that the relation linking abstract times is an analogue of the eternalist's *earlier than* relation. (*Ibid.*, p.102)

It certainly won't do just to state that ersatz-B-relations are those 'learned at mother's knee'. For, what the B-relations of common conception are is controversial, though

typically understood as derivative relations grounded, at least partly, in the A-determinations, and even if not obviously so, almost definitely not ersatz-B-relations. But more importantly, the age we learn to conceptualise ersatz-B-relations is irrelevant to our grasp. I take it then, besides establishing a false impression of the familiar and uncontrived, the passage's purpose is to convey that ersatz-B-relations are straightforward analogues of B-relations, suggesting that understanding of the latter transposes simply to the former. Yet, if my above claims have any veracity, this good-company support is readily transformed into a bad-company objection.

But let us not get ahead of ourselves. What are the proposed similarities forming the analogical basis meant to be? Crisp gives a non-exhaustive sample:

> Some points of analogy: Both relations link times—concrete times in the one case, abstract times in the other. The eternalist's relation, as usually construed, is transitive, irreflexive, and asymmetrical; my analogical *earlier than* relation is also transitive, irreflexive and asymmetrical. (We need not be dogmatic about the formal properties of either relation; for instance, if time is eternally cycling, neither will be irreflexive or asymmetrical.) The eternalist's relation is non-ending and dense; so too with my analogical surrogate. (Though here again, we need not be dogmatic. Maybe time isn't dense or has an end.) (*Ibid*.)

This isn't much of an analogy! Crisp refers us primarily to shared *formal* properties of the two relations. Of course, we understand the formal properties, regardless of our grasp on either of the two relations. That was never a barrier to anyone's comprehension. It's the other part—the character of the relations—that is baffling. To this end, Crisp states that both kinds of relations relate things sharing the quality of being called 'times' (in different senses). Needless to say, typographical similarity, especially when associated with different senses, provides no analogical basis. After all, times only earn that description through membership of a time-series, which relies on the ordering-relation of that series being genuinely *temporal*.

More charitably, perhaps the thought is that ersatz-B-relations play a similar theoretical role to standard B-relations. However, despite bearing some resemblance to B-relations in this respect, they are also importantly different. After all, ersatz-B-relations are meant to be representational in some sense. Crisp therefore strikes me as disingenuous when writing: 'Why would my *earlier than* relation on abstract times be any less suited to the fundamental relation role than the eternalist's *earlier than* relation on concrete times? I can't see any reason why it would be.' (*Ibid*., p.106). This seems

like feigned ignorance only. Its representational character and theoretical contribution makes it singularly unsuited for fundamentality, suggesting a dependency (or some other form of subordinating relation) on whatever it represents. Accordingly, I suspect that actually, if anything, we've a better grasp of A-determinations than ersatz-B-relations. No reasonable motivations for an ersatz account of the A-determinations can be adduced here.

§2.2. Ideological Parsimony.

A second potential motivational source for the ersatz analyses of the A-determinations is savings in primitive ideology. To repeat Crisp's contention: 'the work done in a presentist metaphysic by primitive tensed properties like *being past*, *being present*, and *being future* can be done equally well by the B-theoretic *earlier than* relation.' (*Ibid*.). Of course, this isn't quite right, since it's not the B-theoretic earlier than relation that ersatz presentists need, but their ersatz counterpart. Nevertheless, this is a boast many contemporary metaphysicians will be impressed by. So let us examine its merits.

Firstly, the claim that we only need one ersatz-B-relation might strike my reader as odd. Earlier we referred to three ersatz-B-relations: *E-Earlier-Than*, *E-Simultaneous-With*, and *E-Later-Than*. How does this add up? This is no simple arithmetical error. The contention is that, by taking either e-earlier-than or e-later-than as fundamental, the other ersatz-B-relations can be analysed with respect to it. So, taking e-earlier-than as fundamental, we can purportedly analyse the other ersatz-B-relations accordingly:

**E-Later-Than**: *x* is e-later-than *y* =$_{\text{def.}}$ *y* is e-earlier-than *x*.

**E-Simultaneous-With**: *x* is e-simultaneous-with *y* =$_{\text{def.}}$ It is not the case that (*x* is e-earlier-than *y* or *y* is e-earlier-than *x*).[74]

And we could arrive at similar definitions by taking e-later-than as basic. For 'e-earlier-than' and 'e-later-than' are plausibly merely descriptive variants for the same relation. However, the same isn't true of e-simultaneity, which is symmetric and lacking temporal direction; though its failure to obtains between times might suggest that e-

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[74] Crisp (2007, pp.102-103) suggests analysing e-simultaneity in terms of being at no temporal distance. But this is inadequate where time lacks a metric. Similarly, an event ending with an open temporal boundary temporally adjacent to an event beginning with a closed temporal boundary, would be at no temporal distance at those boundaries, yet they wouldn't be simultaneous.

earlier-than and e-later-than holds between them, it couldn't tell us which side of the asymmetric relation either time stands.

This already indicates that analysing e-simultaneity is less straightforward. And things complicate when considering the possibility of alternative temporal topologies. For example, if time had a circular topology (see Ch.2, §2.2.1), all ersatz-times would be e-earlier-than and e-later-than every other. Consequently, by **E-Simultaneous-With**, no ersatz-times would be e-simultaneous-with any other, including themselves. Similarly, in branching or disunified temporal topologies (see Ch.2, §2.2.2), ersatz-times may fail to be e-earlier-than or e-later-than a distinct ersatz-time without being e-simultaneous-with it. Of course, ersatz presentists could shield themselves somewhat from these troublesome cases by denying their possibility, so no corresponding metaphysical distinctions belie the conceptual distinctions here. Yet, without independent reasons for rejecting these possibilities, their *ad hoc* denial must be counted as account costs, if it's to preserve the reductive analysis of e-simultaneity and the purported motivational parsimony thereby incurred.

Let us not pick further at the proposed reductions; suppose them successful. Does this elevate the standings of the ersatz account with respect to **GM2b** on account of positing fewer primitives? No, because the restricted parsimony principle we subscribed to only stated that there could be theoretical advantage in positing less ideology in a theory when it can get by at no explanatory loss with only a *proper subset* of its rival's ideology (see Ch.3, §1.3). The driving-thought wasn't parsimony per se, but elimination of theoretical redundancies. For, what makes no theoretical contribution by minimising inexplicabilities, fails to further the aims of theorising, and thereby slips into idle fantasising. In our present case, however, we've distinct sets of alternative ideology: A-determinations versus ersatz-B-relations. Each makes important theoretical contributions to their distinct theoretical systems; they aren't theoretically idle. So we cannot reasonably motivate the ersatz account on the grounds of ideological parsimony.

I see no further reason to prefer a theory on the basis of ideological parsimony. Indeed, as mentioned in Chapter 3, Section 1.1, primitives don't look like they are of a kind that can be counted, identified, or individuated. They are, after all, by definition, not things. But if they cannot be counted, it makes no sense to say a theory has *fewer* primitives. At best, we can say that a theory has *less* primitives. And this draws out another quandary for broad ideological parsimony: that even if primitives were countable, they shouldn't be counted equally. This is because more or less information

can be packed into single primitives. So again, the motivations here, though initially promising, deflate under examination.

§2.3. The Unity of Time.

In Chapter 3, Section 3.2, we considered and developed a complaint from Bourne against presentism concerning what he, following Dummett (1968), called the 'truth-value links' across time. Temporal passage should be bound to progress in accordance with certain axioms of second-order change, some of which we outlined in that section. For example, Axiom$_2$ states that, if it will be that something is the case, then it will be that it's then present. We should expect then for facts that presently will be the case to eventually have their time as present. The worry, however, is that, if tensed facts obtain only presently, they shouldn't be able to constrain what happens as of other presents, when they don't obtain. Since, by the time those other presents come around, those facts will have ceased. And what is not, has no influence (see Ch.2, §2.1.3, the Real Influence Restriction).

In this way, we find Hud Hudson and Ryan Wasserman (2010, pp.47-49) proffering the following presentist time-travel scenario where tensed facts as of distinct presents don't cohere. In the scenario a time-traveller gets into his time-machine at 12:00a.m. on 1$^{st}$ January 2000 AD, and setting the dial for 15$^{th}$ March 44 BC, changes the first-order temporal facts (see Ch.3, §3.1) between presents. So, as of one present, the following is true:

- It is 12:00a.m. on 1 January 2000 AD.
- A hopeful time traveler sits in his time machine with the dial set for 12:00am on 15 March 44 BC.
- It WILL be the case one minute hence that (a hopeful time traveler pushes the start button).
- It WILL be the case two minutes hence that (it is NOT the case that [it WAS the case over two thousand years ago that (a time-traveler witnesses a famous murder)]).
- It WILL be the case two minutes hence that (a disappointed non-traveler sits in his machine).

(*Ibid.*, p.48)

Whilst as of an ostensibly succeeding present, the conflicting propositions are true:

- It is 12:02a.m. on 1 January 2000 AD.
- It is NOT the case that (a disappointed non-traveler sits in his machine).
- It WAS the case two minutes ago that (a hopeful time-traveler sits in his time machine with the dial set for 12:00a.m., 15 March 44 BC).
- It WAS the case one minute ago that (a hopeful time traveler pushes the start button).
- It WAS the case one minute ago that (a hopeful time-traveler disappears).
- It WAS the case over two thousand years ago that (a time-traveler witnesses a famous murder).
- It WAS the case that (there are time-travelers).

(*Ibid.*)

The described scenario is meant to be a plausible case of changing what happens at a time consistent with presentism. The thought is that, nothing among standard presentist resources can prevent these kinds of across-present inconsistencies.

Relatedly, if distinct presents cannot impact on what obtains at alternative presents, it becomes unclear in what sense distinct presents are unified into a single, directed, and ordered time-series. This *Problem of Temporal Unity* is clearly elucidated by Barry Dainton in the passage below:

> If $E_1$ is earlier than $E_2$, both $E_1$ and $E_2$ must belong to the same world. But if, as the dynamic presentist maintains, $E_1$ is non-existent as of the time when $E_2$ occurs, how *can* both these events belong to the same world?[...] Presentists, it seems, lack the resources to bind different times into a single universe [...] the presentist is confronted with a disastrous dilemma. Either there are no genuine relations between successive presents, in which case dynamic presentism collapses into many-worlds presentism (if not solipsism), or there *are* genuine relations between different presents, but since these relations are existence-entailing, dynamic presentism collapses into the static block view. (2001, pp.86-87)

Since reality as of present is all encompassing, purported past or future present states of reality aren't around to bear any kind of connection to present reality. But if so, how can they be united into a time-series? The answer is unobvious. Yet, without temporal unity, there can be no temporal dynamism. Indeed, this issue is perhaps especially pressing given we rejected (in Chapter 2, Section 4) the treatment of causation as a real

(transtemporal) relation. Did our earlier escape from searing pan only serve to bring us into jaws of underlying flame? How should presentists respond?

*§2.3.1. Ersatz Temporal Unity.*

In Chapter 3, Section 3.2, we suggested presentists might take the axioms of second-order change as brute primitive facts. This implies we could take facts about temporal unity as brute primitives. We noted there that this strategy, however, doesn't entirely satisfactory. As Adrian Moore summarised:

> ...if someone resolutely refuses to acknowledge the unity of temporal reality—if someone conceives of tense as a feature of reality—then there is no more basic principle we can adduce to force a change of mind. The unity of temporal reality is indeed, to that extent, akin to a brute fact. There is a great deal to be said about it. But there is nothing, or at least nothing with any suasive power, to be said in favour of it. (2001, p.390)

However, this may seem all too defeatist. Can we not do better? Bourne thinks that with ersatz presentism, we can: '...[ersatz presentism] ensures that truth-value links are preserved.' (2006, p.65).

Though Bourne does little to elaborate his claim, the thought is seemingly that ersatz-B-relations are permanent relations, much like standard B-relations, and thereby fix the ersatz-time-series. The ersatz-time-series can then serve as fixed tracks upon which the concrete present can move relatively along. So whilst presents come and go, the ersatz-time-series remains immutable to ensure progression. This strategy has promise, and would significantly improve on previous accounts if successful. We should therefore give it careful consideration.

It's a shame Bourne doesn't further elaborate this contention. For, after dismissing other presentist variants for failing to satisfactorily resolve the problem of temporal unity and a version of the truth-supervenes-on-being objection (see Ch.5, §2.1.1), he never really explains how his own ersatz presentism solves these problems. Yet, it's baffling how the mere addition of representational constructions could outroot these *metaphysical* inadequacies. Of course, we've already mentioned that, for reasons like this, ersatz presentists need something more than mere representations to construct their ersatz-time-series. Still, it's unclear what that something else could be besides the A-determinations themselves.

This problem manifests most clearly in how ersatz presentists purport to handle the truth-supervenes-on-being objection. For, Bourne also boasts that, '[Ersatz presentism] allows us to state truths about the past' (2006, p.65). Yet, it's unclear how the ersatz-B-series helps. Crisp readily acknowledges that, '…it's a brute, contingent fact that the abstract times come temporally ordered as they do. Explanation has to come to an end somewhere, and it's not unreasonable to suppose that it bottoms out in the contingent fact that certain times are earlier than certain other times.' (2007, p.104). And similarly, in Section 2.1, we quoted Bourne (2006, p.65) acknowledging that ersatz presentism makes no improvements with respect to the brute-ness of tensed facts. So the improvement cannot lie there.

Neither can it reasonably be claimed that ersatz-times make better truthmakers than tensed properties. For, many have complained that propositions lack the relevant *aboutness* to make tensed facts true. Trenton Merricks clearly elucidates the point thus:

> …in the sense of 'about' that is crucial to Truthmaker and TSB [**Truth-Supervenes-on-Being**], it is not always obvious what a truth is about. Nevertheless, we can sometimes be confident that a truth is *not* thus about some suggested entity's existence or its having certain suggested properties. For example, *that there is water in the bucket* is not about God's willing that there is water in the bucket. And—lest the presentist be able to satisfy Truthmaker and TSB far too easily—*that the Trojans were conquered* is not about *being true*'s being exemplified by *that the Trojans were conquered*. (2007, p.132)

And the same complaint is delivered in Quentin Smith (2002, p.121) and M. Joshua Mozersky (2011, pp.133-134). Equally, Merricks (2007, p.137) finds the employment of tensed properties as truthmakers guilty of the same misdirected aboutness. Yet, what none of these authors mention is that, there is something especially misguided about using *propositions* as truthmakers for propositions not about propositions. For, if propositions can be truthmakers, or a proposition's truth can be a truthmaker for such propositions, those propositions could make themselves true, and we wouldn't need truthmakers for them. Using propositions as truthmakers in this way simply undercuts the whole purpose of the truthmaking enterprise; it's akin to denying we need truthmakers.

The problem of temporal unity for presentism can be thought of as a special kind of truth-supervenes-on-being problem. Whilst the standard truth-supervenes-on-being objection concerns how synchronic-truths can be true given presentism, the problem of temporal unity concerns how diachronic-truths can be true given presentism. Where

synchronic-truths are those true as of present, in contrast with diachronic-truths, which are truths about how truths change across successive presents. So failings with respect to the simpler synchronic problem speak against the harder diachronic problem.

It's strange then that, having criticised alternative versions of presentism for failing to preserve truth-value links, Bourne appears to freely surrender them in his own ersatz presentism. For, he thinks ersatz presentists should adopt the temporal topology of a closed-past with an open-future:

> ...presentism has a very good reason for adopting a *branching* topology; that is, where the *E*-relation is a one-many relation in the direction from the present to future (the direction in which the dates increase in magnitude), but only a one-one relation in the direction from the present to the past (the direction in which the dates decrease in magnitude). The reason is simple: we all need a way of distinguishing the past from the future. (2006, p.55)

Yet, in giving this account of an open-future with a closed-past, he posits futures that never come to be present. In this way, he betrays some of the most fundamental and inviolable truth-value links across time (such as, Axiom$_2$ (see Ch.3, §3.2) fails). Bourne's reasoning is most clearly manifest in the following passage:

> ...branching does not conflict with our ordinary presupposition that we *will have* a single future, although it does conflict with the idea that we *have* a single future. The former presupposition is something we surely do not want to reject—it is close to being a platitude. But it is far from clear that the latter presupposition has such a status, and arguably is contrary to most people's common-sense view of the future: many people think, in a clear-headed way, that *pace* Lewis, we don't *have* a single future, but we *will* have one. (*Ibid*., p.61)

It's straightforwardly absurd to contend that it will be that *p*, but then maintain that *p* may nonetheless never come about. This is clearly *not* commonsensical belief, despite whatever protestations Bourne might make. And even if it were, this would only evince conceptual confusion amongst common folk. However, what is especially troubling is that, Bourne makes his ersatz-B-series temporally variable. If the ersatz-B-series is temporally variable, it's in no better position to resolve the problem of temporal unity than are standard tensed facts. And though this point is *ad hominen* against Bourne, it suggests that the ersatz-B-series isn't up to grounding temporal unity.

*§2.3.2. The Necessary Incompleteness of Dynamic Reality.*

An inevitable consequence of temporal dynamism is that,

> …there would be no such thing as the complete [once and for all time] description of reality. There would be one, as it were, maximal description of reality in which the statement "The event M is happening" figured, others which contained the statement "The event M happened," and yet others which contained "The event M is going to happen." (Dummett, 1960, p.503)

This philosophical dictum should by now be a well-learned truism among philosophers. Yet, time and again, philosophers attempt the impossible: a complete, *once and for all time*, representation of dynamic reality. If what I argue here is correct, ersatz presentism is just one more failed attempt to do just this.

So where does the ersatz presentist attempt at a complete fixed reresepresentation of reality, in terms of an ersatz-B-series, go wrong? The first problem is that an ersatz-B-series fails to capture certain tensed facts. For example, we saw in the previous section that Bourne subscribes to a closed-past, open-future, temporal topology, as '...a way of distinguishing the past from the future.' (2006, p.55). This hints that all is not well. For, we shouldn't need a topological difference to distinguish past from future. Yet, if the ersatz-time-series were indeed permanent, then it cannot capture temporal *direction*. A directed relation must privilege one of its relata in a distinctive way as that which others are directed. However, all a B-series or ersatz-B-series can offer is systematic asymmetries between members; only by adding metaphysical change into the picture do we get time's direction. But metaphysical change is essentially temporally dynamic (see Ch.2, §3.1.1), so cannot be captured by that which is static. Consequently, any ersatz-time-series will either fail to capture a complete fixed representation or a cohrerent representation of temporal reality.

§2.3.2.1. The World-Time Predicate-Indexing Disanology.

The error comes from reading too much into analogies between times and worlds. By emulating ersatz modal realism, ersatz presentists forget important disanalogies, and especially, that what is present changes. This disanalogy manifests itself most acutely

with a certain kind of *world-indexed property* (cf. Plantinga, 1974, Ch.4, §11 and pp.72-73; Yagisawa, 2010, §3.5). World-indexed properties are properties of having a certain property at a certain world. More precisely, Plantinga gives the following account: 'A property *P is world-indexed* if and only if either (1) there is a property Q and a world *W* such that for any object x and world *W\**, *x* has *P* in *W\** if and only if *x* exists in *W\** and *W* includes *x's having Q*, or (2) *P* is the complement of a world-indexed property.' (1974, p.62). For our purposes, and perhaps more accurately, it will suffice to speak of world-indexed *predicates*, rather than properties, in case there really are no world-indexed properties. An example of a world-indexed predicate is *being such that x is F at w*. And this can be predicated of a thing, regardless of whether it's *x*, *F*, or at *w*.

As Plantinga explains, '...for any world *W*, either Socrates [and any other particular] has the world-indexed property of existing-in-*W* or he has the complement of that property—the world-indexed property of not-existing-in-*W*. Hence, for any world *W*, either *existence-in-W* or *non-existence-in-W* is essential to Socrates and entailed by his essence.' (*Ibid*., p.72). The thought is that, given ersatz modal realism, what is true-at-a-world is necessarily true-at-a-world, since sets, including world-sets of abstracta, have their members essentially. And necessary truths, by definition, are true at all possible worlds.

A special case of world-indexed predicate is where the indexing is to the actual world. Takashi Yagisawa provides the following clear elaboration of such properties under the guise of a property's *α–transform*:

> Alvin Plantinga proposed the notion of α–transform. The α–transform of a property is that same property as indexed to @ [the actual world]: for example, the α–transform of being a philosopher is being a philosopher at @. It is almost universally accepted that the operation of α–transformation produces necessity out of contingency, i.e. if a thing has a property contingently, it has the α–transform of that property necessarily. The widely accepted reason is that if x is F at @, then for any possible world w, x is F at @ at w, and vice versa. (2010, p.59)

*Actuality*, in this context, should be understood rigidly: it always designates the same world, regardless of where in modal space the predication of a proprty's α–transform is made. So, if it's actually the case that *x* is *F*, then, as of every world, and every individual, it's true of it that *x* is *F* at @.

This works fine for ersatz modal realism, but consider now the analogous case for ersatz presentism. Just as we had world-indexed predicates, we can likewise have

*time-indexed predicates*: predicates of being such that a specific predicate is truely ascribable of a specific thing at a specific time. And like world-indexed predicates, time-indexed predicates, if they hold of a thing at one time, will necessarily hold at all times. This is because, assuming times are sets of propositions, and sets have their members essentially, then what is true-at-a-time is then necessarily true-at-a-time. And necessary truths are true at all possible times.

Moreover, there is also an analogue of the α–transform of predicates: *present-indexed predicates*. Present-indexed predicates are predicates of being such that it's presently the case that a specific predicate is truely ascribable of a specific thing. For example, the predicate of *being such that x is F at present*. The primary difference, so far, between world-indexed and time-indexed predicates, isn't the predicates themselves, but whether the maximal consistent sets of propositions correspond to times or worlds. However, as noted in Chapter 1, Section 1, there are three ways of understanding present tensed operators: non-rigidly, semi-rigidly, or rigidly. For our interests, we will be concerned with the semi-rigid reading.

According to this interpretation, present tensed operators, like rigid actuality operators, always refer to the objectively *privileged* ersatz-construction (in this case, ersatz-time, rather than ersatz-world). However, unlike actuality, what is presently the case, changes; which ersatz-time is (semi-rigidly) present changes with corresponding changes to reality. So the operator selecting the privileged time is neither rigid (always selecting the same time), nor completely malleable, changing in accordance with whatever time the predication is made from (as per the non-rigid interpretation). Instead, its level of rigidity lies somewhere between rigid and non-rigid interpretations: it's semi-rigid.

§2.3.2.2. The Present-Indexing Conundrum.

What are the implications of this disanology between ersatz modal realism and ersatz presentism? In short, the implications are that, any metaphysical changes to present facts requires the complete supplantation of the ersatz-B-series prior to changes, with a new ersatz-B-series after changes, with no common ersatz-times between the series'. This demonstrates that ersatz-B-series' fail to give complete *permanent* representations of dynamic reality, and hence failing to solve the problem of temporal unity. But it also demonstrates that ersatz-B-series' necessarily *misrepresents* dynamic temporal reality, since, beside present ersatz-times, no other ersatz-time in any of the successive ersatz-

B-series' would ever become present. If correct, this would be a major blow to ersatz presentism. So let us carefully consider the argument for these consequences.

Since things are getting complicated, with considerations at a high-level of abstraction, it will be instructive to take more care by presenting this argument formally, with greater detail:

*Argument for the Propositional Reflectance of Present-Indexing.*

**P1**. There are propositions concerning predications of present-indexed predicates which vary in their truth-value with corresponding changes to concrete reality. (Dynamic Propositional Reflectance)

**P2**. If P1, then for all ersatz-times, $t_n$, and all present-indexed predicates, $\Phi$, $t_n$ will have as a member either a proposition, $p$, affirming a predication of $\Phi$, or a proposition, $q$, affirming that predication of $\Phi$'s negation, to all things represented in $t_n$. (Conditional Ersatz-Membership)

From **P1** and **P2**:

**C1**. For all ersatz-times, $t_n$, and all present-indexed predicates, $\Phi$, $t_n$ will have as a member either a proposition, $p$, affirming a predication of $\Phi$, or a proposition, $q$, affirming that predication of $\Phi$'s negation, to all things represented in $t_n$. (Ersatz-Membership)

*Argument for the Diachronic-Coherence of Ersatz-Time.*

**P3**. There is a single ersatz-B-series, $\langle t_i,...,t_j \rangle$, which is an ordered-set of ersatz-times, holding as of each present. (Temporal Ersatzism)

**P4**. If a proposition, $p$, affirming any predication of a present-indexed predicate, $\Phi$, is a member of an ersatz-time, $t$, belongubg to ersatz-B-series, $\langle t, t_1,...,t_n \rangle$, then for coherence, there must be some proposition, $p_x$, belonging to every ersatz-time in $\langle t, t_1,...,t_n \rangle$ such that, $p_x$ affirms a predication of $\Phi$ to each individual represented at the ersatz-time(s) it belongs to. (Diachronic-Coherence Constraint)

From **C1**, **P3**, and **P4:**

**C2**. For every present-indexed predicate, $\Phi$, for which there is some proposition, $p$, affirming a predication of it, and $p$ is a member of an ersatz-time, $t$, such that $t$ is a member of present ersatz-B-series, $\langle t_i,...,t_j \rangle$, there must be some proposition,

$p_x$, belonging to every ersatz-time in $<t_i,...,t_j>$ such that, $p_x$ affirms a predication of $\Phi$ to each individual represented at the ersatz-time(s) it belongs to. (Diachronic-Coherence)

*Argument for Temporary Present-Indexing.*

> **P5**. What facts are present changes with corresponding changes to concrete reality. (Dynamic Ersatz Presentism)
>
> **P6**. If C1, P3, and P5, then for some present-indexed predicate, $\Phi$, a proposition affirming a predication of $\Phi$ will be true-at-a-time $t$ belonging to the present ersatz-B-series before changes to present facts, and not true-at-a-time $t'$ belonging to the present ersatz-B-series after changes to present facts. (Conditional Ersatz-B-Series Dynamism)
>
> From **C1**, **P3**, **P5**, and **P6**:
>
> **C3**. For some present-indexed predicate, $\Phi$, a proposition affirming a predication of $\Phi$ will be true-at-a-time $t$ belonging to the present ersatz-B-series before changes to present facts, and not true-at-a-time $t'$ belonging to the present ersatz-B-series after changes to present facts. (Ersatz-B-Series Dynamism)

*Main Conclusion.*

> From **C2** and **C3**:
>
> **C4**. There can be *no* ersatz-times in common between ersatz-B-series, $<t_i,...,t_j>$, holding before changes to present facts, and ersatz B-series, $<t_m,...,t_n>$, that holds after changes to present facts. (Ersatz Temporal Disunity)

Call this the *Argument from Temporal Disunity* against ersatz presentism. As can be seen, it proceeds in four stages towards the problematic conclusion. The first sub-argument concerns whether there are propositions affirming predications of present-indexed predicates, and whether they belong to ersatz-times. Its main purpose is to highlight the affirmative stances on these issues as argumentative assumptions. The second sub-argument concerns certain constraints on the relationships between ersatz-times. The third sub-argument educes a consequence of metaphysical change for the ersatz-B-series. And the final move combines the conclusions of the second and third sub-arguments to generate the unfavourable conclusion.

§2.3.2.3. Examining Temporal Disunity.

Before moving on, let us elaborate the justifications supporting some of the argument from temporal disunity's premises, and answer potential objections. I suspect that objections won't come at the argument's final stage or third sub-argument. Rather, I anticipate that objections will be levelled towards the first and second sub-arguments. So our discussion focuses on them.

In the first sub-argument, **P1** should be uncontroversial. For all facts, there should be a proposition representing them. Perhaps some will have reservations that propositions concerning predications of present-indexed predicates, given dynamic ersatz presentism, will be irreducibly tensed. For example, when outlining his ersatz presentism, Crisp suggests that propositions be taken as tenseless:

> One "takes tenselessness seriously," let us say, iff one thinks there are tenseless propositions. In what follows, I shall suppose there are. I shall suppose henceforth that expressions like ˹$[\Phi x]$˺, ˹$[\forall x\Phi x]$˺ (where $\Phi$ does not express an A-property) denote such propositions. (2007, p.99)

However, this is untenable; Crisp is simply mistaken in thinking his propositions are tenseless. After all, they are meant to change their truth-values. But tenseless propositions cannot undergo change. Indeed, if the ersatz-constructions were made up of tenseless propositions, we would expect them to better represent worlds, rather than times. I suspect that Crisp lacks an accurate grip on what tenseless propositions are, and doesn't really mean what he ostensibly contends (we saw in Chapter 1, Section 3.2, Crisp involved in a similar confusion).

The main pressure in the first sub-argument will then be on **P2**. According to both Bourne and Crisp's account of ersatz-times, such propositions, concerning predications of present-indexed predicates, should be included in ersatz-times. For even on Bourne's restricted account (see §1), which only permits *u*-propositions as members of ersatz-times, such propositions should be included, since they include no past or future tense operators. Of course, some might protest that propositions concerning predications of present-indexed predicates shouldn't be included in ersatz-times precisely because they are problematic for ersatz presentism, and that this should be the correct reaction to the argument.

This suggestion misunderstands why Bourne is legitimately able to exclude the otherwise problematic *e*-propositions in the first place. It's because they are meant to be a complex, reducible to representation of a *permanent* aspect—ersatz-B-relations—and of a *temporary* aspect—facts about concrete reality's present states. Representations of what is temporary are eligible members of ersatz-times, whilst representations of what is permanent could arguably be maintained to stand outside time. (Of course, Bourne betrays this distinction in his own account by making some ersatz-B-relations temporary.)

But, unlike *e*-propositions, propositions concerning predications of present-indexed predicates lack a permanent aspect. They concern the present state of concrete reality. If they aren't permitted into ersatz-times, nothing should be. Indeed, if representations of facts concerning predications of present-indexed predicates aren't included in ersatz-times, then whether such facts did, do, or will obtain, are simply not captured by the ersatz-B-series. The ersatz account of the A-determinations must then fail, because it cannot capture *all* facts about what was, is (now), or will be the case. Ersatz presentists must accept **P2** if they are to give the *complete* representation of temporal reality required for their reductive ambitions.

If ersatz presentists are going to contest the argument from temporal disunity, they will need to place their objections in the second sub-argument. And since **P3** is a defining characteristic of ersatz presentism, that leaves only **P4**. So why believe **P4**? In Section 2.3.2.1 we merely stated that, in accordance with popular opinion, if a predication of a time-indexed predicate holds of a thing, it then necessarily hold of things at all times. The reason given was that, since ersatz-times are sets of propositions, and sets have their members essentially, what is true-at-a-time is necessarily true-at-a-time. And necessary truths are true at all then possible times.

Yet, some might object that, for some true predication of the presently realised ersatz-time, $t_p$, that the present-indexed predicate, $\Phi_\alpha$, truly holds of $t_p$, though it will be true-at-$t_p$, and hence true *simpliciter*, *of* any ersatz-time in the ersatz-B-series that $\Phi_\alpha$ truly holds of $t_p$, for any other time in the ersatz-B-series, $t_n$, it wouldn't be true-at-$t_n$ that *of* any ersatz-time in the ersatz-B-series that $\Phi_\alpha$ truly holds of $t_p$. Rather, it would be true-at-$t_n$, *of* any ersatz-time in the ersatz-B-series that $\Phi_\alpha$ truly holds of $t_n$. For it's only *if the present-indexed predicate holds of a thing*, that it must then hold of all other things, regardless of where or what. But, when the present-indexed predicate ceases to hold due to the metaphysical changes to concrete reality, this antecedent ceases to be true *simpliciter*. So, though a predication of a present-indexed predicate may presently

hold *of* all things that are *as of now* the case, including past ersatz-times, it needn't hold of anything *at* other ersatz-times.

Are ersatz presentists therefore now vindicated? Can we simply reject **P4**? Not so quick. Defeating a justification for a contention isn't itself an argument against it. And the above response of blocking the inference from what is true-*of*-a-time to what is true-*at*-a-time has the ominous consequence of making what holds at one ersatz-time, even about other ersatz-times, place *no* constraints on what holds at those other ersatz-times. For example, it could be true at the present ersatz-time that history is accurately represented by one ersatz-B-series. And then at a following ersatz-time, related by e-later-than, that history is accurately represented by entirely distinct ersatz-B-series. Time would only be superficially unified on this picture. So, ersatz presentists should be cautious before rushing into this response.

Indeed, on closer examination, it becomes evident that **P4** follows straightforwardly from the analyses of the A-determinations outlined in Section 1. Consider the following statement affirming that a predication of a present-indexed predicate was true:

(1) It was the case that, for any *x, x* is such that $\alpha$ is (semi-rigidly) now $\Phi$.

What are the truth-conditions for claims like (1) according to ersatz presentism? Intuitively, (1) would be true if *x* existed, and is such that $\alpha$ is (semi-rigidly) now $\Phi$, and that depending on $\alpha$'s being (semi-rigidly) now $\Phi$. Likewise, according to the ersatz analysis of pastness, ERSATZ-PAST, (1) is true under the following conditions:

> **(TC1)** (1) is true iff there is as of now a proposition, *p*, and an ersatz-time *t*, such that: i) *p* represents *that there is as of now some x such that α is (semi-rigidly) now Φ*, and *p* is a member of *t*, and ii) there is as of now an ersatz-time *t'*, such that *t'* accurately represents (concrete) reality, and *t* is e-earlier-than *t'*.

According to **(TC1)**, (1) is true when there is an *x* such that $\alpha$ is (semi-rigidly) now $\Phi$ at an ersatz-time e-earlier-than the present ersatz-time. If we want claims like (1) to come out true, then some past ersatz-times must indeed contain the problematic propositions, affirming predications of present-indexed predicates to things made-true partly by the realisation of the distinct present ersatz-time. And the same will hold of future ersatz-times. Moreover, we need only change the embedding operator in (1) to an always

operator (see Ch.1, §1) to extend this argument towards the generalisation that such problematic propositions are members of each ersatz-time in the ersatz-B-series. So, ersatz presentists are indeed compelled to accept **P4** after all.

And again, ersatz-times, qua sets, have their members essentially. Therefore they will only be able to make statements like (1) true when different ersatz-times are present, if they also contain propositions affirming predications of present-indexed predicates of things made-true partly by the realisation of those distinct, and therefore conflicting, present ersatz-times. But then, if the same ersatz-times were to continue to represent the time-series after concrete reality has undergone metaphysical change, those ersatz-times must contain inconsistent sub-sets of propositions affirming predications of present-indexed predicates of things made-true partly by the realisation of distinct ersatz-times. However, since ersatz-times must, by any plausible account, be *consistent* sets of propositions, the resultant sets would cease to be ersatz-times at all. What we have here is essentially a version of McTaggart's (1908) infamous A-series paradox revived for temporary facts within a fixed ersatz-B-series.

## §3. Undermining Ersatzism.

Despite the superficially promising motivations for the ersatz account of the A-determinations, closer examination failed to vindicate its recent popularity. We've already encountered several problems for the ersatz account when considering these potential motivations. In this section, we attempt to deliver further nails to its coffin to safeguard against the rising-dead. More specifically, we raise some problems for analysing A-determinations in terms of either B-relations or ersatz-B-relations. This will have the simultaneous effect of undermining B-theory, presentism's main rival.

### §3.1. Topological Impediments to B-ing A-Relation.

How appropriate are B-relations or ersatz-B-relations for analysing A-determinations? In Section 2.2 we met the contention that, because B-relations are inter-defineable, we could get by with fewer primitives. However, instead of suggesting merit with respect to **GM2b**, we might rather worry about whether *A-Relations* are inter-defineable. The A-relations are *past-relative-to*, *present-relative-to*, and *future-relative-to*. In particular, we will see that A- and B-relations come apart under different topologies. Consider first a branching temporal topology with linear-past and branching-future, as depicted below:
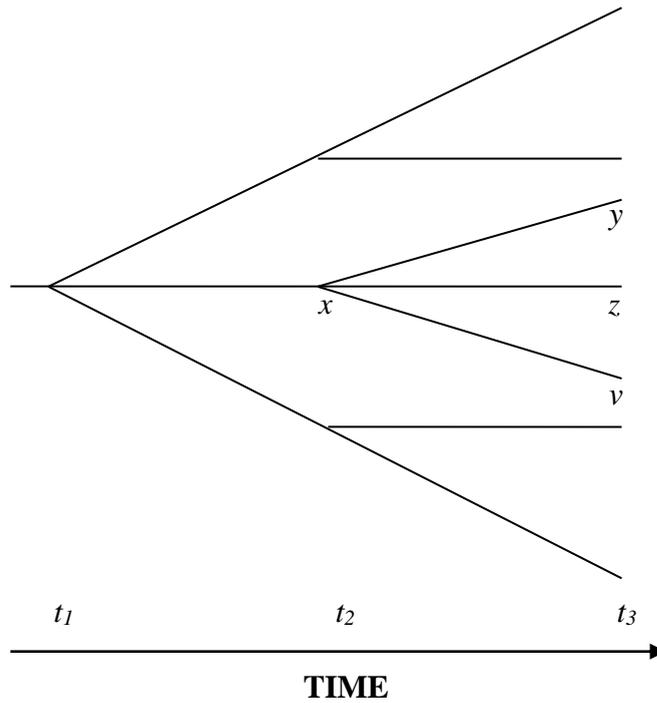
Figure 5: This diagram represents a temporal topology with a linea-past and branching-future. The horizontal arrow represents time's direction across three vertical time-slices '$t_n$'. Lines connecting points (times) at time-slices represent temporal progressions. The time-points on the middle branches at $t_2$ and $t_3$ have been labelled $x$, and $y$, $z$, and $v$ respectively.

In figure 5 we see that, at each time-slice, future-wards temporal-fission, and past-wards temporal-fusion, occurs. Given this topological asymmetry it follows that:

(2) $(\mathbf{P_n}p \mathbin{\&} \mathbf{P_n}q) \rightarrow \mathbf{P_n}(p \mathbin{\&} q)$

According to the notation outlined in Chapter 1, Section 1, '$\mathbf{P_n}$' stands for the past metric tense operator. The subscript is a variable for the temporal units past-wards at which the embedded proposition represents. Since only one time lay $n$-units-past-wards, if '$p$' holds $n$-units-past-wards, and '$q$' holds $n$-units-past-wards, then '$p \mathbin{\&} q$' holds $n$-units-past-wards. However, consider the equivalent conditional with the future metric tense operator '$\mathbf{F_n}$':

(3) $(\mathbf{F_n}p \mathbin{\&} \mathbf{F_n}q) \rightarrow \mathbf{F_n}(p \mathbin{\&} q)$

Given figure 5's branching temporal topology, (3) doesn't follow, since there is more than one time *n*-units-future-wards. If '*p*' holds *n*-units-future-wards, and '*q*' holds *n*-units-future-wards, then it may be that '*p & q*' fails to hold *n*-units-future-wards (cf. Le Poidevin, 1996, p.478). So, consider time-points *x* and *y* in figure 5. Suppose that '*p & q*' is true at *x*, and that '*r & s*' are true at *y*, but not at *v* or *z*. Then according to the above reasoning the following A-relation will hold:

(4) (*p & q*) was-the-case-1-unit-ago relative to *y*.

And this follows from:

(5) '*p* was-the-case-1-unit-ago relative to *y*' and '*q* was-the-case-1-unit-ago relative to *y*'.

However, the same cannot be said of the equivalent future-wards directed A-relations. For, whilst the following A-relation holds:

(6) (*r & s*) will-be-the-case-1-unit-ago relative to *x*.

It does *not* follow from:

(7) '*r* will-be-the-case-1-unit-ago relative to *x*' and '*s* will-be-the-case-1-unit-ago relative to *x*'.

This asymmetry in what inferences are permissible from different A-relations suggests that the *past-relative-to* and *future-relative-to* relations are non-equivalent. However, there is no such barrier for the equivalence of *earlier than* and *later than*. So, consider:

(8) (*r & s*) obtains-1-unit-later-than *x*.

Unlike the fact that (6) follows from (7), (8) follows from:

(9) '*r* obtains-1-unit-later-than *x*' and '*s* obtains-1-unit-later-than *x*'

And this is regardless of there being several times (*v*, *y*, and *z*) later than *x*. Why the disparity between *future-relative-to* and *later than*? The reason stems from the familiar implication that what *was* and *will be* the case, *was* and *will be presently* the case. No such implication follows from the *earlier than* and *later than* relations. Given (8), both *r* and *s* may or may not be *simultaneous*. But given (6), *r* and *s must* be *co-present*. And a similar argument can be made with past-wards-branching temporal topology.

Likewise problems arise for another non-linear temporal topology: the *Shrinking-Tree* temporal topology, advocated by McCall (1994) and Bourne (2006)—for Bourne, times are abstract, whilst for McCall, they are concrete. Like the future-wards-branching topology, this model has future-wards-branching with a linear-past. However, as the present progresses future-wards, only one future-wards branch becomes present; the others are "shaved-off" (cease to be series-members).

Typically this kind of topology's motivated by an attempt to capture the open-future, whilst maintaining a closed-past, and/or to capture time's direction. But it's not my purpose here to assess this model's merits/demerits; my point here is to question whether pastness and futurity can be captured by B-relations. We can represent the model pictorially below:
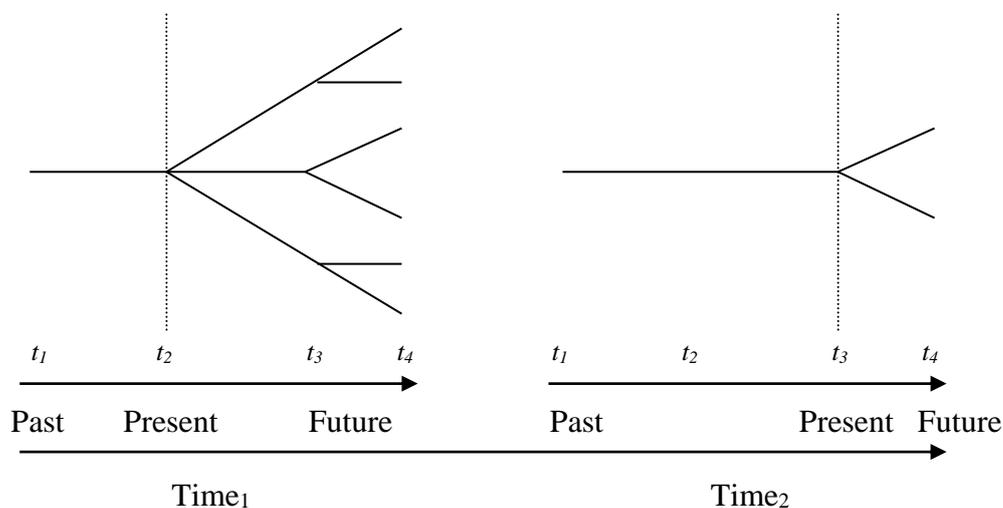


Figure 6: This diagram represents a shrinking-tree temporal topology whereby 'Time$_1$' and 'Time$_2$' reflect successive presents represented by vertical dotted lines. The two upper horizontal arrows are labelled above with distinct vertical time-slices '$t_n$', and assigned A-determinations below. Lines connecting points (times) at time-slices represent temporal progressions.

What is striking about this temporal topology for present purposes is that, for all times later than the present time-slice, at either Time$_1$ or Time$_2$, it's *not* the case that they are *all future*, since some are never present. For example, as of Time$_1$ there are in figure 6 three *potential* futures that could obtain when $t_3$ becomes present. But since only one of these actually obtains as of Time$_2$ when $t_3$ becomes present, two of the times at $t_3$ as of Time$_1$ aren't *actually* futures. Yet, those times at $t_3$ as of Time$_1$ are nonetheless later than the present time as of Time$_1$. This suggests that the later than relation is too coarse-grained to successfully analyse futurity.[75] And there is a similar story for pastness.

Worryingly then, under certain temporal topologies, certain constitutive axioms of second-order change, such as were discussed in Chapter 3, Section 3.2, fail. (For example, both Axiom$_1$ and Axiom$_2$ straightforwardly fail for the kind of reasons we've been discussing.) This would deal a devastating blow to the ersatz account with repect to **GM5b**. Since the primary reason we care about the future is because it will be present. However, advocates of the ersatz account might reply that, this poses no problem for the proposed analyses if time is essentially linear. Indeed, one B-theorist, Robin Le Poidevin, considers a similar kind of response to his suggestion that certain topologies create obstacles for analysing B-relations in terms of A-determinations:

> It may be suggested (it has been, by Peter Simons) that all we have established is simply that the usual tensed analyses of B-series facts proceed on the (surely anodyne) assumption that time is linear. Recognizing this, the tensed theorist could make the reduction sensitive to different topologies. For linear time, the reduction goes like this, for disunified time, like that, and so on. Even if this were the right approach, however, we would still need to come up with an analysis compatible with branching time, and I am not at all clear that this can be done. I suspect strongly, in fact, that it cannot be done. But in any case, the truth-conditions of a statement like '*i* is simultaneous with *j*' cannot be a purely contingent matter: statements have their truth-conditions as a matter of necessity. So topological sensitivity is no virtue in a tensed analysis of B-series facts. (1996, p.480)

I'm inclined to offer an analogoue of Le Poidevin's reply against my objector. Either independent reasons need to be supplied to think the discussed topologies are impossible, or analyses of A-determinations in terms of B-relations for these topologies are wanting. Analysis may be topologically sensitive, but perhaps at a cost if so.

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[75] Nothing so far stated suggests the reverse, that A-determinations aren't fine-grained enough to provide analyses of B-relations.

A second objection might be to merely stipulate that their (idiosyncratic) B-relations *do* parallel the A-determinations in the problem cases. But then I suspect that no genuine analysis is being offered. Any such analysis would stink of a simple rebranding of the *same* primitives. For example, the B-relations, just like the A-determinations, would no longer be inter-defineable, even *earlier than* and *later than*.

§3.2. To B- or not to B- A-Determination.

According to McTaggart (1908, 1927), there are three kinds of ordered-series: an A-series, B-series, and C-series. The former two, but not the C-series, ostensibly order their members *temporally*, whilst the latter two, but not the A-series, are ordered via fixed asymmetric relations. The only difference between C-series and B-series is that B-relations, unlike C-relations, have a temporal dimension to them. McTaggart thought that, 'It is only when the A series, which gives change and direction, is combined with the C series, which gives permanence, that the B series can arise.' (1908, p.464). And since he thought the A-series is paradoxical, and the B-series cannot exist without it, by elimination, he thought our world is ordered by a timeless C-series. Perhaps the central tenet of B-theory is that, contra McTaggart, the B-series is independent of the A-series.

As far as I'm aware, this tripartite distinction between ordered-series' has been universally accepted. But it's this that I now want to dispute. For, though I agree with B-theorists that a B-series can exist independently of an A-series, this is because I think the B-series is merely a C-series in disguise; I think McTaggart was mistaken in distinguishing B-series from C-series. My contention is that B-relations are strictly timeless relations. In this way, I'm broadly in agreement with McTaggart that the A-series is essential to time. And even if B-theorists were correct in postulating B-relations to order events, they would be insufficient to distinguish temporal from non-temporal forms of variation (see Ch.2, §3.3.1).

To illustrate, take the number-series as a paradigmatic C-series. Typically, this series is ordered by the fixed asymmetric relations of *less than*, *equal to*, and *greater than*. But now apply B-relations to this series. One is *earlier than* two, five comes *after* four, ten is *before* eleven, twenty-one comes *later than* fourteen, one *begins* the series, or if I prefer, *ends* it. These B-relations find themselves acutely at home in a non-temporal setting. Indeed, note that one features that McTaggart thinks distinguishes B-series from C-series is directionality: 'More is wanted, however, for the genesis of a B series and of time than simply the C series and the fact of change. For the change must

be in a particular direction. And the C series, while it determines the order, does not determine the direction.' (*Ibid*., p.462). Yet, B-relations have no more directionality than the C-relations, less than and greater than. The number series gains no directionality by being ordered with B-relations.

However, my observant reader will have noted that I omitted an important B-relation, simultaneity, from the above description. Admittedly, although some expressions of this B-relation, such as, 'three is *concurrent with* itself in the series,' *do* fit well with this C-series, other expressions, such as, 'three *occurs simultaneously with* itself in the series,' seem slightly out of place in this C-series. This might be partly explained by the fact that positions in the number series are uniquely occupied. So there is no need for a relation securing that members occupy the same place within that series. (Note that the *equality* relation is really *identity*, so palys a different role.) Nevertheless, it would be obstinate to deny simultaneity has any temporal connotations whatsoever. Yet, the connotation isn't that the relata occupy the *same* position *within a time-series*. Rather, it's that the relata *don't* occupy *distinct* positions within a time-series; the temporal connotation is negative, not positive. It doesn't entail that the relata of simultaneity lie within a time-series at all.

To see why, consider McTaggart's construal of a *moment*. According to McTaggart, 'The contents of a position in time are called events. The contents of a single position in time are admitted to be properly called a plurality of events. (I believe, however, that they can *as* truly, though not *more* truly, be called a single event. This view is not universally accepted, and it is not necessary for my argument.) A position in time is called a moment.' (*Ibid*., p.458). Moreover, he clearly considers, not unreasonably, that the plurality of events are related by simultaneity: '…a compound substance consisting of simultaneous events may properly be spoken of as itself an event.' (1927, Ch.2, p.10).

These moments form the basic constituents potentially ordered by his three series'. Indeed, it should be noted that there is *no* time *within* or *at* a time. After all, there can be no genuine change at a time, and time, according to McTaggart, requires change.[76] Importantly, when McTaggart argues for time's unreality, he isn't denying there are any moments. Rather, he is denying that those moments are temporally ordered and directed within a temporally-unified-series. It's this temporally-unified-series that properly deserves the label 'time' which he contends is unreal.

Consider, then, Jonathan Tallant following portrayal of a C-theoretic world:

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[76] Yagisawa (2010, p.52) makes a similar point.

What is a C-world, then? Consider, what we might think of as, a single instant. That is, a particular way that the world might be at any given time, a particular 3D arrangement of physical objects. The cricket ball is poised, millimetres away from the stumps having beaten the bat, the bathtub is full and just one more drop from the tap will send water cascading over the side, the water itself seems to form a column from the tap to the bath—but nothing moves. This single instant looks, if we could look at it, much as a paused video might. This is our single instant. Consider this instant to be world *w*: is time real in *w*? Seemingly not. There are no B-relations. Now add another instant to this world. Do we now have a temporal world?

Intuitively I would suggest not. In order for *w* to be a world in which time is real, the relation in which the instants stand to one another must be a timely relation. So far there is no reason to think that the mere creation of two instants is sufficient for there to be time. We have not arranged them properly. By extension, then, we could add an indefinite number of instants to *w* and still not have a world in which time is real. (2008, pp.118-119)

We see here that a multitude of moments doesn't make a time-series. McTaggart's conclusion is unthreatened by the collection of these temporally unrelated moments.[77] Indeed, besides McTaggart, C-theory has proved more popular among physicists, most notably Julian Barbour (1999).

It should now be clear that the negative temporal connotations of simultaneity— that the relata don't occupy distinct positions within a time-series—are insufficient to make its relata temporal. Some, however, may hesitate, thinking that the denial of simultaneity, itself a B-relation of sorts, could be employed to establish the temporality of those events. But this too is no good, since events can be non-simultaneous for reasons other than occupying distinct positions within a time-series. For example, they could occupy different positions within a timeless-series. It seems then that B-relations merely form a subclass of C-relations; there is nothing distinctively *temporal* about them. A B-series, like a C-series, gains its temporal connotations merely by ordering a *temporal* series, but can describe the ordering of timeless-series'. The ordering of 'positions' via B-relations doesn't make a series *temporal*.

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[77] Michael Dummett was also making this point when he wrote: 'To say that time is unreal is to say that we apprehend relations between events or properties of objects as temporal when they are not really temporal at all. We have therefore to conceive of these events or objects as standing to one another in some non-temporal relation which we mistake for the temporal one.' (1960, p.503).

If the above reasoning is correct, we've another reason here to be suspicious of the ersatz account; if the ersatz-B-series represents B-relations, and B-relations are non-temporal, then the ersatz-B-series should equally fail to represent temporal reality. But the A-series really does capture temporal reality. So ersatz-B-relations cannot successfully analyse A-determinations. If they are to represent a time-series, the analysis should go the other way.

## §4. Summary.

Having outlined the ersatz account of the A-determinations, and the resultant ersatz presentism, we explored several reasons for preferring them over redundant presentism: understanding of primitives, ideological parsimony, and temporal unity. On examination, we found each motivation wanting. We then turned to exploring potential defects of the reductive analyses. In particular, we challenged the adequacy of the analyses relative to certain temporal topologies, and questioned whether the B-relations are genuinely temporal. Reflection on these issues should lead us to think that, despite its growing popularity, there is little to recommend, and some reason to disfavour, ersatz presentism over its competitors.

# Appendix
## Theory-Choice Criteria.

I list here, for easy access, all good-making criteria formulated used in assessing and guiding theory-constructions in Part II.

**GM1.** An account of the A-determinations is *ceteris paribus* preferable to the extent that we understand and can apply the account's primitives.

**GM2a.** An account of the A-determinations is *ceteris paribus* preferable to the extent that it's committing to less inexplicable facts.

**GM2b.** An account of the A-determinations, *T*, is *ceteris paribus* preferable to another, *T\**, to the extent that *T* posits a subset, or less, of the metaphysical primitives of *T\**, without increasing inexplicability.

**GM3.** An account of the A-determinations is *ceteris paribus* preferable for presentists to the extent that it facilitates explanatory potential for the connection between presentness and existence.

**GM4.** An analysis should be non-circular, in that it employs no use (even tacitly) of the analysandum in the analysans.

**GM5.** An analysis should be non-arbitrary, in that the analysans, in some sense, offers a suitable analysis of the analysandum.

**GM5a.** An account of the A-determinations is *ceteris paribus* preferable to the extent that it preserves our beliefs prior to, or irrespective of, the account.

**GM5b.** An account of the A-determinations is *ceteris paribus* preferable to the extent that it preserves the *force* of the A-determinations prior to, or irrespective of, the account.

**GM6.** An account of the A-determinations is *ceteris paribus* preferable to the extent that it preserves and supports presentist motivations.

**GM7.** An account of the A-determinations is *ceteris paribus* preferable to the extent that it captures what's fundamentally in contention between competing temporal metaphysics.

# Part III:

## Effervescent Presentism.


Getting up, he hurried into his study, returned at once with two cigarette lighters which he set down on the coffee table. 'Look at these. Look the same don't they? Well, listen. One has historicity in it.' He grinned at her. 'Pick them up. Go ahead. One's worth, oh, maybe forty or fifty thousand dollars on the collectors' market.'

The girl gingerly picked up the two lighters and examined them.

'Don't you feel it?' he kidded her. 'The historicity?'

She said, 'what is "historicity"?'

'When a thing has historicity in it. Listen. One of those two Zippo lighters was in Franklin D. Roosevelt's pocket when he was assassinated. And one wasn't. One has historicity, a hell of a lot of it. As much as any object ever had. And one has nothing. Can you feel it?' He nudged her. 'You can't. You can't tell which is which. There's no "mystical plasmic presence", no "aura" around it.'


—Philip K. Dick, *The Man in the High Castle*, 1962, pp.65-66

# Chapter 7

## The Effervescent Present.

*What is the present? The most obvious answer is that the present is the time when things change, act, and persist, when there are events or occurrences, when causes cause, and when things become what they are and have ceased to be what they were. The present is so different from the past and future—there are no occurrences in them—that it seems obviously to be the time of activity. It seems sophistry to argue that it is not.*

*—Irwin C. Lieb, Past, Present, and Future: A Philosophical Essay*

*About Time, 1991, p.15*

In Part II we explored several competing presentist variants. Though they were not exhaustive, I hope to have captured those most plausible. In what follows I outline, develop, and defend my preferred account of the A-determinations and its resultant presentist variant, building on insights from previous accounts, and guided by theory-choice criteria identified along the way. The following account is more intricate than those preceding it; it involves considering how temporal metaphysics combines with several other fields of metaphysics and taking unorthodox stances there. However, this shouldn't be especially surprising, since, as David Armstrong notes:

> ...especially in metaphysics, every question proves on examination to be subtly intertwined with every other. The strategy of divide and conquer that has served natural science and mathematics so well is far harder (though not quite impossible) to apply in philosophy. Metaphysicians, in particular, find over time that they must present a position as an assemblage of more or less interlocking doctrines that cover the whole ontological field. (1997, p.9)

A consequence of this is that earlier exposition inevitably presupposes later exposition. This is unfortunate, but like Armstrong, I know of no solution: '...it does not seem possible to develop this ontology, and perhaps any other, without in some degree anticipating and presupposing parts of the argument that, in the serial order on the page, still lie ahead. Metaphysics is a serpent that has itself by the tail.' (*Ibid.*, p.28). Accordingly, a degree of patience on the reader's part may be required before they have

their questions answered. I only hope that, by the time you reach the end, those questions will have been answered.

This chapter focuses on the account of presentness, whilst the following chapter tackles pastness and futurity. The account of presentness is developed in three main sections. The first introduces the idea (Section 1.1), outlines a broad metaphysical groundwork, creating the best condition for that idea to flourish (Section 1.2), and only then proceeds with formulating the account (Section 1.3). The rest of the chapter concentrates on elaborating two central aspects of the account, that must developed in a certain way for the account to be successful: natural laws (Sections 2) and the ranges-over relation binding them to what they govern (Section 3). These will be developed with one eye on the accounts of pastness and futurity developed in the following chapter. Some of the compensation and significance of the developments in these sections only reveal themselves there. So, once again, I urge patience.

## §1. The Time of Activity.

The following account of the A-determinations is inspired by an account of *presentness* proffered by Peter Forrest (2004, 2006) for growing-block thesis. According to Forrest's account, the present is when casual activity occurs, and that 'causal activity' is the occurrence of some *x*'s tendency ('causal power') to generate an event C to which *y* belongs, '…at a time too early for it to be the case that there has been a causal relation or to be the case that there has not been one.' (2004, p.359). It seems to me that Forrest has hit upon something intuitively important about our conception of presentness. Consider the short passage from Lieb (1991) placed decoratively at this chapter's beginning. To summarise the moral I draw, intuitively the present is when things *can* happen.

Indeed, this isn't an especially uncommon insight. For example, we find Jorge Luis Borge in his *The Garden of Forking Paths* writing: 'Then I reflected that everything happens to a man precisely, precisely now. Centuries of centuries and only in the present do things happen.' (1941, p.45). Consider also the Sarte quotation heading Part I of the thesis. What is uncommon is for philosophers to draw upon this insight. So perhaps we should attempt to analyse presentness in terms of *being active*. But if this is to be any help, we must first understand what is meant by 'being active', and what it amounts to. Let us explore this now.

§1.1. On Being Active.

By *being active* I don't mean *being in action*, *activity*, or *undergoing activity*. The lattermost are typically understood as *processes*, activity as *events*, whereas the formermost is usually taken to be a *state* (cf. Steward, 1997, Chs.1-3). States are typically construed as preconditions for the processes bringing about events. The relationship between being active and being in action should be thought of as a distinction amongst states: those actually participating in activity, and those that *can*. Being active corresponds to the broader latter class of states, and being in action its subclass. This relates to the distinction between a *disposition* and its *manifestation*, whereby being active is a *dispositional state* and being in action a *manifest state* of some dispositional state. For example, fragility would be the dispositional state, and breaking, its manifestation. Following George Molnar's (2003, Ch.3) characterisation of dispositions, these dispositional states are *directed* towards such potential manifestations. But why use being active rather than being in action to guide our account of presentness? I have in mind the following criticisms expounded by Harris:

> The suggestion might be made that action is a sign of the present, the fact that action is going on. Alas! This proposal is no help. First, to say that action is going on is no more than to say that it is present, without offering any distinguishing criterion. Secondly, the activity of what is not acting is just as much present as the exertion of the active. Inertia does not disqualify the inert from being present. (1988, p.27)

The second criticism directs our attention to cases of *activity* where there is no *acting*. It's unclear how Harris understands either 'activity' or 'action' here. But plausibly, activity is necessary for action, whereby action might involve intentions that are *inter alia* responsible for, and direct, activity. Activity, however, needn't be directed by intentions or serve any purpose. Plausibly activity involves some kind of *happening*, *goings on*, or *event*.

    The case offered as an example is inertia. The thought is that we don't want to exclude inertial things from presentness. Though 'inertia' literally means lacking activity, there is perhaps a case for claiming that, strictly, things commonly ascribed inertness, by physicists among others, aren't entirely inert. Activity comes in degrees. We may speak loosely of things being inert as we do of things being flat. But in its most rigorous sense, it might be maintained that nothing is truly inert. Perhaps this is because

persistence, or maybe even existence, is construed as a kind of activity. Responding this way, however, brings us back to the redundancy account of presentness; that notion of activity would therefore be useless for our endeavour.[78] Instead, I exclude existing and persisting as genuine activities, allowing that there can be genuinely inertial entities. Indeed, I will be interpreting activity and being active as *causal activity* and being *causally active*. I suppose many will find this quite natural, and opens up the possibility of inertial states. But I take it that we wouldn't want to exclude merely inertial things, qua inertial, form presentness.

Being active is meant to be broader than undergoing activity. All things that are undergoing activity are in a state of being active, but some things not undergoing activity are also active, including inertial things. Moreover, the class of active things not undergoing activity should be such that they possibly, in some sense (to be elaborated), undergo activity. Hence, capturing the intuitive idea that the present is when things *can* happen; the present is when things are active. (More needs to be done to support this contention later. But the relevant sense is 'weak nomic possibility' (see §3.2.3.1).) However, to avoid losing focus, we return now to Harris' first criticism.

Harris' first criticism, 'to say that action is going on is no more than to say that it is present, without offering any distinguishing criterion', on first blush, sounds like it's complementary to an account of presentness framed in terms of being active. After all, if presentness is to be reductively analysed in terms of being active, it's unsurprising that what is active is also present. However, if emphasis is placed on 'distinguishing criterion', the objection becomes clear. For, is there not also activity in the past and future? B-theorists accept non-present things with causal powers no less than accepting non-present things generally. How then does being active distinguish non-present from present things? We cannot appeal to the distinction between what *was* and *will be* active, and what *is (now)* active. That would make any analysis of the A-determinations in terms of being active circular—failing crucially on **GM4**. If we're to make use of causal powers, we will need to elaborate what they are, and how they can be appropriately discriminating between the present and non-present.

What then of Forrest's (2004, 2006) constraints on *when* things possess their powers? He contends that present things must belong to 'a time too early for it to be the case that there has been a causal relation or to be the case that there has not been one'. Given our rejection in Chpater 2, Section 5, of causation as a real relation, we might instead understand this condition as: it's not yet the case that the thing has or has not

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manifested its tendencies. What appears to be doing much of the work here is whether there 'has been' a causal relation, that it's 'too early' for there to be any past tensed facts about whether a thing manifested its tendencies. Yet, if that were so, any account of presentness in terms of a thing's being active would again be circular. Since, for there to be a fact about what is past, there must be facts about some former present. But that present is just what we're trying to reductively analyse. So presupposing it in the analysis of being active would preclude being active's inclusion in the reductive base for presentness, lest it contravene **GM4**.

Nevertheless, an alternative way of understanding being active looks more promising for our pupuoses. If being active is to possess a causal power, then one popular way of understanding such powers is that they are inherited from contingent natural laws. Stephen Mumford provides the following concise expression of this view: 'Although the disposition has its causal power as a matter of conceptual necessity, a property token classified non-dispositionally does not: its causal powers are contingent upon the contingencies of the laws of nature.' (1998, p.162).[79] On this view, causal powers are bestowed upon *categorical* (intrinsic non-dispositional) property instances in virtue of their relations to natural laws. This conception of dispositional properties has been most ardently defended by David Armstrong (cf. 1997, Ch.5).

The details of this relation between law and categorical property instance will need to be elaborated later. Yet, the laws I have in mind will need to be non-Humean. That is, they don't merely *classify* or *describe* patterns or regularities in nature, but *govern* and *explain* the history of events. Accordingly, the relation between law and categorical property instance intended is the *ranges-over* relation, whereby a law *constrains* or *governs* the behaviour of all those things it ranges-over. In particular, laws range-over, and thereby govern, *states of affairs*, or simply *states* for short (to be elaborated next section).

Only that which a natural law ranges-over is active, and thus possesses any causal powers. Such things *inherit* their powers from the laws ranging-over them. Or equivalently, laws *bestow* powers upon the things they range-over. Accordingly, I propose the following account of being active:

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[79] Mumford (1998, Ch.10) himself rejects this view, argueing for the replacement of laws by 'real dispositions'.

**ACTIVE**: There is as of now some $x$, whereby $x$ is active $=_{def.}$ There is as of now some $x$, and $x$ is a state, $S$, whereby there exists some natural law, $L$, such that $L$ ranges-over $S$.

Inactive things are causally impotent, devoid of all powers. This is the conception of being active I intend to defend and utilise in my reductive analysis of presentness.

§1.2. A World of States of Affairs.[80]

Before outlining my account of presentness in terms of being active, I must elaborate some background metaphysics underpinning the proposal. I don't suppose that *all* parts of the following metaphysical picture are essential to the forthcoming analysis. But they are more congenial to the analysis than current metaphysical orthodoxy. Followng Armstrong, I assume that, '...coherence is an important virtue in a philosophical system, and so one that, to a degree, recommends that system.' (*Ibid*., p.29). If there is anything to epistemological *coherentism* at all, the mutually supportive fit between parts of a metaphysical system recommends it. It's therefore instructive to see how the analysis flourishes in its natural habitat; examination outside that environment undermines the ecological validity of the observations.

One distinctive feature about my conception of being active is the choice of entities I take natural laws to range-over. What are states and why do I suggest that they alone are the kind of entities laws range-over? On my understanding, a *basic state* is the condition of a substrata (a *thin* or *bare* individual) having a categorical property. Hence, states are structured particulars. Categorical properties, besides being non-dispositional, are intrinsic: they constitute some way a thing is in itself. A basic state needn't involve every way that something is, but merely some *aspect* of the way it is; they are instantiations of a single categorical property. Properties here should be thought of as *tropes*—particulars (non-repeatable) rather than universals (repeatable).

Similarly, *complex states* are constituted by basic or complex states related by bare structural external relations (see Ch.6, §2.1.1.2). States related by the external relation in a complex state must be ranged-over by the same natural law, since the law ranging-over those constituent states provides the basis for that external relation. Such complex states may then themselves be ranged-over by *emergent* natural laws, if such

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[80] I stole this section's heading from Armstrong's (1997), though, clearly, my indebtedness to Armstrong runs much deeper here.

there be. I take laws to only range-over states because it's in virtue of a thing's being a certain way that laws govern or dispose it to behave a certain way. Otherwise, we would have no explanation of the differential treatment of things by laws.

Moreover, it's problematic to treat the nature of either substrata or tropes as fundamentally independent of each other; without tropes, substrata would lack character, whilst a trope's character needs to be *situated* in a thing, with distinct tropes often situated in the same thing (see Ch.6, §2.1.1.2). Additionally, we would need to explain the non-supervenient relationship between trope and substrata. And this relationship is infamously beleaguered by F. H. Bradley's regress argument, whereby any instantiation relation relating property and substrata itself requires instantiation. Fundamentally, I think there are only states. Once we have states, we don't fundamentally need substrata and tropes also, though that doesn't deny them derivative (supervenient) existence. **Minimising Inexplicbility** (see Ch.2, §1.2) demands we be ontological conservative. And since states are the entities ranged-over by laws, they are also the inheritors of dispositions.

Like any trope theorist must, I take *resemblance* as primitive. Though substrata and tropes don't feature in fundamental ontology, their non-fundamental reification represents ways states resemble each other. So, states can be more/less similar with respect to the substrata, properties, and relations constituting them. These three aspects of a state's derivative ontology distinguish three grades of similarity. Furthermore, since states are the fundamental entities of our ontology, unless there are compelling reasons to think otherwise, laws too should be construed as a kind of state. I shall understand natural laws as being, like basic states, constituted by substratum and trope. But unlike basic states, the trope constituting a law is a *dispositional structure*; for basic states, the trope is a *quality*. We will elaborate this distinction later. For now, it should suffice to state that laws govern things they range-over by situating them in their structure.

A state's having of a disposition is a *basic event*. Basic events are thus complex states consisting of a law ranging-over a state. Events are distinctive kinds of complex state in that they are essentially temporal, inheriting their temporality from the ranges-over relation partly constituting them. Ranges-over is distinctive in that it has an *affective* or *transformative* effect by situating that ranged-over under the governance of a law, allowing the law to *manifest* changes. Since both events and laws are states, they may also be ranged-over by distinct laws. A law ranging-over either an event or law is a subclass of emergent law: a *higher-order* law.

Like other states, basic events can combine to form *synchronically complex* events—composites of co-present basic events and their relations. Such events can equally be ranged-over by higher-order laws. *Diachronically complex* events, by contrast, would involve a complex of events that don't all bear co-presentness to each other. Such events are human constructions out of synchronic events reflecting salient patterns across times. They are nothing additional to those sequences of events they abbreviate. Accordingly, they are ineligible to be ranged-over.

§1.3. The Effervescent Present.

We should now have an adequate enough grasp of the background metaphysics to understand the form of my preferred analysis of presentness. So how exactly can we utilise being active for our reductive purposes? It would be problematic merely to equate presentness with being active, since, if states are active in virtue of being ranged-over by a law, what secures the presentness of laws themselves? We wouldn't want to commit presentism to an infinite hierarchy of higher-order laws, to ensure the activeness of all laws. Moreover, if a law were a merely past, then presumably, all we could reasonably assume of those ranged-over states is that they *were* active, not that they *are*.

The account will, therefore, need to assume that, necessarily, all laws ranging-over a state are present. Though, this doesn't mean all laws are *co-present*. Indeed, if we're justified in believing ranged-over states are present, it would be odd to believe ranging-over laws aren't themselves present. After all, laws stand on the ranges-over relation's other side, as *activator* to that *activated*. On the proposed account, laws have their temporality metaphysically prior to active states, in that, by bearing the ranges-over relation to them, they *infect* them with temporality, by *affecting* them into temporality.[81] The temporality of states comes from standing on either side of the ranges-over relation. Accordingly, I propose the following analysis:

> **EFFERVESCENT PRESENT**: There is as of now some *x*, such that **N**(*x* exists) $=_{\text{def.}}$ There is as of now some *x*, such that *x* exists, whereby *x* either is, is a

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[81] This temporal-inheritance may be thought of as similar to the spatial-inheritance described by Lowe: "...if a mental substance exists in space at all, then it does so only *contingently* and *derivatively*, by virtue of some contingent relationship which it bears to physical objects of some kind, certain of whose spatial properties and relations it may be said to inherit through that relationship. Such a relationship may be termed 'embodiment'." (1998, p.172).

constituent of, or constituted by, a state that's either active or a natural law ranging-over a state.[82]

The presentist variant adopting this account of presentness takes the following form:

EFFERVESCENT PRESENTISM:

$$\Box A \forall_{As} x \left( \exists_{As} y N(x = y) \& \left( \left( \exists_{As} y \left( x = y \& \exists_{As} z \left( \exists_{As} u \left( (Lz \& Su \& Rzu) \& \left( (y = \right. \right. \right. \right. \right. \right.$$

$$\left. \left. \left. \left. \left. \left. u) \lor (y = z) \lor (Cyu) \lor \left( \exists_{As} c (\forall_{As} p (Cpc \& Sp \& Rzp)) \right) \right) \right) \right) \right) \right) \leftrightarrow \exists_{As} z N(x = z) \right) \right)$$

Here 'S(...)' stands for '…is a state', 'L(...)' for '…is a natural law', 'R(...,...)' for '…ranges-over…', and 'C(...,...)' for '…is a constituent of…'. As will become apparent later, the necessity and always operators are negotiable.

The first thing to note about this proposed account is the assignment of presentness to both constituents and composites of active states or laws. In this way, presentness extends beyond what is active or a law. We've already justified why we should conceive of active states or laws as present. But, as yet, no reason has been provided for thinking the constituents or composites of such things are present. This extension deserves justification. What might that be?

In the case of the constituents of active states or laws, their presentness is inherited from the state they participate in. It's only substrata, relations, or tropes, from which basic states are constituted, that obtain their presentness in this derivative way; any states themselves constituting complex states must, in order to constitute that complex state, be ranged-over by the same law. It's striking that this account nicely fits the conception of things deriving their presentness from participating in events (cf. Lowe, Ch.5, §5). Something like this view is advocated by Bede Rundle in the following passages:

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[82] The name 'effervescent present' is inspired by Graeme Forbes' claim that, "The present has, but the past lacks, what I shall call 'causal fizz', or 'effervescence'." (2010, p.59).

> Events, not objects, have first claim to be what we time, what our clocks measure, persistence of an object being parasitic on a background of change: x is there when a change gets under way, it is still there when the change ceases... (2009, p.234)

> ...it appears to be essentially events that demand time, objects being said to endure only by courtesy of an association with intrinsically temporal items; it is only through their co-presence with changes that bodies can be placed in a temporal dimension. (*Ibid*., p.241)

This view has the advantage of explaining why entities not participating in events, such as abstract entities, if such there be, are atemporal.

As for composites, it would be strange if the presentness of *all* constituents didn't ensure the presentness of the composite. And like constituents, it seems overwhelmingly plausible to characterise their presentness as inherited, in this case from their constituents, as it uncontroversially does with many other characteristics (e.g. spatial location). In fact, the presentness of a *single* part of a composite ensures the composite's presentness, because a composite requires for its existence that its parts be appropriately related, which they cannot be unless they are ranged-over by the same law; that is, unless they are co-present.

## §2. Laws of Nature.

Given the centrality of natural laws to the effervescent account, it's urgent that we elaborate just how they are being construed. We've already noted that they should be understood as non-Humean governing laws, rather than Humean classifying laws. That is because we require laws to *explain* some otherwise inexplicable features of reality. We cannot do this with mere descriptions and classifications, and therefore Humean laws do no serious metaphysical work (cf. Armstrong, 1983, p.40; Bird, 2007, §4.3.2). They are only good for word-play: altering our conception of reality so our statements turn-out mostly true. However, as argued in Chapter 2, Section 1, theorising should aim at **Minimising Inexplicability**, and to the extent that a practice doesn't aim towards furthering those ends, it's not theorising. Yet, this Humean approach to metaphysics generally, and laws particularly, neither aims at, nor accidentally furthers, that end. Consequently, regardless of how well that Humean practice is done, for the purposes of theorising, it's not worth doing! At the very least, it's not what *I* am doing.

The unfortunate legacy of this Humean approach has been a deficiency of work on governing laws and how exactly they govern. The main non-Humean alternative proffered by Armstrong (1983), Dretske (1977), and Tooley (1977), treats laws as higher-order relations between universals. As will become clear, this account of natural laws cannot do all that is required of them for our purposes. Instead, I shall craft an account of laws that does. We will adopt a problem-based methodology for our exposition, molding an account of laws in terms of the theoretical roles they need play. However, I think the resultant account isn't far from our intuitive conception. In what follows, we outline, and elaborate the significance of, four crucial features of natural laws for effervescent presentism: their restricable governance (Section 2.1), their enabling of influence (Section 2.2), their facilitation of productive causation (Section 2.3), and their reality-unifying role (Section 2.4).

§2.1. Restricted Governance.

Chief among concerns is whether the effervescent account is tacitly equivalent to the redundancy account, since laws inevitably range-over all states. But given that laws are governing states, they can be selective and restricted in what they govern. Just as legislative laws may, and typically do, have local jurisdictions, natural laws may also be localised, ranging-over only a proper subset of states. Indeed, assuming that laws aren't self-governing, laws necessarily wouldn't range-over all states, since they wouldn't range-over themselves. Furthermore, perhaps certain laws only range-over certain kinds of states, that is, states resembling each other in some relevant respect. Such laws would plausibly require states to have a certain character to be able to *fit* those states into the structure it imposes. For example, gravitational laws presumably only apply to things with mass.

The possibility of local natural laws was discussed by Armstrong (1983, Ch.3, §§1-2), who was in turn persuaded of their possibility by a thought-experiment developed by Tooley, which it will be instructive to repeat here to help readers grasp restricted governance:

> All the fruit in Smith's garden at any time are apples. When one attempts to take an orange into the garden, it turns into an elephant. Bananas so treated become apples as they cross the boundary, while pears are resisted by a force that cannot be overcome. Cherry trees planted in the garden bear apples, or they bear nothing at all. If all these

things were true, there would be a very strong case for its being a law that all the fruit in Smith's garden are apples. And this case would be in no way undermined if it were found that no other gardens, however similar to Smith's in all other respects, exhibited behaviour of the sort just described. (1977, p.686)

The thought is that, if the above data from Smith's garden were accurate, the most plausible explanation would be that there are local laws with governance restricted to the occupants of Smith's garden. So, it's a non-trivial matter that laws, as I'm conceiving of them, range-over all states. Strictly speaking '*local* law' doesn't quite capture the sort of scope restrictions on laws that I suppose possible. This implies that laws are restricted to *spatial regions*, whereas I intend the possibility to be merely that the scope of laws can be restricted in any which way; restrictions needn't be spatial.

So the effervescent account has no covert ties to the redundancy account. Given what we've stated so far, it's epistemically possible that effervescent presentism is merely contingent, and perhaps only temporarily true. That is, for all we've stated so far, there *may* be states *not* ranged-over by a law, whether or not such states *were* or *will be* so ranged-over. This, I think, decisively settles this concern.


§2.2. Enabling Laws.


We've noted already that laws governing the behaviour of things bestow powers on that which they range-over, and achieve this by imposing a structure on ranged-over states. This conception of laws may seem unwieldy for some struggling to get a fix on what I mean. To help elucidate my conception, it will be insightful to consider Gregg Rosenberg's (2004, §9.2) colourful portrayal of the traditional conflict between Humean and Non-Humean accounts of causation, what he calls *the Problem of Causation*. He asks us to imagine two canvases: the *Humean Canvas* and the *Canvas of Causation*. The Humean canvas is like an ordinary canvas, and '...will accept any drop of paint anywhere on its surface in any color that you let fall.' (*Ibid*., p.142). However, the canvas of causation is more selective about what marks can be made on it:

> If your first drop of paint is a bit of green, and then you try to place a dollop of red next to it, the red paint will bounce off. The canvas will not accept it. But it will accept yellow. And the more paint you put on the canvas, the more subtle and picky it becomes. Each bit of colour that sticks to its surface seems to place a constraint on what colors may appear anywhere else on the canvas. In fact, although the canvas will allow

you to paint it many different ways, it will only accept combinations of color that make for a beautifully covered canvas, so that somehow the canvas enforces aesthetic laws. (*Ibid*., p.143)

Rosenberg explains how this second canvas is seemingly magical. It's mysterious why it accepts certain paint drops, but not others, and why just what paint drops it accepts is dependent on what other paint drops it has received. The two canvases are analogies for two conceptually possible ways he thinks the world could be: a permissive Humean world accepting any combination of things, and a restrictive non-Humean world where the canvas '...represent[s] a world in which laws of nature suggest a connection between each event so that every one must somehow respect the nature of every other.' (*Ibid*.). Given these competing conceptions of reality, he presents the problem of causation accordingly:

> The problem of causation is that we do not live in a Humean world, even though the Humean canvas seems so much simpler to make than a Canvas of Causation. Making a Canvas of Causation requires some extra ingredient over and above simply having a world in which things can happen, and it is not clear what this extra ingredient is or what it means for our understanding of the world in general. Given that our world is like the Canvas of Causation, it seems that there is some magic in it somehow that connects things to one another in a deep way. The problem of causation is to understand what that really means for the nature of things. (*Ibid*.)

As noted above, I agree with Rosenberg insofar as we don't inhabit a Humean world; our world is set upon a canvas of causation. But then comes what I think to be the fundamental mistake traditionally shared by both Humeans and non-Humeans. Rosenberg wonders what magic plays the *constraining role* upon the constituents of the world. However, this seems like the wrong question to me. We should instead be asking: what *permits*, rather than *constrains*, certain interactions, influences, and behaviour between things? That is, why is there a canvas at all situating these metaphorical paint drops in relation to one another, establishing rules and regularities on that mysterious terrain? Why are things not like Leibniz's windowless monads: alone, isolated, and self-contained?

My understanding of natural laws is that they provide the canvas shape and structure. In the words of Dan Brown's Leonardo Vetra, 'The laws of physics are the canvas God laid down on which to paint his masterpiece.' (2000, p.55). And the

deficiency of anomic reality is captured by the impossibility of painting any picture of the world without a canvas (or any other paintable surface). However, the canvas analogy breaks down when the consequences of a dynamic reality are fully appreciated. For, the world is a moving, rather than static, picture. So, for example, as explained in Chapter 2, the temporal locality of influence is demystified with dynamic presentism.

The paint droplets represent qualitative states. The mystery is how these qualitative states—seeming entirely inward-looking (intrinsic ways of being)—could be outward-looking—influencing other qualitative states external to them. It doesn't seem like anything about the qualities themselves could confer influence. This is essentially George Molnar's complaint against *Neutral Monism* (cf. Mumford, 1998; Heil, 2003), the thesis that properties or states can be accurately described as both categorical (non-dispositional) and dispositional:

> ...neutral monism reverts to treating 'is dispositional' and 'is qualitative' as whole property predicates. What makes true 'F is a power' is not a side or facet of F, but F itself, F as a whole. Similarly, what makes true 'F is a quality' is the property F in its entirety. The very same thing is both dispositional and qualitative. How could that be, given that a power is a property that is essentially directed to a specific manifestation, whereas a quality is a property that is not essentially directed to any manifestation? A quality is either not connected with anything beyond itself or is contingently connected. The descriptions 'dispositional' and 'qualitative' are prima facie inconsistent. How then can both apply to the one property? (2003, pp.154-155)

I agree with Molnar that neutral monism is plainly absurd. But so is *Dispositional Monism* (cf. Mellor, 1974), which only posits dispositional properties or states. This tends to be guided by some form of *Eleatic Principle* stating that we should only posit entities making a causal contribution. It's unclear how 'causal contribution' should be understood here, but the thought is, in some appropriate sense, only dispositional states or properties make any contribution to the empirical world.

However, what would a world without qualities be like? Presumably, it would be like the mere form or shadow of a world. As John Heil explains, 'On the face of it, a qualitatively empty world is indistinguishable from the void. The worry here isn't just that a world barren of qualities would be dull and listless. A weighty tradition, going back at least to Berkeley, has it that the notion of a world without qualities is incoherent: a wholly non-qualitative world is literally unthinkable.' (2003, p.76). Dispositions need something to dispose, but dispositional monists give us nothing, just

empty nothingness pushing nothingness. But it's manifestly evident that our world has vibrant qualities. This is the most immediate feature of our phenomenology, and that which we're best acquainted with. If a theory doesn't accommodate that, it fails to accommodate that which I'm most certain of, and thus fails altogether.

What then of *Categorical Monism*, which posits only categorical, non-dispositional states or properties? That is just the Humean world, where 'All there is in the world is a vast mosaic of local matters of particular fact, just one little thing and then another.' (Lewis, 1986b, p.ix). But, as Rosenberg notes, we don't inhabit a Humean world, states influence other states. And despite Armstrong's (1983) best efforts to account for how categorical states can impinge on each other, this is simply impossible in a world with only catrgorical states or properties. For, there is no more reason to think that a categorical universal holding between universals would compel their regular or constant conjunction than there is to suppose that categorical universals holding between particulars would dispose them to behave a particular way (cf. Bird, 2007, §4.4). Indeed, it's unclear how that account of laws could capture the temporal character of the regularities, where universals are instantiated in regular succession by a certain temporal interval.

So we need a *Categorical-Dispositional Dualism* where there are states of both kinds. Yet, the two kinds don't exist in isolation; they must be appropriately *related*. Dispositional states must dispose categorical states, lest they be consigned to the same vacuous movers of nothingness that caused our rejection of dispositional monism. For me then, the distinction between laws and basic states just is the distinction between dispositional and categorical states. The two kinds of states are related, and thereby brought together, by the ranges-over relation. But this relation cannot simply be one-one between dispositional and categorical states, since dispositions are required to facilitate influence between distinct states. Rather, dispositions must range-over distinct states if they are to confer influence between that which is ranged-over.

Accordingly, laws cannot be mere dispositions; they must be dispositional *structures*, mediating *Avenues of Influence* or *Affordances* between ranged-over states. Just what affordances a state has depends on where in the structure it's situated. (Affordances don't depend on the intrinsic character of the ranged-over states, but instead rests entirely on where in the structure they're situated. Nevertheless, the intrinsic character of ranged-over states *may* determine *whether* they *can* be ranged-over by a law, and perhaps also their position within a dispositional structure.) These affordances of states characterise the dispositions inherited by ranged-over states.

Consequently, ranges-over must be a *species* of relation; laws must range-over states in different ways reflecting their position(s) in the structure. It doesn't follow that all members of that species of ranges-over relation that a law can bear, are instantiated. Each such relation corresponds to a position in the dispositional structure. And whilst this conception of how laws permit, rather than constrain, influence between states doesn't entirely dissolve the mystery of causation, it does lessen it. For, though it must be a brute fact that laws, like any other states, have the character they do, and it seems overwhelmingly plausible that external relations, like the ranges-over relation, hold contingently, I've elaborated the mechanistic form by which laws govern. Unlike Rosenberg's static picture, where paint droplets are repelled from positions on the canvas, the dynamic picture is one where the arrangements of droplets on the canvas at one moment *explains*, rather than mystifies, the arrangement of droplets on the canvas at later moments.

§2.3. Productive Laws.

The effervescent account requires that laws play the temporally privileging role of conferring presentness on states they range-over. They do this by activating them, and thereby instilling in them this distinctive characteristic of presentness. But why think that being active is distinctive of presentness? After all, B-theorists might maintain that governing laws range-over the entire four-dimensional manifold of states, and consequently, all things are active, whether past, present, or future. Ideally, laws should be such as to eliminate this scenario. We've already hinted how they do so. The dispositions laws bestow upon states they range-over are *dynamic* or *productive* dispositions. Laws thus empower states to be productive causes, in the sense described in Chapter 2, Section 3.1, which are the drivers of metaphysical change. Yet, the B-theoretic world is essentially without productive causes, and thus essentially lacking the kind of governing laws posited here.

In particular, if there were "past" dinosaurs or "future" Martian colonies belonging to, or constituted out of, states empowered by laws, they would be active dinosaurs and colonies, contributing to the bringing about of new states. Such active dinosaurs or colonies would bear no more threat to **GM5a**, and the capturing of our pre-account beliefs about pesentness, than were the dinosaurs active at our time. So the account doesn't delimit the present's temporal extent. This is because, if a reductive analysis manages to capture the analysandum's force (scoring well against **GM5b**), then

it cannot fail to get our judgements about the analysandum's applicability right; it inevitably scores well on **GM5a**. Force in some sense determines application. And this account surpasses its predecessors on capturing presentness's force. For, it's evident that the transitoriness of presentness is intimately linked to its activeness; it's integration into the causal flux that makes things subjects of change, that mutability presentisms unsuccessfully attempted to capture, whilst permitting potential exceptions of permanents.

Indeed, the close connection effervescent presentism draws between causal activity and presentness, and thereby between causal activity and existence, places it in close allegiance with those fond of the *Eleatic Principle*. This principle's taken several forms, but as Armstrong phrases it: "Everything that exists makes a difference to the causal powers of something." (1997, p.41; cf. Bird, 2007, pp.113-114). Effervescent presentism becomes less arbitrary than some of its predecessors, and this allegiance suggests it has good explanatory potential for relating presentness and existence. Insofar as this is correct, the effervescent account makes substantive gains on **GM3** over those accounts treating this connection as substantive.

The effervescent account can also capture clear boundaries of dispute between competing temporal metaphysics. We've seen that the productive dispositions bestowed by laws forms a fundamental point of contention between B-theorists and presentists. A version of growing-block theory can hold onto this point of contention, but also posit a contrast class for the present of states formerly ranged-over by laws, but no longer. Similarly, a version of shrinking-block theory can maintain that laws bestow destructive, rather than productive, dispositions, positing the alternative contrast class for the present of states that aren't yet, but will be, ranged-over by laws. Finally, moving-spotlight theorists can maintain, with B-theorists, that dispositions bestowed by laws aren't powers for metaphysical change, but rather powers responsible for mere temporal variance. They can posit both contrast classes for the present of states formerly and eventually ranged-over by laws; whilst laws ranging-over states can be used to elaborate the otherwise mysterious privilege of presentness that moving-spotlight theorists require.

Interestingly, rather than arbitrarily permitting or excluding exotic presentisms, the use of productive laws to distinguish present from non-present allows us to conceptually divide cases of static, empty, and temporally extended presents into presentist and non-presentist metaphysics. For example, static worlds with productive laws ranging-over their constituents, whereby the bestowed dispositions maintain some

stable equilibrium among states, would be presentist worlds. Static worlds without productive laws ranging-over their constituents would be non-presentist worlds. Similarly, there might be worlds where productive laws fail to range-over anything, whereby the dispositional structures would be empty. This would contrast with fully empty worlds or worlds with non-productive laws failing to range-over anything. This conceptual division of exotic presents allows presentists to capture what made these cases intuitively presentist, without committing to what made them intuitively non-presentist. In these ways, productive laws permit useful ways of carving-up the metaphysical terrain, capturing traditional positions with sharp boundaries and deep points of contention. Accordingly, the effervescent account seemingly makes progress over predecessors with respect to **GM7**.

Moreover, using productive laws to distinguish presentness isn't merely consitstent with the presentist motivations from Chapter 2, but actually complements them. Since effervescent presentism entails that states have the productive powers needed to explain both **Shared Direction** and **Temporal Locality** (see Ch.2, §§3 and 5), it's effervescent presentism itself, rather than some supplementation to presentism that explains those causal characteristics. In this way, effervescent presentism rejects versions of presentism not preserving these explanatory virtues, such as the steadily accruing-present thesis (Ch.2, §3.3.2), whereby only reality's most recent additions have productive powers, which they then lose when reality receives new additions. For effervescent presentists, if states lose their inherited powers, they cease to be present. Effervescent presentism therefore avoids the potential explanatory defects of such problematic temporal metaphysics, like why productive causes generate their effects where they do and cannot interact with those enduring existents. So again, effervescent presentism improves on its predecessors; this time with respect to **GM6**.

Finally, the contrast between A-determinations shouldn't be a distinction in kind. Our concepts of the A-determinations are such that those very same states that are present, were those that were future and will be past. Accordingly, it won't do to merely divide reality into dispositional and non-dispositional/categorical states, where the former are present, and the latter non-present—their pastness or futurity dependent on whether they were or will be respectively dispositional. Firstly, we don't want to exclude categorical aspects of reality from embracing presentness. And secondly, if those categorical aspects were never present, they couldn't then be past or future, for that entails sometime being present. Consequently, to draw the appropriate contrast, there must be no change in the categorical states themselves between when they are

past, present, or future. Instead, such states need to sometime partake in presentness. And partaking in the dispositional structure of laws provides a way of capturing this.

§2.4. Unifying Laws.

Whenever there is a plurality, we must ask whether its members are in some relevant sense together or apart. There are many ways things can be together or apart; things can belong to the same world, time, space, and object. I assume actualism, since I cannot comprehend the possibilist alternative; there isn't really a plurality of non-actual worlds. But there do appear to be pluralities of the other kinds. We therefore owe an explanation of how times belong to the same time-series, spaces to the same system of spaces, and states fused into the same object. Rosenberg (2004, pp.134-135) charmingly names this the *Humpty Dumpty Problem*. I think laws can provide a unifed account of how these pluralities are united. As Armstrong remarked, 'It is laws above anything else that give the world its unity.' (1997, p.267). This section is thus devoted to elaborating how they do that.

*§2.4.1. Synchronic Temporal Unity.*

We focus here on synchronic temporal unity: what unifies states into a single present. Our treatment of the problem of temporal unity (see Ch.6, §2.3), which deals with diachronic temporal unity and how unified-presents are united into a time-series, will be delayed until the following chapter (see Ch.8, §3). According to the effervescent account, a state is present when standing in the ranges-over relation. But since laws bring about metaphysical changes, what states they range-over, and the way they are ranged-over, is inconstant. We shouldn't take for granted, then, that because two entities presently exist, their present existences are co-present. Yet, since real relations are existence-symmetric, if something is as of now ranged-over by a law, and hence co-present with that law, it must also be co-present with whatever else is ranged-over as of now by that law. And even if two states, $x$ and $y$, weren't ranged-over by the same law, but by distinct laws, $L_1$ and $L_2$ respectively, they might still be co-present by being co-present with a third state, $z$, ranged-over by both $L_1$ and $L_2$. This follows from the transitivity of co-presentness. It's in these ways that things are co-present.

However, nothing so far mentioned prevents there being: i) states not entering the ranges-over relation, or ii) non-co-present states ranged-over by distinct laws.

Indeed, I know of no reason to deny their possibility, so accept them as such. But what then should be said about them? Let us first tackle states not entering the ranges-over relation. These come in two kinds: states that either did or will stand in a ranges-over relation, and those that never do. The latter, since they are never present, must be atemporal. One interesting consequence of this is that a substratum can be at once both temporal and atemporal, by participating in both temporal and timeless states; whereby participating in temporal states means participating in states that either were, are (now), or will be, ranged-over by a law. For example, Christians could maintain the timelessness of God the Father whilst accepting God the Son as manifestly temporal.

I envisage some complaining that things cannot be both temporal and atemporal, that I've straightforwardly contradicted myself. This misunderstands the situation, for *strictly* substrata are neither *entirely* temporal nor atemporal. Rather, it has different aspects, which inherit their temporality from the states they partly constitute. The temporality of things is extrinsic to them. The intuition that substrata must be *wholly* either temporal or atemporal, comes from mistaking them as the fundamental, rather than derivative, bearers of temporality. And, as with temporality, so it is with many other ordinary predications. Indeed, we sometimes add that something is a certain way 'all over' to crowd out incompatibile qualities; though, this 'all over' typically means spatially 'all over', which isn't necessarily 'all over' *tout court*.

What then of non-co-present states ranged-over by distinct natural laws? Simon Bostock (2003, pp.526-527) calls laws not governing any stuff governed by the network of laws governing us, *Spooky Laws*. He takes their isolation from us as reason to reject them, but like Alexander Bird (2007, p.58, fn.60), I don't find this compelling grounds for rejection. If there were states ranged-over by spooky laws, there would seemingly be no unique present time (collection of co-present events). Rather there would be multiple presents. This is in agreement with a complaint Robin Le Poidevin makes against orthodox presentists taking for granted the present's uniqueness:

> At first sight, it might seem that the presentist is in the best position to explain the uniqueness of the now. For only the present—what exists now—is real, and there is only one reality. This may explain why there is *at least* one now, but it does not actually follow from this that there is *only* one now. It is consistent with the propositions that only the now is real and that as there is only one reality that reality should contain more than one now. What is ruled out is that it should contain anything that is *not* now. So presentism is not enough to guarantee the uniqueness of the now. (2003, p.145)

Indeed, the potential multiplicity of presents was required to make sense of the branching temporal topology described in Chapter 2, Section 3.2.2. Moreover, if there are multiple presents, governed by distinct laws, they would form distinct A-series'. In this way, temporal reality would be radically *disunified*.

*§2.4.2. Temporal Disunity.*

So we've two kinds of counter-possibilities to universal co-presentness. What are the consequences of this? In Chapter 1 we established that presentists are committed to understanding existence as *existence as of now*. This raises the question of whether atemporal states, or states belonging to other time-series', exist as of now. Since atemporal existents are untouched by temporal vicissitudes, these should straightforwardly be taken to exist as of now. Note, that the effervescent account doesn't encounter here the problems of capturing the temporal-timeless distinction that afflicted the redundancy account in Chapter 4, Section 3. The effervescent account provides a natural reductive analysis of the temporal-timeless distinction in addition to the analysis of presentness; the redundancy account couldn't do this because it was undiscriminating, so had to take that distinction as primitive, if at all.

Accommodating temporally disunified existents is more complicated. Arthur Prior thought that claims about states in other time-series' simply couldn't be expressed:

> If, as I would contend, it is only by tensed statements that we can give the cash-value of assertions which purport to be about 'time', the question as to whether there are or could be unconnected time-series is a senseless one. We think we can give it a sense because it is easy to draw unconnected lines and networks as it is to draw connected ones; but these diagrams cannot represent *time*, as they cannot be translated into the basic non-figurative temporal language. If we try to translate them, we produce contradictions which are a kind of inverse of McTaggart's, like 'Right now there are things going on which stand in no temporal relation to what is going on right now', 'There are things going on which neither *are* going on, nor will be going on, nor have been going on, nor even will have been going on, nor have been going to have been going on—not *anything* like that at all—there really are'. We can only avoid stating this hypothesis in such self-contradictory terms by saying that there timelessly 'are' worlds in which, or instants at which, such-and-such is the case, such-and-such has been the case, such-and-such will be the case ($\Sigma aTap$, $\Sigma aTaPp$, $\Sigma aTaFp$), these worlds or

instants being temporally unconnected with *this* one (the present one); this talk of

worlds and instants being itself irreducible to talk of what is, has been, will be, will

have been, etc. (1967a, pp.198-199)

Following Prior's reasoning, states in other time-series' neither did, do, nor will exist as of (our) present. We cannot use our tense operators to locate when events of these alternate time-series' would occur. Accordingly, there would be no legitimate way of expressing their existence were they to obtain. To do that, we would need to take an atemporal perspective on existence (cf. Lewis, 1986a, §1.6). But the issue runs deeper than ineffability, since, as argued in Chapter 1, presentism presupposes a fundamentally tensed sense of existence; tensed quantification is as unrestricted as it gets.

However, I think Prior surrenders too easily here. To see why, consider Rosenberg's following description of disunified-time:

To see that it is possible for a collection of independent events to fail to be a world, consider a collection of causally separated dimensions, such as a set of parallel universes in a science fiction novel. We can coherently conceive of each separate world as possessing its own internal time dimension. In this kind of multiverse, each world's time dimension would sequence the events within it. Nevertheless there would not need to be an overarching, transworld time sequencing of events across worlds. Thus there would be no answer to questions about whether event X in world A occurred before or after event Y in world B. (2004, p.134)

Rosenberg captures the situation whereby distinct fragments of reality aren't unified by a single overarching law. Rather, different bits of reality are ranged-over by distinct networks of laws without overlap. The intuitive take on when events of the distinct time-series' occur relative to each other that Rosenberg takes is that such facts are in some sense illegitimate, because there is 'no transworld time that ordered events with respect to one another across worlds' (*Ibid.*).

I think this indicates a way for presentists to understand disunified-time consistent with a fundamentally tensed description of reality. On this view, for times belonging to other time-series', it's radically metaphysically indeterminate when they occur with respect to our time-series, and likewise for ours with theirs.[83] That is, reality's missing the requisite structure(s) to give definitive answers to whether such existents are past, present, or future. For effervescent presentists, that common structure

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[83] For one way of understanding the metaphysical indeterminacy here, see Barnes and Williams (2011).

is the unifying structure imposed by laws; where no common laws range-over states, there can be no respective temporal orderings between them. Accordingly, our conception of disunified-time bears some resemblance to the ontological pluralist's claim that there are many distinct kinds of existence, each fundamental (cf. McDaniel, 2009). Each of these fundamental notions of existence corresponds to existing as of the dynamic present of a distinct time-series.

If the scope of a law can be restricted, as contended earlier, it's hard to discount the epistemic possibility of disunified-time; it at least seems conceptually viable. This possibility introduces two distinct strengths of effervescent presentism:

**Strong Effervescent Presentism**: All and only present things exist in *every* actual time-series.

**Weak Effervescent Presentism**: All and only present things exist in *our* actual time-series.

Those advocating either version needn't think effervescent presentism is an essential characterisatic of temporal reality. Though, those accepting the stronger version will be strongly motivated to do so.

This explains what effervescent presentists should say about atemporal and disunified states in isolation. But there is an additional complication when they are permitted together. Suppose there is an atemporal existent, Timeless, and two time-series' each with their own present: $present_1$ and $present_2$. According to our conclusions in this section, Timeless both exists-as-of-$present_1$ and exists-as-of-$present_2$. This means that a state, $S_1$, existing-as-of-$present_1$ is co-existent with Timeless, and a distinct state, $S_2$, existing-as-of-$present_2$ is also co-existent with Timeless. Yet, since $S_1$ and $S_2$ belong to distinct time-series', they don't co-exist. This breaks the transitivity of co-existence, and may consequently raise eyebrows.

Though this may initially seem counterintuitive, it's a familiar feature of dynamic temporal theories that diachronic co-existence is essentially non-transitive. As Barry Dainton explains: 'Coexistence is certainly *symmetrical,* but it needn't be transitive; to suppose otherwise is simply to deny the dynamic nature of time, which involves precisely the coming-into-being and departing-from-being of times and events. Coexistence is transitive in *space* (at a give time), but to impose transitivity on time amounts to an unjustifiable spatialization of the latter.' (2010, p.99). The kind of co-

existence holding between Timeless, $S_1$ and $S_2$ is clearly not the transitive synchronic co-existence relation, and has more in common with the non-transitive diachronic co-existence relation. In this way, the effervescent account supports, through its robust account of temporal unity, both timeless and temporally disunified existents. These contrast classes help to bring into focus a narrower conception of a time-series that will be important for our analyses of pastness and futurity in the following chapter.

*§2.4.3. Spatial Laws.*

We've maintained that states are only related by being ranged-over by a common law. But isn't there another more straightforward way that things are unified in reality, *viz.* by a system of spatial relations? What would prevent states belonging to different time-series', as elaborated above, from being spatially related? In this way, some might complain that spatial relations create a problem for the complementary background metaphysics I've given effervescent presentism, just as they do for dispositional monism (cf. Mellor, 1974; Molnar, 2003, §10.5.6). I think this complaint is built upon a common misapprehension of the nature of space.[84] As Marc Lange explains, 'Geometric properties, like size and shape, may initially seem to be ideal cases of properties we know in themselves. But insofar as these are *physical* properties, to be instantiated by matter in space and not merely by abstract mathematical entities, it is not obvious that our senses disclose to us these properties as such.' (2002, p.87). Insofar as there is spatial structure or unity to the world, it's a dispositional structure; a spatial structure is essentially a causal structure.

What sort of dispositions do spatial structures bestow on their occupants? The most obvious is that spatial structure creates the possibility for *motion*; it offers ways for progression into different positions in its structure. Indeed, we define our spatial *metric* with respect to particular natural laws, *viz.* those of light's propagation.[85] And impose *affine* structure on space such that light's propogation in a vacuum is rectilinear. This resultant dispositional conception of motion will be important later (see Ch.8, §2.3). But that cannot be the full extent to which spatial structure bestows dispositions upon its occupants. The relative positions of occupants in its structure must make a difference to the affordances of things to influence other things, lest they lack theoretical

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[84] I merely sketch the following position, to demonstrate the theoretical utility of laws, tie-up loose ends, and build the way for later explanation.

[85] The standard metre is defined as the distance travelled by light *in vacuo* during 1/299,792,458s.

significance. As Sydney Shoemaker explains, '...there do seem to be conceptual limitations on the extent to which causal action can be at a spatial or temporal distance. It is doubtful, to say the least, whether there could be something whose causal powers are *all* such that whenever any of them is activated the effects of its activation are spatially remote from the location of the thing at that time, or occur at times remote from the time of activation.' (1980, p.220).

This point is further illustrated by a *gedankeneperiment* devised by John Foster (1982, 2000) and explained in Dainton (2010, Ch.15). The case involves deviant laws operating on the behaviour of material things and conspiring to conceal the "real location" of spatial regions. Dainton elaborates the scenario accordingly:

> ...S is a three-dimensional Newtonian space. Although S itself is homogeneous, there are two spherical regions within it, $R_1$ and $R_2$, some distance apart, whose boundaries have unusual effects on any material objects that cross them, effects due to the relevant laws of nature. Any object that enters $R_1$ emerges in $R_2$ and continues on its way, with the same speed and in the same direction; similarly, an object entering $R_2$ emerges in $R_1$, and continues on its way, with the same speed and in the same direction. An object that leaves $R_1$ appears at the boundary of $R_2$, and continues on its way, and in a similar fashion, an object that leaves $R_2$ appears at the boundary of $R_1$, and continues on its way. All of these "transitions" occur instantaneously, and all forms of matter and energy (light included) are affected. These deviant laws have the effect of making it appear as though $R_1$ is located where $R_2$ actually is, and vice versa. (2010, pp.251-252)

The example is then concretised by supposing $R_1$ is a spherical region with a five-mile radius in Cambridgeshire, whilst $R_2$ a similarly sized and shaped region in Oxfordshire. Now, my contention coincides with Foster's here: the imagined scenario is impossible. It's impossible because space's physical geometry must coincide with its functional geometry (its dispositional structure), and it's this distinction that the example plays on. If we divorce spatial relations from their dispositional role, they are utterly otiose; they make no causal difference, and, qua external relations, add no qualitative content. So I'm compelled to conclude that they are altogether *nothing*.[86]

Similarly, if there is anything to the idea that things crowd each other out of spatial locations, it must be due to dispositions bestowed by spatial laws upon them. And interestingly, if a thing's position in a structure is characterised by its dispositions

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[86] The situation isn't improved if the difference dull categorical spatial relations make is simply to *constrain* what other such relations can hold; constraints on nothing is no constraint at all.

and affordances to affect other things in that structure, we've got our explanation for the principles of spatial locality outlined in Chapter 2, Section 3.3, which we had to defer explanation of until now. Occupying a spatial location is no more than possessing such differential powers to affect other things; to occupy a certain location is to be able to affect things at a distance from that location only via affecting things proximate to that location. It is in virtue of being constrained by the principles of spatial locality that things assume the spatial positions they do. In this way, merely assuming things occupy the spatial positions they do, and then demanding an explanation of their differential powers according to the principles of spatial locality, problematically gets cart before horse; since, as we saw, no such explanation is readily forthcoming.

Finally, this reductionist conception of space fits particularly well with suggestions from physics that spatial structures vary over time. For example, famously the orthodox Einsteinian interpretation of General Relativity has it that mass affects the shape of space. This formed the pillars of Graham Nerlich's (1994) case for a substantivalist account of space. To explain this structural variance, we need only posit a higher-order law ranging-over the spatial laws and mass states, bestowing dispositions on both to confer influence on each other. No commitment to substantivalism needed! Similarly, a promising interpretation of how entangled states in quantum mechanics can seemingly confer non-local spatial influence (potentially a problematic exception to spatial locality) is the emergence of spatially *non-local links* (cf. Smolin, 2013, Ch.15). That is, extra-spatial structure emerges between entangled states to confer influence. The emergence of such extra-spatial structure can again be the result of higher-order laws introducing extra dispositional structure between the entangled states.

*§2.4.4. Unified Objects.*

Some may have reservations about the overtly fractured conception of *things* as clusters of states. For, we appear to be acquainted with *objects*. But how do we get from clusters of states to the objects they constitute? The problem here parallels a complaint commonly issued against *Bundle Theory*, which construes objects as bundles of properties. My answer takes its inspiration from an account of composition, receiving a recent resurgence, called *Neo-Aristotelian Hylopmorphism* (cf. Fine, 1999; Koslicki, 2008; Sattig, 2015). Thomas Sattig outlines the hylomorphic account accordingly:

Aristotelian hylopmorphists agree that there is a type of whole that is generated from a plurality of objects just in case these objects are arranged in a certain way and belong to certain kinds. There is, to put the idea with a familiar phrase, a type of whole that is generated from a plurality of objects under a certain 'principle of unity'. A principle of unity is what 'glues' some entities together to compose a further entity. Such a principle of unity is the *form* of a whole genereated in this way. The plurality of parts that are unified by such a principle is its *matter*. (2015, p.6)

Unlike classical mereology, the hylomorphic composites are structured objects. This structure is provided by the object's *form*, which unifies parts into a whole. I think laws are what give composites their form. Similarly, it seems clear to me that the parts, even the simple ones, are structured entities, conglomerations of states; they too have form. And again, I think laws give objects this structure.

### §3. Relating Governance.

The effervescent account of presentness also relies heavily on the ranges-over relation holding between laws and what they govern. It will therefore be helpful if we can say some more about it. This section is devoted to that task. Firstly, some may worry that they don't have a firm enough grip on what the ranges-over relation is, or perhaps complain of incomprehension outright, just as I complained against certain theoretical devices in competing accounts. To assist those struggling to get on board, consider the analogous judicial laws. Typically, theys aren't ubiquitous; there is a jurisdiction wherein they apply and without they don't.[87] This jurisdiction is just where the judicial laws can have direct influence or power. Similarly, I mean nothing more by 'ranges-over' than that a law may exert influence or power over that ranged-over. If you understand jurisdiction, you understand ranges-over.[88] Consequently, I think it's clear we *do* understand the ranges-over relation; if we didn't, it would impede our ability to function properly.

However, given the close connection drawn between the ranges-over relation and presentness, some might wonder if we can run the analysis in the opposite direction. So, consider the following proposal:

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[87] At least, that particular *token* of the judicial law won't apply in other jurisdictions. Perhaps other tokens of the same *type* of judicial laws would apply in whichever jurisdiction they obtain.
[88] If you don't like this case, then think of how our logical quantifiers range over a domain.

RANGES-OVER: $x$ ranges-over $y$ $=_{\text{def.}}$ $x$ is a law and $y$ presently exists as of now.

The thought is that, given the proposed analysis of presentnes*s*, if '*x* is a law' were true, then $x$ would presently exists as of now, whilst if '*y* presently exists as of now' were true, then $y$ must be ranged-over by a law, otherwise it wouldn't presently be. It should be clear however that this analysis doesn't get things quite right. The mere fact that both '*y* presently exists as of now' and '*x* is a law' are true wouldn't ensure that '*x* ranges-over *y*' is true. There might be another law, $z$, distinct from $x$, ranging-over $y$, and it's in virtue of $z$, not $x$, ranging-over $y$ that '*y* presently exists as of now' is true. This is possible because laws potentially have restricted scope. It's then difficult to see how any suitable analysis of ranges-over in terms of presentness would be possible.

A further question some might ask is: why think the ranges-over relation's any more tractable than presentness? This is misguided. Presentists have good independent reasons to believe in the account of laws proposed here, regardless of their accepting the effervescent account. For example, to give a satisfying account of productive causation (necessary for the presentist motivations of Chapter 2) and a solution to the problem of temporal unity (see Ch.6, §2.3, for the problem, and Ch.8, §3, for the solution). Those already committed to the background metaphysics incur no extra cost by employing it for the purposes of reductive analysis. Moreover, if what I stated above is adequate, I think we do find ranges-over more tractable than presentness. Either way, the effervescent account seemingly improves on the primitive account with respect to **GM1**.

Now, some may think this reliance on commitments elsewhere is an unwanted feature of an account; that we should want our accounts to have as few commitments as possible. Indeed, this belief is seemingly popular amongst philosophers. Speculatively, I suspect that this has more to do with philosophers' desire not to be tied down, to have flexibility enough to permit manoeuvres. Nevertheless, it's unobvious that the conviction has any firm basis. In fact, I think it's largely mistaken.

Clearly, an account inherits the costs of its commitments. But this will be no extra cost to those already committed. An account's commitments elsewhere are costly only to those inclined to settle those other disputes differently. The avoidance of commitments is symptomatic of the trend for *difference-minimisation* in metaphysical disputes. This is where both partisans in a debate attempt to downplay their commitments as 'innocent' and unworthy of controversy. Karen Bennett has recently criticised this difference-minimising strategy in metaphysics accordingly:

> My suggestion that these are cases which the available evidence does not settle which
> side is correct should not be particularly surprising, given that I have argued that these
> debates are 'difference-minimizing'. They are debates in which everyone takes the data
> to be largely the same. All the participants want somehow to preserve our ordinary
> judgements of persistence, of sameness and difference, of what there is and isn't. Note,
> then, that one way to resist the lessons I am drawing is to say that it is a mistake to
> difference-minimize. In particular, one way for a low-ontologist to resist is to embrace
> his view with a braver heart, and *stop trying to say everything the other side says!*[…] It
> is the difference-minimizing that leads to the odd epistemic impasse. (2009, p.72)

This seems like shrewd advice for low-ontologists. And presentists are low-ontologists. But perhaps it's also shrewd advice all round. Just as in science, the number of ways a theory can be shown false is testament to its strength and significance (at least according to Popperian falsificationism), so should our commitments be testament to the strength and significance of a metaphysical theory. That is not to say that a position is better for having more commitments. We should accept only as many as is reasonable or necessary for a position. But the mere fact that a position has commitments is neither wholly bad nor good; though it may increase risk, this is paid for by explanatory remunerations. The risk itself is a sign that something substantive has been proffered.

§3.1. Formal Properties.

Hopefully, we should now have a reasonable grasp of what is meant by the ranges-over relation that holds between laws and states. In this section we look more closely at some characteristic properties that relation should be deemed to have. These will be especially important for our account of pastness and futurity to follow in Chapter 8.

*§3.1.1. Reflexivity.*

Is ranges-over reflexive, irreflexive, or non-reflexive? That is, can laws range-over themself, and if so, must they? There is a temptation, I think, to answer the latter question's two parts affirmatively. This would allow for a simplification of the effervescent analysis of presentness; we would no longer need to make the account of presentness disjunctive between entities appropriately related to states standing on either side of the ranges-over relation. We could instead argue that only those entities

appropriately related to ranged-over states enjoy presentness. Laws wouldn't presently exist by potentially ranging-over states, but rather by themselves being ranged-over. So the following alternative account of presentness might be proposed:

> **EFFERVESCENT PRESENT\***: There is as of now some $x$, such that $\mathbf{N}(x$ exists) $=_{def.}$ There is as of now some $x$, such that $x$ exists, whereby $x$ either is, or is a constituent of, or constituted by, an active state.

Despite initial appeal, the claim that laws range-over themselves is problematic. Firstly, by allowing laws to range-over themself, they would become subject to change. That is, they would be *causa sui*. There is a long history treating self-causation as palpably absurd. It's like pulling yourself up from your own bootstraps; it won't work, the lifting requires firm ground to remain constant and against which influence can be exerted. The same is true with laws (and indeed time) more generally. And as we will make clear in Chapter 8, Section 3.1, when responding to the problem of temporal unity, change only makes sense against a backdrop of something fixed. The dispositional structure of a law provides the fixed basis upon which the states it governs can exert influence on each other. It's the foundation of that influence. But it cannot be the foundation of its own influence. (Though, that doesn't mean it cannot be governed by higher-order laws.)[89]

Relatedly, when laws range-over states in certain ways, they thereby situate them at certain nodes in their structure. Therefore, if a law were capable of ranging-over itself, it would itself be situated at a node in that structure. But this is equivalent to the entire dispositional structure being situated at a node in that structure, which is absurd, in the same way that a space cannot contain all space at a single point in its own structure (space itself being a kind of dispositional structure). Accordingly, we shall treat ranges-over as *irreflexive*: laws cannot range-over themselves.

*§3.1.2. Transitivity.*

Given the possibility of higher-order laws, it might be the case that a law, $L_1$, ranges-over another, $L_2$, which in turn ranges-over another, $L_3$. The question then arises as to whether this situation entails, or permits, that $L_1$ ranges-over $L_3$. That is, whether ranges-over's transitive, intransitive, or non-transitive. I think it must be transitive. For,

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[89] Similarly, to continue the judicial analogy, there is something self-undermining about having legislators deciding upon what *they* are permitted to do.

suppose $L_1$ *directly* ranges-over $L_2$. $L_2$ must thereby be situated at a node in $L_1$'s structure. Likewise, if $L_2$ directly ranges-over $L_3$, $L_3$ must be situated at a node in $L_2$'s structure. However, since $L_2$ is itself situated at a node in $L_1$'s structure, all of $L_2$'s nodes are situated at that node in $L_1$'s structure. But this means that anything situated at a node in $L_2$'s structure—as $L_3$ must be if ranged-over by $L_2$—is thereby situated at the very node in $L_1$'s structure that $L_2$ itself is situated at. Therefore, ranges-over must be *transitive*. For clarity, we might distinguish the *way* in which $L_1$ ranges-over $L_3$ as *indirect*, since its ranging-over $L_3$ is dependent on $L_2$ ranging-over $L_3$. Moreover, since ranges-over is irreflexive, the hierarchy of laws cannot be cyclical, as this would entail, by transitivity, that laws in the hierarchy range-over themselves.

*§3.1.3. Symmetry.*

Ranges-over is either symmetric, anti-symmetric, or non-symmetric. That is, if a law, $L$, range-over a state, $S$, can $S$ then range-over $L$, and if so, must it? I hope it's clear from earlier discussion that ranges-over isn't symmetric, since states needn't be laws, and only laws can range-over states. That leaves two options: ranges-over is either anti-symmetric or non-symmetric. It's non-symmetric just in case it's possible that a law, $L_1$, ranges-over a law, $L_2$, such that $L_2$ also ranges-over $L_1$. Otherwise it's anti-symmetric.

For a similar reason to why laws cannot self-govern, I think ranges-over must be anti-symmetric. When a law, $L_1$, ranges-over another, $L_2$, in a certain way, it thereby situates it at a certain node in $L_1$'s structure. If $L_2$ were then also to range-over $L_1$, $L_1$ would be situated at a node in $L_2$'s structure, which is itself at a node in $L_1$'s structure. Thereby, by transitivity, $L_1$ would also be situated at the node in its own structure where $L_2$ is situated. But, in virtue of the irreflexivity of the ranges-over relation, $L_1$ cannot be situated at a node in its own structure; doing so would collapse that structure by situating all nodes of the structure at a single node. So, by *reductio ad absurdum*, it follows that ranges-over is *anti-symmetric*. Ergo, ranges-over's irreflexive, anti-symmetric, and transitive.

§3.2. Nomic Superstructural Topology.

Whenever there are higher-order laws ranging-over other laws, they form a *hierarchical network* of laws. Whilst each law has its own dispositional structure, the hierarchy of laws has a structure of its own determined by the distribution of the ranges-over

relations between laws. Call the structure of this hierarchy the *Nomic-Superstructure*. We've already eliminated the possibility that the nomic-superstructure can have a cyclic topology (see §3.1.2). But there are many other topologies it potentially could have. This section explores the modal space for nomic superstructural topology. Again, by delimiting the shapes nomic-superstructures can take, we also restrict how they can evolve. This will be important for the accounts of pastness and futurity in Chapter 8.

### §3.2.1. Discreteness.

An initial concern is whether the superstructure has a *dense* or *discrete* ordering. Density is a structural property of ordered-sets such that, between any two distinct members, there is a third distinct from them. Discrete structures deny this. In particular, discrete structures are such that, in sets of more than one member, the set's members must, in the relevant sense, have an *adjacent* member. In nomic-superstructures, this adjacency is just the *direct* ranges-over relation. And since laws can only indirectly range-over states in virtue of directly ranging-over laws that range-over those states (see §3.1.2), it follows that the nomic-superstructure must have a discrete topology.

### §3.2.2. Finitude.

The superstructure has either *finitely* or *infinitely* many members in its structure. Given its discrete topology, whether it has infinitely-many members depends on whether it's fully *bounded* at both ends of the structure. That is, whether the superstructure has first and last members. So consider the following structure depicted below:
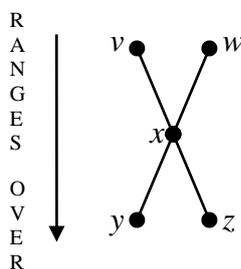


Figure 7: A diagram depicting a basic nomic-superstructure. Nodes are labelled with letters and represent states. Lines connecting them represent the ranges-over relation. The vertical downwards arrow represents the ranges-over relation's direction: higher-states range-over lower-states.

Call each vertical linear-route through that structure a *Hierarchical-Strand*. For example, in figure 7 <*v, x, y*>, <*v, x, z*>, <*w, x, y*>, and <*w, x, z*> are all the hierarchical-strands (ordered top to bottom) in that superstructure. That superstructure is *fully-bounded*, since each strand has first and last members. However, if it were such that *all* its strands lacked both first and last members, then the superstructure would be *fully-unbounded*. And if it were such that *some*, but *not* all, of its strands lacked either first or last members, the superstructure would be *partially-unbounded*.

If a superstructure were either fully or partially unbounded, it would contain infinitely-many laws. Otherwise, the superstructure would have only finitely-many laws. Moreover, since the ranges-over relation is anti-symmetric, we might treat the possibility that either end (top or bottom) of the superstructure is unbounded differentially. Call the topological property of being fully-bounded at the bottom of the superstructure, where all hierarchical-strands have last members, *Well-Groundedness*. And call that topological property of being fully-bounded at the top of the superstructure, where all hierarchical-strands have first members, *Well-Governedness*.

§3.2.2.1. Well-Governedness.

In Section 3.1.1, one of our reasons for rejecting the reflexivity of the ranges-over relation was that change requires a fixed basis upon which those changes may change against. We promised to develop this point in Chapter 8, Section 3.1. But to assist my reader's current grasp, consider the following analogous objection that Issac Newton made against *Relationalist* accounts of space, which attempt to reduce spatial facts to spatial external relations holding between things:

> …it is impossible to pick out the place in which a motion began (that is, the beginning of the space passed over), for this place no longer exists after the motion is completed, so the space passed over, having no beginning, can have no length; and hence, since velocity depends on the distance passed over in a given time, it follows that the moving body can have no velocity.[…] Moreover, what was said of the beginning of space passed over should be applied to all intermediate points too; and thus as the space has no beginning nor intermediate parts it follows that there was no space passed over and thus no determinate motion. (*De Gravitatione*, in Huggett,1999, p.110)

Newton notes that, since relationalists define spatial locations in terms of spatial relations between things, if things change their spatial relations, former spatial locations

cease to be. But then, if spatial locations don't survive changes in spatial relations between things, there remains *nowhere* from which things moved. But then, we can make little sense of the nature of the change, of how far or fast they moved.

Likewise, it was permitted that laws may undergo change, if they were disposed to under the governance of a higher-order law. In that case, any changes undergone by the law wouldn't be under its own esteem, but rather under the direction of the higher-order law. The higher-order law takes over the role of providing the firm basis against which the law can then undergo change; it both fixes the order and direction of the change, and processes the transaction from beginning to end.

If a nomic-superstructure had non-well-governed laws—what we might call an *Anarchic Hierarchy*—it would lack this fixed basis against which we can make sense of change. And since laws are *dispositional* structures (i.e. they provide the structure for metaphysical changes), without any ultimate fixed basis against which to support those changes, the governance of each law's own structural changes—determining their own dispositional structure and influence—would be groundless. In this way, all laws in an anarchic hierarchy would lose a solid basis or structure against which to manifest the dispositions they bestow upon states they directly range-over. And since, in dispositional structures, structural positions are determined by those dispositions, all laws in anarchic hiearachies would thereby lose their structure altogether. They would cease to function as laws! In short, nomic-superstructures must be well-governed.


§3.2.2.2. Well-Groundedness.


Are there any reasons for supposing that nomic-superstructures must be well-grounded? I can think of two. Firstly, if a superstructure weren't well-grounded, it would have an infinite hierarchy of higher-ordered laws. Those denying actual infinities (and I'm sympathetic to this position) would thus be committed to accepting the well-groundedness of nomic-superstructures. This might be because, despite understanding the syntactic rules of transfinite mathematical models, we might fail to comprehend their semantics. These objectors will reject the *Axiom of Infinity*—that guarantees there being sets with infinite members—upon which such models are partly founded. Instead, infinities are treated merely as *potentials* to indefinitely extend any finitude.

Secondly, some might think that dispositional superstructures must "bottom-out" in qualitative states. This might be because they think a structure must structure something; that *form* requires *matter*. As noted in Section 2.2, there is something quite

hollow or vacuous about a world of dispositions, where dispositions merely dispose other dispositions to be otherwise disposed. Such a world would lack substance or content. We noted there that, at the very least, it's manifestly evident that *our* world has qualitative content. So our world must be at least partially grounded, since qualitative states aren't laws, and therefore cannot continue the hierarchical-strand. It's noteworthy that one characterisation of an empty present is of a groundless nomic-superstructure. Consequently, whether a nomic-superstructure must be well-grounded may be crucial for whether there can be an empty present. Nevertheless, since nothing important hangs on whether nomic-superstructures must be well-grounded, I leave this option open.

*§3.2.3. Monarchy Versus Polyarchy.*

We've already assumed that laws can range-over multiple states. Similarly, there is seemingly no immediate barrier against a state being ranged-over by multiple laws. And since we've established that nomic-superstructures must be well-governed, this raises the question of whether all hierarchical-strands in a single superstructure begin with the same law, or whether they can begin with distinct laws (as the superstructure in figure 7 does). That is, whether there must be a single highest-ordered law, or whether there can be multiple highest-ordered laws, in a nomic-superstructure. Nomic-superstructures with a single highest-order law are *Monarchical*, whereas ones with multiple highest-order laws are *Polyarchical*.

My contention is that nomic-superstructures must be monarchical. To see why, we need to better understand how higher-order laws function. This will involve a brief excursion into what has become known as the *Composition of Causation*. The composition of causation takes for granted that causation is *polygenic*: effects typically have multiple causes (cf. Molnar, 2003, §12.1.3). For example, the movement of a cart pulled by two horses. The converse of this is *pleiotropy*: that one cause or power can have many effects. Granted this assumption, causal composition concerns how causes or powers combine to bring about some effect when there are multiple contributions.

§3.2.3.1. The Composition of Causation.

One intuitive model of how causes combine is outlined by Mumford and Anjum (2011, Ch.2) in their vector model of causation. On a simple understanding of this model, powers combine in a simple additive manner: each power contributes its full causal

effect towards the resultant effect that gets manifested, whereby the resultant effect is arrived at by summing all the full effects of the contributing powers. The resultant effect would equal that achieved if each contributing power had their effects manifested in turn. This view is nicely captured by John Stuart Mill in the following passage, quoted by both Molnar (2003, pp.196-197) and Mumford and Anjum (2011, p.39):

> In this important class of causes of causation, one cause never, properly speaking, defeats or frustrates another; both have their full effect. If a body is propelled in two directions by two forces, one tending to drive it to the north and the other to the east, it is caused to move in a given time exactly as far in both directions as the two forces would separately have carried it; and is left precisely where it would have arrived if it had been acted upon first by one of the two forces and afterwards by the other. (1843, Bk.III, Ch.VI, §I, pp.370-371)

But as Mumford and Anjum (2011, Ch.4) later acknowledge, as does Mill, this additive, or linear, model of causal composition is overly simplistic. It seems there are cases where causal composition doesn't adhere to such simplistic functions. And consequently, Mumford and Anjum are compelled to admit that, 'Addition looks too restrictive to account for some cases of composition and for that reason we will be making a move towards pluralism. The mode of composition can vary for different combinations of powers. We will have to allow that, for some cases, causes compose according to non-linear functions; contrasting with addition, which is a simple linear function.' (*Ibid*., p.87). But even if causal composition did conform to a principle of additive composition, this wouldn't settle matters, because it's perfectly conceivable that an alternative mode of causal composition could have been at work.

This point is brought out in the following passage where Molnar explains Mill's distinction between two types of cases of polygenic effects:

> Mill tells us that there are two types of cases in which 'several agents' contribute to one effect. In the first type, which he calls *Composition of Causes*, 'we can compute the effects of combinations of causes, whether real or hypothetical, from the laws which we know to govern the causes when acting separately' [Mill (1893: Book III, Ch.VI)]. In the second type of polygeny, exemplified by chemical reactions, these computations cannot be performed, and the effects of the cooperation of several agents are 'surprising', for example, the known laws of the properties of oxygen and hydrogen do not jointly imply the properties of water. Is this difference between the types of

polygeny a reflection of merely epistemic differences? Is it just a matter of our not knowing the 'laws of combination' that govern individual substances when they enter into chemical combinations? Or is there a fundamental, metaphysical difference at work here? Mill, as I read him, refrains from deciding this issue: he would like to think that at bottom nature is everywhere ruled by Composition of Causes, but he cannot dismiss the possible ineliminability of surprising effects. (2003, p.196)

The important point here is that the way causes combine in cases of polygeny can be 'surprising'. Indeed, I think Mill is wrong to make a distinction between the two cases, in that, when considering how powers combine towards the production of an effect, it matters not whether the powers are of distinct kinds; it should remain an open question how those powers combine regardless. It's also interesting that Molnar suggests there are 'laws of combination'. This alludes to an important role governing laws are meant to play: to determine the way powers combine towards the production of effects.

Yet, this would be no good if there are many laws ranging-over the same collection of states, dictating different outcomes. My contention is that laws need a dictatorship, a monarchic hierarchy, in order to resolve potential conflicts. The thought, then, is that, if two distinct laws directly range-over the same states, they wouldn't settle how the two powers combine towards a resultant effect. A higher-order law, a 'law of combination', is needed to settle this fact. That is, the dispositional structures of laws don't have the necessary *joints* to allow their combined implementation. What is needed is a higher-order law to serve as a hinge or coupling, whereby the two segments of the superstructural body can fit together. These higher-order laws function as structures that can unify other structures into one superstructure. What should be learnt from this is that, for emergent laws to arise, there must be in place some higher-order law, that would range-over them, determining how the possible affectations of emergent laws combine with the potential affectations of other laws ranging-over the same states.

Likewise, in this way, avenues of influence that laws open up for the states they range-over may be closed off, or constrained, by a higher-order law, by diverting influence along different channels—perhaps avenues of influence opened up by other laws ranging-over a common state, and themselves ranged-over by the same higher-order law. This allows us to distinguish between *weak* and *strong nomic possibilities*.

**Weak Nomic Possibility**: A state, *S*, is weakly nomically possible for a specific law, *L*, iff it's possible that there is a nomic-superstructure that includes *L* and *S*, whereby *L* ranges-over *S*.

**Strong Nomic Possibility**: A state *S*, is stongly nomically possible for a nomic-superstructure, *N*, iff it's possible that *N* includes *S*.

Weak nomic possibility gives the relevant sense in which a law allows that a thing *can* manifest activity, and that the present is when things *can* happen, even when it's not strongly nomically possible that it can. We don't need a new primitive, *dispositional modality*, as Mumford and Anjum (2011, Ch.8) propose, to do this work.

§3.2.3.2. A Problem for Nomic Reductionism.

It should be clear, then, from the above precondition for emergent laws, that there must be a single highest-ordered structure at the top of the superstructure determining how low-ordered laws combine. That is, a nomic-superstructure must necessarily be monarchical. Where laws emerge in a nomic hierarchy, they cannot emerge at the hierarchy's top; they must arise, and perhaps fall, at sub-ultimate levels of the superstructure. Yet, strangely, Mumford and Anjum seemingly think that law-based explanations of causal composition are unsatisfactory. They express their concerns accordingly:

> But what in the world are these functions [of causal composition]? How do they work and how are they physically realized? How do they relate to composition? Traditionally, such functions would have been thought of as laws of nature. They would have told us that when one property *F* and another property *G* interacted they would produce another property *H*, where the magnitude of *H* was a non-linear function of the magnitudes of *F* and *G*. Such an answer will satisfy many people though there is something that is also unsatisfactory about it. We might want to know whether these laws govern and determine the non-linearity of the functional relation between *F*, *G* and *H*. If they do, then what are these laws and how do they do the work they do? Calling the function a law of nature has merely displaced the problem of accounting for it and it is questionable whether a satisfactory account of naturalistic governing laws has ever been provided. (2011, p.99)

It should, I hope, be clear that Mumford and Anjum are just confused. Given my account of laws, there is no remainder question about the functional relationship between *F*, *G*, and *H*. *H* is just the resultant disposition where *F* and *G* combine. *H* cannot combine with *F* and *G* because it merely is the combination of the two. So there is no need for some further higher-order law to explain how the higher-order law disposes the behaviour of the laws that it ranges-over, since those lower-ordered laws don't range-over it, on account of the irreflexivity and transitivity of the ranges-over relation. I've answered the 'how do these laws work?' rhetoric earlier. Their mistake is in thinking that the Armstrong-Dretske-Tooley account of laws is the only non-Humean account. We have, I think, more than adequately explained how these combinatorial laws work. So there are no genuine problems for us that Mumford and Anjum can here be alluding to.

So why do they think there is a problem? My suggestion is that they want there to be a problem for a law-based explanation of causal composition here, because this is precisely where their own reductive account of laws fails hopelessly. Indeed, they seemingly acknowledge this as a point where their own view errs:

> In the metaphysics of powers, there is an alternative to nomological conceptions of nature. What we take to be laws are just descriptions of how the powers behave and affect each other. Powers do all the work and there is no need to posit laws as additional entities besides. While this may be a metaphysically more satisfying and economical picture, in respect of explanation the powers view does little better than the laws view. Stating that some property, *F*, has a power to compose with *G* to form *H* according to some non-linear function *f* is only slightly better than saying it is a law that it does so. The powers view attributes the responsibility for *H*, and its magnitude, to *F* and *G* and their magnitudes. It makes it a feature of *F* and, according to dispositional essentialism, an essential feature of what it is to be *F*, where each property is identified with a cluster of powers. So there is some explanatory role in the attribution of powers, but only a limited one. The attribution of a power does not tell us how *F* and *G* compose *H* in this way, only that they do as part of their nature. (2011, pp.99-100)

So clearly an account of causal composition based purely on ungoverned and uniherited powers not only does no better than my law-based account, but does significantly worse. In fact, it's entirely inadequate. The powers, strictly, don't interact, they merely share a third party: what they are a power to affect. But then how can it be a power of *F* to affect differently some state *E* when *G* also affects *E*, and vice versa? The powers

would somehow have to "know" when and what other powers are affecting $E$. That is, to say the least, strange.

Moreover, even if there were some interaction, it would be to admit some extrinsic powers of $F$, whereby the identity and nature of those extrinsic powers is partly constituted by the existence of its complement, $G$. Yet, as is a familiar problem from the literature on mental content externalism (cf. Kim, 1998, p.37), it's highly counterintuitive, given causal locality (see Ch.2, §5), that extrinsic or relational properties can be causally efficacious. For those taking dispositions seriously, at some fundamental level of description, they should be understood as intrinsic and non-relational. Indeed, to even get these powers to work, we would have to intrinsically "pack-in" all the dispositional information of the world into every disposition, like a Leibnizian Monad. Having non-reductive laws is far less costly than the currently popular nomic reductionism (cf. Mumford, 1998, Ch.10; Bird, 2007, Ch.3 and Ch.9).

## §4. Summary.

We outlined an account of being active in terms of a states being ranged-over by natural laws. And it was in turn used to offer an analysis of presentness. The focus for the remainder of the chapter was on elaborating, motivating, and defending that effervescent account of presentness. This centred round the two important aspects of that account: natural laws and the ranges-over relation. In terms of the former, we highlighted their restrictable, enabling, productive, and unifiying characteristics. In terms of the latter, after elucidating their mediating role of conferring influence from law to state, we highlighted certain formal characteristics: irreflexivity, transitivity, and anti-symmetry. Finally, we delimited what shapes of nomic-superstructures this ranges-over relation permits: discrete, finite, well-grounded, well-governed, monarchical superstructures. As we will see, these characteristics of laws and the ranges-over relation restrict in important ways how reality evolves. It is to this, and the account of pastness and futurity, that we now turn.

# Chapter 8

## Nomological Temporal Unity.

In Chapter 7 we outlined and elaborated the effervescent account presentness. But there is more to time than presentness. Effervescent presentists owe an account of pastness and futurity and how they are related to the effervescent present. This chapter builds such an account. In particular, we shall construct a *nomological* account of pastness and futurity in accordance with the effervescent account of presentness. We've already laid the nomological groundwork for this account in the previous chapter. Simplistically, in what follows we provide a *non-reductive* analysis of pastness and futurity relative to a nomic-superstructure, respectively in terms of what states the nomic-superstructure determined as bringing about its present state, and what states it determines will be brought about by its present state (Section 1).

To fully elucidate the account, we construct a detailed temporal model to frame and explicate its implications; it allows us to bring out and individually justify its underlying metaphysical tenets. Given that our account is non-reductive, we won't be looking to reduce past or future facts to anything else. Rather, the past and future just is respectively how reality was and will be. Moreover, we won't be specifically concerned with looking for *truthmakers* or identifying any part of present reality as *grounding* the past or future facts. Instead, in giving a non-reductive account of pastness and futurity, we merely intend to identify metaphysical constraints on how history could have evolved into and from the present by highlighting the kinds of facts (temporary and permanent) which such past and future facts *supervene* upon. Accordingly, since there presently are no past and future facts—though there may be present facts concerning the past and future—all we can do is *represent* those facts. Therefore, like ersatz modal realists do with worlds, we will require ersatz representations to model times.

After outlining the analyses of pastness and futurity, we then respond to some concerns and challenges (Section 2) relating to: truth (Section 2.1), Russell's hypothesis (Section 2.2), and motion (Section 2.3). Finally, in Section 3 we show how the account can be employed to provide an adequate response to the problem of temporal unity (see Ch.6, §2.3). Weighing-up our competing presentist accounts against the theory-choice criteria enumerated in the Appendix, we will find that effervescent presentism performs

demonstratively better on almost all fronts. Insofar as that is true, I recommend that presentists be effervescent presentists.

## §1. Pastness and Futurity: A Non-Reductive Analysis.

Since we recognised in Chapter 7, Section 2.4.2, the possibility that reality consist of multiple, mutually disunified, time-series', pastness and futurity must be relative to a time-series. And given that nomic-superstructures are monarchical (see Ch.7, §3.2.3), and the ranges-over relation transitive (see Ch.7, §3.1.2), a unified present will consist of all states ranged-over by the *Reigning* (highest-order) law of a nomic-superstructure. Moreover, since states can only influence others by ranging-over them, or (in a derivative sense) by being mutually ranged-over by a law (see Ch.7, §2.2), only those states apart of the same nomic-superstructure can influence the course of events in that superstructure. Call this characteristic of nomic-superstructures *Causal Closure*.

The causal closure of nomic-superstructures means that how a nomic-superstructure evolves is, if determined at all, entirely determined by the complete dispositional structure of that nomic-superstructure. This suggests we might account for pastness and futurity respectively in terms of how nomic-superstructures must have been to evolve into their present total-state, and how they will evolve given their present total-state. An account of this sort isn't completely unprecedented; analyses along these lines have been suggested by both Robin Le Poidevin (1991, p.39) and Craig Bourne (2006, Ch.2, §.IV). However, both are quickly dismissive of such proposals. I shall show that this proposal, when given a sufficiently detailed development, in fact has alot more going for it than usually credited.

### §1.1. The Ersatz-C-Series.

To assist our representation of the proposed analysis, we take inspiration from ersatz presentism, minus reductive ambitions, and represent an *Ersatz-Moment* as a set of propositions. Though we maintain that the set of propositions constituting an ersatz-moment be consistent, it won't be maximal. Rather, a set of propositions will be an ersatz-moment under the following conditions:

> **Ersatz-Moment**: A set of propositions, $\{p_1,...,p_n\}$, such that, i) $\{p_1,...,p_n\}$ is consistent, ii) if presently true, would entail all present facts about what is

intrinsic to a nomic-superstructure, $N$, and iii) there is no set of propositions $\{q_1,...,q_n\}$ such that, a) $\{q_1,...,q_n\}$ is a proper subset of $\{p_1,...,p_n\}$, and b) $\{q_1,...,q_n\}$, if presently true, entails all present facts about what is intrinsic to $N$.

'Intrinsic' here should roughly translate as 'solely concerns'. Less formally, ersatz-moments represent possible present ways a nomic-superstructure might be. Since the representations concern possible present ways nomic-superstructures are in themselves, they don't include representations of other ersatz-moments, of what is merely past or future, nor of what might timelessly be the case.

Of course, we won't be interested in all ersatz-moments equally. So we need to narrow our focus. The first thing to do is group ersatz-moments into common sets. We can say that ersatz-moments representing nomic-superstructures with the same reigning-law form a *C-Space*. What makes a C-space a significant class of ersatz-moments is that reigning-laws are immutable and permanent feature of any nomic-superstructure they reign over. This follows from the fact that, productive causation is the mechanism for metaphysical change (see Ch.2, §3.1), the ranges-over relation is irreflexive (see Ch.7, §3.1.2), and states cannot causally influence states they either don't range-over, or aren't mutually ranged-over by a law (see Ch.7, §2.2). Consequently, reigning-laws won't be subject to any intrinsic metaphysical changes.

Within a C-space, some ersatz-moments will be *Accessible* from others. An ersatz-moment, $M_1$, is accessible from another, $M_2$, just in case, if the nomic-superstructure represented in $M_2$ were realised, it could bring about the realisation of the nomic-superstructure represented in $M_1$. The accessibility relation is non-symmetric, since nothing prevents or guarantess that the nomic-superstructure represented in $M_1$, if realised, being able to bring about the realisation of the nomic-superstructure represented in $M_2$, given that the nomic-superstructure represented in $M_2$, if realised, were able to bring about the nomic-superstructure represented in $M_1$.

Moreover, we can distinguish between *Direct* and *Indirect* accessibility between ersatz-moments. This parallels the distinction between direct and indirect causation made in Chapter 2, Section 5. Accordingly, $M_1$ is directly accessible from $M_2$, just in case, if the nomic-superstructure represented in $M_2$ were realised, it could *directly* bring about the realisation of the nomic-superstructure represented in $M_1$. And $M_1$ is indirectly accessible from $M_2$, just in case, if the nomic-superstructure represented in $M_2$ were realised, it could *indirectly* bring about the realisation of the nomic-superstructure

represented in $M_1$, via bringing about the nomic-superstructures represented in ersatz-moments $M_m,...,M_n$.

These accessibility relations between ersatz-moments in a C-space give it structure. They provide accessibly connected *linear-routes* through that space. A linear-route through a C-space is a potential journey that can be made through it from an ersatz-moment to accessible ersatz-moments. This journey can have no back-tracking or branching. A *maximal* linear-route extends a linear-route (in both directions) as far as the accessibility structure of its C-space permits. Finally, relative to each ersatz-moment, there is an *Ersatz-C-Series*. The ersatz-C-series for an ersatz-moment, $M$, is the accessibly-structured set of all ersatz-moments on maximal linear-routes passing through (containing) $M$. I call the series a 'C-series' following McTaggart's terminology (see Ch.6, §3.2) because, so far, there is nothing *temporal* about this set of ersatz-moments. An ersatz-C-space is a timeless abstraction, unmoved by temporal vicissitudes.

## §1.2. Representing A-Temporalised C-Space.

Unlike the ersatz presentist's use of the ersatz-B-series, an ersatz-C-series is a mere tool to help represent time. But if not a time-series, how can it be employed for that task? It's by providing the framework upon which to pin our temporal representations onto. That is, we represent a time-series by supplementing the representation of a C-space with representations of A-determinations distributed across an ersatz-C-series. The A-determinations are represented by propositions representing whether an ersatz-moment represents a nomic-superstructure whose constituent states are past, present, or future. Call the supplementation of an ersatz-C-series in this way its *Represented-Temporalisation*. In contrast, timeless propositions, such as concern atemporal states or C-spaces (prior to their temporal supplementation), if true at all, will always be true (as of every ersatz-moment).

Crucially, the represented distribution of A-determinations across an ersatz-C-series isn't arbitrary. An ersatz-C-series constrains in important ways—as we should expect if it's to be a useful tool—the distribution of A-determinations across an ersatz-C-series can be represented if it's to represent a *temporal* series. These constraints incorporate, but go beyond, the usual axioms of second-order change (see Ch.3, §§3.1-3.2). So what are these additional constraints? The most straightforward are the following two:

**Past Constraint₁**: If an ersatz-moment, $M$, is represented as representing a present nomic-superstructure, then ersatz-moments in the ersatz-C-series relative to $M$ can be represented as representing a past nomic-superstructure in a time-series, only if $M$ is accessible from them.

**Future Constraint₁**: If an ersatz-moment, $M$, is represented as representing a present nomic-superstructure, then ersatz-moments in the ersatz-C-series relative to $M$ can be represented as representing a future nomic-superstructure in a time-series, only if they are accessible from $M$.

These hold in virtue of the fact that the nomic-superstructure represented by $M$ could only have come about as the result of nomic-superstructures represented by those ersatz-moments from which $M$ is accessible. And the nomic-superstructure represented by $M$ could only bring about nomic-superstructures represented by ersatz-moments accessible from $M$.

Another constraint concerns the position of the ersatz-moment representing the nomic-superstructure represented as present within an ersatz-C-series which has undergone represented-temporalisation. In particular, the following must hold:

**Present Constraint₁**: The ersatz-moment, $M$, which an ersatz-C-series in a C-space having undergone represented-temporalisation is relative to, must be represented as representing the unique present nomic-superstructure in that time-series.

This is because only the ersatz-C-series relative to the ersatz-moment, $M$, represented as representing the present nomic-superstructure, is guaranteed to include all maximal linear-routes passing through $M$. And though there might be multiple disunified time-series', each with there own unified present, there can only be one unified present within a time-series.

So far we've only placed necessary constraints on what ersatz-moments *can* be represented as representing a past or future nomic-superstructure in a time-series. But what then is the status of those ersatz-moments meeting these necessary constraints if insufficient for being represented as representing a pastness or futurity? The answer is

that meeting the necessary constraints on pastness or futurity is only sufficient for *possible* pastness or futurity. We can express this more formally as follows:

> **Past Constraint$_2$**: An ersatz-moment, *M*, meeting the conditions in **Past Constraint$_1$** for being represented as representing the pastness of a nomic-superstructure in a time-series, is thereby represented as representing a possible past nomic-superstructure in that time-series.

> **Future Constraint$_2$**: An ersatz-moment, *M*, meeting the conditions in **Future Constraint$_1$** for being represented as representing the futurity of a nomic-superstructure in a time-series, is thereby represented as representing a possible future nomic-superstructure in that time-series.

The thought is that, there might be several distinct maximal linear-routes passing through the ersatz-moment represented as representing the present nomic-superstructure. Yet, since there can only be one unified present within a time-series, and a reigning-law of a nomic-superstructure, given its immutability, would remain the reigning-law throughout the entire course of history, the entire history of that time-series would accurately be represented by the accessibility-ordered succession of ersatz-moments along a *single* maximal linear-route through an ersatz-C-series.

This suggests a further constraint, about the represented dependency of ersatz-moments $M_1,...,M_n$, represented as representing possible pasts and futures, when the ersatz-moment, *M*, represented as representing the present, is respectively only indirectly accessible to or from $M_1,...,M_n$. We can elaborate these constraints accordingly:

> **Past Constraint$_3$**: An ersatz-moment $M_n$—whereby $M_n$ is represented as representing a possible past nomic-superstructure in a time-series, in virtue of the ersatz-moment, *M*, represented as representing the present nomic-superstructure in that time-series, being indirectly accessible from $M_n$, via interceding ersatz-moments $M_j,...,M_k$ on the same maximal linear-route—is represented as representing a possible past nomic-superstructure, only if $M_j,...,M_k$ are represented as representing an actual past nomic-superstructure in that time-series.

**Future Constraint₃**: An ersatz-moment $M_n$—whereby $M_n$ is represented as representing a possible future nomic-superstructure in a time-series, in virtue of the ersatz-moment, $M$, represented as representing the present nomic-superstructure in that time-series, being indirectly accessible to $M_n$, via interceding ersatz-moments $M_j,...,M_k$ on the same maximal linear-route—is represented as representing a possible future nomic-superstructure, only if $M_j,...,M_k$ are represented as representing an actual future nomic-superstructure in that time-series.

Complicated as these constraints may seem, in essence, the basic idea is that a time-series must follow the accessibility-structure of a single maximal linear-route through a C-space; even when there are multiple available routes in an ersatz-C-series. Yet, so much for representing *possible* pastness and futurity in a time-series, what we're really interested in is representing *actual* pastness or futurity in a time-series. So what is needed to move from representing mere possible pastness or futurity to representing actual pastness or futurity?

We can tell a simple story if the nomic-superstructures are past-wards and future-wards deterministic. That is, if the ersatz-moment, $M$, represented as representing the present nomic-superstructure, is past-wards and future-wards deterministic, there would be only a single maximal linear-route through $M$ in the ersatz-C-series. If that were the case, those ersatz-moments represented as representing possible pasts or futures in that ersatz-C-series would represent actual pasts and futures in the representation of a time-series. This permits the following additional constraints:

**Past Constraint₄**: An ersatz-moment $M_n$—represented as representing a possible past nomic-superstructure in a time-series—will be represeneted as representing an actual past nomic-superstructure in that time-series, iff there is no other linear-route from a distinct ersatz-moment $M_m$—represented as representing a possible past nomic-superstructure in that time-series—to the ersatz-moment $M$—represented as representing the present nomic-superstructure in that time-series—which doesn't contain, or is entirely contained by, the segement of the maximal linear-route extending from $M_n$ to $M$.

**Future Constraint₄**: An ersatz-moment $M_n$—represented as representing a possible future nomic-superstructure in a time-series—will be represeneted as

representing an actual future nomic-superstructure in a time-series, iff there's no other linear-route from the ersatz-moment $M$—represented as representing the present nomic-superstructure in that time-series—to a distinct ersatz-moment $M_m$—represented as representing a possible future nomic-superstructure in that time-series—which doesn't contain, or is entirely contained by, the segement of the maximal linear-route extending from $M$ to $M_n$.

This notion of *containment*, whereby a segement of a maximal linear-route may contain, or be contained by, another, isn't quite the set-theoretic *subset* relation. Since a linear-route is an *ordered-set* of ersatz-moments, with an internal structure, and the containment relation requires this internal structure of the contained set be preserved within the containing set. We needed to employ this notion of containment to capture represented pastness in a time-series, rather than merely counting whether there is more than one past-wards or future-wards linear-route, because the linear-routes may not be entirely distinct. And we don't want to exclude the represented actual pastness or futurity of a nomic-superstructure represented by an ersatz-moment, $M_n$, just because it belongs to multiple maximal linear-routes, which in fact all coincide (have the same members) at the segment of those routes between the ersatz-moment, $M$, represented as representing the present, and $M_n$.

However, it's widely accepted that natural laws needn't be past-wards or future-wards deterministic. Assuming this is accurate, there may well be ersatz-C-series' consisting of multiple maximal linear-routes. This means there will be instances of represented possible past or future nomic-superstructures in a time-series represented by ersatz-moments that **Past Constraint4** and **Future Constraint4** doesn't settle which nomic-superstructure represented by those ersatz-moments should be represented as actually past or future. Yet, an objector might complain that a represented actual past or future must be settled in this way; that one, and only one, maximal linear-route must capture the represented actual course of history in a time-series.

To this objector, I submit that one, and only one, maximal linear-route captures the represented actual course of history in a time-series. Nevertheless, where there are multiple maximal linear–routes in an ersatz–C-series, the represented-temporalisation of that series would be such that the represented actual course of history is *Metaphysically Unsettled*. That is, the represented time-series would be such that there is no fact about which of the maximal linear-routes accurately represents actual history. This is in

keeping with Elizabeth Barnes and Ross Cameron's (2009) proposed treatment of the open past or future as being presently metaphysically unsettled.

These are all the constraints on temporal representation needed for the ersatz-C-series to serve our purpose. From these meagre constraints, we can give an account of pastness and futurity supervening on facts about presentness and its corresponding ersatz-C-series. It's to this task we now proceed.

§1.3. The Nomic Past and Future.

We begin by elaborating a general account of representing pastness and futurity in a time-series. This will then be used to give an account of actual pastness and futurity in particular. Given the constraints on the represented-temporalisation of an ersatz-C-series outlined above, we can simply state that a proposition is represented as formerly or eventually true, if it's a member of an ersatz-moment represented as representing a past or future nomic-superstructure in a represented-temporalisation of an ersatz-C-series. Yet, this won't exhaust the propositions needing to be represented as formerly or eventually true. We need to include propositions representing timeless facts, which would always be true. And, crucially, we need to give an account of what propositions are represented as formerly or eventually true when they are members of an ersatz-moment represented as representing a *possible* past or future nomic-superstructure in a represented-temporalisation of an ersatz-C-series. Finally, we need to specify the conditions under which propositions representing the represented-temporalisation of an ersatz-C-series are represented as formerly or eventually true.

The account I propose for propositions that are members of an ersatz-moment represented as representing a *possible* past or future nomic-superstructure in a represented-temporalisation of an ersatz-C-series, is as follows:

**Possible Past Pastness**: A proposition, *p*, is represented as formerly true, if it's a member of an ersatz-moment represented as representing a *possible* past nomic-superstructure in a represented-temporalisation of an ersatz-C-series, just in case, *on every maximal linear-route* in that ersatz-C-series, *p* is a member of an ersatz-moment represented as representing a *possible* past nomic-superstructure.

**Possible Future Futurity**: A proposition, $p$, is represented as eventually true, if it's a member of an ersatz-moment represented as representing a *possible* future nomic-superstructure in a represented-temporalisation of an ersatz-C-series, just in case, *on every maximal linear-route* in that ersatz-C-series, $p$ is a member of an ersatz-moment represented as representing a *possible* future nomic-superstructure.

The thought is simply that, if maximal linear-routes represent possible histories of a time-series in the represented-temporalisation of an ersatz-C-series, then if a proposition is a member of an ersatz-moment in either the past-wards or future-wards segment of every maximal linear-route, then respectively it must actually be formerly or eventually true. For, what obtains in all possibilities must obtain actually.

Whilst the account I propose for those propositions, $p$, representing a fact about the represented-temporalisation of an ersatz-C-series, $S$, will be represented as presently true, iff $S$ is relative to the ersatz-moment, $M$, represented as representing the present nomic-superstructure in that time-series. If, however, $S$ is relative to an ersatz-moment, $M_n$, represented as representing a past or future nomic-superstructure in that time-series, $p$ will be represented as formerly or eventually true respectively. And finally, if $S$ is relative to an ersatz-moment, $M_m$, represented as representing a *possible* past or future nomic-superstructure in that time-series, it will be metaphysically unsettled whether $p$ will be represented as formerly or eventually true respectively.

Combining the exhaustive disjuncts for when a proposition is represented as formerly or eventually true in a represented-temporalisation of an ersatz-C-series, we can now offer the following accounts:

**Represented Pastness**: A proposition, $p$, is represented as formerly true in the represented-temporalisation of an ersatz-C-series $=_{def.}$ either, i) on *every* maximal linear-route in that ersatz-C-series, $p$ is a member of an ersatz-moment contained in that maximal linear-route represented as representing a *possible* past nomic-superstructure, ii) $p$ represents a timeless fact, or iii) $p$ represents a fact about the represented-temporalisation of an ersatz-C-series, $S$, whereby $S$ is relative to the ersatz-moment represented as representing a past nomic-superstructure in that time-series.

**Represented Futurity**: A proposition, *p*, is represented as eventually true in the represented-temporalisation of an ersatz-C-series =def. either, i) on *every* maximal linear-route in that ersatz-C-series, *p* is a member of an ersatz-moment contained in that maximal linear-route and represented as representing a *possible* future nomic-superstructure, ii) *p* represents a timeless fact, or iii) *p* represents a fact about the represented-temporalisation of an ersatz-C-series, *S*, whereby *S* is relative to the ersatz-moment represented as representing a future nomic-superstructure in that time-series.

All that is then required to move from merely represented pastness or futurity to actual pastness or futurity is that the represented-temporalisation of an ersatz-C-series, *S*, is such that *S* is relative to the ersatz-moment accurately representing the effervescent present. If this is the case, then given the metaphysical structure of an ersatz-C-series, and the constraints, enumerated in the previous section, that representation of pastness and futurity would be *accurate*.

We're now finally able to offer our non-reductive analyses of pastness and futurity. They are as follows:

**Nomic Pastness**: 'It was the case that *p*' is true =def. *p* is represented in a represented-temporalisation of an ersatz-C-series, *S*, as formerly true, and *S* is relative to the ersatz-moment accurately representing the effervescent present.

**Nomic Futurity**: 'It will be the case that *p*' is true =def. *p* is represented in a represented-temporalisation of an ersatz-C-series, *S*, as eventually true, and *S* is relative to the ersatz-moment accurately representing the effervescent present.

If we want to give an account for metric tense operators, we need to add a metric structure to the ersatz-C-series. Assuming time is discrete, the supplementation might correspond to some real non-reductive feature of a time-series. That is, we can simply count the moments. But if time weren't discrete, then a non-reductive account of the metric becomes trickier. It will have to be built into the dispositional structure of laws. The laws must bestow dispositions to bring about certain metaphysical changes at a certain objective (maybe relative) rate. Alternatively, a reductive account of the metric will be sought. This will likely be through tracking regularities in the world. Yet, once

we've provided the metric, the same account of pastness and futurity applies *mutatis mutandis* to metric pastness and futurity.

## §2. Responding to Objections.

We've now given our accounts of pastness and futurity. All we've left to do is assess their relative merit. Perhaps the first clarification required is why the analyses are *non-reductive*. After all, haven't I characterised pastness and futurity strictly in terms of what is present in combination with some timeless abstract representations? I resist making the stronger reductive analyses because there was implicit use of primitive pastness and futurity in the construction of ersatz-C-series'. In particular, the accessibility relation between ersatz-moments is understood in terms of what would be *brought about* by a nomic-superstructure, if it were realised. Given our assessment of productive causation in Chapter 2, Section 3.1, we know that to make sense of productive causation, we require an account of metaphysical change, whereby productive causation functions as the mechanism for metaphysical change. But since metaphysical change cannot be simultaneous (see Ch.2, §3.1.1), an account of metaphysical change in terms of a presentist conception of pastness and futurity must be supplied (see Ch.1, §4). So, since our account of metaphysical change presupposes pastness and futurity, and our account of productive causation presupposes metaphysical change, the accessibility relation itself must presuppose an independent account of pastness and futurity. For our purposes, that independent account is primitive pastness and futurity.

No doubt, given the close relationship between nomic pastness and futurity, and productive causation, it is possible to pack into a primitive some amalgamation of nomic pastness and futurity, with productive causation combined. But it's unclear whether this would constitute any ideological savings. As we've repeatedly stressed, primitives, since not *things*, aren't of a sort that are countable. However, perhaps given the theoretical overlap in the roles of nomic pastness and futurity, and productive causation, it may be that we need those primitives to do *less* independent work, than they might otherwise do, in our theory. And this might just constitute a kind of ideological saving. If so, then our non-reductive account of pastness and futurity improves on its predecessors with respect to **GM2b**. Yet, if not, it's certainly not in any worse position in this respect. I tentatively proffer that there are indeed savings to be had here.

Another advantage this close relationship between nomic pastness and futurity, and productive causation, yields is a complete dissolution of the truth-supervenes-on-being objection to presentism from Chapter 5, Section 2.1.1. That is, since what is past or future is *analysed* in terms of resources entirely available as of present—namely the permanent C-space structure in combination with facts about what is present—then it *trivially* follows that what is nomically past or future supervenes on what is presently the case for effervescent presentists. The basis for one of the most virulent and persistent objections to presentism has simply evaporated! And we're not even strictly committed, as is common amongst responses, to denying **Temporal Recombination** (see Chapter 5, Section 2.1.1), whereby the past and future may have been different given how things presently are.

The important point here is that, in cases where things could *have been* or *come to be* different, there is no fact of the matter which way things were or will be respectively. That is, past or future facts are metaphysically unsettled in such cases; all there are is facts about what is *possibly* past or future. Of course, this opens effervescent presentism up to a different complaint. Some intuit that at least the past is *closed*, even if they maintain the future is *open*. Indeed, many proffer this as an important, and perhaps defining, asymmetry between past and future. Yet, the nomic account not only preserves symmetry between past and future, but also seemingly treats the past as open in some importantly objectionable respect.

How we respond to this sort of objection depends on what is meant by 'open' and 'closed' with respect to pastness and futurity. One common characterisation is in terms of whether facts concerning the past or future are determinate. We can draw this distinction accordingly:

> **Open/Closed Determinacy**: The past (future) is *closed* iff for every proposition, *p*, concerning what is possibly past (future), there is a determinate fact about whether *p* is presently true. Otherwise, the past (future) is *open*.

On this way of delineating the distinction, both nomic past and future are potentially open. They would be open just when the laws are past-wards and future-wards indeterministic respectively. Yet, the objector will contend that at least the past is

closed, even when laws are indeterministic. For example, Craig Bourne lists this as a platitude '...that every theory must account for before it even attempts more substantive issues.' (2006, p.15) later stating that '...even in an indeterminstic world, we still want to say that at least past-tensed statements have *determinate* truth-values.[...] To confuse determinateness with determinism is an offence.' (*Ibid*., p.50). He then continues to simply *stipulate* a closed-past and open-future in this sense, when formulating his own presentist theory. Indeed, he doesn't even attempt to explain why. Likewise, after finding no basis for presentists treating pastness and futurity differently, Joseph Diekemper remarks that, 'I take our failure, here, to reconcile presentism with the intuition that the past is fixed and the future not, as a failure of presentism in general.' (2005, p.239).

　　If this is the objection, I don't share the intuitions of my objectors. And I'm not alone in departing from this consensus (cf. Markosian, 1995). After all, as Diekemper (2005) explained, given standard presentist ontological symmetry between pastness and futurity, there are no grounds for treating them differently with respect to **Open/Closed Determinacy**. Moreover, contra Bourne and Diekemper, I don't think our credence in a metaphysical theory should be influenced by its accordance to common opinion. We argued against this commonsensicalism in Chapter 4, Section 4.1. Rejecting this objector's intutitions on principled grounds is no cost to effervescent presentism.

　　In this way, facts about what is past or future would mirror our epistemic situation, whereby we make inductive inferences based on assumed uniformities. But any reasonable warrant we might have for believing such uniformities obtain presupposes they are brought about by governing laws. I take it that it's fundamentally this point that Terfil was getting when he wrote:

> In principle, each object could behave according to its own set of laws, totally unrelated to the laws that govern all other objects. Such a universe would be chaotic and difficult to understand, but it is logically possible. That we do not live in such a chaotic universe is, to a large extent, the result of the existence of natural laws [...]. It is the role of natural laws to order and arrange things, to connect the seemingly unconnected, to provide a simple framework that ties together the universe. (2002, p.xxi)

And a more detailed argument for the consequent epistemic solipsism following from the denial of governing laws is outlined by Gregg Rosenberg (2004, §8.5). The important consequent of this is that, if laws are in fact past-wards or future-wards

indeterministic, then we lack good reason to believe there is a determinate matter of fact regarding those undetermined past or future facts.

Alternatively, the openness or closedness of past or future might be understood in terms of whether we can change the past or future respectively. We might formulate this interpretation of the distinction thus:

> **Open/Closed Change**: The past (future) is *closed* iff for every proposition, *p*, concerning what is possibly past (future), it's presently impossible to change whether *p* obtains. Otherwise, the past (future) is *open*.

On this understanding of the distinction, then, as elucidated in Chapter 2, Section 3.1.1, it should be uncontroversial that we cannot *change* what happens at any time (cf. Lewis, 1976). And indeed, the nomic account of pastness and futurity involves no such change. Though the facts about the past or future may become more or less settled with time's passing, creating or filling factual lacunas, they don't offer conflicting accounts of the facts about what obtains *at* a time (the first-order temporal facts), with what they are as of other presents. Information is gained or lost, but never altered. As Howard Stein put it, there would be 'a kind of fading of the world's memory.' (1968, p.23). Nevertheless, there would only be one maximal linear-route, which the present traces, representing at least a possible complete history as of every present. It may simply be unsettled as of any present which route that is.

However, perhaps what those favouring the **Open/Closed Change** interpretation are really getting at is whether we can *affect* the past or future. We can tweak that interpretation accordingly:

> **Open/Closed Affect**: The past (future) is *closed* iff for every proposition, *p*, concerning what is possibly past (future), it's presently impossible to affect whether *p* obtains. Otherwise, the past (future) is *open*.

Yet, if this is the interpretation, it should be clear the nomic past is closed, whilst the nomic future is open, to affectations. Since, as established in Chapter 2, Section 3.1.2, presentists hold that causation and time must share a common direction. We can no longer influence what happened, but may still influence what will happen. Insofar as there is a complaint to be had here, then, the nomic account of pastness and futurity doesn't suffer from it.

§2.2. Russell's Sceptical Hypothesis.

An objection often made against similar accounts of pastness and futurity concerns Bertrand Russell's (1921, pp.159-160) *Sceptical Hypothesis*. According to this hypothesis, for all we know, things can be exactly as they presently are, yet, instead of a history filled with dinosaurs, big bangs, and planetary formations, the universe only came into being five-minutes-ago. In some respects, this is just an extreme version of the temporal recombination intuition. It shouldn't be surprising then that my response is simply to deny this possibility, insofar as it's excluded by the present nomic-superstructure. This suggests that we must contest Bourne's contention that, '...we couldn't rule out Russell's hypothesis by appealing to actual laws of nature that wouldn't allow for such a complex environment in such a short space of time, for, as I have argued above, the grounding of those very laws is called into question on the reductive view.' (2006, p.51). However, Bourne's objection here only has force against the two traditional conceptions of natural laws we've already rejected.

The nomic account of pastness and futurity would be straightforwardly circular if it were founded on a Humean conception of laws, as mere regularities. To see why, consider Theodore Sider's remarks that, 'If tensed facts are to be grounded in the laws, the laws could not themselves be grounded in the tensed facts. The only regularities available for securing the laws would be *current* regularities, and regularity theories are only plausible if the regularities are drawn from all of time.' (2001, p.37). That is, if the laws are to have implications about what was or will be, they must themselves be drawn from the regularities across time; they must presuppose facts about what was and will be. Yet, if this were so, our nomic account of pastness and futurity would place no substantial constraints on pastness and futurity.

And there are also problems afflicting the nomic account of pastness and futurity when combined with the Armstrong-Dretske-Tooley account of natural laws (see Ch.7, §2), whereby laws are second-order 'necessitation' relations between universals (multiply-instantiated properties). For instance, Armstrong understands universals to be *Imminent*. That is, they are located in their instances, such that their existence depends on their instances; they cannot exist without instances. But as Sider explains, '…on Armstrong's version of the theory, universals do not exist unless they are instantiated; for the presentist, this formula becomes: a universal exists only if it is *currently* instantiated.' (1999, p.337). The worry is then that there cannot *currently* be second-

order relations governing those universals lacking any instances as of present, since those universals wouldn't then exist, whilst relations are existence-symmetric, so require existing relata. Yet, it seems as though there may be cases where instances of universals exist at some times, but not others. And importantly, given the current non-existence of those universals, there could be no higher-order law explaining the coming about of those universals.

We might, however, suppose that the universals involved in such laws are *Transcendent* (cf. Tooley, 1977). That is, they aren't located in their instances, and exist independently of them. Bourne's objection to this account of laws is in fact quite vague. He merely sates that '...a presentist who appealed to these accounts of laws of nature would either have to find something in the present to ground these laws—and it's difficult to see what this could be—or they must appeal to facts outside the present, in which case they've conceded that not all of the truthmakers can be found *in* the present, which was their initial contention.' (2006, p.50). This is odd, because clearly the transcendent universals would exist as of present, and it's not difficult to see why. Nevertheless, it's difficult to see how *categorical* properties or relations could constrain the course of history (see Ch.7, §2.2); they seemingly require dispositional characteristics to do so. But then the account of laws would bear a closer resemblance to my own. Under these conditions, despite Bourne's protestations, there would be no obvious problem for the nomic account of pastness or futurity here. What this indicates is that nomic pastness and futurity is tightly bound-up with the account of natural laws outlined in the previous chapter.

There is a different way, though, of understanding the challenge Russell's sceptical hypothesis presents for the nomic account of pastness and futurity. Perhaps the complaint is that it's metaphysically possible that some influence on the course of history could occur from outside the nomic-superstructure. History would then fail to follow the course set out by the laws. If so, I deny this is metaphysically possible. Firstly, the only entities outside a nomic-superstructure co-existing with entities inside it are timeless existents (see Ch.7, §2.4.2). Secondly, timeless existents cannot influence the course of history; if they had the power to influence history, they would either be laws or governed states, and thus timely. So, suppose a theist contended that God could influence the temporal course of reality. That wouldn't refute the nomic account of pastness and futurity. All that suggests is that the reigning-law in that nomic-superstructure is divine.

Finally, this leaves productive causation as the mechanism of metaphysical change (see Ch.2, §3.1), whereby it's in virtue of being ranged-over by the same natural law that states are *enabled* influence over each other and the course of history (see Ch.7, §2.2). This excludes the possibility of arbitrary events coming about *ex nihilo* into a nomic-superstructure without laws governing their coming about. Though this epistemic possibility has been rejected, it was eliminated in a principled way that didn't presuppose the nomic account of pastness and futurity. Accordingly, I don't think there is anything *ad hoc* or otherwise objectionable about the exclusion of such cases.

§2.3. Motion in the Present.

Russell once remarked that, 'Physical science, more or less unconsciously, has drifted into the view that all natural phenomena ought to be reduced to motions. Light and heat and sound are all due to wave-motions, which travel from the body emitting them to the person who sees light or feels heat or sees sound.' (1912, p.13). Perhaps there is some hyperbole here, but it serves to highlight the seriousness of giving an adequate account of motion. However, presentism has been charged with being unable to do so (cf. Sider, 2001, Ch.2, §2; Le Poidevin, 2002, 2003, Ch.9). Underlying these objections is a commitment to a *Static Account of Motion*, which characterizes a thing's motion purely in virtue of its relative positions at other times. A standard version of this account might be formulated accordingly:

> **Static Motion**: $x$ is in motion at time $t =_{\text{def.}} x$ occupies a different spatial location to the location it occupies at $t$ at times immediately preceding *and* succeeding (or infinitesimally close to) $t$.

Sider (2001, p.34) attributes this view to Russell (1903, p.473), but as Le Poidevin (2002, p.63) makes clear, Russell's account disallows instantaneous velocity, instead taking motion to be a durational-property *emerging* over the succession of durationless instants, but never instantiated by instantaneous things. He thus rejected instantaneous velocity. However, as Mark Sainsbury explains, instantaneous velocity is essential to our best scientific theories: 'Classical mechanics purports to make sense not only of velocity at an instant but also of various more sophisticated notions: rate of change of velocity at an instant (i.e., instantaneous acceleration or deceleration), rate of change at an instant, and so on.' (1995, p.21).

Nevertheless, instantaneous velocity is accommodated by **Static Motion**, which treats motion as a *resultant* instantaneous-property, instantiated by things in virtue of their being located at different spatial locations at immediately preceding and succeeding (or infinitesimally close) times. Either way, a static account of motion presents challenges for the nomic account of pastness and futurity. For, an object's current motion seems to at least partly explain its location at future times. But if the facts about an object's motion are determined by how it was or will be, then it seems that, contrary to the nomic account of pastness and futurity, facts about pastness and futurity cannot be entirely analysed in terms of, or supervene upon, present facts.

*§2.3.1. Against Static Motion.*

My response to this worry is that **Static Motion** provides an implausible account of motion. But given its popularity, I want to devote some space to explaining why before getting to my preferred account. There are a number of places where the account is vulnerable. Firstly, if an object's motion is to be genuinely explanatory in determining its later positions, then an account of that motion shouldn't presuppose those positions. This was John Bigelow and Robert Pargetter point when they wrote, '…velocity [according to the static account of motion] cannot explain an object's sequence of positions on Ockham's theory: we cannot say an object is now located to the right of where it was a moment ago *because* it was in motion a moment ago.' (1990, p.66; cf. Armstrong, 1997, pp.76-78).

Moreover, along these lines, the causal influence of motion, undertstood according to **Static Motion**, would appear to involve backwards causation. Since whether an object is in motion at a time, $t$, according to **Static Motion**, is partly determined by whether it has undergone spatial displacement between $t$ and a succeeding time, yet to occur. And the consequences are further exasperated if the future is determinately open, which may leave it metaphysically unsettled whether a thing is presently in motion. Importantly, if this is so, **Static Motion** would conflict with AXIOM$_1$ from Chapter 3, Section 3.2, whereby we would have determinate past facts concerning states that were never *determinately* present.

A further objection against **Static Motion** comes from John Carroll (2002). Carroll shows through a series of seemingly plausible hypothetical scenarios, that there are certain cases of instantaneous velocity that **Static Motion** cannot countenance, and that this will be true for any reasonable modifications to it. In the first scenario, an

object, $b$, is in motion (according to **Static Motion**) on an inertial trajectory at times $t_{n \leq 2}$, and that time $t_{n=2}$ is $b$'s last moment of existence. Now, at $t_{n=2}$ $b$ has no succeeding spatial location, since *ex hypothesi* $b$ doesn't exist after $t_{n=2}$. According to **Static Motion**, $b$ isn't in motion at $t_{n=2}$; it lacks instantaneous velocity then. But as Carroll explains, '…what is interesting about this example is that, though $b$ does not have [an instantaneous] velocity at [$t_{n=2}$], it is tempting to think that it is moving at [$t_{n=2}$].' (*Ibid.*, p.53). That is, following Sainsbury, we should be able to assign $b$ at $t_{n=2}$ an instantaneous velocity.

This is bad news for **Static Motion**, though it can perhaps be rescued with the following modification:

> **Static Motion\***: $x$ is in motion at time $t$ =$_{\text{def.}}$ $x$ occupies a different spatial location to the location it occupies at $t$ at times immediately preceding (or preceding and infinitesimally close to) $t$.

Here we've altered **Static Motion** so that motion is determined purely by spatial displacement at preceding, but *not* succeeding, times. Given these modifications, **Static Motion\*** seemingly copes much better with some of the objections so far made against **Static Motion**. According to **Static Motion\***, $b$ *is* moving in the first scenario, and an open-future wouldn't, though an open past would, affect the determinacy of facts about present motion. Neither would it entail backwards causation. Still, this modified account faces like problems of its own.

Carroll's second scenario sits badly with **Static Motion\***. In this scenario, $b$ comes into existence *ex nihilo* at time $t_{n=1}$. At times $t_{n \geq 1}$ $b$ follows an inertial trajectory. Intuitively, $b$ is in motion at $t_{n=1}$, but both **Static Motion** and **Static Motion\*** would deny this, since $b$ lacks a preceding location in this scenario. However, again, the account might be modified to cope with the scenarios so far presented. The following account seems the obvious progression:

> **Static Motion\*\***: $x$ is in motion at time $t$ =$_{\text{def.}}$ $x$ occupies a different spatial location to the location it occupies at $t$ at times immediately preceding *or* succeeding (or infinitesimally close to) $t$.

Here the italicised conjunction in **Static Motion** has been changed to a disjunction in **Static Motion\*\***. When $b$ lacks a succeeding location, whether it's in motion would be

determined by its spatial displacement from its location at the preceding time. Whilst if *b* lacks a preceding location, whether it's in motion would be determined by its spatial displacement from its location at the succeeding time.

In response to **Static Motion\*\***, Carroll describes one final scenario problematic for even this more permissive account of motion. In this scenario, *b* undergoes no spatial displacement, so according to **Static Motion\*\*** is at rest, throughout times $t_{n<1}$, whilst *b* does undergo spatial displacement, following an inertial trajectory, so according to **Static Motion\*\*** is in motion, throughout times $t_{n>1}$. The question then arises as to whether *b*'s in motion at time $t_{n=1}$. Or more precisely, what is its instantaneous velocity? Since all spatial things, whether in rest or motion, have an instantaneous velocity. If we look only at preceding moments to decide whether *b* is in motion, we will conclude that it isn't (it hasn't undergone spatial displacement). And, if we look only at succeeding moments to decide whether *b* is in motion, we will conclude that it is (it has undergone spatial displacement). Yet, **Static Motion\*\*** seemingly settles this question arbitrarily in favour of motion. That suggests we must assign *b* a positive inertial veolocity at $t_{n=1}$ in this scenario, given that **Static Motion\*\*** entails it's in motion then.

But there is no good reason to conclude that $t_{n=1}$ is the first moment of *b*'s motion rather than its last moment of rest. After all, suppose we follow **Static Motion\*\*** and contend that $t_{n=1}$ is the first moment of *b*'s motion. We could equally describe that same scenario from an alternative inertial reference-frame, whereby *b* is in motion throughout times $t_{n<1}$ and at rest throughout times $t_{n>1}$. **Static Motion\*\*** would then suggest $t_{n=1}$ is rather the last moment of *b*'s motion. Yet, this is equivalent to $t_{n=1}$ being the last moment of *b*'s rest, rather than its first moment of motion, in the original reference-frame. So **Static Motion\*\*** is internally conflicted.

There is seemingly only two tenable responses open to those hoping to defend a static account of motion. They can accept Ulrich Meyer's (2003, p.97) response, that velocity is undefined at an instant. This would be a cost, since as Sainsbury (1995, p.21) explained, instantaneous velocity is essential to our best scientific theories. Indeed, without any instantaneous velocity, present velocity won't *explain* later velocity. Alternatively, they could endorse Graham Priest's (2006, Ch.11) response, that *b* has both instantaneous velocities corresponding to the trajectories from both preceding and succeeding times respectively; at the moment of change, things possesses contradictory velocities. Unlike Priest, I take this to be straightforwardly absurd. This provides some independent motivation for looking at alternative accounts.

*§2.3.2. Dispositional Motion.*

If the static account of motion isn't correct, how should we think of motion? The previous section suggests that instantaneous velocity must be defined using present resources. My suggestion is then that a thing's motion is deeply tied to the way it's governed by natural laws, and in particular spatial laws (see Ch.7, §2.4.3). That is, motion should be understood as a manifestation of certain powers bestowed upon states by spatial law. Those powers are the instantaneous velocities. Entities ungoverned by spatial laws would lack instantaneous velocities, and therefore wouldn't be in motion.

To elaborate the integral role of spatial laws in motion, consider Michael Tooley's (1988) following *gedankenexperiment*. Tooley describes a world where objects are located randomly, unconstrained by natural laws. The trajectory of such objects would typically be discontinuous and sporadic. He asks us to imagine that in this world, an object forms a smooth curvilinear trajectory, purely by chance. The static account of motion would assign motion to this object.[90] But as Tooley explains, '…one is very hesitant to attribute a velocity in such a case, and I would suggest that the reluctance to do so derives from the feeling that the velocity of an object at a time should be causally relevant to its positions at later times.' (*Ibid*., p.244). The reason for this hesitancy to ascribe motion in this case is that there is no explanation why the object is spatially displaced across time in the way it has been. That is, the spatial relations would be explanatorily irrelevant to how things behave. To reiterate our earlier point (see Ch.7, §2.4.3), if space is devoid of causal regulation, all that remains of it is a proliferation of empty relations playing no interesting theoretical role whatsoever.

The dispositional property of instantaneous velocity states inherit is such that it disposes, but needn't guarantee, those states be spatially displaced in the proceeding nomic-superstructures laws bring about. Some might complain that motion should at least *guarantee* displacement, in which case instantaneous velocity wouldn't be sufficient for motion; motion would be partially extrinsic. However, I agree with Bigelow and Pargetter contention that, '…it is not absurd in principle to attribute a nonzero instantaneous velocity vector to an object which displays no variation whatever in its sequence of positions across time.' (1990, p.68). They propose the following

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[90] In fact, **Static Motion** and its variants would have us ascribe motion to the object even if its trajectory were discontinuous and sporadic. But additional constraints could easily fix this defect. However, it's unclear what would motivate the supplementary constraints if motion weren't essentially law-governed.

situation where an entity has the disposition to be displaced—is in motion—yet isn't displaced. The case involves the transference of instantaneous velocity through three objects, *a*, *b*, and *c* in a Newtonian world. As *a* collides with *b*, its instantaneous velocity is transferred to *b*, but *b* is blocked-in by *c* so cannot alter its position. Instead it passes that instantaneous velocity on to *c* in the next moment without spatial displacement. The situation here is essentially that of a Newton's cradle.

If motion requires this extrinsic condition of spatial displacement, in addition to instantaneous velocity, it needn't be treated as fundamental for explaining the course of history. That work is done by dispositional instantaneous velocities. And that is all we require to make the nomic account of pastness and futurity adequate. Thus the nomic account of pastness and futurity can surmount the difficulties presented by motion.

**§3. The Problem of Temporal Unity.**

Our final task will be to show how effervescent presentism helps resolve the problem of temporal unity (see Ch.6, §2.3). We do this in two stages. Firstly, we diagnose the problem and outline the form of its solution. Secondly, we explain how effervescent presentism supplies the resources to provide a solution of that form. My understanding is that this provides another significant advantage for effervescent presentism over its competitors. In particular, facts about diachronic temporal unity won't need to be taken as brute; rather, it's given a firm foundation in natural laws. This result yields important savings with respect to **GM2a**.

§3.1. A Diagnosis.

In 1908, McTaggart wrote:

> The C series, however, is as ultimate as the A series. We cannot get it out of anything else. That the units of time do form a series, the relations of which are permanent, is as ultimate as the fact that each of them is past, present, and future. And this ultimate fact is essential to time. For it is admitted that it is essential to time that each moment of it shall either be earlier or later than any other moment; and these relations are permanent. And this—the B series—cannot be got out of the A series alone. It is only when the A series, which gives change and direction, is combined with the C series, which gives permanence, that the B series can arise. (p.464)

Yet, despite the importance McTaggart clearly assigns the C-series (see Ch.6, §3.2) for an account of time—that it's '*essential* to time'—it's largely fallen off the theoretical radar. A notable exception is Jonathan Tallant (2008), though, he draws on the C-series there as part of a *timeless* reality, only to note how B-theory doesn't significantly differ from it. He doesn't recognise there the importance the C-series for *temporal* reality. Throughout the century-long dispute following McTaggart's paper between the relative fundamentality of A-series and B-series, and the attempts to derive one from the other, the C-series has scarcely been mentioned (for an overview, see Le Poidevin, 1998).

According to McTaggart, then, the essential function of the C-series in an account of time is to provide the fixed/permanent structure to reality against which second-order change (see Ch.3, §3.1) can occur. Without that fixed structure to hold moments together in a definite order, we merely have a collection of unconnected moments, where it's unclear what reality as of one moment has to do with reality as of any other. In short, the problem of temporal unity for presentism arises from the presentist discarding of the C-series. As a reaction to McTaggart's (1908, 1927) infamous A-series paradox, whereby events are in turn each present and non-present, which is contradictory, presentists were quick to discard much permanent temporal structure to avoid such contradictory states ever arising together (cf. Percival, 2002). However, in so doing, they have thrown the baby out with the bathwater.

To help get a fix on what is required to unify distinct moments into a time-series, we consider a proposed necessary criterion on temporal unity by E. J. Lowe, whereby '...time necessarily involves change...' (1998, p.121), and that '...when something begins to be the case which was previously not the case (that is, when a change occurs), there must exist at the time of change something which also existed prior to the change.' (*Ibid*., p.122). In favour of this necessary criterion on temporal unity, Lowe asks us to explore the consequences of the contrary:

> Suppose I tell you that *nothing* that has existed between now and five minutes ago existed more than five minutes ago: what *can* you make of this but that I am saying that the entire universe began to exist five minutes ago?[...] how could you accept this and yet still give credence to the thought that there were events occurring *more* than five minutes ago? *Ex hypothesi*, no record of any such events could possibly now exit. So what would warrant our talking of these supposed events as *having occurred* more than five minutes ago rather than talking of them as belonging (at best) to an altogether different space-time continuum—another 'possible world'? (*Ibid*., p.123)

One suggestion is that it's a brute fact that temporal relations hold between that more than five-minues-ago and that now. However, as explained in Chapter 6, Sections 2.1.1 and 3.2, there are reasons to doubt the success of such strategies. And, crucially for present concerns, this option typically won't be open to presentists. Since, given that real relations are existence-symmetric, ordering things with transtemporal relations would entail the co-existence as of now of things at different times (see Ch.2, §6).

An alternative, *prima facie* more promising, proposal would be that events from more than five-minutes-ago *brought about* the events obtaining now. The worry then becomes how this influence was conferred. As Lowe puts it, '...how could the required causal influences have been propagated in the absence of any objects surviving from the supposed earlier time into the current five-minute period? No photons, for instance, transmitted from objects existing in the supposed earlier period could be received by us—for all existing photons, being persisting things themselves, would *ex hypothesi* have existed for no longer than five minutes.' (*Ibid.*, p.123). Seemingly, something of the cause must survive the transition to carry the influence across to the effect at the new moment. But if nothing survived from beyond what happened five-minutes-ago, the influence couldn't have survived to impress itself upon that at later moments.

It seems, then, we should agree with Lowe that something must survive from moment to moment if moments are to be united into a time-series. Yet, this cannot be a sufficient condition. It doesn't explain the *order* of the moments within that series, or that order's *permanence*. That is, we need something permanent to *structure* or *form* that time-series. In particular, whatever plays this structuring role must be something unaffected by temporal vicissitudes and capable of imposing strict constraints on the course of temporal dynamics. Finally, it needs to ensure that causal influence can be transferred from moment to moment. Given presentism, the options for what can play this multifaceted role are extremely limited.

§3.2. A Unified Solution.

If presentism is to provide an adequate temporal metaphysics, it must account for both permanent and transient characteristics of time. This isn't impossible if presentists would but allow themselves the appropriate resources. Historically, Rene Descartes (1942) employed God to play this C-theoretic role. Descartes advocated a rather austere form of presentism, whereby the world was created anew each moment. He thought that, 'The fact that I existed a short while ago does not imply that I must exist at present

unless some other cause re-creates me, as it were, in the present moment or, in other words, conserves me.' (*Ibid*., p.41). However, I couldn't maintain my own existence, since, after all, I can have existed a short while ago and not exist at present. So like modern-day presentists, Descartes was left with a quandary over how things can be created at new moments, how causal influence is transferred between presents. Descartes answered this challenge by propounding a version of *Occasionalism*. According to occasionalism, '...divine causal activity is maximal and creaturely causal activity is non-existent, since divine causal activity is the only type of genuine causality. Creatures provide at most an occasion for God's activity, which is direct and immediate in bringing about all effects in nature.' (Lee, 2008, §2.2).

Unlike Descates, I don't think a thing's persistence is a genuine form of activity. Moments aren't places into which things move; they are merely collections of things. It was in this way we suggested a presentist explanation of inertia back in Chapter 2, Section 4.2. Nevertheless, there are other forms of metaphysical change that presentists owe an explanation for why they occur. That answer must respect the causal influence things at different presents confer onto each other. But given that causation isn't a real relation between things (see Ch.2, §6), and causes often won't survive to see their effects, how then can causal influence be propagated? My answer is that influence is propagated, not by God, but by natural laws. For, though causes may not survive to propagate influence in their effects, the governing law when causal influence is transferred. Indeed, the real work is done by the laws; they are the ultimate source of dispositions. The states they range-over merely provide an *occasion* for activity. Of course, a theist, if so inclined, may well maintain that God plays the role of reigning ('divine') law (see §2.2) in a nomic-superstructure. This take on things treats Descartes' occasionalism as a special case of my own.

Specifically, we saw in Section 1 how laws can ground a permanent atemporal structure for a McTaggartian C-series. That is, they ground the construction of our ersatz-C-series'. It's in virtue of this structure's permanence that effervescent presentism can unify distinct presents into a time-series. Crucially, the permanence of these grounds for the C-series holds in virtue of the irreflexivity of the ranges-over relation (see Ch.7, §3.1.1) and the monarchical topology of nomic-superstructures (see Ch.7, §3.2.3). These features ensure the reigning-law's immutability that provides the ultimate unifying structure of a time-series. Importantly, the laws can only play this unifying role when tied to the nomic account of pastness and futurity, lest there be aspects of the time-series escaping the confines of that structure laws provide.

On the other hand, the represented-temporalisation of those ersatz-C-series captures time's transient features, and whose accuracy is temporally variable. Unlike ersatz presentists, effervescent presentists admit certain transient facts about the time-series that cannot be permanently captured. The permenantly accurate representation of temporal reality is given by the relevant C-space. But that representation is both incomplete and timeless: it represents no information about the A-determinations. This gives us our solution to the problem of temporal unity. As far as I'm aware, the only other solution to the problem of temporal unity takes it as a brute. Insofar as this solution avoids this shortful, it secures an advantage for effervescent presentism.

## §4. Conclusion.

I've now laid out the details. It should be clear where my preference lies. Effervescent presentism provides the most promising presentist variant; presentists should be effervescent presentists. Hopefully, it's also clear why it lies there. Effervescent presentism consistently out-performed its competitors on almost all our theory-choice criteria. And in those rare exceptions where it doesn't *improve* on its competitors against a theory-choice criterion, it seemingly doesn't do significantly worse, if it does worse at all. We've also seen how effervescent presentism is immunised to certain tiresome complaints broadly made against presentism, such as, the truth-supervenes-on-being objection (see §2.1) and the problem of temporal unity (see §3). And any doctor will tell you, the best kind of headache is a headache avoided rather than treated. I accordingly offer this prescription.

Nevertheless, some may be weary that I'm offering more than they might have originally bargained for. They were only shopping for the item, yet it's been packaged part-and-parcel of a set. I've tried to show that the other commitments are both complementary and independently recommendable to presentists. Of course, only so much can be done in one thesis. For those with remaining reservations about my preference, they should at least recognise that I've outlined an attractive new presentist variant deserving of attention. If I've achieved this, I've been successful in my primary aims. I've also clearly demarcated this new presentist variant from several other competing variants all too often blurred together. And while I don't contend the presentist variants considered are exhaustive, I believe they include those most plausible. In these ways, I contend that a significant contribution to the temporal metaphysics literature has here been made.

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