2475/3975

MONASH UNIVERSITY
THESIS ACCEPTED IN SATISFACTION OF THE
REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
ON..... 20 December 2002 .....
.....[redacted].....
Sec. Research Graduate School Committee

PASSAGE, PERSISTENCE AND PRECISION

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Submitted for the degree of Ph.D.
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July 2002

Acknowledgements and Statement

ACKNOWLEDGEMENTS

For their timely assistance/criticism/inspiration/supportiveness, I would like to thank the following people:

Dirk Baltzly, Sam Butchart, Monima Chadha, James Chase, Mark Colyvan, Michael Esfeld, Ian Gold, John Heil, Lloyd Humberstone, Cathy Legg, Neil Levy, Steve Matthews, John O'Dea, Graham Oppy, Michael Pendlebury, Su Rogerson, Ted Sider, Jack Smart, and anonymous referees for several journals.

There are several people of whom I would like to make special mention. Edward Khamara gave me lots of early encouragement, grammatical pointers, and a fine set of worry-beads. John Bigelow has been my main supervisor, and I would like to thank him for his support, imagination and cheerful disposition. Font-afficionado and resident LaTeX wizard Toby Handfield is responsible for the formatting of the thesis (so if you think it looks even marginally pretty then the plaudits go to Toby). Without his assistance, my poor visual aesthetic and rudimentary LaTeX skills would have produced something rather more plain. I would also like to thank my parents. They are no longer with us, but I'm sure they would have been pleased that I managed to sort this thing out eventually.

Thanks also to the Philosophy Program at the Research School of Social Sciences, Australian National University, for allowing me to work there for a time during my research for the thesis.

Portions of this thesis have been previously published, or accepted for publication in the following journals:

"The Hybrid Theory of Time". 1999. *Philosophical Papers* 28: 37–53.

"Supervaluations and the Problem of the Many". 2002. *Philosophical Quarterly* 52: 320–39.

"The Endurance/Perdurance Distinction". 2002 (forthcoming). *The Australasian Journal of Philosophy* 80.

"Vague Simples". forthcoming. *Pacific Philosophical Quarterly*.

STATEMENT

I hereby certify that this thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other institution. I affirm that to the best of my knowledge the thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis. I also affirm my allegiance to Her Majesty, Queen Elizabeth II and the Richmond Football Club.

Signed,

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Contents

Abstract

Time passes, and the inexorability of its passing has deep emotional significance. One of the main themes of this thesis involves an investigation into the metaphysical nature of the passage of time. What sort of metaphysical account of passage should be given? And do our emotional responses to temporal passage have metaphysical implications?

The other main theme of the thesis is the issue of the metaphysics of persistence. When a thing is present at more than one time, what is the metaphysical underpinning of its persistence? Some subsidiary issues, which are nevertheless important in their own right, are also discussed. There are interesting connections between the issues of persistence and these further issues, which include the nature of vagueness, and the distinction between intrinsic and extrinsic properties.

1

Introduction

This thesis began its life as an attempt to vindicate a tensed metaphysics of time. Somewhere along the line, two important things happened. First, I became persuaded that tensed views of time, although psychologically compelling, are mistaken. Second, the thesis ceased to be exclusively about the metaphysics of temporal passage. Gradually, I became aware of related issues that tantalised me at first before suffocating me in cling-wrap (for a time).[1]

The issue of persistence was the first layer of plastic. The question here is one of the mereological status of persisting things. Informally speaking, the dispute is often set up by asking whether things persist by having temporal, as well as spatial, parts. One party to the dispute answers yes, the other (unsurprisingly enough) answers no.

Thinking about persistence soon became a springboard to other important issues. The distinction between intrinsic and extrinsic properties is one of these. Another is the question of what vagueness consists in. This question is an especially expansive one, since vagueness has been categorised by many philosophers as wholly semantic in origin, whereas others demur and variously categorise it as being an epistemological matter, or at least partially a matter of metaphysics.

1.1 THE CHAPTERS

The thesis divides into two parts. The first makes a case for a tenseless theory of time. The second discusses the issue of persistence, with a special focus on vagueness-related considerations. I had initially intended the second part to endorse an endurantist account of persistence. Regrettably, many of the positive ar-

1. Thanks to Ashley Woodward for this classy metaphor.

guments for endurance that I once espoused I now see to be flawed. Part 2 is now a collection of extended thoughts centred around the theme of persistence. One of the chief aims of Part 2, as it now stands, is to investigate what implications issues of vagueness and intrinsicness have for the metaphysics of persistence. However, I hope that things are a little more interesting than this description might suggest. I intend to show that a discussion of persistence illuminates these other issues as well.

I shall give a brief summary of each chapter. This will be followed by various addenda, chiefly involving a brief mention of various issues relevant to the metaphysics of passage and persistence that I have neglected to discuss (or discuss only sparingly) in the main text.

In 'The Hybrid Theory of Time', I argue against a version of the tensed theory of time I label the *hybrid theory*. I give it this label because in divergent respects it bears similarity to both the tenseless view of time and presentism. According to the hybrid theory, past, present and future entities exist (though one variant of the hybrid theory accords existence only to past and present entities). In this way the hybrid theory is similar to the tenseless theory, since it accords existence to past and future entities. On the other hand, the hybrid theory resembles presentism in the following way. Both views insist that there is no collection of facts that characterise the world 'once and for all'; temporal passage is not exhausted by the obtaining of precedence relations among things and events. For the hybrid theorist, entities have monadic properties of pastness, presentness and futurity. Just which facts characterise the world changes as entities gain and shed these monadic properties.

One influential argument against the hybrid theory has been that (at best) it commits us to an infinite regress of meta-time series, since a thing's changing with respect to pastness, presentness and futurity must itself take time. I claim that this line of argument is not thoroughly conclusive. I argue that the hybrid theory is indeed incoherent, but that infinite regress arguments are not sufficient to demonstrate this. I urge that we have no coherent conception of the putative monadic temporal properties required by the hybrid theory. Any concept we have must be either primitive or non-primitive. I argue that the so-called concepts of monadic pastness, presentness and futurity do not fall into either of these categories. Therefore, we have no conception of these properties. But since the hybrid theory is, in part, made out in terms of them, I conclude that the hybrid theory is incoherent.

'Presentism and Consciousness', embodies a conditional argument against presentism. Presentists believe that no past or future entities exist; the passage

of time consists in the coming-to-be and ceasing-to-be of things and facts. Pretty much universally, as far as I can gather, presentists hold that the present has no temporal thickness; the present is a 'knife-edge' separating what has been from what will be. I argue that there are difficulties in reconciling the fact that there is conscious experience with this sort of temporal metaphysic. The neural correlates of consciousness (namely, those neural events that are directly correlated with the production of conscious experience) cannot be plausibly rendered by this variety of presentism in a way that is consistent with conscious experience. Since it is manifestly clear that there is conscious experience, the 'knife-edge' version of presentism is in trouble. I further argue that attempts by the presentist to imbue the present with temporal extension are flawed. Thus, I conclude that presentism should be spurned. However, this conclusion is conditional (in a way that I spell out in the chapter) on a physicalist account of the mind. If we should be mind/body dualists then *perhaps* presentism can be saved. I think that, on balance, we should not embrace such a dualism, though this is a rather big issue, and I do not present arguments for physicalism here.

'Time and Temporal Attitude Asymmetries', involves a defence of the tenseless theory from a seemingly potent objection. The objection is that we have various rational intentional emotional attitudes that would count as irrational if we had reason to believe that time were tenseless. The fact that these attitudes appear to be rational is regarded as *prima facie* evidence against the tenseless theory. The example most regularly associated with this argument is of a visit to the dentist. It is rational to feel relief only after a painful treatment is past. But, the claim is that only tensed views of time can explain why this is so. That I undergo a painful dental treatment at a certain time is just a fact *simpliciter* about the world on the tenseless view. And since, for the tenseless theorist, there is no ontological distinction between the past, present and future, I am no more justified in feeling relief about the cessation of the treatment just after it has finished than I am justified in feeling relief before or during the treatment. This is held to be a rather difficult consequence to stomach, and so, the argument goes, the tenseless theory is therefore in need of really strong motivation.

I think that the argument against the tenseless theory from temporal attitude asymmetries is fundamentally mistaken. Some of our temporally asymmetric attitudes can be justified in terms of causal asymmetries. However, others cannot. Yet, even if the tenseless theorist has to admit that some of our (ostensibly rational) temporally asymmetric attitudes are irrational, there is no mileage here for opponents of the tenseless view. I advance a couple of reasons for thinking that

there is something wrong with arguments based on temporal attitude asymmetries against the tenseless theory. I then offer a diagnosis of where arguments from such attitude asymmetries go astray.

'The Endurance/Perdurance Distinction' is the first chapter of Part 2. Here, I try to work out just how we should formulate the distinction between things that persist by enduring and things that persist by perduring. Recent authors (in particular, Trenton Merricks and Theodore Sider) have shown that there are considerable difficulties with previously entrenched understandings of how this distinction is to be drawn. I make my own suggestion as to how the distinction ought to be captured. In doing so, I aim to formulate the distinction in a way that will be amenable both to tenseless theorists and presentists (since I hold that presentism is the most promising tensed view of time, I think it's certainly desirable to frame the distinction in such a way that it is intelligible in presentist terms).

In 'Intrinsicness, Duplication and Relations to Times', I offer a limited defence of the often derided view that ostensible temporary intrinsic properties are really relations to times. In particular, I defend the view from what I call the *Objection from Bareness*. This objection identifies a thing's intimately characteristic properties with its intrinsic properties (or, perhaps more accurately, with a subclass of its intrinsic properties). I show that Kim-style accounts of intrinsicness actually render qualitative relations to times as intrinsic rather than extrinsic. Perhaps this offers a line of defence against the Objection from Bareness. Or perhaps it tells against Kim-style accounts of intrinsicness. I suspect the latter, so I do not rely on Kim-style accounts to mount a defence of the relations to times view. Instead, I argue that it is a mistake to classify all intimately characteristic properties as intrinsic.

Independent of whether we should accept the relations to times view, I claim there are cases where it is plausible to count a thing's extrinsic features as among its intimately characterising ones. In doing so, I break with tradition by claiming that the notion of duplication ought not to be correlated with the notion of intrinsicness. Rather, in fact, it should be correlated with the notion of intimately characteristic properties. I suggest that the notions of duplication and intimately characteristic properties are in fact interdefinable. Thus, I claim, there are some extrinsic properties over which duplicates (*qua* duplicates) could not differ. This aids the cause of those who regard ostensible temporary intrinsics as relations to times, since at least now it is open to defenders of that view to answer the Objection from Bareness by claiming that relations to times are intimately characteristic.

'Supervaluations and the Problem of the Many', discusses supervaluational

treatments of Unger's Problem of the Many. Unger presents us with the following problem. We know that macrophysical objects have as constituents lots of subatomic particles. At the subatomic level, macrophysical objects are continuously exchanging particles with their environment. This means that at any time, a cup on a table, for instance, has vague mereological boundaries. There are many equally good ways to make out the mereological boundary of the cup, and therefore, many collections of particles with equal claim to be the cup. If so, we must either say that there are no cups where we thought there was just one, or that there are many.

A supervaluational solution diagnoses the Problem of the Many as a case of semantic indecision. Our concept of cuphood, for instance, is not refined enough to isolate just one collection of particles as the cup. 'Never mind', the supervaluationist says, 'The semantics for a vague natural language are given in terms of the ways in which that language can be made precise. On every precisification of "cup" it turns out that there is just one cup on the table. Thus, it is (super)true that there is just one cup on the table.'

I argue that the supervaluational solution is flawed for the following reason. Either admissible precisifications of 'cup' are thoroughly principled, or they are at least partially arbitrary. If they are thoroughly principled, then it turns out that there are many fewer admissible precisifications than we should expect. On the other hand, if they are partially arbitrary then certain penumbral connections, which the supervaluationist ought to observe, are violated.

In 'Persistence and a New Problem of the Many' I note that by thinking about persistence we can arrive at a new, and particularly resistant, strain of the Problem of the Many. I argue that this version of the Problem is immune to the various extant solutions to the standard Problem. I propose a rather tentative solution of my own.

'Vagueness and Endurance' discusses an important objection to endurance based on considerations involving vagueness. Some authors, such as Heller (1990) and Sider (1997), have urged that a plausible endurantist ontology would include objects with vague properties. The worry here is that endurance is going to commit us to metaphysical vagueness, whereas the correct account of vagueness places it in the semantic domain. I discuss Sider's argument at some length. He worries in particular that endurance commits us to things with vague essential properties, and therefore, to vague existence, which he regards as a particularly nasty variety of metaphysical vagueness. I argue that even if Sider is right to spurn vague existence, it may well turn out that endurance commits us only to more benign forms of metaphysical vagueness (for instance, vagueness of temporal location). I then

proceed to sketch some reasons for thinking that perhaps metaphysical vagueness is not so bad after all.

The appendix, 'Vague Simples', grew out of my work for 'Vagueness and Endurance'. Here, I argue that even if some rather influential arguments against metaphysical boundary vagueness are totally effective, such vagueness is not entirely vanquished. The arguments in question are Gareth Evans' argument against metaphysical vagueness from the supposed impossibility of indefinite identities, and David Lewis' argument against vague parthood. I urge that even if these arguments are entirely effective, there could still be metaphysical boundary vagueness. I claim that it remains possible for there to be mereological simples with indefinite shapes.

1.2 SINS OF OMISSION

I have outlined what my thesis contains. I should also say a few words about what it does not contain. There are many issues pertaining to the subject matter of this thesis that I do not discuss, or that I discuss only in passing. Some of these issues are rather important, while others have been felt to be important in some quarters, whereas I disagree about just how important they are.

There are many contributions to the subjects under discussion that I have simply ignored here. Some of these I have ignored for the following reasons. First, I wanted space to develop my own ideas, and did not wish to merely present a commentary on what other philosophers have written. Second, I doubt that it would be of much value to the philosophical community (even if it were possible) to field my opinion on everything that has been written on passage, persistence, vagueness and intrinsicness! And third, since each of the issues of temporal passage, persistence and vagueness are individually broad enough to be centrepieces of an entire volume (and possibly more), if I wanted to examine each of these issues, and some of the interesting connections between them, much had to be omitted.

Other issues I have omitted in part for the previous reasons, but also because I think their importance to the subjects under discussion has been exaggerated somewhat. I really ought to say a little, however inadequately brief it may be, about why I think these issues are not as important as many philosophers have thought.

First of all, there is McTaggart's Paradox. My own view is that McTaggart's argument was pretty conclusively refuted by C.D. Broad many years ago (1938, pp. 313–17). Obviously, many people do not agree with this assessment, but if there is something deeply significant about McTaggart's argument (as opposed to his

positive account of time) I regret to say that I have failed to discern it.

Second, a considerable portion of the contemporary debate over the issue of temporal passage has been conducted at the semantic level. Some of this discussion has been edifying, but I have doubts as to how far this line of inquiry can take us. Until the early 1980s a vital issue was seen to be one of translation. The question was, 'Can tensed language be rendered in tenseless terms without loss of meaning?' If the answer is yes, many philosophers thought, a tenseless understanding of time is vindicated. Otherwise, a tensed view of time ought to be embraced.

At the beginning of the 1980s key tenseless theorists, like Smart (1980, p. 5) and Mellor (1981b, Ch. 5), conceded the debate over translation. They admitted that not all tensed vocabulary can be translated into tenseless language. Their revised position was that tensed vocabulary is ineliminable, and indeed, an indispensable feature of human thought and action. However, they leant heavily on work by Perry (1979) and others, which showed that, in general, indexical content cannot be rendered in non-indexical terms without loss of meaning. Since (almost) no one believes that there are irreducibly indexical *facts*, by parity of reasoning, the mere ineliminability of tensed language should not force us to believe in irreducibly tensed facts. Much of the debate since then has focused on whether tensed sentences can be made true by tenseless facts.

However, I am not convinced that the tenseless theorist really needs to go quite so far down this path. I doubt that it is possible to get away with claiming that indexical terms are entirely eliminable from ordinary discourse. However, I suspect it might be possible to claim that the tenses are (in principle) dispensable to human thought and action, so long as we admit that some indexical terms are in fact indispensable. I speculate that a pool of indexical terms, and some demonstratives, such as 'this' are indispensable to human thought and action. Thus, for instance, we could say things like 'My hunger is simultaneous with the utterance of this token', or 'Were the party to occur, it would occur two days later than this token'. The constructions arising from a language including such terms but excluding the tenses would be rather cumbersome and impractical, but if that were a concern, we could define quasi-tenses in terms of various of these constructions.

There would undoubtedly be some tensed constructions that would have no analogue in terms of the above (certain nested tensed constructions, for instance) but I suspect that these would be 'fringe' constructions which are not really terribly important to human thought and action. A response to this might be to note that the positing of tensed facts coheres better with actual language-use than does the positing of only tenseless facts. That is probably true, but I think the advantage this

affords tensed theorists is marginal, and that there are weightier considerations in favour of the tenseless theory. This is all rather too schematic, however, and can only be considered a promissory note in lieu of further work.

Last of all, there are some quite important issues that I neglect. In most cases, this is because I don't feel that I presently have anything particularly noteworthy to say about them. Relativity theory is, of course, something that no one who is interested in the nature of time can ignore with impunity. I make little mention of relativity theory (apart from a brief discussion in Chapter 6). This is not because I think relativity theory is unimportant, but rather, because my grasp of it (especially the General Theory) is too rudimentary for me to have anything particularly new or insightful to say about its bearings on temporal passage and persistence.

The other view whose absence from discussion in the ensuing pages might be particularly noted is the Stage Theory of persistence. This view has been elaborated and defended in recent times by Theodore Sider and Katherine Hawley.[2] I had originally intended to include a chapter with criticisms of this view, but the view turned out to be more resilient than I had expected; more resilient than my criticisms, in any event. So a discussion of this view (by me, at any rate) will have to wait for another time.

This concludes the list of my sins of omission (though undoubtedly there are others). To become appraised of my sins of commission the reader need only turn the page!

2. Sider defends the view in his (2001a) (of which I have seen only a draft) and Hawley apparently defends the view in her new book (Hawley, 2002) (which I have not as yet seen).

Part I

Passage

2

The Hybrid Theory of Time

Time passes; sometimes swiftly, sometimes interminably, but always it passes. We see the world change as events emerge from the shroud of the future, clandestinely slinking into the past almost immediately as though they are reluctant to meet our gaze: children are born, old friends and relatives die, governments once full of youthful enthusiasm wane. If the Earth were sentient, it might feel itself being torn apart as tectonic plates diverge, and chuckle as it outlived species upon species of transient parasites. How could anyone possibly deny that time passes?

And yet there is dissent over this issue. Many philosophers believe that there is no objective temporal passage *in the sense just described*; no procession of events passing from the future, through the present and into the past.[1] Rather, the only facts are tenseless ones. We can briefly sketch the *tenseless* theory of time by noting that it commits us to at least the following: no distinction is made with respect to existence between past, present and future entities; these all exist. There is a set of temporal objects and a set of temporal separation relations (e.g. precedence, simultaneity, betweenness), and once we have said which separation relations hold between which pairs, triples, etc., we have given a complete description of the temporal facts 'once and for all'. Tenseless theorists generally say that the passing of time just consists in succession—in the fact that some times and events stand in the relation of precedence to others. And if this does not exhaust the intelligible content of 'temporal passage', then the remainder is something subjective—a 'side-effect' of our mental life which does not reflect anything mind-independent

1. Events have been construed in a number of ways in the philosophical literature. It will be convenient in this chapter to include both changes and facts or states of affairs (that is, a certain thing's having a certain property or standing in a certain relation) under the rubric of events.

(see, for example, Grünbaum (1967)). However, there are others who hold that this account of temporal passage is emaciated and that our experience of time as something which seems to pass reflects something more than this account offers. Let us say that these people hold a *tensed theory of time*. According to one tensed theory of time, *presentism*, the only temporal things in existence are those that exist now. Moreover, there is no complete set of temporal facts 'once and for all', since different sets of temporal facts characterise the world as time passes and things are generated, or undergo change, or cease to exist.

Straddling the tenseless theory and presentism is a version of the tensed theory which we shall call the *hybrid theory*, since it bears some similarity to each of the other two theories. It resembles the tenseless theory to the extent that it accords existence to all past, present and future entities. But it also resembles presentism insofar as it insists that there is no complete set of temporal facts 'once and for all', since temporal entities change with respect to the monadic properties of pastness, presentness and futurity. Those in favour of the hybrid theory have included Wilfrid Sellars, and more recently, George Schlesinger and John Bigelow.[2]

It has often been alleged that the tensed theory of time is incoherent, but this broader charge will not be addressed here. Instead, I shall be focussing on the question of the hybrid theory's coherence. First, the familiar argument that the hybrid theory generates an infinite regress of time series is presented. The charge that such a regress is vicious because it is generated to *analyse* the concept of events

2. See Bigelow (1991), Schlesinger (1980) and Sellars (1962). Lately, Bigelow has moved over to the presentist camp (Bigelow, 1996). I should also mention that I harbour some doubts about whether Schlesinger is really a hybrid theorist. He does speak of events gaining and shedding monadic properties of pastness, presentness and futurity, and of their approaching us from the future (1980, pp. 23–4). However, there is some textual evidence to suggest that he may hold something like the presentist view endorsed by Mark Hinchliff (1996). According to this view, pastness, presentness and futurity are monadic properties of events, but only those events which are present exist. To hold this view, one must first believe that non-existents can bear properties. And there is evidence to suggest that Schlesinger does have this belief. In his (1985) and (1994, Ch. 2) he claims that what makes it true that Socrates, say, occurs in counterfactual situations, is the fact that Socrates is an aggregate of his this-worldly self and his other-worldly selves. That is to say, Socrates has 'cosmic' parts. However, Schlesinger clearly states that other worlds, and hence, Socrates' other-worldly parts, do not exist (1994, pp. 61–2)). Thus, it would seem that whatever mereological relation binds together the cosmic parts of the full-blown transworld Socrates must hold between his existent this-worldly cosmic part and each of his non-existent other-worldly cosmic parts. And if non-existents can stand in relations, why not allow that they can instantiate monadic properties? Given his views on modality, it would not be entirely surprising should Schlesinger, if pressed, claim to be a Hinchliff-style presentist.

undergoing change (hereafter, event-change) is noted (2.1). Following this, I urge that if the notion of event-change does indeed require analysis, no analysis can be given that avoids the regress. Thus, if analysis is required, the hybrid theory is in trouble (2.2). 2.3 and 2.4 broach attempts to salvage the hybrid theory. The first of these investigates the possibility that the notion of event-change might be taken as primitive. I argue that this line of defence is not promising. The second attempt is more ambitious. I endeavour to show that combining the traditional hybrid theory with presentism in a certain way allows us to halt the regress and resuscitate event-change. In 2.5, I embark on an attempt to show that the efforts outlined in 2.4 are in vain. It is argued that the hybrid theory is coherent only if we understand the concepts of pastness, presentness and futurity *as it presents them*. And if we understand these concepts then they must be either primitive or analysable.[3] I further claim that they are not analysable. The rest of the paper is devoted to showing that neither can they be primitive. I contend in 2.6 that if the hybrid theory were correct then regardless of whether our experiences were past, present or future, their phenomenal content would not differ. And in 2.7, I argue that this is enough to ensure that the concepts of pastness, presentness and futurity cannot be unanalysable. Hence, it is concluded that these are not genuine concepts. But, since they must be genuine in order for the hybrid theory to be comprehensible, I conclude that the hybrid theory is incoherent.

2.1 THE INFINITE REGRESS OF TIME SERIES

Events pass from the future into the brief glare of the present before receding into the past. So says the hybrid theory of time. This view of time is emotionally satisfying, and yet, as has been noted in various places (e.g. Smart (1956) and Williams (1967)), it is also deeply perplexing. A chief point of concern seems to be that according to this way of thinking about time, events change. And this looks ominous since changes always take time to occur. Thus, by saying that events change from being future to being present it seems that we are treating these changes as second-

3. It might be suggested that I am setting up a false dichotomy here. After all, it might be thought, there are many concepts which are (i) not completely specifiable in terms of necessary and sufficient conditions and (ii) nevertheless stand in certain conceptual relationships that partly constitute their meanings. Such concepts, it might be thought, are plausibly neither analysable nor primitive. In response, I would say that those concepts which satisfy (i) and (ii) count as *partially* analysable. When I speak of a concept as being analysable, I mean just that it is *at least* partially analysable.

order events, and if we introduce second-order events then it looks at though we are lumbered with a second-order time series. Moreover, it seems that we can't rest here. If it is central to the concept of time that events change, then our second-order events, *qua* events, must themselves change if they are to be worthy of their names. Furthermore, if the second-order events change in this way, then by parity of reasoning there are third-order events. And so it goes. To save the notion of time-flow we will have to postulate an infinite hierarchy of unobservable events. If time passes in this way, there is a lot of passing going on.

Of course, there are senses in which events may be said to change that do not of themselves require commitment to higher-order time series. For instance, we may speak of a football game becoming progressively more heated. And this would be the case if, generally speaking, later temporal parts of the game were more heated than earlier ones. In fact, this sort of change is of a kind with ordinary changes in things (although more or less so, depending on whether we think of ordinary things like cars as having temporal parts). But it is easy enough to see that this innocuous sort of change can't be what hybrid theorists have in mind when they talks of events changing with respect to pastness, presentness and futurity. For hybrid theorists maintain that it is possible for a *whole* event to be past, while *having been* future. Now, if pastness and futurity were *dyadic*, so that being past, for instance, happened to be a property that an event has relative to other times or events, then there would be no need for higher-order time series. But such an account clearly analyses pastness and futurity purely in terms of precedence relations, and thus, this would be a *tenseless* account of what it is for events to change from being wholly future to wholly past. However, the hybrid theorist wants to say that pastness and futurity are *monadic*. And for a whole event to change with respect to its monadic properties seems to require higher-order time with respect to which the change can occur.[4] So it really does appear that the hybrid theorist needs higher-order time series.[5]

4. Throughout the remainder of the chapter, when I speak of 'event-change' I mean events changing with respect to monadic pastness, presentness and futurity.

5. These issues bring to mind an interesting question which I shall briefly outline here but leave unanswered. Suppose that the hybrid theorist really is committed to an infinite hierarchy of time-series; then it is natural to assume that the same story is to be given about the ontological status of higher-order times and events as is given of first-order times and events. Therefore, just as all past, present and future first order times and events exist, so too do all past, present and future higher order times and events. Now, it has just been noted that the hybrid theorist does not construe pastness, presentness, and futurity as relations between events/times and other events/times (of the same order), as this would be to adopt a tenseless rendering of these

Yet, it is not altogether clear that we can save the hybrid theory by introducing an infinite hierarchy of time series. It might plausibly be thought that our perplexity about the notion of event-change, and the ensuing regress, result from our trying to do a bit of conceptual analysis: we are trying to *explain* what it is for events to change (Oaklander, 1983, p. 396). However, in order to provide an 'explanation' we must appeal to a second order time series and thus we are launched on the regress. And under these conditions, the regress looks vicious because the notion of event-change is ungrounded. Given that the notion of event-change really does require analysis, it becomes imperative for the hybrid theorist to provide an analysis which shows that event-change does not entail higher-order time. I shall now argue that the prospects for such an analysis are grim.

2.2 THE RIVER OF TIME

How might the hybrid theorist begin the task of finding a satisfactory analysis of event-change? A good way to start is by keeping in mind the following constraint: an adequate analysis must clarify the similarities and differences between (i) ordinary changes, that is, those changes which take time to occur, and (ii) event-changes, which the hybrid theorist is claiming do not take time to occur.

Exactly where the hybrid theorist can go next is not easy to determine. I suggest the following as the most promising path. As is well known, time is apt to figure in metaphor. And metaphor, conceived as an attempt to draw *similes*—however vaguely and imprecisely—involves conceptual connections. Might there not be a kernel in some metaphorical treatment of time that could lead to a regimented analysis of event-change? Of particular interest here is the famous metaphor of time as a river and its associated notion of *time-flow*. A discussion of this metaphor will serve to emphasise the difficulty of the task that confronts the hybrid theorist.

It is easy to think of time as something that flows like a river. Events are like debris (twigs and leaves, perhaps) pulled along by the flow of the river of time from the future (upstream), and passing momentarily into the present before making

properties. The question is, can the hybrid theorist retain the view that pastness, presentness and futurity are monadic properties of n-order events and times while *also* saying that they are had by these events and times at, or relative to, $n+1$-order times? It certainly seems that a *prima facie* case could be mounted for saying that on this picture, pastness, presentness and futurity must be relations between n-order events/times and $n+1$-order times. If these properties must be treated in this way, then it might be asked whether the hybrid theory is committed to treating them tenselessly. An affirmative answer here would naturally constitute a *reductio ad absurdum* of the hybrid theory.

their way into the past (downstream). From the perspective of the hybrid theorist, it might be thought that the river metaphor embodies a vague, embryonic explanation of how it is that events change—a groping attempt to say how it is that they are 'carried' from the future, to the present and into the past. In the case of the river, the flow of its waters can be cited to explain the change in position of the twigs and leaves from upstream to downstream. Likewise, it might be thought, a notion of time-flow can be called upon to explain how it is that events change from being future, to present, to past.[6]

Unfortunately for the hybrid theorist, it is difficult to see how this helps. An analysis of event-change needs to sharpen the points of contact and divergence between event-change and ordinary change, and it was suggested that the notion of time-flow might be useful in this regard. However, the same problem now confronts us with respect to time-flow. If this notion is to fulfil its task, we need to understand how time-flow resembles and differs from water-flow. For example, the flowing of water is an instance of ordinary change; it takes time for water to flow. If the notion of time-flow is to fulfil its task then it must be clear that time-flow doesn't take time. But this is not clear, as I will now explain.

The problem seems to be that there is one element of the river metaphor which does not correspond to anything that we can get a grasp on. We can say that the points along the river correspond to degrees of pastness, presentness and futurity. And we can say that the twigs and leaves floating downstream correspond to events. But what can be said of the water? The flowing waters are a crucial part of the metaphor of time as a river—they give the twigs and leaves their impetus. Where is the temporal analogue of the water? What is it that 'pushes' events along? And how does it manage to do so in a way that does not involve higher-order time? We cannot say. Speaking of time as a river seems to be a desperate attempt to express in ordinary causal terms whatever this thing might be. If we understood what this thing might be, then *perhaps* we could see how its 'flow' differs from the flow of a river. Then we could say how the 'motion' of events differs from the motion of twigs and leaves. But we have no inkling as to what this mysterious substance

6. This portrayal of the river metaphor is the most usual one (see, for instance, Smart (1956, p. 104) and Williams (1967, p. 213)) and probably the most apt to be of assistance to the hybrid theorist. Another way in which we might depict the metaphor is by leaving the debris out of the picture and allowing the body of water itself to stand for the totality of events. But in that case, the water-flow would itself stand for event-change, and so the ontological distinction between event-change and time-flow would collapse. And thus, it is clear from the outset that this depiction offers us no resources with which to frame an *explanation* of event-change.

could be like. Although we may have some idea of how time-flow might be like water-flow—hence the availability of the metaphor—it turns out that we don't have a sharp enough sense of how the two differ for the notion of time-flow to be useful.

The picture of time as a river is perhaps the most satisfying metaphysical metaphor of time. If this metaphor doesn't point to an adequate analysis of event-change, then the project of satisfactorily analysing event-change via the procedure of clarifying a pre-existing metaphorical treatment of time does not look promising. More generally, we can say that a satisfactory analysis of event-change seems to require more resources than we possess. How we might find these resources is difficult to fathom.

2.3 PRIMITIVE EVENT-CHANGE?

The problems that have arisen for the hybrid theory are grave. As long as the notion of event-change requires analysis, the hybrid theory seems doomed. At this point, it might well occur to the hybrid theorist that we should stop trying to analyse event-change. Perhaps it can be taken as a primitive notion.[7]

Suppose that the notion of event-change can be taken as primitive. Then, the following question comes to mind: does this remove the need for a hierarchy of time series? This would be to suggest that event-change is a primitive notion which is clearly understood to be unlike other changes in that it does not take time to occur. This is too much to ask. If we say of event-change that it does not require time to occur *and regard this fact as inexplicable*, then we lose any grip that we might have had on this concept. The fact that we use ordinary temporal language to describe what the hybrid theorist calls event-changes (e.g. the meal *was* present and *then* it became past) is telling. If we really did have a primitive concept of event-change according to which event-change did not take time to occur then this would most probably have been reflected in our language.

It seems that hybrid theorists should admit to the regress. Although they could then say that the regress does not arise from a need to explain the concept of event-change, they still ought to admit that it does arise: they should admit that event-

7. It is worth noting here that if our conceptual schemes are holistic (as many people now think—see Fodor and Lepore (1992)) then this option is closed to the hybrid theorist. For, if this is how our conceptual networks are, then there will be no conceptual primitives: no concept in a certain network will be understood without reference to the other concepts in that network. But we shall be charitable here and assume that such views are wide of the mark.

change, *being a species of change*, requires time to occur. This is not to suggest that event-change is to be *understood* in terms of any other sort of change, just that it shares with all varieties of change the characteristic of occurring over a temporal interval. (Note that if we take event-change as primitive then we may in turn define an overall notion of the passage of time as the simultaneous (relative to meta-time) event-change of all events.)

If the notion of event-change may be taken as primitive then it can be argued that this notion is not incoherent, but merely a little ontologically extravagant. If so, the regress that the hybrid theory commits us to is not actually vicious, but just a little nasty! Unfortunately for the hybrid theorist, the prospects for taking event-change as primitive look bleak. We might begin by noting that the procedure of declaring a concept to be primitive once it becomes involved in difficulties is often a dubious enterprise. But this sort of comment, however sincere it may be, is not dialectically helpful; the hybrid theorist may believe with equal conviction that in this case the difficulties are manufactured rather than genuine. However, as will now be argued, we can do more than just cast suspicious glances at the hybrid theorist who treads this path.

Consider a case of ordinary change—say, the event of a door's creaking slowly open. According to the hybrid theorist, ordinary changes supervene on event-changes: a world stripped of events changing with respect to the monadic properties of pastness, presentness and futurity is a world stripped of ordinary change. This suggests that ordinary change is at least in part analysed by event-change. So far everything seems to be in order. But now the hybrid theorist strikes an unyielding problem. It turns out that event-changes *just are* ordinary changes. As we have seen, a (first-order) event-change is a change with respect to second-order time.[8] However, with respect to second-order time, a (first-order) event-change is an ordinary change. In second-order time, the door's creaking open is future at one time and past at another. From the perspective of second-order time, this is an ordinary change in the door's creaking open, just as the door's creaking open is an ordinary change in the door from the perspective of first-order time. To use an old philosophical cliché, the distinction between ordinary change and event-change is a distinction without a difference. And so the hybrid theorist continues down the regress, blindly slapping on layer after layer of ordinary time! In short, a primitive notion of event-change cannot itself successfully undertake the task of supporting the notion of ordinary change, a task that the hybrid theory requires of it, since all

8. More generally, an n-order event-change is an $n+1$-order ordinary change.

event-changes are themselves ordinary changes.

2.4 PRESENTISM AND THE HYBRID THEORY

Are there any more throws of the dice for the hybrid theorist? I think that there are. I shall now present a version of the hybrid theory which promises to avoid the regress and the associated charges of incoherence. This version is, loosely speaking, a marriage of the hybrid theory with the variety of presentism endorsed by A.N. Prior. Indeed, the potential it has for avoiding the regress comes chiefly as a result of its presentism-inspired aspects. Let us first see how this variety of presentism avoids the regress.

As was noted earlier, the presentist holds that only present temporal items exist. Moreover, the present has no temporal extension, so it is also the case that those temporal items which exist are strictly simultaneous with each other. This means that the only events (in the sense in which we are understanding events [see footnote 1]) which the presentist takes to exist are states of affairs. In particular, the presentist does not hold that changes *exist*. Certainly, things change, but there exist no particulars which *are* changes. To think otherwise, the presentist says, is to reify changes. And if there are no changes, then a door's creaking open, for instance, cannot be said to change. What account, then, can the presentist give of statements whose surface structure suggests that there are changes, and that these changes change? Prior writes instructively:

> What I am suggesting is that what looks like talk about events is really at bottom talk about things, and that what looks like talk about changes in events is really just slightly more complicated talk about changes in things.
>
> (1968, pp. 10–11)

Thus, when we say that the door's creaking open has receded five minutes into the past, we are saying no more than, 'It is five minutes since the door creaked open'. Or to put things more metaphysically, 'The door has the property of *having creaked open five minutes ago*.' And we can give similar construals of statements that seem to predicate change of states of affairs. Thus, 'Humphrey's sadness is now a day past' can be rendered, 'It has been a day since Humphrey was sad'. Here it is important to notice that by refusing to treat changes as entities, and restricting all change to ordinary change, any obvious reasons for thinking that there must be a regress of higher-order times evaporate. Indeed, for the presentist, there is no more to the passing of time than ordinary change.[9]

How does any of this bear on the matter at hand? My suggestion is that the hybrid theorist can think of ordinary time as being embedded in a presentist second-order time. And for the reasons cited above, the regress is halted at this level. Let's look at this approach in a little more detail.

The series of ordinary events and times, and the possession of the various monadic properties of pastness, presentness and futurity by these events and times, constitute the sum-total of temporal existence. The basic idea is to treat ordinary events and times as the 'things' of the presentist second-order time. Then, we can say that in the presentist second-order time, various states of affairs involving the possession of pastness, presentness and futurity by ordinary times and events pass in and out of existence. Thus, the statement, 'The door's creaking open has gone from being future to being past' can be expressed thus: 'The door's creaking open has the monadic property of being past and has the property of *having had the monadic property of futurity*.' This statement expresses a change in an event, but since our second-order time is a presentist one, we say that the event changes, but not that there exists a (second-order) event which is that change.

The view that has just been outlined may, I think, be seen as a means of implementing a recent defence of the hybrid theory offered independently by George Schlesinger (1994, Ch. 3) and John Bigelow (1991). They wisely prefer not to relativise an event's possession of pastness, presentness and futurity to coexistent second-order times. Instead, they relativise the possession of these properties to different possible worlds. Event-change may then be construed as the passing in and out of actuality of states of affairs involving the possession of monadic pastness, presentness and futurity. And the overall notion of the passage of time may be thought of as the passing in and out of actuality of entire possible worlds. This mirrors very closely Prior's presentism. For Prior, every change is a change in what is *actual*. Indeed, we could express the presentist's changes in the terminology of possible worlds if we so desired. In short, the Schlesinger/Bigelow strategy appears to be the Priorean strategy applied to events rather than things—in other words, it appears in essence to be the strategy outlined earlier in this section.

One important reason for noting this connection is that it offers Schlesinger and Bigelow a chance to legitimise the notion of event-change. I argued in 2.3 that it was not acceptable for the hybrid theorist to take event-change as primitive while claiming that it did not require time to occur. By viewing the spread of events as

9. For the presentist, ordinary change just involves things undergoing changes, or coming into existence, or ceasing to exist.

being embedded in a presentist second-order time, the hybrid theorist can, without risking a regress, comply with the requirement that event-change takes time to occur. Moreover, the sense in which second-order time is required is quite ontologically benign: according to this fusion of the hybrid theory and presentism, there exist neither second-order events nor second-order times.

The above response preserves the spirit of the hybrid theory, and it certainly has the appearance of consistency. However, while the mere coherence of this response might be sufficient to uphold the coherence of the hybrid theory, it may be wondered why anyone would adopt this view in preference to presentism. Here is one potential reason. The relativity of simultaneity is often thought to be a compelling objection to tensed views of time.[10] A common reply to this objection involves relativising presentness to reference frames. For the presentist, this seems to involve relativising the *existence* of ordinary things to reference frames. And insofar as the relativisation of existence itself is regarded as dubious, it might be thought that this is a drawback for presentism. On the other hand, the hybrid theorist who relativises presentness to reference frames is committed only to relativising the possession of the property of presentness to reference frames.

2.5 THE IRREDUCIBILITY OF PASTNESS, PRESENTNESS AND FUTURITY

Is the hybrid theory coherent after all? The answer, I think, is no. There are considerations independent of the familiar regress arguments that can still be brought to bear against the hybrid theory. We shall now turn to these considerations.

It seems fair to assume that any concept which is comprehensible must be either primitive or analysable. The remainder of the chapter is devoted to showing that the notions of pastness, presentness and futurity, as the hybrid theory construes them, can be neither primitive nor analysable. If we can do this, then we can demonstrate that there can be no such concepts. And if there can be no such concepts then the hybrid theory is not coherent, as it is in part formulated in terms of them. Let us now turn to this task.

First, let us ask if there might be an analysis of the concepts of monadic pastness, presentness and futurity. It seems reasonable to assume that an analysis of the concept of a particular property ought to be given in terms of other properties. In the case of monadic pastness, presentness and futurity, we are hard-pressed to

10. See Putnam (1967) and 'Time, Reality and Relativity', in Sklar (1985) for discussions.

find more conceptually fundamental properties, and it seems fairly safe to assume that there is no analysis of these concepts that preserves the spirit of the view that events change. Therefore, it looks as though the concepts of pastness, presentness and futurity, if they are genuine concepts at all, must be unanalysable. The aim of the next section is to show that they cannot be unanalysable. It will be argued that the hybrid theory suffers from certain phenomenal inadequacies which lead to this conclusion.

2.6 THE PHENOMENAL PROBLEM

Experiences vary in length. Some experiences, like a quick stab of pain or a fleeting glimpse of something, are brief. Others, like watching a cricket match or listening to a song, are (relatively) long. In this section, we are primarily concerned with experiences at the brief end of the spectrum. More specifically, we are interested in those experiences which encompass our fleeting *psychological* present. Phenomenally speaking, the psychological present is very brief; the experiences it encompasses are quite short. Longer experiences are not 'wholly present' to the mind, but are amalgams of various shorter experiences which are at one time or another encompassed by the psychological present.

For the tenseless theorist, psychological presentness is a purely perspectival matter. Each person has a sequence of psychological presents stretching from birth to death. And each of these psychological presents has a certain temporal location and from its own temporal perspective each is privileged. Hybrid theorists are not satisfied with this perspectival explanation. They think that the experiences enclosed in the psychological present must be *metaphysically* privileged. According to hybrid theorists, this metaphysical privilege consists in the fact that the experiences encompassed by the psychological present have the monadic property of presentness, while those experiences outside the psychological present exemplify either monadic pastness or futurity (see Schlesinger (1982, §5)). However, as we shall now see, the hybrid theorist's explanation is glaringly inadequate.

Consider a brief experience—let's say a sharp pain—that is enclosed by my psychological present. The hybrid theory explains this enclosure by noting that the pain has the metaphysical property of presentness. And it explains the fact that very soon the pain will not be enclosed by my psychological present by noting that the pain will shortly have the metaphysical property of pastness.

There is something suspicious about these explanations. Recall that according to the hybrid theorist, events do not come into existence by acquiring present-

ness. Nor do they pass out of existence by losing presentness. In short, past and future events are no less existent than present ones. Now, if it is allowed that past and future events exist, then past and future experiences exist. But if this is the case, it is hard to see what is added to the content of an experience by saying that it exemplifies the monadic property of presentness, or what is subtracted from its content by saying that it exemplifies monadic pastness or futurity. Consider again the sharp pain. When it is future and past it is nevertheless an experience of mine, with all its attendant phenomenal properties. Or consider my experience of relief just after the pain has subsided. Irrespective of whether this experience is past, present or future it is nevertheless an experience of relief. So it is not clear why my psychological present should encompass those experiences of mine that are metaphysically present and exclude those which are metaphysically past or future.[11] It is fair to conclude, then, that the part of the hybrid theory which involves the monadic properties of pastness, presentness and futurity does not explain the nature of our temporal experience.

This conclusion is, for my purposes, an important one. So, we shall now consider a response that the hybrid theorist might make to the preceding argumentation. The hybrid theorist might concede that if there are past and future experiences as well as present ones then an experience's being present does distinguish it phenomenally from past and future experiences. But, the hybrid theorist might say, 'Perhaps there are no past and future experiences, but only present ones. I'm not being a presentist, mind you; I still believe that there are past and future entities that are not experiences.'

The following example should help to elucidate this view. Consider the following sequence of events: my getting up from my chair, my walking across the room to the bookshelf, and my picking up a book. Regardless of whether they are past, present or future, each of these events exists. But, when, and only when, one of these events is present does its corresponding group of experiences exist. So, for

11. This is really just an extension of a point that David Lewis makes while discussing his version of modal realism. According to Lewis, non-actual people (among other things) exist. But he thinks actuality is not some special property that some entities have and others lack, for 'How could we ever know? Unactualised dollars buy no less unactualised bread, and so forth.' (Lewis, 1986, p. 93). If actuality were a special property, it would nevertheless be true that there are non-actual people living lives that are qualitatively just like ours. Such a 'special' property seems theoretically idle. Thus, he opts for an indexical theory of actuality. The comparison with the hybrid theory is obvious. According to the hybrid theory, some people are having experiences which exemplify the 'special' property of presentness while there exist non-present people having non-present experiences.

instance, when my walking across the room is present, the feeling of having my legs swinging exists and is present. But when my selecting a book is present, I am no longer walking. Although my walking across the room exists and is past, the corresponding group of experiences have ceased to exist, having been replaced by the group of experiences that correspond to my picking up a book. According to this picture only our present experiences exist: there are no past or future experiences to mess things up. Therefore, the phenomenal problem which besets the standard version of the hybrid theory is successfully negotiated.

Disregarding concerns about *ad hoc*ness, it remains far from clear that pastness, presentness and futurity influence our phenomenal content on this revised version of the hybrid theory; a strong suspicion remains that it is not the presentness of our experiences that accounts for their psychological 'nowness', but their *existence* that is doing the work.

We may conclude, then, that the hybrid theory lacks explanatory power. Saying that it is incoherent is another matter, but this is something we are now in a position to claim. Recall that we have already concluded that the coherence of the hybrid theory rests on classifying pastness, presentness and futurity as conceptual primitives. I shall now urge that this classification can't be made.

2.7 THE INCOHERENCE OF THE HYBRID THEORY

Here are two extreme positions concerning the genesis of primitive concepts. According to *extreme empiricism*, every primitive concept we possess is formed by experience. On the other hand, *extreme innatism* says that every primitive concept we possess is innate. Between these views is a spectrum of more moderate positions according to which some primitive concepts are formed through experience while others are innate. I take it that this spectrum is exhaustive. Given the background provided by the phenomenal problem, it will now be claimed that it is not consistent with any of the views in this spectrum to hold that monadic pastness, presentness and futurity are conceptually primitive. That is, the concepts of these properties can neither be innate nor formed by experience.

Consideration of the phenomenal problem seems to scuttle the claim that our concepts of these properties are formed by experience. Since the content of our experiences would not differ regardless of whether they possessed pastness, presentness or futurity, our primitive conception of these properties could not originate from the properties themselves. And it is usual to think that if we form a *primitive* concept of *x*ness via experience, then that concept is formed by the interaction of

instances of *x*ness with our senses.

The thought that we are innately endowed with a primitive conception of monadic pastness, presentness and futurity is not much more promising. It is highly plausible to think that any innate concepts we possess, although not formed *by* experience, are nevertheless important factors in our capacity to interact with the world. A good reason for thinking this is that natural selection is responsible for those innate concepts (if any) that we possess. Our concepts of identity and similarity, for example, are sometimes thought to be innate. If these concepts are innate, it would be no surprise that they have been produced by natural selection, since they are crucial to our successful interaction with our environment. However, this is not the case with the concepts of monadic pastness, presentness and futurity; it seems unlikely that our successful interaction with the world requires, or would even be aided, by our having these concepts. This is because we discovered, from the small amount of conceptual work we did in 2.6, that monadic pastness, presentness and futurity can have no influence over our experiential content.

These considerations suggest that we do not have primitive concepts of pastness, presentness and futurity.

The hybrid theory is incoherent.

3

Presentism and Consciousness

Last chapter we briefly met the presentist view. Presentism is, I think, immune to the criticisms I made of the hybrid theory in the last chapter. This chapter we meet presentism again. And this time I will be arguing that presentism is confronted with its own set of difficulties.

Presentism draws you in. When you first become acquainted with the presentist view of time it's hard not to concur that this is how time must be. What is it that makes the presentist theory of time so compelling? Its appeal is often said to reside in the way that it illuminates the temporal aspect of human experience. Psychologically, there is something special about the present. All of our thoughts, feelings and actions occur there. Past joys and hurts become less palpable and visit us more and more infrequently as they recede into distant memory, while past visions and sounds ebb into dullness and pallor. The future is more elusive and even less tangible than the distant past. We often try to sniff it out, striving to locate it, yet not for what it is, only for what it will be. But present awareness is fresh, immediate, lustrous, and, sometimes, exciting in a way that past awareness never is. Given the psychological uniqueness of the present it is therefore tempting to imbue this specialness with ontological import—to make this psychological centrepoint a centrepoint of our metaphysics. The presentist does this, but not merely by elevating the metaphysical status of present states of affairs above all other temporal states of affairs. Rather, other temporal states of affairs are ontologically excluded.

The primary aim of this chapter is to present a new difficulty for presentism. I will argue that, contrary to appearances, a central feature of our psychology, namely conscious experience, embodies a significant obstacle to presentism. I claim that this obstacle can be overcome only if the presentist is willing to embrace some form of mind/body dualism. And insofar as mind/body dualism is

unattractive, so too is presentism.

3.1 THE CORE THESES OF PRESENTISM

Here are the two basic tenets of presentism:

(1) *Nothing that is past or future exists.*

Accordingly, though we exist, neither our deceased forebears nor our unconceived children exist.

(2) *There is change with respect to* which *facts characterise the world.*

To illustrate this, consider my neighbour's dog, Conan. It once *was* a characteristic of the world that Conan barked incessantly. It is at this very moment a characteristic of the world that he is on an operating table somewhere having his vocal cords severed. And it soon *will* be a characteristic of the world that Conan is a non-barking animal (though he will still probably move his jaws a lot). (2) is what makes presentism a tensed theory of time: any metaphysically accurate survey of the world must be formulated using the tenses, since it is these that convey how the world is, as distinct from how it *has been in the past* and how it *will be in the future*.

(1) and (2) set presentism apart from its main rival, the tenseless theory. If the world has a history or a future then according to the tenseless theory there are past and future entities as well as present ones. Furthermore, there is one set of facts that eternally characterises the world. Once we have described in full detail the various entities in the world and set out the relations (including temporal ones) that obtain between them, we have said all that there is to say about the world 'once and for all'. That is the end of the story; no other set of facts did, nor will, characterise the world. The denial of (2) makes the expression, 'the tenseless theory' apt, since, according to the tenseless theorist, a metaphysically accurate survey of the world is to be given without recourse to tenses.

3.2 MOTIVATING PRESENTISM

Where does the attraction of presentism lie? The psychological privilegedness of the present has already been noted. There are routes to presentism from this psychological privilege. A simple route is to claim that presentness is a phenomenal

property; we can directly apprehend that our experiences have the monadic property of presentness. However, the view that there is a *property* of presentness is not shared by most presentists.[1]

A related, but less crude, path to presentism flows from more theoretical considerations. There appears to be a powerful case for presentism if it can be shown that certain aspects of our psychology could not be properly explained if presentism were false. Over the course of our lives we have a great number of experiences. Yet, if the tenseless theory of time is correct, all of these experiences are ontologically on a par. If none of our experiences are ontologically privileged, then why are they not psychologically on a par? Why do we discriminate phenomenally against past and future experiences? (Ferré, 1972, pp. 435–6) And if there is no change of the facts that characterise the world, then how do we explain the unease which rises up in us as we anticipate an unpleasant event that is inexorably approaching us, and the wonderful sense of relief that accompanies its ending? (Prior, 1959).

It might be argued that these considerations do not lead directly to presentism. There are other tensed theories of time which ontologically privilege the present, but not by ontologically excluding the past, or in some cases, even the future. Such theories treat presentness as a special transient intrinsic property. These are versions of the hybrid theory I discussed and dismissed in the last chapter. There, I argued (2.6) that despite appearances such theories don't mark any advance over the tenseless theory when it comes to addressing these considerations.

Other reasons have been given for embracing presentism which are not so closely tied to psychological matters. Sometimes, for example, it is thought that only presentism affords us with an adequate response to McTaggart's Paradox (Christensen, 1974).

I will not mention any further motivations for presentism, as it is not my purpose here to be exhaustive in this regard. I have emphasised in particular those motivations arising in connection with our phenomenal experience, because, as I will explain later, issues surrounding the metaphysical basis of consciousness actually turn out to yield considerable negative consequences for the presentist.

Having briefly introduced presentism and some motivations for that view, I turn next to some further relevant details concerning the metaphysics of presentism.

1. See, for instance, (Prior, 1970, pp. 246–7) and Craig (1997).

3.3 THE METAPHYSICAL PRESENT

It is often noted that the words 'now' and 'present' have no fixed usage in everyday discourse. Sometimes, it seems that they are meant to indicate a very brief span, as in the following example:

Jamie stares listlessly from his rumbling carriage. The monotony of the lifeless desert sands remains, as it has for the last several hours, unrelieved. Wrenching his gaze from the window, he attends to his shoes. Just now, an amusement park hurtles by.

In other situations they might be used to encompass longer periods. Consider a commander speaking to his troops on the eve of a pivotal battle: 'Now is our last chance to repel the enemy', he says as he exhorts them to one last effort. Evidently, he does not intend his use of 'now' to be as temporally restricted as its use in the previous example. In this context, 'now' suggests a period extending from the time of utterance until the result of the battle is beyond doubt.

Granting the apparent context-dependent nature of 'present' and 'now' as they feature in ordinary discourse, we might be curious about how the presentist uses these words. When the presentist says that the only temporal items in existence are present ones, what does this amount to?

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? Surely it is not so broad as to include the Age of the Dinosaurs, the Big Bang and the extinction of our sun. This would be to make presentism too much akin to the tenseless theory of time. Just how narrow must it be?

It is often thought that the presentist should conclude that the metaphysical present has no scope; that figuratively speaking, it is a knife-edge separating what has been from what is yet to come. In other words, the metaphysical present is temporally unextended. The justification for this view traces back to Saint Augustine (Augustine, 1991, p. 232). Here is what I take to be the essence of Augustine's influential argument. If the present is extended then it has wholly distinct parts and those parts must be simultaneous. This rests on the assumption that if x and y are both metaphysically present then they are simultaneous. On the other hand, if the present is extended then it also seems that its disjoint parts cannot be simultaneous: if x and y are not temporally overlapping then they are temporally

separated and hence, not simultaneous. Thus, we have a *reductio* of the view that the metaphysical present is extended.

If Augustine is to be believed, the presentist must regard the present as temporally unextended. I have some reservations about whether Augustine's argument licenses this conclusion (see 3.10), but I will put these aside for now; as far as I know, no presentist has suggested in print that the present is durational. As we will soon see, the metaphysical nature of consciousness leads to problems for the view that the metaphysical present is unextended. It turns out that there are reasons for thinking that conscious experience is always temporally extended.

3.4 CONTENT AND BEARER

On the hypothesis that the metaphysical present is durationless it follows that any conscious experience we are having must itself have no metaphysical duration. But do we really have durationless conscious states? At this point, it is important to eliminate a possible source of confusion about this question. I will now outline an unsatisfactory, but instructive, argument against presentism. Isolating the flaw in this argument will help us to remain clear about what is at stake.

Echoing Kant, William James observes that there is a significant difference between a mere succession of awarenesses and an awareness of succession (James, 1981, p. 591). To illustrate this point, suppose that we have a series of awarenesses. Further suppose that each of these awarenesses is a phenomenal island, untinged by vestiges of past awareness. In that case, we would not have any conception of one thing following another, and hence, we would have no conception of change. So what is required for us to have a conception of succession, and therefore, of change? Here, James quotes Volkmann with approval:

> . . . if A and B are to be represented *as occurring in succession* they must be *simultaneously represented*; if we are to think *of* them as one after the other, we must think them both at once. (James, 1981, p. 592)

Thus, for two states of affairs to be represented to us as occurring successively, the first must leave a trace behind, so that when we become aware of the second, this awareness of the second is juxtaposed with an awareness of the first. Thus, James thinks that the span of our *phenomenal* present is far from being a vanishing point. In his opinion, the breadth of this present can be anywhere from a few seconds to a minute (James, 1981, p. 603).

Suppose that James is right. The mistaken argument against presentism concludes that since our phenomenal present has temporal breadth, so too does the

metaphysical present. The problem with this argument is that it conflates the distinction between content and its bearer. A written token of 'loud' represents loudness, but the bearer of this content is not itself loud. In the case that interests us, even if we think that the *content* of our phenomenal present represents past and present things as co-existing, it remains an open question whether our phenomenal present *qua* bearer of this content has metaphysical extension. The presentist can claim that the bearer is metaphysically durationless. To make things uncomfortable for presentists, it must be argued that the *bearers* of conscious states have temporal extension. It is to this task that I now turn.

3.5 THE NEURAL CORRELATES OF CONSCIOUSNESS AND TEMPORAL CODING

In this section, I will discuss *prima facie* reasons for thinking that the neural correlates of consciousness, namely, those neural phenomena which are direct correlates of consciousness, are temporally extended. Later, I will discuss what implications this might have for consciousness *itself*. To help locate the ensuing discussion, a very brief overview of the cerebral cortex is worthwhile, since this is where the neural correlates of consciousness are most likely to be found.[2]

Two separate sheets of nerve cells, one on each side of the brain's exterior, make up the cerebral cortex. The surface area of these sheets is sufficiently large that they must be folded to fit inside the skull. This folding accounts for the brain's characteristic walnut-like appearance. Functionally speaking, the cortex is strikingly modular. There are separate regions devoted to processing information from each of the sensory modalities, namely, sight, touch, smell, taste and hearing. Moreover, at least some of these regions are also modular. For instance, specific visual functions have been assigned to more than twenty cortical areas. There are separate regions devoted to handling colour, shape, contrast, orientation and movement. As Singer puts it:

> Depending on the features constituting the object (of perception), neurons become activated in different, often noncontiguous cortical areas, and it can be predicted that even simple visual patterns will give rise to simultaneous responses in a vast number of (widely distributed) neurons.[3]

2. Note, however, that in some quarters it is thought that some correlates of consciousness are to be found in sub-cortical regions like the thalamus. See, for instance, Baars and Newman (1994).

(Singer, 1994, p. 80)

The brain itself is composed of billions of interconnected nerve cells, or neurons, and information is carried and disseminated throughout the brain by these cells. Each neuron has a protruding fibre called an *axon*, whose firing transmits information to adjoining neurons. It also has other fibres called *dendrites*, which receive information from the firing of adjoining neurons. The neural correlates of consciousness are those neuronal activities that are directly correlated with consciousness. Of special interest to us is the way in which neurons encode information. It turns out that much of this coding is temporal as well as spatial, as I will now explain.

It has been known since the 1920s that at peripheral levels of sensory systems single neurons represent fixed stimuli; a the firing of a given peripheral neuron always codes for the same sort of sensory stimulus (Adrian and Zotterman, 1926). The intensity of that stimulus is registered by the average firing rate of that neuron over a brief period of time; the stronger the stimulus, the higher the firing rate. It is not, however, plausible to think that all, or indeed, many, representations at higher levels of processing, such as those which correlate with conscious states, are signalled exclusively by one neuron. A single-cell code precludes generalisation from old representations to new ones. This is a severe problem, since the system will hardly ever be presented with exactly the same stimulation on multiple occasions (Fotheringhame and Young, 1997, p. 49). There is also a combinatorial problem. Even if we restrict ourselves to visual stimulation, it is unlikely that there would be enough neurons in the brain 'if all distinguishable objects, including their many different views, each had to be represented by a specialized neuron...' (Singer, 1994, pp. 80–1). Thus, it is likely that higher-level representations embody assemblies of co-active neurons.

Although it is unlikely that the brain employs single-neuron codes on a large scale, important roles have commonly been assigned to coding by firing rate (rate coding) at all levels of processing. It has, for instance, been widely held that colour and form are represented by rate codes (Burkhalter and Van Essen, 1986), (Hubel and Livingstone, 1987), and that the perception of motion is rate encoded (Koch and Crick, 1994, p. 98).

Moreover, evidence has been growing to suggest that coding in the temporal domain is not restricted to codes of average firing rate. Two neurons sharing the same average firing rate over a certain period of time might have firing patterns

3. On the modularity of the cerebral cortex, see also (Thompson, 1993, Ch. 8).

that differ markedly when considered in fine detail. In a rate code these differences are regarded as noise, contributing nothing to the information content of the code. However, it is plain that in principle, at least, these differences in the temporal relationships between individual firings could constitute differences in information content. Let us call this potential means of coding *timing coding*. Evidence for the timing coding of contrast (e.g. the contrast between figure and background) has been presented in Richmond (1997) and Mechler et al. (1998).

3.6 IMPLICATIONS FOR PRESENTISM

It appears that there are good reasons for thinking that the neural correlates of many conscious states are temporally extended. So we can conclude that many conscious states are themselves temporally extended. Yet, the presentist says that the metaphysical present lacks temporal extension. Therefore, we can conclude that presentism lacks the resources to adequately support consciousness. And since it is clear that there are conscious states, it can be concluded that presentism is falsified.

This is a pleasingly simple argument, but it is much too eager to reach its conclusion. One response might be to observe that the neural correlates of consciousness are just that, namely, *correlates* of consciousness. We need a bridging argument to justify the conclusion that conscious states themselves have temporal extension. An example would be an argument for some form of mind/body identity theory. However, this would not be a dialectically useful response, since it concedes that *something* has temporal extension, namely, the neural correlates of consciousness; that concession alone is enough to cause problems for presentism.

A better response is to note that presentists admit certain analogues of temporal extension which might be capable of standing proxy for the concrete temporal extension favoured by tenseless theorists. The thought is that these resources might allow the presentist to do justice to the temporal features of the neural correlates of consciousness without conceding that anything has temporal extension. Thus, much still needs to be done to show that presentism is in trouble. I will first argue that if an identity theory of mind/body is correct, then presentism does not in fact have the resources to plausibly account for consciousness. I will then consider what prospects there are for presentism in the absence of an identity theory.

3.7 IDENTITY THEORIES

First, I will make a few amplifying remarks about identity theories of mind. Those who favour physicalism generally prefer some sort of identity theory. Old-style physicalists preferred a type identity theory, where a certain type of mental state is identified with a type of physical state.[4] This seemed a little severe since it meant that organisms with physiologies different from humans could not share the same sorts of mental states. The intuition that a certain mental state could be realised in different ways led to functionalism. According to functionalists, a mental state is defined in terms of its functional relationships with the outside world and with other mental states. Sometimes, this leads to a token identity theory, where particular tokens of mental states are to be identified with particular tokens of physical states, but no type identities obtain.[5] Sometimes it leads to the identification of particular mental states not with their physical realisers, but with functional role states. On this view, mental states are not identical with the physical states that realise them, but are nevertheless *constituted* by physical states. What I say about the temporal properties of conscious states according to the identity theory carries over to this view, since the spatio-temporal properties of mental states on this view are coextensive with the spatio-temporal properties of their realisers.

Now, consider the following example. Suppose that you are reclining outside on a beautiful summer's day with the Sunday paper beside you. You gaze sleepily out at the clear blue sky. The neural correlates of your colour-experience involve either rate or timing codes. Either way, the neural correlates of this experience seem to be temporally extended. On the assumption of an identity theory, the conscious state is itself temporally extended. The tenseless theory of time accommodates this fact quite easily. Your experience is spread out in time; its earliest part is no less existent than its latest part. Presentists have to say something different, since they say that the metaphysical present is unextended. We will now see how presentists aim to do without temporal extension.

Since presentists hold that nothing past or future exists, they generally construe facts ostensibly about past and future entities as disguised facts about existing things. Some facts about putative past or future states of affairs, for instance, can be expressed purely in terms of entities that were or will be constituents of those states of affairs. John Major's having been Prime Minister of the United Kingdom,

4. See Place (1956) and Smart (1959).

5. See Braddon-Mitchell and Jackson (1996, pp. 98–100) for an argument that functionalists should retain restricted type identities.

for instance, can be expressed in terms of a certain relationship between John Major and the property of being Prime Minister of the United Kingdom. John Major has the property of *having instantiated* the property of being Prime Minister of the United Kingdom. Other ostensibly past and future states of affairs are not so easily accommodated. Consider the past-tensed state of affairs of the horse Phar Lap's having been a Melbourne Cup champion. Phar Lap no longer exists according to the presentist, so something else that does exist has to be found to act as a placeholder for him. There are a few things we could try here. We could say that the fact that Phar Lap was Melbourne Cup Champion is really a fact about his stuffed hide, now residing in the Melbourne Museum, which was once the skin of a horse that won the Melbourne Cup. Or we could say that it is really a fact about Phar Lap's haecceity, which was once instantiated by a horse that won the Melbourne Cup. We could even say that it is a fact about the world as a whole that it once contained a horse which won the Melbourne Cup.[6]

How could this sort of presentist handle the case of your blue sky experience? To simplify things, let's pretend that your blue sky experience consists in the firing rate of a single neuron over a certain period of time. Since in this case the neuron which supports this experience still exists, there is no need to invoke recondite entities like haecceities or world-properties. The neuron itself has various past (and perhaps even future) tensed properties like having fired a certain time ago, a certain time ago before that, and so on. On this view, the conscious state consists in the instantiation by the neuron of a conglomerate of past, and perhaps future, tensed properties, along with how it is in the present. So the conscious experience is constituted largely by non present-tensed states of affairs about how the neuron was or will be. On the face of it, this is very peculiar. We are asked to believe that a present conscious state could be *constituted* mostly by facts about what no longer obtains, or what does not yet obtain.

Even worse, it seems to allow that a conscious experience could be made up *entirely* of past or future-tensed facts. After a neuron fires, there is always an interval during which it is not firing. Consider some moment, in the middle of a sequence of firings that constitute your blue sky experience, when the neuron is not firing. Do we say that you are having my experience at that moment? If we say yes, then that experience is composed entirely of non present-tensed states of affairs about the firing of the neuron. Can we say no? It's hard to see how. If we say no, then we are saying that you can have the blue experience only while the

6. See Bigelow (1996) for more details.

neuron is firing. But this seems unjustified. A single firing of a neuron makes no significant difference to the average firing rate of the neuron, and it is this average firing rate which constitutes my experience. So it is hard to see why the matter of whether the neuron is currently firing or not should make any difference to whether or not you are having the experience. Thus, it seems that the presentist has no good reason for denying that conscious experience could involve only non present-tensed facts.

Note also that the problem of conscious states being constituted by past (or future) tensed states of affairs is not merely one of peculiarity. Past tensed states of affairs cannot be constituents of present tensed states of affairs like your blue sky experience because they lack the right structure. The present tensed state of affairs that the neuron is in a firing state registers a fact about how the neuron *is*. However, a past tensed state of affairs to the effect that the neuron was in a firing state two seconds ago is a fact purely about what happened two seconds ago. It conveys only that two seconds ago the property of being in a firing state was instantiated by the neuron. And this is not the right kind of structure to be a constituent of fully-fledged present tensed states of affairs like your blue sky experience. Here, it is useful to compare past-tensed states of affairs to modal states of affairs. For the same sorts of reasons we would not like to think that a fully-fledged existing entity could be constituted mostly by states of affairs about what is merely possible. So, for instance, we would not be happy to think of my blue sky experience as being constituted mostly by states of affairs about what is merely possible for the neuron.

It is worth mentioning that not all presentists think that past or future tensed facts need to be facts about something that now exists. In the tradition of Meinong, some presentists have held that non-existent entities possess properties and stand in relations, either with existent entities or with other non-existents.[7] According to this view, the fact that Phar Lap won the Melbourne Cup is a fact about Phar Lap, even though Phar Lap no longer exists. Exactly what sort of properties can non-existents have on this view? Usually it is held that most ordinary properties, such as having hair and being made of wood, are indeed existence-entailing. Properties that are not thought to be existence entailing are properties like being the subject of propositional attitude ascriptions and the properties of having ordinary prop-

7. Routley (1980, Ch. 2), Salmon (1998) and Hinchliff (1996).

erties in the past and future (Salmon, 1998, pp. 290–1), (Hinchliff, 1996, note 17).[8]

There are a couple of ways in which this sort of presentist might construe your blue sky experience. One way might be to identify it with how the neuron is presently, along with various non-existent states of affairs dealing with how the neuron was in the past, and perhaps, how it will be in the future. However, it is more than hard to believe that a conscious state *qua* aggregate of states of affairs could exist unless all of its parts exist; an existing aggregate must have existing parts. A better idea would be to identify the experience with present and non present-tensed facts about the neuron itself. One such fact might be the past-tensed fact that the neuron *was* a constituent of a certain now non-existent firing of that neuron. Notice that this idea closely resembles the account of your blue sky experience attributed to presentists who believe that all properties are existence-entailing. The only difference is that here the relevant non present-tensed facts are facts about the neuron and non-existent states of affairs, rather than facts about the neuron and the property of neuronal firing. So the problems I raised earlier for thinking of conscious states as being made up of non present-tensed properties apply here also.

3.8 A PRESENTIST RESPONSE

At this point, it might occur to presentists that I have misconstrued their position, and that this misconstrual is responsible for the difficulties just outlined. To explain this thought we need to discuss the presentist treatment of events.

Imagine you are a servant at the court of Henry VIII. At the end of a rather large meal he gorges on a dismembered chicken. He raises a hand from his fulsome belly and p sses it lethargically across his mouth, signalling the end of his transaction with the plate. After rubbing his greasy fingers indelicately through his beard he settles back. And then he lets out the loudest, longest belch you have ever heard. Just as it is reaching its apex, you whisper to yourself, 'That's some belch!'

For tenseless theorists, the belch taken as a whole is part of the furniture of the world. This event has earlier and later parts, ranging from the first tones that puncture the silence and the crescendo that rapidly builds, through to the stunningly sustained apex and the gradual release into a low, self-satisfied rumble. Each of these parts exists, and thus, the temporally extended sum of these parts exists. In

8. It is probably safe to say that most presentists think that all properties (and relations) are existence-entailing. See Prior (1967, Ch. 8), Christensen (1976, p. 137), Lloyd (1978), Williams (1981, pp. 109–110), Bigelow (1996, pp. 36–39) and Craig (1997).

other words, the belch exists. Presentists cannot say this, since it is never the case that more than one configuration of Henry's lungs, vocal cords and mouth exists. Presentists regard talk that seems to imply the existence of events as elliptical talk about existing things and what is happening to them (Prior, 1968). So, when you whisper mid-belch, 'That's some belch!', you are not implying that a belch *qua* event exists. You imply only that Henry is in the process of belching. But it is never the case that there exists something that is a belch.

Taking these facts into consideration, it might be claimed that I have simply misrepresented presentism. I began by arguing that if an identity theory of the mind is accepted, then *prima facie* your blue sky experience has temporal extension. It could be said that I went some of the way towards accommodating presentism when I wondered whether that experience could be wholly located in the metaphysical present, albeit at the cost of including non present-tensed states of affairs as its constituents. But perhaps I did not go far enough. In my dim way I continued to treat experience as if it were some kind of entity. Had I followed things through properly, it would have become clear that if experience is something that happens over time, then for the presentist there is no *existing* series neuronal firings that responds to blue; there is only one neuronal state existing after another. So, just as there is the property of being in the process of belching, there is the property of being in the process of experiencing blue. And just as there are no belches, there are no blue sky experiences. Therefore, the arguments presented earlier against the thought that your blue sky experience could be situated in the durationless metaphysical present were misdirected.

In general, I have no quarrel with the presentist's distaste for reifying changes and processes. In terms of serving our everyday practical interests, it usually makes no difference whether we think of changes and processes as entities (things which exist). When we say that a thing has changed in some way, our interest is just in contrasting the way the thing is before the change with the way it is after the change. When we talk of a thing's having undergone a certain *process*, the nature of our interest is a little broader. We do not care simply about the contrast between how the thing is before and after it has undergone the process. We care also about *how* it went from being in its pre-change state to its post-change state. And this involves our being interested in the sequence of states that the thing is in while it is undergoing the process. None of these considerations, however, suggest that in terms of our practical involvement with changes and processes it matters to us whether changes *exist*. I may care, for instance, that the traffic light has changed from green to red, but for all practical purposes, it does not matter whether there

is an ordered pair of light states, (green, red), which exists and can be identified with the change.

I doubt that avoiding the reification of changes produces deep metaphysical difficulties for presentism. However, I claim that the processes directly involved in the production of consciousness are special cases. Under the assumption of physicalism, the failure to reify these processes commits us to the elimination of conscious experience.

Just as tables and chairs exist, so do qualia.[9] If physicalism is right, then qualia are in fact sequences of neuronal firings. And if qualia exist, then these sequences of neuronal firings must also exist. But if presentism is right, then we cannot reify such sequences.

Do qualia really *exist*? Suppose you are playing cricket. You are fielding in an attacking catching position. As such, you are very close to the batsman. In fact, if the bowler bowls a poor delivery and the batsman aims a hefty swing in your direction (and bat meets ball) you are almost defenceless. And this is just what happens. The ball hits you on the thigh and sharp pain coruscates through your leg. I claim that the pain you feel exists. I claim that you have non-inferential warrant that it exists.[10] Moreover, it is not obvious that there is good reason for accepting cricket bats, balls and bruised legs in your ontology but excluding pains. Certainly, I think that the burden of proof lies with those who wish to give bats and pains a different ontological status.

Of course, the fact that I make these claims does not guarantee their truth. I suspect that some people will agree with me on these points, but that, perhaps, others may demur. It is hard to argue for claims of non-inferential warrant. And notoriously, there is often disagreement over such claims. In order to reach a dialectically satisfying position I need arguments. To that end, consider the following cases.

CASE 1. Alan is dawdling along the street when he is hit by a distracted cyclist. It hurts. Alan continues to feel pain for some days.

CASE 2. Alan is hit by the distracted cyclist. From t_1 to t_2 he undergoes the minimal amount of neural activity required for him to feel any pain whatsoever.

9. Here, I do not mean the controversial reading which takes qualia to be ineffable phenomenal items. Qualia in this sense seem incompatible with physicalism. Instead, I mean the minimal understanding according to which qualia are phenomenal 'feels'.

10. This does not commit me to an extreme Cartesian position according to which, necessarily, if you believe that you are in pain then you are in pain.

Immediately after, he is obliterated by an errant cruise missile.

CASE 3. Like Case 2, except that at some t between t_1 and t_2, (before he has completed the minimal amount of neural activity required for him to feel any pain whatsoever) Alan is obliterated by an errant cruise missile.

Look at Case 2. The presentist needs to say that no pain exists, but that between t_1 and t_2 Alan is in the process of experiencing pain. Now transfer your attention to Case 3. Take an arbitrarily selected t between t_1 and t_2. What does the presentist say about whether, at t, Alan is in the process of experiencing pain?

There appear to be two options; Alan is not in the process of experiencing pain or he is in the process of experiencing pain. Consider the first option. If we say that at t in Case 3 Alan is not in the process of experiencing pain, then how do we justify saying that at the corresponding time in Case 2 Alan is in the process of experiencing pain? The only way, it seems to me, of supporting an asymmetry between the cases is by appealing to those future-tensed facts about Alan's neural activity which obtain in Case 2 (but not in Case 3). And this is dubious because it looks as though, at t in Case 2, Alan has the property of being in the process of experiencing pain in virtue of things that will happen to him. And this is suggestive of backwards causation. And invoking backwards causation for *normal* cases of conscious experience is most undesirable.[11] Even if this objection is wrongheaded, I still suspect it is implausible to say that Alan is not in the process of experiencing pain at t in Case 3. I will now motivate this suspicion.

Consider the second option, according to which Alan is, at t in Case 3, in the process of experiencing pain. I think that this is the correct option to take. However, I will argue that this in fact turns out to be a consideration against the presentist metaphysics of conscious experience. Compare Case 3 with an adjunct to Case 1:

11. You might wonder if this problem is exclusive to presentism. Suppose we modify Case 2 so that the metaphysical backdrop is one of tenseless time rather than presentism. Isn't there still a sense in which, at t, Alan is in the process of experiencing pain? And doesn't this fact depend on what is happening neurally to Alan *later* than t? If backwards causation needs to be invoked for the presentist version of this scenario, doesn't it need to be invoked here as well? The answer to the first two questions is yes, but the answer to the third is no. The difference between the cases is that, for the tenseless theorist, being in the process of experiencing pain is a derivative property based on purely mereological considerations. Assuming, as we are at the moment, that Alan can be truly said to be in the process of experiencing pain at t in Case 2 but not in Case 3, we can give the following tenseless account of being in the process of experiencing pain at t: Alan is in the process of experiencing pain at t iff Alan has a pain experience which is partially located at t.

CASE 4. Jonas is changing a wheel on his bicycle which was damaged by a collision with a dawdling pedestrian. Just as he removes the warped wheel he is obliterated by an errant cruise missile.

Jonas did not finish changing the wheel. Does that mean that he was not in the process of changing the wheel when the missile arrived? It does not. It is not usually a condition of being in the process of *R*-ing that the process ends up being completed. What sort of conditions are there, then? I will mention two. First, and most obvious, is that completion of the process is possible. If I start following a diet and exercise regime with the intention of weighing eighty and eighty-five kilograms simultaneously, then when I give up after a couple of months, no one is going to say that I was, before I gave up, in the process of becoming eighty and eighty-five kilograms. Second, I suspect, is some sort of counterfactual completion condition. I am not going to try and specify that condition in detail here. However, in very broad outline, we would say that Jonas was in the process of changing a wheel because Jonas was a competent wheel changer, and if things had gone along as they usually do when competent people try to change wheels, then Jonas would have completed the process.

Thus, I also think it is reasonable to agree that in Case 3, Alan was in the process of experiencing pain at t; had a wildly improbable event not intervened the process would have been completed. Tenseless theorists can use similar reasoning and agree that at t Alan was in the process of experiencing pain. For the tenseless theorist, there is an existing sequence of neural states, s, which, while not actually comprising an experience, could have been parts of an experience. And had Alan not been obliterated at t_2, s would have been part of an experience.

Tenseless theorists can therefore distinguish between being in the process of experiencing pain and having a pain experience. And this is important, because, if the neural picture I have presented is correct, then a person can be in the process of producing conscious experience without thereby succeeding in producing it; Case 2 is an example of success, whereas Case 3 exemplifies failure.

Presentists are not in a position to draw this distinction. The only way that presentists have of parsing phenomenal vocabulary is in terms of being in the process of having an experience. And as I have already indicated, this does not give us the resources we need to classify Case 2 as one where there is phenomenal experience and Case 3 as one where there is not.

3.9 A PRESENT WITH DURATION?

I have argued that presentism is not compatible with mind/body identity theories. An important part of my argument involved the view that presentism is committed to the present's having no temporal extension. The motivation cited for this view was Augustine's argument. Perhaps it is time to re-evaluate that motivation. I doubt that it is ironclad. I will argue that a presentist can coherently hold that the metaphysical present has duration. However, I will also argue that ultimately, coming to this realisation does not help to square presentism with physicalism.

It is assumed in the premises of the argument that any stretch of time may be divided into further stretches of time. Perhaps this assumption could be questioned. Certain ancient Greeks questioned it. They maintained that there are atomic intervals—that is, intervals which have no proper parts. If presentists adopt this view, they can say that the present is indivisible even though it is extended. And this means that the presentist is not touched by the attempted *reductio*, since it depends upon the falsity of temporal atomism. But we can see that this is not going to help the presentist. For what matters here is not merely that the present has extension, but that it has parts. The neural correlates of consciousness have distinct temporal phases. A durational present without parts does not have the mereological structure required to support the neural correlates of consciousness. Temporal atomism is not helpful.

However, I doubt that we need to resort to temporal atomism in order to find a version of durational presentism that is coherent. The view that the metaphysical present has duration *and* has parts is coherently describable. Once this view has been properly described, it turns out that Augustine's objection rests on equivocation. Before this point can be established, however, it is necessary to flesh out the notion of durational presentism.

3.10 TWO VERSIONS OF DURATIONAL PRESENTISM

Consider an interval which has as parts every interval that exists. This interval indicates the boundaries of the present. Let's introduce a special technical expression to denote this sort of interval: let's call it a *big interval*. As time passes, there is change with respect to which set of intervals exists, and therefore big intervals pass in and out of existence. To distinguish the picture we are developing from the atomistic view previously considered, we will stipulate that big intervals are not atomic—they have *proper* parts.

Note that I am assuming a reductionist view of the nature of instants and in-

tervals. I mention this because what I have said above may sound confusing if the reader has in mind a substantival view. Here, instants and intervals are being construed as constructions from their 'contents'. Thus, any change in terms of what exists, marks the destruction of one big interval and the generation of another. This way of putting things is purely a matter of convenience. A substantival view of instants, according to which instants and intervals are entities distinct from their contents, could just as easily have been assumed. On a substantival view, there would be no reason to talk of big intervals going in and out of existence. We would merely speak of their contents as changing.

Now, suppose that we are interested in the details of how big intervals pass in and out of existence. We might start by dividing the ways in which big intervals pass in and out of existence into two broad versions. Each way, I will argue, can be defended from Augustine's objection.

According to the first version, when a big interval goes out of existence it leaves nothing behind. More precisely, no part of a big interval will be a part of the next big interval.[12] According to the second version, a big interval does leave something behind. It goes out of existence by losing a *proper part*, thereby making way for a new big interval. Putting this second view more pictorially, think of the present as a worm that gains segments at one end while losing them at the other. A segment is 'born' at one end of the worm and passes along the length of the worm to the other end, where it is annihilated. To each such generation and annihilation corresponds a distinct big interval.

Now, recall the two principles that were crucial in the reconstruction of Augustine's argument against a durational present:

(1) If x and y are present then they are simultaneous.

(2) If x and y do not temporally overlap then they are not simultaneous.

I think that a defender of durational presentism ought to say that (1) and (2) equivocate over 'simultaneous'.

According to durational presentism, time has two importantly different aspects. First, there is the concrete temporal extension embodied by the big interval.

12. Though this is true for the most part, there could be (very unusual) degenerate cases. Here is an example. Suppose a particular big interval encompasses a time which comprises world-state *W*. Further suppose that the world leaves state *W* but soon returns to that state, so that the following big interval includes a time which also comprises state *W*.

The big interval is made up of sub-intervals and instants, such that these sub-intervals and instants (and their contents) stand in relations of precedence and simultaneity to each other. Second, there are tensed facts about how the contents of the big interval were, how they are, and how they will be.

The durational presentist ought to connect the sense of 'simultaneous' in (1) with the second aspect. Thus, the correct understanding of 'simultaneous' in (1) is as follows:

> x is simultaneous$_1$ with y iff x and y are present.

On the other hand, the sense of 'simultaneous' relevant to (2) ties in with the first aspect:

> x is simultaneous$_2$ with y iff x and y are located at the same concrete moments of the big interval.

Once we distinguish these two senses of 'simultaneous' we can agree x and y's being present and non-overlapping entails that they are simultaneous$_1$ and non-simultaneous$_2$. But since it is consistent for x and y to be simultaneous$_1$ and not simultaneous$_2$, no contradiction can be derived in Augustine's way from durational presentism.

Given that durational presentism survives Augustine's argument, how does it fare with respect to squaring presentism with physicalism? First, consider the version which says that when a big interval goes out of existence, it leaves nothing behind. An apparent drawback to this view involves the question of what makes one end of the big interval the earlier end, and the other the later end. Since each big interval comes into existence complete, as it were, it seems that an account has to be given which is separate from the story about the passing of big intervals in and out of existence. This is likely to be unattractive to many presentists *qua* tensed theorists, who prefer to account for any talk of earlier/later in terms of tensed notions.

There is another drawback to this view, which pertains to consciousness. Suppose that Kate is such that whenever she has an experience it is always neatly enclosed by the metaphysical present. Let l stand for the length of the metaphysical present. Now suppose that Kate's entire life were shifted backwards by l=2. In an intuitive sense, Kate would have had the same neural history, but she might have no conscious experiences whatsoever, because the contents of the metaphysical present never have the right properties.

Notice that these reservations need not apply to the other version of durational presentism. This version says that big intervals go out of existence by losing proper parts. The question of why one end of the big interval is the earlier end and the other is the later end can be answered without having to appeal to anything outside the passing of big intervals in and out of existence. We can simply say that x is earlier than y iff x and y exist and x did exist while y did not exist.[13] One unusual consequence of this view is that any interval smaller than the big interval has a history, in the sense that it has past and/or future-tensed properties. For example, consider two non-overlapping intervals, d and e. Suppose that d is earlier than e. It then turns out that it was the case that it was not the case that d is earlier than e. This is because at one stage, d existed while e did not. It might be thought that the notion of intervals themselves as things that have histories is absurd, and that this consequence alone is enough to thoroughly discredit this version of presentism. However, the notion of intervals having past or future tensed properties does not strike me as absurd, but merely a little unkempt.

Notice also that so long as the longest temporal part of the big interval having no past tensed properties is brief enough, the problem of Kate's history being shifted back by half the length of the big interval does not arise. This is because what exists is replaced very gradually.

Still, this second version of durational presentism faces a serious objection if it is invoked as a way of allowing presentists to be physicalists. In fact, the objection applies equally well to both versions of durational presentism.

The objection takes the form of a dilemma. Suppose that the actual world is a presentist world with a metaphysical present long enough to enclose the conscious experience you are now having. Further suppose that the present is also brief enough to ensure that it does not enclose successive conscious experiences of yours. Now imagine another world, W_b, which is just as the actual world is except that the duration of the metaphysical present is four times longer than it actually is. In W_b, the metaphysical present is long enough to enclose successive experiences of yours. Does the presentist say that W_b is a world where there are conscious experiences? This is the dilemma.

If the answer is yes, then any reasons we might have for endorsing presentism begin to fade. After all, if the present can be durational, there is no reason at all

13. To completely avoid the worry about providing a tensed account of temporal order, it must be the case that the bits of reality that come into, and go out of, existence are not themselves intervals with proper (temporal) parts. That is, they must either be instantaneous or embody atomic intervals.

to suppose that the metaphysical present is not long enough to encompass entire lifetimes, centuries, millennia, etc. Moreover, once we admit that the metaphysical present could be long enough for both a and b to coexist, it becomes hard to see what sort of reasons we might have for supposing that in the actual world the metaphysical present is not arbitrarily long. This sort of presentism has no apparent advantages over the tenseless view of time.

If the answer is no, then a concern is that consciousness turns out to be extrinsic in an unpalatably bizarre way. Let a be a conscious state of yours. And suppose that it will pass out of the metaphysical present to be replaced by an incompatible conscious experience, b. In W_b, however, both a and b are enclosed by the same metaphysical present. So a's actually being a conscious state is constituted in part by there being nothing located at a portion of the metaphysical present earlier or later than a that otherwise has all the right features to be a conscious state. Such a restriction has little plausibility beyond a pathological desire to defend durational presentism. We might ask, for instance, how a double success could be a failure? Admittedly, this remark has no currency as an argument against the restriction (since thus construed, it clearly begs the question), but it does convey something of the incredulity with which the restriction deserves to be met.

I will mention here the only independent motivation for the restriction that I can imagine. And it is an embarrassingly poor one. a and b, as previously noted, are incompatible experiences. The usual way of understanding this incompatibility is by noting that a and b cannot be instantiated relative to the same person and same time. Thus, it is perfectly acceptable for one person to instantiate a and another to instantiate b at the same time. Likewise, it is perfectly acceptable for one person to instantiate a and b at different times. The restriction we are considering suggests that if a and b are both located in the big interval, then they must be instantiated relative to different persons. In other words, it is acceptable for a and b to both be experiences of the one person so long as those experiences never coexist. If this is the rationale, then it's pretty clear that it must apply to any pair of incompatible properties whatsoever. And that effectively means that no qualitative change at all could occur within the big interval. This means that the only feasible version of durational presentism would be one where the times of the big interval were substantival, so that it is not big intervals that come in and out of existence, but only their contents. This leads to disaster.

First, the second version of durational presentism has it that the contents of the big interval change gradually by the accretion of new contents at one end and the loss of the oldest ones at the other. However, if it is not possible for there to be

qualitative variation within a big interval, then on this view, anything that persists throughout the big interval could never change. Since, *ex hypothesi*, nothing can have incompatible properties at different times within the big interval, and since the contents of the big interval change only gradually, any qualitative change in a thing would usher in a big interval featuring such incompatible properties. In short, this makes qualitative change impossible. We can be pretty sure that the actual world is not like this!

Moreover, both versions of durational presentism are supposed to allow for the existence of the neural correlates of consciousness. But if neither can allow for qualitative change within the big interval then neither can do justice to the neural correlates of consciousness, which are jam-packed with qualitative change.

So either path offered by the dilemma I have presented leads the durational presentist to an unsatisfactory conclusion. I conclude that durational presentism does not, after all, help to square presentism with physicalism.

3.11 DUALISM

For presentists who wants to say that the metaphysical present is durationless, a more satisfactory treatment of issues surrounding the neural correlates of consciousness can be given if they embrace dualism. For dualists, conscious states are either states of non-physical entities (substance dualism) or states of physical entities, where the physical entity instantiates non-physical mental properties (property dualism).[14]

The dualist presentist can admit that the neural correlates of your blue sky experience include a bevy of non present-tensed states of affairs, and yet deny that the experience itself has any non present-tensed constituents. This is because the neural correlates of consciousness are not identified with conscious states, but are merely correlated with them. If there is a mind/body dualism then the presentist has a means of escape from the difficulties I have presented.

The situation with respect to durational presentism is interesting. I suspect that important parts of the objection I gave against mind/body identities in the context of durational presentism could be adapted to apply also to the case of dualism. However, in terms of my current objectives it is sufficient if I have shown that presentists ought to be dualists.

14. For a contemporary defence of substance dualism, see Eccles and Popper (1977). For defences of property dualism, see Jackson (1982) and Chalmers (1996).

3.12 CONCLUSION

Facts about the temporal properties of conscious experience are difficult to reconcile with presentism. I have argued that the only plausible way to reconcile consciousness with presentism is to endorse a mind/body dualism. To the extent that dualism is problematic so too is presentism. Notice, however, that even if on balance we ought to be dualists, my arguments nevertheless undermine presentism to some degree. To the extent that we are unsure about dualism we ought also to be unsure about presentism. However, since the question of whether time is tenseless is quite independent of the mind/body dualism issue, uncertainty about whether we ought to be dualists does not translate into uncertainty about whether we ought to be tenseless theorists.

4

Time and Temporal Attitude Asymmetries

Thus far, I have argued against the main versions of the tensed view of time. The aim of the current chapter is to defend the tenseless view from what I take t be the most cutting argument against it.

We have various emotional intentional attitudes. For instance, we fear serious illness and disease. We grieve personal losses. We regret lost opportunities. We are ashamed about the callous and hideous things we have done. And so on. Now, consider these two pieces of data about our emotional intentional attitudes and our preferences:

(1) Certain of our intentional attitudes appear to have time-asymmetric manifestation conditions. For instance, we *dread* a certain painful episode only if (we believe) it is future and feel *relief* about that episode only when (we believe) it is past. We eagerly anticipate events only when (we believe) they are future and regard them with nostalgia only when (we believe) they are past.

(2) Other things being equal, we prefer disvalued experiences to be in the past rather than in the present or the future.

This data appears hard to reconcile with the view that time is tenseless. If time is really tenseless, then there is no ontologically relevant distinction between any of our experiences, be they past, present or future. So there seems to be no rational basis for (1) and (2).

I will begin by briefly revisiting the place where this all started, namely, A.N. Prior's 'Thank Goodness That's Over' argument. Then I will look at influential

responses to this argument endorsed by Murray MacBeath and D.H. Mellor. I will suggest that these responses are not entirely satisfying. However, the chief objective of this chapter is to show that even if tenseless theorists cannot fully accommodate (1) and (2), there is no metaphysical mileage to be gained by their opponents. The argument against the tenseless theory from attitude asymmetries is fundamentally misguided.

4.1 TENSED BELIEF AND TENSELESS TRUTH CONDITIONS

> One says, e.g., "Thank goodness that's over!," and not only is this, when said, quite clear without any date appended, but it says something which it is impossible that any use of a tenseless copula with a date should convey. It certainly doesn't mean the same as, e.g., "Thank goodness the date of the conclusion of that thing is Friday, June 15, 1954," even if it be said then. (Nor, for that matter, does it mean "Thank goodness the conclusion of that thing is contemporaneous with this utterance." Why should anyone thank goodness for that?).[1] (Prior, 1959, p. 17)

This is Prior's famous 'Thank Goodness' argument. Around the time of its publication the philosophical debate over tensed and tenseless views of time was conducted largely at the semantic level. A crucial issue was seen to be one of translation. Tenseless theorists held that tensed language could be translated by tenseless language; the meanings of our tensed vocabulary could be given in tenseless terms. Tensed theorists disagreed with this.[2] Prior's argument can be seen as an argument for the untranslatability thesis.

Since the late 1970s, tenseless theorists have, on the whole, conceded the debate over translation. But they have not conceded that the untranslatability of tensed language vindicates a tensed understanding of time. Instead, they have drawn analogies between the untranslatability of tensed discourse in tenseless terms and the untranslatability of sentences featuring personal and spatial indexicals by sentences featuring only proper names or descriptions of persons and places. No one, so the argument goes, wants to says that there are facts stateable only by using 'I' or 'here', for instance.[3] Yet, if we can pass from the untranslatability of tensed sentences by tenseless ones to our having reason to hold the tensed theory of time,

1. See also Prior (1968b, p. 29).
2. See Gale (1968) to get an idea of the state of play during this period.
3. See Perry (1979, pp. 15–6) for a discussion of this point with respect to 'I'.

then we can also pass from the untranslatability of 'I' and 'here' to our having reason to think that there are irreducible personal facts and irreducible spatially 'tensed' facts.

Take the case of spatial indexicals, for example. It is now common to admit that a sentence token containing spatial indexicals expresses a proposition that has no indexical content. But it is not common to admit that the proposition expressed is a translation of the sentence token, since indexical elements are ineliminable features of many of our beliefs. When I think to myself, 'It's raining here', I may know that this thought expresses the proposition, 'It's raining at Monash University'. On the other hand, I may not know this. I may be lost. But even if I do know that it is raining at Monash University, it is not knowledge of this fact that makes me look for shelter. I look for shelter because I believe that it is raining here. If all beliefs were propositional, there would be no explanation for action. I find shelter because I believe it is raining *here*. I go to the doctor because I believe *I* am ill. And so on.[4]

Tenseless theorists have taken advantage of this work. Mellor claims that we have irreducibly tensed beliefs. However, following MacBeath (1983), he claims that these tensed beliefs, when true, are made true by purely tenseless facts (Mellor, 1983, p. 91). Say, for instance, I believe that yesterday I bought a scurrilous squid. This belief is made true by a tenseless fact like the following. One day earlier than February 10, 20002, Neil McKinnon buys a scurrilous squid.

Prior's argument, viewed simply as an untranslatability argument, may appear to have lost its dialectical force since all parties to the tensed/tenseless dispute now tend to agree that tenseless sentences do not provide translations of tensed ones. However, suppose we accept that the tenseless theorist can provide a tenseless account of tensed belief. Does this dissolve Prior's argument without residue? I suspect that the issue is not so readily resolved.[5]

Consider again spatial indexicals. Suppose you hear a news bulletin which reports that a house on your street is burning down. You rush home and discover that your house remains intact. Standing on your porch and peering down the street at the burning house, you say, 'Thank goodness the fire is not over here'. Now, suppose you have just moved into your house and you know nothing about

4. There is much more to be said about how the details of a theory of indexical belief should be worked out, but I will not rehearse these details here. Instead, I refer the interested reader to Perry (1979), Kaplan (1989), and Perry (1997).

5. See also Dyke and Maclaurin (forthcoming 2002) for an interesting discussion of MacBeath's influential response to Prior's argument.

the other people on your street. You have no reason to prefer that the fire is occurring at any particular house on the street. You may look across at the burning house and form the indexical belief that the fire is over there, but all the same, it's not really appropriate for you to thank goodness for the fire's being over there in particular. Had someone told you that the burning house was unoccupied, then it would indeed have been appropriate for you to thank goodness for the fact that the fire is over there, since this gives you a reason to prefer that the fire be in that place and not anywhere else on the street.

In the context of the tenseless theory, we can say something similar about relief from pain. Just after the cessation of a painful episode, I have the tensed belief that I am not now in pain. I also have the tensed belief that my pain is past. I am certainly justified in being thankful that I am not now in pain, since for any t, it is good not to be in pain at t (though this sort of thankfulness probably does not count as relief). But why should the fact that I have a tensed belief that my painful episode is past evince relief if that belief does not have tensed truth conditions? And why, had I believed that the pain were in the near future rather than in the past, would it have been appropriate for me to feel dread? Just as further information is required to show why it is appropriate for you to feel thankful that the fire is 'over there' rather than just 'not here', further information is required to show why it is appropriate for me to feel thankful that the pain is past rather than just 'not now'. And such information needs to be given in tenseless terms.

This sort of information is nowhere to be found in Mellor (1983). To see why not, we need to look elsewhere. In an earlier paper, Mellor argues that no ostensibly satisfying reason for the appropriateness of relief occurring when pain is past can be given in tenseless terms. However, he counters, the tensed theorist is not in any better position:

> And the real question is when it is natural to have a feeling of relief in relation to a painful experience. The tensed answer to that question is, of course, when the experience is past, rather than present or future. The tenseless answer can only be that it is natural to feel relief *after* a painful experience, that is, at a later date, rather than during or before it. Now this may well seem a rather weak response. Why, after all, should relief be peculiarly natural after pain, if not because the pain is now past and so, as we have seen, no longer pain? To this further question I confess I see no answer. But I also see no answer to the question, Why feel relief only when pain has the A-series position *past*, as opposed to being present or future?
>
> (Mellor, 1981a, p. 24)

I agree that the sort of tensed theory which says that past, present and future things all exist, but differ with respect to their possession of the intrinsic properties of pastness, presentness and futurity, has no good explanation of why relief is appropriate when an experience is past rather than when it is future. The phenomenal content of experiences on this view does not vary according to whether they have the property of being past, present or future. A past pain, despite its pastness, remains a pain, with all of the attendant phenomenal properties (see 2.6 for more about this). Nor does a view according to which reality grows as time passes (i.e. according to which past and present things but not future ones exist) fare any better. On that sort of view, there still doesn't seem to be a good reason to feel relief when an unpleasant experience is recently past, since the unpleasant experience is just as much a part of reality as its cessation. If anything, this view gives us reason to prefer painful experiences to be future rather than past, since at least when an experience is future it is not yet part of reality.

However, presentism, the view that Prior himself held, does tell us why it is appropriate to feel relief after a pain has ceased, and to feel dread over future pain.[6] The first part of that explanation is that there exist no past or future experiences. What I am experiencing is thus confined to what is going on now. The second part of the explanation involves the invocation of tensed facts. It is appropriate for me to feel relief after the cessation of a painful experience because my experiencing pain has passed out of existence. And my feeling of dread concerning impending pain is appropriate because my experiencing pain will soon pass into existence. And presentism appears to supply a justification for our general preference that pains be past rather than just 'not now'. When a pain is past, it no longer exists. We know that in the future we will have to deal with it only in the form of memory traces. However, we know that a future pain will come into existence, and we are yet to have experienced it, though it is coming.

Since presentism, at least, seems to offer an explanation for the appropriateness our 'relief' and 'dread' behaviour, tenseless theorists ought to see whether they can vindicate this behaviour. And even if could be shown that tensed theories of time were in fact in no better position than the tenseless theory regarding this justification, it would still be worth seeing to what extent the tenseless theory can provide justification.

6. Mellor does in fact make this admission (Mellor, 1981a, p. 28). However, he gives presentism rather short shrift; see Mellor (1974) and Mellor (1981b, p. 30). I am rather less unsympathetic, so I will take it presentism a little more seriously.

On the face of things, these considerations appear to lend credence to presentism over the tenseless theory. It seems that only presentism can underpin the rationality of our temporally asymmetric preferences and attitudes. To what extent can the tenseless theory justify these preferences and attitudes? And if it turns out that the tenseless theory cannot fully justify them, are we entitled to regard this fact as providing support for a presentist view of time?

I will turn first to the question of justification. However, it is important first to disentangle justification from explanation. It is certainly true that tenseless theorists can provide an explanation for why we prefer pains to be past rather than merely not present. But it would be a mistake to equate an explanation for our temporally asymmetric preferences and biases with their rational justification.

4.2 EXPLANATION AND JUSTIFICATION

Here is a sample explanation due to Paul Horwich. He provides a sketch of an evolutionary explanation for our propensity to have more concern for our future than our past. He argues that there are selectional advantages for having a special interest in the future. The basic point is that since the direction of causation runs from earlier to later, a creature at t will be best served in terms of surviving and reproducing by caring more deeply about what happens to it later than t than what happens earlier.[7] Thus, a temporal value asymmetry has been built in to humans as a result of evolutionary pressures. With respect to pains, for instance, you have a greater chance of surviving to procreate and care for your offspring if you devote much of your energy to avoiding future pains (since pains are indicators of bodily damage or danger), rather than being concerned about past pains, except insofar as your memory of past pains is useful in helping you to avoid future pain.

This explanation (and probably any others that a tenseless theorist might suggest) is a causal one. Stripped back to its most simple terms, our special concern for the future is underwritten by the direction of causation. Now, there is not always a correlation between causal explanations for practices, values and beliefs and their being justified. Consider the case of Russell Weston, a paranoid schizophrenic who in July 1998 killed two U.S. Capitol police officers. He believed, among other things, that the U.S. government has the power to reverse time (Hull, 2001). There is a (probably very complicated) causal explanation for his coming to have this

7. Horwich (1987, pp. 196–8). A more detailed evolutionary account can be found in Dyke and Maclaurin (forthcoming 2002).

belief. However, this explanation does not thereby license us to say that his belief was rational. Similarly, we cannot proceed directly from the fact that there is a causal explanation of our temporal biases to their being rationally justified.[8] So we need to make sure that the explanation is the right sort of explanation to provide justification for these biases.

One way of showing that the explanation is of the right sort would be to connect the explanation of these biases to their rational justification via a bridging principle which it is clearly rational to hold but which exhibits no temporal bias. Here is a sample candidate to help us see how this might work:

(P) It is sensible to maximise pleasure and happiness and minimise pain and unhappiness across your lifetime.

(P) is temporally unbiased. It just says that it is sensible to maximise certain things and to minimise others over your lifetime considered as a whole. Now, if it turns out (contingently) that the best way to satisfy (P) is by having a bias towards the future then we can say that the rationality of those biases is grounded in (P). Let's look at this suggestion in more detail.

We return to the example of pain. It is rational for you to feel greater concern about future pains than past ones, since you cannot do anything to prevent the negative contribution that past pains, *qua* pains, make to your lifetime considered as a whole.[9] However, since the direction of causation runs from earlier to later, you can affect your future path, including what pains and other damage you suffer. We can say similar things about pleasurable experience. It is rational for you to feel greater concern about future pleasures than past ones because you are in a position to influence the quantity and quality of future pleasures you will have, but you are not in a position to influence the quantity and quality of your past pleasures.

8. *Cf.* Craig (2000, pp. 156–7).

9. It is important to expand on this statement. It is true that past pains can have future unpleasant *effects*. We remember past pains, and sometimes memory-episodes relating to past pains can be quite painful themselves. Moreover, sometimes past pains can be so traumatic that they have a myriad of negative influences on our future life. We might classify these future effects as sorts of pains as well. According to (P), it is rational to feel quite concerned about these pains, since they are future, and things can often be done to lessen their detrimental impact on our lives. However, in these cases it is difficult to divorce the effects from their cause. The past pain still greatly concerns us. These sorts of cases are worth mentioning, but they do not greatly affect this discussion. This is because the attitude asymmetry argument can be expressed in terms of pains which, although unpleasant, do not have significant detrimental effects on our life considered as a whole (for example, a dental treatment).

(P) is useful. It goes some of the way to providing a justification for asymmetries in our attitudes towards the past and the future. However, there is still much that it does not allow us to justify. There are, for instance, some painful experiences that serve to increase the overall positive experiences of our lives, and/or extend our lives so as to increase our potential for maximising positive experiences. Consider, for instance, a painful operation, such as heart bypass surgery, that ultimately improves the quality of a life substantially. Even though this operation has positive effects which outweigh its painfulness, we would still feel very apprehensive about such an operation that lay in the future even if we knew it would be successful. And we would still be very glad that it was over once we had fully recovered. Again, consider some future painful event that has purely negative consequences for our overall life experience, but which we see as being unavoidable. Suppose, for instance, you know that tomorrow you are going to be incarcerated for one year and will be forced to choose between (a) reading treatises on the history of air vents in nineteenth century Europe for twelve hours a day, or (b) attempting for ten hours a day to construct a functioning television from an empty cardboard box, a coathanger, and the buttons from your shirt. Presumably, you would feel an appalling sense of terror at this prospect. And presumably, upon your release, you would feel an overwhelming sense of relief (provided you had retained your sanity).

The tenseless theorist is still left with a gap between explanation and justification. At this point, I'm just going to stipulate that the tenseless theorist cannot count as justified all of the temporally asymmetric attitudes that we would normally regard as rational. My primary interest in this chapter is to see just what follows from this assumption. Ultimately, I will claim that even if this stipulation is accurate, there is no metaphysical capital here for presentism.

4.3 FACULTY AUGMENTATION

How might the tenseless theorist show that there is no legitimate inference to presentism from our temporal attitude asymmetries? Here is one idea. Recall the causal explanation for our exhibiting these asymmetries. The explanation centred around our faculties and their limitations. A preliminary way of trying to obtain leverage from this observation might run as follows. We have the attitude asymmetry because we have limited faculties. But if we had been differently constituted we might not have had the attitude asymmetry. This point is certainly right. Yet, how might this help the tenseless theorist?

In a sense, it's trivial that if we had had certain different make-ups, we would not have had the attitude asymmetry; if we had no memory (as well as no foreknowledge) then we would not have the attitude asymmetry. That is no reason to say that we are *actually* unjustified in having the attitude asymmetry. Compare the situation under discussion with the following case. Suppose we had been born without, say, the senses of touch and sight. We would probably not in that case be justified in having a belief in material objects *qua* material objects; we might even lack a concept of material objecthood. Of course, it does not follow from the counterfactual, 'Were our faculties diminished in certain ways we would lack justification for certain beliefs that we actually have,' that we are actually unjustified in having those beliefs.

What the tenseless theorist should focus on is faculty augmentation rather than diminution. The idea here is that we try and imagine whether a creature whose faculties and abilities were far in advance of our own would have the attitude asymmetry. The idea, then, is to say that if a creature with faculties and abilities far in advance of our own would not have the attitude asymmetry, then we are not licensed in drawing metaphysical conclusions about time from the fact that we possess the attitude asymmetry. A striking problem faced by this sort of thought experiment involves the question of whether we can be confident about what attitudes creatures with faculties and abilities far in advance of our own would have. Nevertheless, let's see how far this line of investigation takes us.

The examples of augmented faculties that would appear to be relevant involve our access to things that happen at times other than the point of access itself. We have the faculty of memory, and the obvious supplement is precognition. What I am considering is not just a faculty that allows us to divine truths about the future, but a faculty which is exactly analogous to memory, except that it involves precognitive episodes rather than memory-experiences. As a first approximation, imagine a creature like ourselves, except for the fact that it has this extra faculty.

This addition is manifestly not sufficient to produce a creature without the attitude asymmetry. To see that this is so, recall the example I gave of being informed that you are to be incarcerated for a year. Mere propositional knowledge of this fact is enough to disturb you greatly. Now imagine how much more disturbed you would be if you had experiential knowledge of what was about to happen to you for the next year. And imagine the great relief you would feel upon being released, knowing that your episode of prison life was consigned to memory, never to return to reality. Since we are imagining precognition to be closely analogous to memory, a precognitive episode, like a memory episode, never has the full phenomenal impact of the the experience of which it is a precognition. So in the case we are discussing you are in the position of having precognitive episodes of unpleasant experiences; episodes which are phenomenal shadows of the experiences yet to come.

In terms of faculty augmentation, much more is required. Specifically, we need a creature that will consider the events of its life with complete equanimity, regardless of whether they be past, present or future. To envisage such a creature we need to think of something even more unlike ourselves than is the creature of the previous example. Imagine, for instance, a creature that can, at any time, access any of the experiences it has across its lifetime and experience them just as if they were happening at that time. Or we might imagine an even stranger creature which, for any time at which it is located, is fully aware at that time of every experience that it has across its lifetime. Such cases are exceedingly odd, and embody difficulties of evaluation. These creatures are so far removed from ourselves that it is difficult to tell whether they would exhibit the attitude asymmetry. In fact, we might even wonder whether the last creature I introduced is even coherently describable.

This looks like a problem for the line of argument I have been pursuing. Recall that the line of argument goes like this. We exhibit the attitude asymmetry. But we can imagine creatures with faculties and abilities significantly more extensive than our own. Such creatures would not have the attitude asymmetry. Thus, by imagining creatures that differ from ours only in ways that can be specified in either tensed or tenseless terms, and which are, if anything, in a better epistemic situation than ourselves *and* lack the attitude asymmetry, we see that we ought not draw metaphysical conclusions from the fact that we have the asymmetry. However, if we are uncertain that we can imagine such creatures, the line of argument is inconclusive. Even so, it does improve the dialectical situation of the tenseless theorist, since it leaves us in a zone of uncertainty. Still, this is not very satisfying. It would be nice to be able to provide something more conclusive. Note, also, that these augmented abilities all require backwards causation. Whether backwards causation is genuinely possible remains a subject of heated debate. This fact casts further doubt on the effectiveness of this way of proceeding.

4.4 THE CAUSAL ATTITUDE ASYMMETRY AND ATTITUDE CHANGE

Next, I would like to examine an intriguing discussion (regrettably neglected in the literature) by André Gallois. Gallois (1994) provides a novel response to the

argument from our attitudes to the past and the future to metaphysical conclusions about the nature of time. This response is well worth discussing in its own right. However, I think that even if it proves ineffective, Gallois' discussion helps us to see something important; something that provides the germ of a workable response to the presentist.

Gallois urges that upon inspection it turns out that we do not have the kind of attitude asymmetry that we are commonly held to have. Once we realise the true nature of our attitudes we discover that they do not provide support for a tensed view of time. He proceeds by outlining some thought experiments, one of which I will now recount.

Suppose that you are a time traveller. You wake up in a hospital bed with amnesia which you are told is caused by an accident you had while on a one week trip to 2092. You are further informed that in addition to causing your amnesia, the neural damage you sustained in the accident makes it inevitable that you either experienced one day of severe pain while in 2092, or that you will experience one day of extreme pain while on a trip you are about to make to 1892 (p. 63).

Gallois predicts that we would prefer the pain to occur in 2092 rather than during the impending trip to 1892. He claims this shows that we are mistaken in our prereflective beliefs about the nature of our attitudes toward past and future pain. We mistakenly believe that we prefer painful events to be before rather than after the present moment. But in fact, we prefer painful events to be causally prior, rather than causally subsequent, to what is going on at the present moment. We confuse questions of causal order with questions of temporal order because we always view causes as being temporally antecedent to their effects. But time travel cases show us that temporal and causal order can come apart. By imagining time travel cases and inspecting our intuitions, we see that what we really care about is that pains be part of our causal 'past' rather than part of our causal 'future' (pp. 64–6).

Notice how Gallois' claim, if correct, blocks any kind of argument for presentism from an asymmetry in our attitudes towards past and future pains. The claim is that the asymmetry in our attitudes really concerns whether pain is causally prior or causally subsequent to the present moment. The content of the attitude asymmetry involves only the notions of our *causal* past and future rather than those of the temporal past and future. However, causal order can be rendered equally well in tensed or tenseless terms, and since the content of the attitude asymmetry involves only these causal notions and not the temporal ones, the attitude asymmetry has no bearing on the dispute between the tenseless view of time and presentism.[10,11]

Some readers may not find these considerations entirely convincing. First, it is controversial whether travel backwards in time is possible, since it involves backwards causation. While I think worries about the possibility of backwards causation are relevant to assessing the merits of defending the tenseless view of time by imagining cases of faculty augmentation, such concerns are not pertinent here. The concerns are relevant in the case of faculty augmentation because that line of argument requires that a certain type of creature be metaphysically possible. However, the effectiveness of Gallois' argument does not require that the time travel scenario is genuinely possible. Gallois' thought experiment is intended to show that we have the causal attitude asymmetry. The time travel story is an instrument to this end. If backwards time travel is incoherent, the incoherence is not obvious but runs quite deep. And if the incoherence is deep enough, such stories may still be useful devices for determining what kind of attitude asymmetry we exhibit.[12]

One interesting point to note is that we might doubt whether, if we were presentists, we would respond to Gallois' examples in quite the way that he suggests. First of all, suppose that we are about to take the trip to 1892 from the present, having just been told that we will either experience severe pain for a day on arrival, or that we experienced severe pain for a day in 2092 before embarking for the present.

10. One response here might be to claim, as Michael Tooley does, that causation requires a tensed world (1997, pp. 107–11). However, if this is right then the attitude asymmetry argument for tensed time is superfluous; it adds nothing to the strength of whatever arguments there already are for thinking that causation requires a tensed world.

11. In fact, if Gallois is right and we do have the causal attitude asymmetry then we can turn the attitude asymmetry argument, as it is normally conceived, on its head. If we really prefer the pain to occur in 2092 rather than in 1892, and this attitude is irrational from a presentist perspective, then we have the beginnings of an attitude asymmetry argument against presentism. The idea is that certain of our attitudes only count as rational if the world is not a presentist one. I note this way of proceeding only in passing, however, since I doubt that this causal asymmetry argument is going to be any more successful than its temporal counterpart.

12. It is sometimes thought that time travel in a presentist setting is particularly implausible. Some people worry that since there are no concrete past or future times according to the presentist, there is nowhere for the time traveller to go (Grey, 1999, pp. 56–7)! I agree that the notion of time travel seems to gel more intuitively with a tenseless view of time than it does with presentism. However, the 'no destinations' objection to time travel under presentism has been thoroughly put on the rack in Dowe (2000) and Keller and Nelson (2001). In any case, such concerns are irrelevant to Gallois' argument, since whether backwards causation is incompatible with presentism need have no bearing on whether we actually exhibit the causal attitude asymmetry.

Gallois expects that we would prefer the pain to be in 2092. However, if we were presentists, we might well have strong reasons to prefer the pain to have occurred in 1892. After all, anything that happened in 1892 has well and truly passed out of existence, whereas what will happen to us in 2092 is still to be. If I were a presentist, I can envisage digging my heels in and insisting that I would prefer the pain to have occurred in 1892 rather than be going to occur in 2092.

As a response to Gallois, this is dialectically unfruitful. In fact, this response is tantamount to a concession that the argument for presentism from our attitudes towards the past and future fails dismally. To draw metaphysical implications from the attitude asymmetry, the attitudes in question must be free-standing. That is, they must not stem from a prior commitment to presentism. Otherwise, the inference is blocked on pain of circularity.

Ultimately, however, I am uncertain whether the considerations raised by Gallois are decisive. For instance, when Gallois asks us to inspect our intuitions concerning the examples he presents, who comprises his target audience? Philosophers? Physicists? The general public? I suspect that appeal to the intuitions of philosophers and physicists is not going to be satisfactory. Philosophers and physicists may well exhibit the causal attitude asymmetry. But their doing so may be too direct a consequence of their professional theoretical views to be useful here. Perhaps members of the general public would respond to his examples in the ways that Gallois expects. And *perhaps* that lends credibility to his case that there is no capital for the presentist here. But it is hard to know how the general public thinks about time travel cases. It may be that they do think of them simply in terms of causal reversal. But perhaps they do not. Perhaps much of the general population thinks of travel backwards through time as involving a literal reversal, or rolling back, of time. In that case, there would be no reason to think that they exhibit a causal attitude asymmetry rather than a temporal one.

Nevertheless, there are interesting insights to be gleaned from supposing that the general public bears the causal attitude asymmetry. Granting this supposition, there is reason to think that they have not always had the causal attitude asymmetry and that formerly, they had the temporal attitude asymmetry instead. The proliferation of time travel fiction in the late nineteenth and early twentieth centuries is perhaps a result of the fact that a new conception of time, the tenseless view, was in the air.[13] Although presentism is most likely compatible with time travel, the possibility of travel to the past and future does not occur to us as readily when

13. See Bigelow (1996) for references on the history of time travel fiction.

we think in presentist terms as it does when we think of the past, present and future as being ontologically on a par. This fact at least partially explains the absence of time travel stories before the late nineteenth century. Eventually, the notion of time travel entered public consciousness, and ultimately, the general population was 'infected' with the causal attitude asymmetry. This speculation is interesting because in the eighteenth century, say, we had the temporal attitude asymmetry.[14] These considerations highlight the fact that our attitudes can change. Focusing on this fact yields some interesting consequences.

Even if Gallois is wrong and we do have the temporal attitude asymmetry (and have had all along), it could be the case that we come to lose that attitude asymmetry, or at least, those aspects of it which seem to conflict with the tenseless theory of time. And we could come to lose the asymmetry in ways that do not presuppose that we have a metaphysical picture of time antecedently in mind.

4.5 THE CONTINGENCY OF TROUBLESOME TEMPORAL ATTITUDE ASYMMETRIES

Assume that we now have the temporal attitude asymmetry, and consider the following scenario. Here is a tale of the future. The forces of globalism lead to a world government in 2050. The new government is an oligarchy comprising the heads of leading multi-national companies and organisations. By 2100, a series of international incidents result in the world falling into the hands of the evil despot, D.E. Tenser. Tenser had made his fortune and gained his influence as the chairman of Global University. Early in his career he argued vigorously for the tenseless theory of time, while developing a vicious and maniacal hatred for tensed views of time and their proponents. He had always felt particularly antithetical toward arguments for tensed views of time which traded on the temporal attitude asymmetry. One of his first edicts upon gaining power is to expunge from the world 'the

14. This speculation raises an interesting possibility. Perhaps the influx of time travel stories did not result in the replacement of the temporal attitude asymmetry by the causal one. In a way, it would be neatest to suggest that one type of attitude asymmetry was replaced wholesale by another. But perhaps this is not the case. Perhaps what is true is that the general population has some sort of mixture of the two. In normal contexts, we exhibit the temporal attitude asymmetry, but in 'deviant' cases of time travel featuring backwards causation, we exhibit the causal attitude asymmetry. If this were the case, then it might be argued that Gallois' argument fails. The causal attitude asymmetry appears only in very specialised circumstances, and so the temporal attitude asymmetry still carries the most weight.

stench of Prior'. All known copies of A.N. Prior's work are destroyed. Soon after, Prior is graced with the posthumous title, 'Betrayer of Humanity', while known sympathisers are hunted down.

Tenser and his minions toil feverishly on a daring project of unprecedented scope. His scientists set to work, and soon it is decreed that the human genome is to be modified in order to remove the temporal attitude asymmetry. It pleases Tenser to make the adjustments as minimal as possible. He does not remove the temporal attitude asymmetry entirely, but excises only those aspects that cannot be grounded in a tenseless principle such as (P), mentioned earlier. Seventy years later, there is virtually no one alive with the full-blown temporal attitude asymmetry intact.

Eventually, the world rights itself somewhat. A more pleasant government is installed. Yet, the general population does not grieve the loss of those aspects of the temporal attitude asymmetry which were removed as the result of Tenser's edict. No one feels the pull of the temporal attitude asymmetry argument, though some people regret the lack of connection with the past, and their inability to empathise fully with their predecessors, who possessed the full-blown attitude asymmetry.

What does this tell us about the attitude asymmetry argument against tenseless views of time? I think it at least suggests that there is something wrong with the argument. First, consider whether the people who have had the basis for the temporal attitude asymmetry removed from their genome ought to think that the temporal asymmetry argument still carries weight. Ought these people think that because their predecessors had the attitude asymmetry the inference to presentism still holds good, even though no one now has the full-blown temporal attitude asymmetry? This view is defensible only if the attitudes held by people prior to the genetic modification are somehow more appropriate than the attitudes held afterwards. But in what sense can it be said that the attitudes held by the pre-modifieds are more appropriate than those held by the modifieds? In terms of their faculties, the modifieds have the same access to the world as the pre-modifieds. They just have different attitudes toward certain circumstances. I suggest that the only ways of spelling out what would make the attitudes of the pre-modifieds more appropriate involve tacit appeal to presentism.

So the modifieds ought not think that there is any argument that they should accept from attitudes to presentism. Now, let's look back in time a little and consider what a philosopher who, at t, is told of Tenser's intentions regarding the human genome ought to think about the attitude asymmetry argument. At t, the philosopher knows only of Tenser's intention. Nothing has been changed yet; the

philosopher himself manifests the temporal attitude asymmetry. However, the philosopher ought to conclude that there is no good reason to think that there is a cogent argument from the attitude asymmetry to presentism. The philosopher can reason in just the way I reasoned in the previous paragraph. There is no non-question-begging reason to think that the attitudes which will be held by the modifieds are less appropriate than those attitudes which the philosopher holds. Thus, the philosopher ought to conclude that the temporal attitude asymmetry doesn't bear any metaphysical weight.

The final step in the argument is to note that the mere possibility of altering the human genome in such a way as to remove those aspects of the temporal attitude asymmetry that could not be grounded tenselessly is significant; significant enough to show that the attitude asymmetry argument is flawed. For all we know, the scenario I have just described, or something similar, could describe what will happen in the actual world. Thus, we can say that there is no non-question-begging reason to think that certain *possible* attitudes (namely, the attitudes that the modifieds would hold if they were actual) are less appropriate than those attitudes which we actually hold.

The argument I have presented is in some ways similar to the faculty augmentation approach. However, it has the advantage of involving no changes to our faculties, since it involves the removal only of those aspects of the temporal attitude asymmetry that cannot be grounded in a tenseless principle like (P). Thus, it does not require us to be capable of coherently describing some sort of supercreature and to be capable of knowing whether or not it would exhibit the temporal attitude asymmetry. I think that the argument succeeds in showing that there is something wrong with drawing metaphysical conclusions about time from the temporal attitude asymmetry. But the argument is not entirely satisfying because it still leaves us wondering what exactly goes wrong with the asymmetry argument. Next, I will present one further reason for thinking that there is something wrong with the attitude asymmetry argument. And then, I will suggest where I think the problems with the argument are to be found.

4.6 CLOSED TIME

The challenge posed for the tenseless theorist by the attitude asymmetry argument can be simplified. And once it has been simplified, a further difficulty emerges for the temporal attitude asymmetry argument. The kind of tensed justification often given for our asymmetrical attitudes to the past and the future suggests, for

example, that the reason we are justified in being more concerned about future harms than present ones is that past harms have moved out of reality and are receding 'further and further away' from us. And on the other hand, future harms are approaching 'ever closer'. This sort of language suggests that a tensed justification is needed, not only for our different attitudes toward past and future harms, but also for our different attitudes toward recently past and distantly past harms, and towards slightly future and distantly future harms. I will now urge that this suggestion is mistaken.

Consider the presentist view of time. That view on its own gives us no reason whatsoever to prefer past harms to be distantly past. Nor does it give us reason to prefer future harms to be distantly future. All harms that have passed out of existence are ontologically on a par. How recently a certain harm passed out of existence is irrelevant to its ontological status. It was, but is no longer, a harm of ours. A similar point can be made with respect to future harms. All harms that will come into existence have the same ontological status, regardless of how soon they will come to be. Regardless of how soon a future pain is to come into existence, it will be a pain of ours. Eventually we will have to face it, no matter how long it takes to come into existence.

Now, generally speaking, we do tend to prefer harms to be distantly past rather than recently past, and to be distantly future rather than almost upon us.[15] To the extent that these preferences are to be justified, we must look towards justifications concerning our lifetime as a whole; justifications that serve the sentiments expressed in a principle like (P). And these sorts of justification are, of course, equally available to tensed and tenseless theorist alike. For example, suppose you are twenty-five years old and are told that you are going to suffer 2 years of debilitation at some time in the future. You are asked whether you would prefer this two years to begin next year, or to begin when you are quite old. You might reason that it is better to experience the debilitation when you are old and already somewhat infirm rather than while you are still young. If you experience the debilitation while you are young, then it will affect your capacity for enjoyment and your ability to execute your projects much more than it would do when you are old. So, in terms of satisfying (P), you might prefer the debilitation to occur when you are elderly. On the other hand, you might find some reason in accordance

15. We might wonder if this means that presentists have their own 'Thank Goodness' problem to deal with. Why, for example, is it appropriate for you to feel relief just after a painful experience has ceased, but inappropriate for you to feel relief two years after its cessation?

with (P) for preferring the pain to occur while you are young.

Having urged that the argument in favour of presentism from temporal attitude asymmetries can trade only on the differences in our attitudes to certain experiences being simply past versus their being simply future, a further difficulty arises for that argument. Suppose we introduce a minimal change to the standard presentist view of time. Standardly, presentists think of time as being topologically open. But there is nothing about presentism that requires things to be thus. Presentism is compatible with closed temporal structures.[16] I have argued that presentism does not justify the different attitudes we tend to have towards distantly past and recently past experiences. Nor, I have argued, does presentism justify our differing attitudes towards distantly future and soon-to-be-present experiences. Thus, all that presentists are left with in order to press their metaphysical claims are our differing attitudes towards the past *simpliciter* and the future *simpliciter*. Now, if time were topologically closed, then past experiences would also be future, future experiences would also be past, and present experiences would also be past and future.

This is interesting, because it shows that the attitude asymmetry cannot be said to confirm presentism *simpliciter*. Clearly, it does not confirm presentist time with a closed topology, since presentism with a closed topology does not justify the attitude asymmetry. Suppose I am pleased that my most recent dental treatment is past, but disturbed that my next dental treatment is in the future. If we inhabit a presentist world with a closed temporal topology then, really, the metaphysical situation with respect to time gives me no reason at all for my differing attitudes. My most recent dental treatment is past, but it is also future. And my next dental treatment is certainly lies in the future, but it is in the past as well.

Thus, the presentist who wants to obtain metaphysical capital from the attitude asymmetry must claim *not only* that the attitude asymmetry confirms presentism, but that it bears on time's topology; the attitude asymmetry gives us reason to think that time's topology is not closed.

What philosophical import does this have? At the very least, it weakens somewhat the argument from the attitude asymmetry to presentism, since the attitude asymmetry argument has more weight to bear than was previously noticed. If the argument is to work, it must support a stronger thesis (presentism *and* a closed topology) rather than the weaker one (presentism alone). My own suspicion is that things are worse than this. I suspect that it highlights the poverty of the atti-

16. Certainly Prior thought so. See Prior (1967), pp. 63–66.

tude asymmetry argument. What we are being asked to accept is that we can make progress on questions about the topological structure of time, questions usually thought to fall under the jurisdiction of cosmology, by thinking about our attitudes toward past and future experiences.

4.7 ATTITUDES

In the previous two sections I made a case for the conclusion that something is wrong with the argument for presentism from temporal attitude asymmetries. Next, I will attempt to diagnose the shortcomings of this argument. We start by thinking about attitudes in general. Usually, we have attitudes toward certain things because of our beliefs and desires. For example, suppose I live in a jungle where tigers roam. It is certainly true that I fear tigers. But I do not infer that tigers are dangerous because I fear them. Rather, I fear them because I believe that they are dangerous, and I wish to avoid harm. For the most part, when we have an intentional attitude, that attitude is based on certain beliefs and desires of ours.

Could there be a situation where I fear a tiger without antecedently believing that tigers are dangerous, and where I am justified in inferring that tigers are dangerous because of my fear? Suppose I am in the wild and I confront a tiger for the first time. I am deeply afraid. Suppose also that I have never seen or heard of any dangerous creatures, and wouldn't consciously know how to recognise one. Would I be justified to infer from my fear that the tiger is dangerous? Perhaps, but only if I had good independent reasons to think that my fear of the tiger is no coincidence. I would need good reasons to think that my fear tracks the world in the right way. For instance, I might have good independent reasons to think that I have been hardwired so that when I am in the proximity of certain dangerous things the fear response is produced, *and* that the fear response is rarely produced when I am in the presence of benign things. My being hardwired to respond to tigers in this way is a causal consequence of tigers being dangerous, so my fear response tracks the world in the right sort of way.

Here is another example that is a little closer to home. You have an acquaintance of whom you feel wary. You cannot locate a source for this attitude, and yet you believe it justifies you in being careful around this person. Does the attitude justify the belief that the likelihood of this person doing something underhand is high enough for it to be in your interests to be especially careful around the person? Again, the attitude justifies the belief only if you have reason to think that the attitude tracks the world in the right way. The inference from attitude to belief is

justified only if you have good reason to think that there is something about the person which is subliminally, and in a reliable way, triggering your wariness (and also that you do not too often get unfounded feelings of wariness towards people).

What do we learn from these examples? First, we learn that it is quite rare to be in a position to form rational beliefs about *G*s from our attitudes toward *G*s. And of those cases where attitudes do license rational belief formation, rational auxiliary beliefs must be lurking in the background. Generally speaking, they must be rational beliefs that spell out an appropriate relationship between *G*s and the production of our attitudes when in the proximity of *G*s.

Let's look at a specific case that is relevant to the topic of interest. Suppose you have asymmetric attitudes toward a pair of qualitatively identical pains, *P* and *F*. *P* is past and *F* is future. You are not particularly concerned about *P*, but you are a little distressed about *F*. The inference to presentism comes from such pairs of attitudes. First, I will schematise the case involving wariness. Then I will schematise the case involving *P* and *F* so that we can compare the two.

Here is a schematisation of the case involving wariness:

> NEW JUSTIFIED BELIEF: Person *M* is untrustworthy.
>
> ATTITUDE: You feel wary of *M*.
>
> AUXILIARY JUSTIFIED BELIEF: Your attitudes of wariness indicate reliably whether people are trustworthy.

And here is a schematisation of the case involving pains:

> NEW JUSTIFIED BELIEFS: It was (and is no longer) the case that you are experiencing Pain *P*. It will be (but is not yet) the case that you are experiencing Pain *F*.
>
> ATTITUDES: You feel a little distressed about Pain *F*. You are relatively unconcerned about Pain *P*.
>
> AUXILIARY JUSTIFIED BELIEF/S: ???

Note that the tensed vocabulary of the 'NEW JUSTIFIED BELIEFS' needs to be read as irreducible presentist language; not as language which is neutral between presentism and the tenseless theory. Now, the question here is what auxiliary justified beliefs will allow us to pass from our attitudes towards *P* and *F* to the new justified beliefs? This is a really difficult question to answer. I must confess I have very

little idea what could fill the gap here. The pressing concern is one of circularity. We want something that, when conjoined with the attitudes, licenses the so-called new justified beliefs. Obviously, anything that presupposes presentism will do the trick. But of course, it will do the trick too easily. Try as I might, I am unable to think of any insertion that is not going to trivialise the inference to presentism.

Perhaps the presentist might claim that our temporal attitude asymmetries are a special case. We are justified in inferring presentism immediately from our differential attitudes towards past and future experiences. There is no need for further justified beliefs to be lurking in the background. However, this looks particularly implausible. Provided that the attitudes themselves are not set out in terms that presuppose presentism, there seems to be no immediate inference to presentism. The only way that our attitudes could directly confirm presentism is if what is going on is not in fact inference, but perceptual acquaintance. On this view, we could recognise perceptually certain tensed facts (such as those mentioned in 'NEW JUSTIFIED BELIEFS'). I doubt that we can do any such thing; if we could, then I imagine there would be a lot more presentists than there are. But certainly, if we could perceptually recognise tensed facts, then the attitude asymmetry argument would be otiose.

4.8 CONCLUSION

Arguments for presentism from asymmetries in our temporal attitudes fail. And they fail even if there are exemplifications of temporal attitude asymmetries that we would like to think are rational, but which the tenseless theorist cannot count as rational. I have advanced two reasons for thinking that the argument from temporal attitude asymmetries goes wrong somewhere, and discussed some others. Finally, I have explained why the attitude asymmetry argument flounders.

Part II

Persistence and Precision

5

The Endurance/Perdurance Distinction

The focus now shifts from the metaphysics of passage to the metaphysics of persistence and related issues. The two main competing views about the metaphysics of persistence are those of endurance and perdurance. It has come to light recently that there are difficulties with the ways that these two views are commonly distinguished from each other. The purpose of this chapter is to furnish a new account of the endurance/perdurance distinction.

It is now usual to say that something *persists* iff it is located at more than one time. This neutral term gives us a means of framing the question, how does a thing persist? One answer is to say that a thing's persistence involves its *perduring*. What is it for a thing to perdure? Generally, it has been held that perdurance involves persisting in virtue of having temporal, as well as spatial, parts. And what is it for a thing to endure? Often, this is put in terms of a thing's being wholly present at all times at which it exists. Again, sometimes the endurance/perdurance distinction is put in terms of the difference between strict identity and a looser unity relation sometimes labelled 'genidentity'. On this understanding, a persisting thing endures iff for any time at which the persisting thing is located, there is something which is identical to that thing. A persisting thing perdures iff for any pair of times at which it is located, it has different temporal parts at those times which stand in the genidentity relation to each other.

Hopefully the above gives the reader some sort of feeling for what the endurance/perdurance distinction might look like. Unfortunately, none of the suggestions above seem adequate to capture the distinction. For instance, the idea that a thing's endurance can be captured in terms of being its being 'wholly present at all times at which it is located' has been shown by Theodore Sider (1997) to be problematic. He says that for an endurantist parthood is an irreducibly temporally relative matter. Contrast the situation for endurance with the situation for

perdurance. We can state without temporal indexing what parts a perduring thing has. What parts a perduring thing has, it has *simpliciter*. These parts have the *further* property of being located at various times. On the other hand, we cannot state what parts an enduring thing has without mentioning the times relative to which it has those parts.

But if this is so, what can it mean to say that an enduring thing is wholly present at a time? The intended idea was, perhaps, to say that for any time at which an enduring thing is located, all of its parts are located at that time. However, once we admit that, for the endurantist, parthood at a time is irreducibly temporally relative, we realise that there is a blank to fill in: being wholly present at a time is to have all of its parts . . . when??? . . . located at that time? Since enduring things don't have parts *simpliciter*, a statement like '*a* is a part of enduring thing *b*' must always be qualified with a time reference. The problem is, how can we fill in the blank while charting a course between triviality (all of its parts relative to that time are located at that time) and absurdity (all of its parts relative to some other time are located at that time) (Sider, 1997, p. 209)?

What of the idea that we can use strict identity to capture endurance? Trenton Merricks brings to light a problem with this approach (1999, p. 427). It is not only the endurantist who holds that for any time at which a persisting thing is located, there is something that is identical to the persisting thing. The perdurantist also assents to this statement. For any time at which a part of a perduring thing is located, the perdurantist will say that the perduring thing is located at that time. Thus, for any perduring thing that has a part at t, the perduring thing is located at t. Naturally, it follows from this that there is something located at t which is identical to the perduring thing. How can we alter the 'strict identity' attempt to account for endurance so that it does not also subsume perduring things? Only, it seems, by adding a proviso to the effect that enduring things are *wholly present* at every time at which they are located. Thus, the account of endurance now becomes: a persisting thing endures iff for any time at which the persisting thing is wholly located, there is something that is identical to that thing. In view of the problems associated with using 'wholly present' in an account of endurance, we don't seem to have advanced very far.

At this point, it is important to recognise that understanding endurance in terms of enduring things being wholly present at each time is unproblematic when taken in the context of presentism.[1] This is because presentists do not hold that

1. The core thesis of presentism is that there exist no temporal entities which are past or future.

talk of things having parts at times involves irreducible relationships to times. For the presentist endurantist, those parts that a thing now has, it has *simpliciter*. Yesterday, it may have had different parts *simpliciter*, and likewise for tomorrow. It *may* be possible to introduce the notion of a thing having parts at a time, but only in a derivative sense. So, for instance, we may be able to think of times as constructions out of propositions, as structured universals, or something like that, and say that x has y as a part at t iff t represents x as having y *simpliciter*.[2] Sider's argument against our understanding a thing's endurance in terms of its being wholly present whenever it exists is fuelled by the concern that irreducible mereological relationships between things and times might be required by endurance. Presentism, then, offers us a counterinstance to Sider's argument.[3]

Does this mean that we have rehabilitated the 'wholly present' understanding of endurance? Not yet. Some people (myself included) believe that endurance is compatible not only with presentism, but also with the tenseless view of time, according to which the past, present and future are all equally real and time's passing consists in nothing more than the obtaining of temporal precedence relations. What should endurantists who favour tenseless time say about whether parthood at a time is irreducibly temporally relative? Those who are convinced mereological essentialists can maintain that all parthood is parthood *simpliciter*, and can thus remain happy with the 'wholly present' understanding of endurance. Those who think otherwise (and I take it that this includes most people who believe that endurance is consistent with the tenseless theory) *are* committed to viewing parthood at a time as an irreducibly temporally relative matter, as I will now explain.[4]

Consider a cart that loses a wheel at some time during its lifetime. According to the tenseless theory, all stages of the cart's history exist, and so the cart's having four wheels and its having three wheels are facts about the cart that are of equal ontological standing. But we can't just say that the cart has four wheels and that it has three wheels, since that would involve a blatant contradiction. So we must say that the cart has four wheels relative to some times and three wheels relative to others. In other words, the temporal indexing of parthood cannot be eliminated.

Thus, very few people who think that endurance is consistent with the tenseless view of time can be satisfied with the 'wholly present' understanding as a general account of endurance. And given this fact, I intend to proceed by looking for an account of the endurance/perdurance distinction that separates endurance and perdurance with tenseless time in mind. So, for the time being I will largely ignore complications related to presentism. However, after the account has been produced, I will give its presentist analogue. In so doing, I intend to produce a general account of the distinction.[5]

How, then, should we proceed? A useful entry-point involves attending to the

To illustrate this claim, anyone currently reading this chapter exists, whereas no one who is dead exists and no one who has yet to be born exists.

2. Note the analogy with actualism about modality here. According to actualists, a certain piece of glass may have been spherical *simpliciter*, although it is planar *simpliciter*. Talk of having properties relative to different possible worlds can be introduced, but only in a derivative sense: x has property y relative to w iff w represents x as having y *simpliciter*.

3. Some might suspect that if the 'wholly present' account of endurance works in the context of presentism, it will work for other tensed views of time. The thought is that it is not presentism which is doing the relevant work here, but 'taking tense seriously'. Non-presentist tensed views make no distinction in terms of existence between the past and the present. Some of these views also ascribe equal reality to the future. These views can be said to 'take tense seriously' because they hold that the passage of time involves more than just temporal subsequence relations. For instance, some of these views interpret passage in terms of things and events changing with respect to monadic properties of pastness, presentness and futurity. I suspect that variations of Sider's problem for the 'wholly present' account of endurance are going to arise for these kinds of views. If I am right, it is the existence of multiple times along with their contents/constituents which creates the trouble. Consider the case of the cart discussed on p. 78 of this chapter. The pressure to relativise parthood to times comes from the facts that the cart's being three wheeled and its being four-wheeled both exist and seem on the face of things, inconsistent. The problem does not go away just by noting that the cart's being four-wheeled has some *additional* property (e.g. monadic pastness) that the cart's being three-wheeled lacks.

4. This is a slight oversimplification. Just because you (*qua* endurantist tenseless theorist) think that parthood at a time *is* irreducibly temporally relative, you need not think that it *must* be irreducibly temporally relative. Perhaps you admit the possibility of worlds where there are enduring things and it is an accidental property of each of these things that they do not undergo mereological change. Or perhaps you don't believe in mereological essentialism as an all-embracing doctrine, yet you countenance the possibility of worlds containing only enduring things that have all of their parts essentially. So, perhaps you might say that parthood at a time is only accidentally temporally irreducible. Thus, you might say that parthood is actually a triadic relation, although it could have been a dyadic one. Or, if you think that an n-adic property or relation is necessarily n-adic, then what you could say is this: parthood is a triadic relation, and there is another relation, parthood*, which is very much like parthood, but is dyadic. And the second relation, not the first, is the one that obtains in the worlds we just considered. The accommodation of this view would lead to some complications in the formulation of endurance, but no real difficulties. Specifically, it would require room to be made not only for the property of enduring (which involves parthood), but also for a similar property, endurance* (which involves parthood*). So, for the sake of a simpler exposition, I will continue as if parthood for the endurantist tenseless theorist can be either dyadic or triadic.

5. Though see note 25 for some qualifications.

notion of a temporal part. It is useful, first, because the notion of temporal parthood has long been associated with the notion of perdurance. And as I explain in 5.4, one of the ways that I think we can make out the endurance/perdurance distinction requires the notion of temporal parthood, though perhaps not quite in a way that would be expected.

5.1 TEMPORAL PARTHOOD

What is a temporal part? Those who believe in temporal parts take them to be among the parts of persisting things. As such, they are located at instants and across intervals of time. Let's start by focusing on instantaneous temporal parts. Plausibly:

> *x* is an instantaneous temporal part located at *t* of *y* iff (i) *x* is a part of *y*, (ii) *x* is located only at *t*, and (iii) *x* overlaps every spatial part of *y* that is located at *t*.

This formulation captures the idea that a temporal part of *y* is made up of all *y*'s spatial parts at *t*, and suffices to give us a pretty good idea of what a temporal part is. The only problem is the restriction to spatial parts. In order to be more accurate we ought to give a purely mereological definition; we don't want to automatically rule out the possibility of there being persisting things that have temporal parts without having spatial location. So we drop the reference to *spatial* parts:

> (TP): *x* is an instantaneous temporal part located at *t* of *y* iff (i) *x* is a part of *y*, (ii) *x* is located only at *t*, and (iii) *x* overlaps every part of *y* that is located at *t*.

This account is easily generalised to cover non-instantaneous temporal parts:

> *x* is a temporal part (extending through the temporal interval *T*) of *y* iff (i) *x* is a part of *y*, (ii) *x* is located only throughout *T*, and (iii) for any time in *T*, *x* overlaps every part of *y* that is located at that time.

The above account of temporal parthood is Theodore Sider's (1997, p. 206). I would take this account to be a satisfactory resting point, but for methodological reasons, Sider chiefly employs a different formulation. Since I plan to use the version of Sider's account of temporal parthood that I have just outlined, I ought to defend this decision. This is my next task.

5.2 SIDER'S NEUTRAL ACCOUNTS OF TEMPORAL PARTHOOD AND PARTHOOD AT A TIME

Recall that Sider thinks (correctly, in my view) that perdurantists ultimately reduce talk about parthood at a time to facts about parthood *simpliciter*. However, references to times are not entirely eliminated, but are shifted from qualifying parthood to qualifying the locations of a perduring thing's parts.[6] Perdurantists can, if they choose, use the idiom of parthood at a time, since they have a ready way of translating such talk into canonical vocabulary. Sider offers the following translation:

> Necessarily, *x* is a part of *y* at *t* iff *x* and *y* are each located at *t*, and *x*'s temporal part located at *t* is part of *y*'s temporal part located at *t*.[7]
>
> (1997, p. 200)

Moreover, Sider also thinks that perdurantists may also employ a temporally indexed notion of temporal parthood, namely, temporal parthood at a time. He offers us an account of temporal parthood at a time, which is defined in terms of parthood at a time and overlap at a time:

> *x* is an (instantaneous) temporal part of *y* at *t* iff (i) *x* is a part of *y* at *t*, (ii) *x* exists at, but only at, *t*, and (iii) *x* overlaps at *t* everything that is part of *y* at *t*.
>
> (1997, p. 205)

We can, if we wish, pass from the neutral to the atemporal reading of temporal parthood by substituting parthood and overlap *simpliciter* for their temporally indexed relatives.

When speaking of perdurance and parthood, Sider mostly employs temporally indexed notions of parthood, and temporal parthood. Why do this if perdurance presupposes parthood and temporal parthood *simpliciter*? As far as I can

6. In this way, the perdurantist account of parthood at a time differs from the presentist account, where all reference to times is eliminated.

7. The translation looks a little overcomplicated. Why not the following? Necessarily, *x* is a part of *y* at *t* iff *x* is a part of *y* and *x* is located at *t*. The simpler understanding may also have two further advantages. First, it is consistent with the example (discussed in 5.3) of Merricks' organism, since it makes no reference to temporal parts. Second, in order to preserve full generality by covering cases of things that are located at only one instant, Sider's translation must rely on the notion of *improper* temporal parthood being a legitimate one. I harbour some reservations about the legitimacy of this notion (see 5.6).

see there are two reasons. Each reason pertains to a different task that Sider sets for himself in 'Four Dimensionalism'. The first task is to see what can be made of the endurance/perdurance distinction. The second task is to provide an argument against endurance based on considerations about vagueness (1997, pp. 224–9). He is certainly warranted in employing parthood at a time (without committing to an endurantist or perdurantist reading of this notion) to discharge his argument against endurance. This argument makes use of the notion of parthood at a time, and so it is of course important that he does not assume at the outset of that argument an understanding of parthood at a time which prejudges the issue in favour of perdurance.

How do things stand with respect to the first task? Sider offers the following account of perdurance in terms of parthood at a time:

> *x* perdures iff *x* persists, and for any two disjoint sets of times, T_1 and T_2 whose union is the timespan of *x*, there is a *y* and *z* such that (i) *x* and *y* have the same parts at every time in T_1, (ii) *x* and *z* have the same parts at every time in T_2, (iii) the timespan of *y* is T_1 and the timespan of *z* is T_2.[8] (1997, p. 204)

He then uses temporal parthood at a time to confirm that his account says what perdurantists want to say; he claims that his account of perdurance entails that perduring things have a temporal part at every time at which they exist (1997, pp. 205–6).

Sider's reason for constructing an account of perdurance in terms of parthood at a time stems from his view that parthood is irreducibly temporally relative for the endurantist but not for the perdurantist. He writes:

> . . . it is desirable to state opposing views in a neutral language, so that the opponents may agree on the identity of the proposition under dispute. Moreover, we do not want to hide [perdurance] in the very language we use to raise the question of its truth. (1997, p. 202)

He further remarks that endurantists and perdurantists will disagree over how to treat parthood at a time (and hence, temporal parthood), but will agree that the notion is intelligible, and thus, that it affords a neutral framework within which the endurance/perdurance distinction can be framed (1997, p. 202).

8. Sider actually gives a *global* account of perdurance, that is, an account of what it would be for the world to be a world of perdurers (called the Thesis of Temporal Locality). However, I have localised his account so that it focuses on what it is for a particular thing to be a perdurer.

Even if it were true that endurance and perdurance have different implications for how parthood is construed, these considerations appear unconvincing. First, it is not clear that using a neutral view of parthood in our accounts of endurance and perdurance does help opponents to agree about the content of the distinction. If the worry was that endurantists will assume an endurantist understanding of parthood when characterising perdurance, and that perdurantists will assume a perdurantist understanding of parthood when characterising endurance, then the move to a neutral language does not seem to advance us very far. This is because any perdurantists, for example, who would have insisted upon mischaracterising endurance by using an inappropriate sense of parthood, will make sure that they always parse the neutral language in their own terms. Second, by making it explicit in an *account* of perdurance that parthood is to be treated as parthood *simpliciter*, we do not thereby assume that parthood is just parthood *simpliciter*. So even though parthood *simpliciter* might appear in our account of perdurance, that does not mean that when we come to discuss whether perdurance is the right view of persistence to hold, we must assume that parthood is just parthood *simpliciter*; only at the point when we come to *argue* for endurance or perdurance does a neutral reading of parthood becomes important.

When stating opposing views, such as perdurance and endurance, we ought to have as much 'up front' in the statement of the views as possible. Where opposing views have different metaphysical primitives, this ought to be made explicit. Non-primitive terms may be used in the statements of the views, but only where it is clear that the analysis of the non-primitive terms does not differ between the views in question. This means that if perdurance were to be understood (partly) in terms of a primitive notion of parthood *simpliciter*, then there would be no temporal indexing of parthood in the account of perdurance. Similarly, if endurance were to be understood (partly) in terms of irreducibly temporally relative parthood, then there would be temporal indexing in the account of endurance.

In any case, since Sider's motivation for the neutral reading of parthood at a time was based on endurance and perdurance each embodying different understandings of parthood at a time, and since it appears that endurance is consistent with the correct notion being parthood *simpliciter*, it might be thought that Sider's motivation has been undercut. However, I suspect that this realisation ought to have a different effect; it actually introduces a new reason for making some use of a neutral account of parthood at a time. A neutral reading is not required in the account of perdurance, but it might be useful in an account of endurance that makes use of the notion of parthood. An endurantist's underlying view of time

and stance on the issue of mereological essentialism may influence whether parthood is held to be fundamentally temporally relative or not. So a neutral reading of parthood at a time may be useful if we desire to frame an account of endurance that does not smuggle aboard assumptions about time or mereological change.

Where does this leave us with respect to temporal parthood? If the having of temporal parts is to make a positive contribution to the formulation of the endurance/perdurance distinction it will [illegible] in the framing of perdurance. There, the appropriate notion is temporal parthood *simpliciter*, since temporal parthood *simpliciter* is defined in terms of the appropriate notion of parthood for perdurance, namely, parthood *simpliciter*. In contrast, any role that temporal parts might have in an account of endurance will be a purely *negative* role. That is, endurantists will want to deny that enduring things have temporal parts as temporal parts are construed in the framing of perdurance. And so, again, the proper understanding of temporal parthood is temporal parthood *simpliciter*.

5.3 UNDERSTANDING PERDURANCE: SOME PROPOSALS

Now that we have an understanding of temporal parthood, namely, (TP) from 5.1, we can use this notion to give a simple account of endurance/perdurance. An entity perdures iff it has temporal parts. And an entity endures iff it persists and has no temporal parts.

This simple account is a good starting point. Regrettably, however, the component that deals with perdurance is flawed because it does not allow us to distinguish between perduring things and things which are both perdurers and endurers.[9] We should not, I think, in our formulation of the endurance/perdurance distinction assume that there could not be things that have at least some enduring temporal parts. And if the tenseless theory of time were right, composition were unrestricted, and ordinary things persisted by enduring, endurer/perdurers might not be far away. Under these conditions, there would be endurer/perdurers like Cromwell–Disraeli–Blair (the mereological sum of the temporally non-overlapping enduring persons Cromwell, Disraeli and Blair). And unfortunately, the above account lumps perdurers and endurer/perdurers together.

Perhaps we could try instead Theodore Sider's account of perdurance, set up without the neutral reading of parthood:

9. The component that deals with endurance is also flawed because it counts Merricks' organism (discussed later in this section) as an endurer.

> x perdures iff x persists, and for any two disjoint sets of times, T_1 and T_2 whose union is the timespan of x, there is a y and z such that (i) x is the fusion of y and z, (ii) the timespan of y is T_1 and the timespan of z is T_2, and (iii) $x \neq y \neq z$.[10] (1997, p. 206)

Although Sider's account makes no mention of temporal parts, he claims that it entails something about temporal parts. He claims that x's satisfying the *definiens* of his account entails that x has a temporal part located at each instant encompassed by x's timespan.[11]

Note that Sider's account and this entailment are not equivalent. In order to arrive at something equivalent to Sider's account, we would need to augment the entailment with the following assumptions that are built into his account: (a) unrestricted composition, and (b) the assumption that any way of partitioning x's timespan into two sets reveals two things which are parts of x. These assumptions ought not to be built into an account of perdurance if at all possible. Building (a) into an account of perdurance automatically rules out the possibility of perduring things whose only temporal parts are instantaneous ones. This is because (a) ensures that any pair of instantaneous entities have a merelogical sum. Thus, a persisting thing made up of many instantaneous temporal parts is sure to have many non-instantaneous ones as well. And incorporating (b) automatically rules out the possibility that perduring things have no instantaneous temporal parts, but only smaller and smaller ones tending towards a limit.[12] Perhaps (a) and (b) register necessary truths. Yet, it is certainly contentious whether they do. So maybe the entailment improves on Sider's own account. Let's try it out. Our new account becomes: x perdures iff x has a temporal part located at each instant encompassed by x's timespan.

This account does not presuppose unrestricted composition, nor does it presuppose that perduring things have instantaneous parts, since it does not assume that if something is located at an instant, then it is not also located at other instants. But unfortunately, by avoiding a commitment to instantaneous temporal

10. Clause (iii) is implicit in Sider's account.

11. See his (1997, note 15), where he explains why he thinks that this entailment holds (though see also his note 14 for some qualifications).

12. See Zimmerman (1996, pp. 122–4) for more on this. Admittedly, Sider at one point allows that some people might want to modify his account of perdurance so that it does not require (b) (1997, p. 226).

parts, this account, like the simple account that said a thing perdures in virtue of having no temporal parts, is vulnerable to the objection that it fails to distinguish between perdurers and endurer/perdurers. Endurer/perdurers satisfy this account of perdurance, since it true that an endurer/perdurer has a temporal part located at every instant encompassed by the endurer/perdurer's timespan.

Where should we go from here? Perhaps we could seek to revise this account, but I doubt that it would be profitable to do so. This is because any account of perdurance which entails that perduring things must have temporal parts faces a formidable objection formulated by Trenton Merricks (1999, p. 431). Here is the objection, slightly rephrased from Merricks' original formulation.

Consider a world where every cell is a perduring thing with temporal parts. Next, consider a persisting organism composed entirely of such cells. Further, assume that the organism has no proper parts aside from these cells and their parts. Since the organism is composed entirely of cells with temporal parts, we ought to say that the organism perdures. Unfortunately, the organism itself has no temporal parts. To see this, note that none of the organism's parts satisfy the account of temporal parthood we have considered. Recall that it was a necessary condition of x's being a temporal part of y located at t that x should overlap every spatial part of y that is located at t. For any t during the organism's life, those of its parts that are t-located are temporal parts of the various cells that compose the organism. But these parts do not compose anything. So none of the organism's t-parts satisfy the above necessary condition for temporal parthood. This means that the organism does not perdure according to an account of perdurance given in terms of temporal parthood. Yet, the organism is a perduring entity since it is composed only by perduring cells and their parts. The conclusion to be drawn, then, is that an account of perdurance given in terms of temporal parthood is inadequate.

Merricks does offer those who favour an account of perdurance in terms of temporal parthood an escape route. He suggests that they might weaken the account of perdurance in the following way: '. . . perduring objects either have temporal parts (i.e. parts that are big enough) at each time/interval at which they exist *or* have proper parts that have such temporal parts.' (1999, p. 432.) This amendment allows for the classification of the organism as a perdurer, but we can alter Merricks' example so that the amendment fails. Why not say that neither the organism *nor any of its parts* have temporal parts? Take the organism's cells, for instance. In Merricks' original example, for any t during the organism's timespan, the organism's cells have temporal parts located at t, but (he stipulates) these temporal parts fail to compose anything. Thus, the organism has no temporal parts.

Why not treat the cells in the way that Merricks treats the organism? Each cell has various t-parts, but (we stipulate) none of the cells' t-parts compose anything. Like the organism, each cell is a perduring entity that lacks temporal parts. And we can say the same thing for any of the parts of the organism, no matter how small. Once we make this change to Merricks' example, we can see that it cannot be subdued by weakening the temporal parthood-based account of perdurance.[13]

Given the outlandish nature of Merricks' organism we might wonder whether it is genuinely possible. Is there any motivation for thinking so? Merricks does, in passing, mention a possible motivation for the view that his organism perdures but lacks temporal parts, namely, a distaste for arbitrary undetached parts (1999, p. 431). However, it is unlikely that the arguments which have been marshalled against the doctrine of arbitrary undetached parts in the philosophical literature provide any support for his organism.[14]

13. Here is another means of upholding the spirit of Merricks' example in a way that is immune to the weakening manoeuvre. Suppose that the organism is composed exclusively by mereological atoms, each of which is located at only one instant (and place). The totality of the organism's mereological atoms compose the organism but there is no subclass of that totality whose members compose anything.

14. The principal argument against arbitrary undetached parts can be found in Van Inwagen (1981). Consider the following circumstance. Jerry has two legs (let's not commit on the question of whether his legs would count as arbitrary parts, though Inwagen would say that they do). If Jerry has arbitrary undetached parts, then Jerry has an arbitrary undetached part which consists of the rest of Jerry minus his legs (Jerry minus). In a fit of pique at his 215 centimetre frame, Jerry hacks off his legs with a scimitar. Focus on the moment at which his second essay in dismemberment hits the floor. Jerry is on his way down, too, but exactly what is Jerry? It appears that Jerry is now identical with Jerry-minus. Since identities are necessary, how can it be that Jerry had Jerry-minus as a proper part and is now identical with Jerry-minus? Various answers to this puzzle have been suggested, for example, that identities are not necessary but are in fact temporary; that Jerry is constituted by, but not identical with, his parts; that identity is relative to a sortal. (For more complete inventories of answers that have been suggested, see Rea (1995) and Simons (1987, pp. 117–21).) Inwagen's answer is that we should not believe in arbitrary undetached parts. There never was a Jerry-minus, and so the puzzle disappears.

However, the view that Jerry is a perduring thing with temporal parts actually equips us with another answer to the puzzle. This answer blames the problematic nature of the puzzle on the assumption of endurance, not on the necessity of identity, nor on arbitrary undetached parts, nor on anything else. Jerry has a two-legged temporal part located just before the amputation and a legless temporal part located afterwards. These temporal parts are mereologically disjoint, and are thus non-identical. Moreover, since Jerry is a sum of his temporal parts, there is no pressure to think of him as being identical with two distinct things. Far from falling prey to Inwagen's argument, the temporal parts doctrine actually blunts the argument against arbitrary undetached parts. To think that considerations surrounding arbitrary undetached parts

What other motivation could there be? Consider the set of entities, *E*, whose members compose the organism. Next, consider *R*, a subset of *E*, which differs from *E* only by excluding those entities that are located only at the organism's first instant. And consider *S*, also a subset of *E*, which differs from *E* only by excluding those entities that are located only at the organism's last instant.[15] Do the members of *R* compose something? And do the members of *S* compose something? If we answer positively to both questions, we have to say that the organism has (at least) two temporal parts. And there seems to be a good reason for answering positively. If *R* were to compose something, then that thing would be almost indiscernible from the organism itself. So it is going to be hard to find a believable restriction on composition that would ensure both that the organism exists but that *R* fails to compose anything. The same point applies also to *S*.[16]

However, it may well be that even if we have no motivation for believing that the organism is possible, nevertheless we ought, for the purposes of framing the endurance/perdurance distinction, to proceed as though it is possible. For perhaps all that Merricks requires is the mere *epistemic* possibility of composition being restricted so that the organism doesn't have temporal parts (1999, note 22 is suggestive). If this is right, then we might need something akin to a proof that the organism is impossible before an account of perdurance that rests on the notion of temporal parts could proceed. But proofs are hard to come by. There might well be arguments against denying that there are arbitrary undetached parts. There are indeed arguments for certain views about composition that affirm the existence of arbitrary undetached parts. For instance, there are arguments for unrestricted mereological composition.[17] But however strong we think these arguments are, should we really regard any of them as *proofs*?[18]

could motivate a perdurer to accept that many perduring things, such as Merricks' organism, do not have temporal parts, we should need some further reason for thinking that there are problems with the putative arbitrary undetached parts of putative temporal parts.

15. Here, I am ignoring complications connected with vagueness.

16. The only sort of restriction that comes to mind is one that would make composition an extrinsic matter. Consider *R*. The sort of restriction I have in mind dictates that the members of *R* would have composed something, namely, an organism of the same kind as the organism of which the members of *R* are parts, were it not for the parts that the organism has at its first instant. And the reason that the members of the set whose members compose the organism do actually compose something is that there isn't, for instance, something which is an organism but has the members of that set as proper parts.

17. See Lewis (1986, pp. 212–3), Rea (1998a) and Sider (1997, §3.1).

18. I have a fair measure of sympathy for this line of thought. Indeed, I assume for the rest of the chapter that Merricks is right on this point. But I think this issue is difficult to evaluate, partly because if we are too liberal about what counts as epistemically possible, it may well become impossible to provide a useful account of anything much at all.

According to Merricks' preferred way of understanding perdurance, it turns out that endurance entails presentism (1999, p. 424). Are we really forced to adopt this position? Fortunately, (since I prefer to juxtapose endurance with tenseless time), even if we grant that Merricks has refuted the idea that perdurance requires the having of temporal parts, we can still avoid his understanding of the endurance/perdurance distinction.

5.4 DRAWING THE DISTINCTION

To secure an adequate understanding of endurance/perdurance, we need very little in addition to the material we have thus far covered. On the supposition that Merricks' organism is possible, an interesting fact emerges that we can use to underwrite an account of the endurance/perdurance distinction. If an enduring thing is located at a certain time, then necessarily there is a set whose members compose that thing at that time. But in the light of Merricks' organism, there is no corresponding fact that obtains for perduring things. His organism perdures, yet for any time, its parts located at that time compose nothing.[19] We can use this disanalogy to frame a general account of endurance/perdurance. Here is the distinction:

(E): *x* endures iff (a) *x* persists, (b) *x* has no temporal parts, and (c) for any time at which *x* is located, there is a set whose members compose *x* at that time.[20,21]

19. Nothing controversial is assumed here about composition, such as whether composition and identity are distinct.

20. A neutral account of composition is assumed in (c) of (E). It is neutral between composition *simpliciter*, which is relevant for the sorts of worlds I discuss in note 2, and an irreducible notion of composition at a time, which is relevant for other worlds at which time is tenseless.

21. Armed with the notion of temporal parthood, we could provide an alternative to (E) by resurrecting the strict identity approach. *x* endures iff *x* persists, has no temporal parts, and for any t and t_1 in *x*'s timespan:

    (a) there is a *y* such that *y* is located at t and $x=y$, and

    (b) there is a *z* such that *z* is located at t_1 and $x=z$.

    This account is actually very close to (E). It incorporates both (a) and (b) of (E), and clearly entails (c). Notice that there is no way of resurrecting the genidentity characterisation of perdurance, since this involved characterising perdurance in terms of the genidentity relation's holding between a thing's temporal parts. As such, any account of perdurance based on genidentity

(P): x perdures iff (a) there is a y and z such that y and z are parts of x, y and z have temporal location, and there is no t such that y and z are both located at t, and (b) x has no temporal parts that endure.

(EP): x endures/perdures iff x has at least one enduring temporal part.[22,23]

A straightforward account of endurance/perdurance put in terms of perduring things having temporal parts and enduring things lacking them falls foul of Merricks' example. But by defining endurance only partly in terms of lacking temporal parts, and then proceeding to define perdurance and perdurance/endurance, we

would be vulnerable to Merricks' problem case.

22. The condition that x persists is omitted from (P) and (EP), since it is implicit in (a) of (P) and in (EP).

23. Note that although I have used temporal parthood in formulating endurance/perdurance, the distinction can be made without any reference to temporal parthood. Consider:

(E*): x endures iff (a) x persists, (b) $\neg\exists yz($ y and z are temporally located parts of x, and $\forall t[$ y is located at t iff z is not located at t $]$ $)$, and (c) for any time at which x is located, there is a set whose members compose x at that time.

(P*): x perdures iff (a) x persists, and (b) $\forall t$(if x is located at t then $\exists yz[y$ and z are parts of x, y is located at t, and z is not located at $t]$).

(EP*): x endures/perdures iff (a) x persists, (b) there is an interval of time such that when the domain of t is restricted to that interval, x satisfies (b) and (c) of (E*), and (c) there is an interval of time such that when the domain of t is restricted to that interval, x satisfies (b) of (P*).

Note that eschewing temporal parts also allows us to define a broader notion of endurer/perdurers than that which features in (EP) and (EP*). Endurer/perdurers not only have parts *simpliciter*, but they also irreducibly have parts at times. This fact would appear to allow the possibility of persisting entities that are even more bizarre than the endurer/perdurers outlined in (EP) and (EP*). Such an entity would not have clearly delineated phases at which it endures, followed by clearly delineated phases at which it perdures. Instead, it would be a kind of a disorderly mish-mash of enduring and perduring parts. So, for instance, one of its perduring parts *simpliciter* might be located throughout interval I, while it might also have enduring parts relative to every time in I. This sort of entity is certainly exceedingly strange. It may well be impossible, in fact. However, I do not see that it is obviously impossible. Thus, a broader notion of endurer/perdurers appears below:

(EP**): x endures/perdures iff (a) x persists, (b) x has a part *simpliciter* which perdures, and (c) there is an interval in x's timespan such that x has a part throughout that interval which endures.

Here, we also need to modify (P*) so that nothing which satisfies (EP**) also satisfies (P*). To do this, we add an extra condition to the effect that perduring things do not have an enduring parts.

can avoid this pitfall. The above account classifies Merricks' organism as a perduring thing. It does not count as an endurer since it violates (c) of (E). And it does not count as an endurer/perdurer since it has no temporal parts, and therefore, no temporal parts that satisfy (E).

In addition, (P) has further advantages over the temporal parts-based accounts of perdurance I discussed in 5.3. For instance, it does not presuppose unrestricted mereological composition. It is also neutral on the issue of whether perduring things with temporal parts must have instantaneous temporal parts. Even granting that the times quantified over in (P) are instants, it does not follow that perduring things have instantaneous temporal parts. This is because there are ways of construing instants as constructions of non-instantaneous things. For example, we could think of instants as the limits of sequences of perduring things such that each thing in the sequence temporally encloses each thing further along in the series. Or we could think of instants as sets of temporally overlapping things.[24] Neither of these alternatives requires perdurers to have instantaneous parts.

To close this section I would like to discuss an interesting objection to (P) suggested to me by Theodore Sider. The objection involves us imagining a certain variant of mereological essentialism which allows that entities *can* gain or lose parts. But if x is a part of y, then it is essential to x that it is a part of y, and thus x is a part of y throughout x's entire timespan.

Now suppose that I am an endurer and that a certain enduring electron is a part of me only during 1980. And suppose that another enduring electron is a part of me only during 1990. This looks like a counterexample to (P). (P) uses the notion of parthood *simpliciter*, and the problem case has been set up so as to accommodate this. Since it is essential to both electrons that they are parts of me, there seems to be no reason not to say that both are parts of me *simpliciter*. And since the electrons do not overlap temporally, I satisfy (a) of (P). As an endurer, I also satisfy (b) of (P). Therefore, (P) mistakenly classifies me as a perdurer.

Notice something disquieting about Sider's objection. Since I am an endurer and I gain and lose parts (e.g. the 1980 electron), the relevant reading of 'has as a part' is 'has as a part at t'. I do not have parts *simpliciter*. Both of the electrons are part of me *simpliciter*, and yet I have neither of them as parts *simpliciter*. This is quite odd, but is it incoherent? I suspect that it is.

One good reason for thinking it is incoherent is the thought that 'x is a part of y' and 'y has x as a part' are just different ways of saying that a certain relationship

24. See Russell (1926, pp. 123–7) for further details about these alternatives.

holds between x and y; they denote the same fact. And if that is so, then x can't be a part of y *simpliciter* without y having x as a part *simpliciter*. Yet, even if this is wrong, and 'is a part of' and 'has as a part' denote different relations, it's hard to imagine how these relations could come apart so that x could be a part of y *simpliciter* without y's having x as a part *simpliciter*.

Even so, it's worth remembering that I am bound by my own dialectical constraints to give any benefit of the doubt to Sider here. Certainly, Sider's example, although unusual, seems otherwise coherently describable. If I am wrong in claiming that it is incoherent, perhaps what is needed is just some sort of connection to be made between x's standing in the dyadic *is a part of* relation to y and y's only standing in the triadic *has as a part at* relation to x. We might say something like this, for example:

> If x is a part of y, then (y has x as a part, or for any t at which x is located, y has x as a part at t).

However, even if we accept the coherence of Sider's example, (P) merely requires a small amendment. We supplement it with (c):

> For any x, x is a part of y iff y has x as a part.

Without the benefit of Sider's example, (c) would appear entirely trivial. But if Sider's example is coherent then we learn that endurance is compatible with its falsity. But perdurance is not compatible with its falsity. Perdurance requires both *is a part of* and *has as a part* to be dyadic relations.

5.5 PRESENTISM

Having shown how to frame an account of endurance/perdurance in the context of the tenseless theory of time, I turn now to the task of providing presentist analogues.[25] I begin by providing a presentist account of temporal parthood. All

25. Even though I provide accounts of endurance/perdurance in the idioms of tenseless time and presentism, I cannot really claim to have provided a thoroughly general account of endurance/perdurance. Though the tenseless theory and presentism seem to me to be the leading candidates when it comes to dealing with the metaphysics of the passage of time, there are other views. These other views I like to think of as hybrids of presentism and the tenseless view, since they bear some similarities to each of these. For example, they hold there is more to passage than just the holding of temporal relations, but that at least some non-present entities exist. These views, I argued in Chapter 2, are incoherent. Thus, I have ignored them here. However, analogues for these views could also be given.

tensed locutions and all quantifiers are to be construed as irreducibly tensed:

x is an instantaneous temporal part of y iff

(i) x is a part of y.

(iia) If x exists then ¬(it was the case that x exists) and ¬(it will be the case that x exists).

(iib) If x existed exactly z minutes ago then x does not exist, ¬(it will be the case that x exists), and there is no $n \neq z$ such that x existed n minutes ago.[26]

(iic) If x will exist in exactly z minutes then x does not exist, ¬(it was the case that x exists), and there is no $n \neq z$ such that x will exist in n minutes.

(iiia) If x exists then x overlaps every part of y that exists.

(iiib) If x existed exactly z minutes ago then x overlapped exactly z minutes ago every part of y that existed exactly z minutes ago.

(iiic) If x will exist in exactly z minutes then x will overlap in exactly z minutes every part of y that will exist in exactly z minutes.

Note that conditions (iib), (iic), (iiib) and (iiic) are included so as to not prejudge the question of whether a thing can have non-existent temporal parts; if x is to count as a non-existent temporal part of y, then it must satisfy these conditions.[27] Indeed, it should be obvious from the above account that things can have temporal parts according to presentism only if non-existents can stand in relations. For instance, suppose that Evad has temporal parts. In that case, he has a temporal part, p, which is not present, and therefore, which does not exist. And given that p is one of Evad's temporal parts, it stands in a mereological relationship to Evad.

The next question is what sort of presentist analogue could be given of non-instantaneous temporal parts? Constraints of length preclude my setting out an account here, but I expect that some sort of construction could be made out

26. The domain of variables n and z is the domain of real numbers, so any finitely long time unit can be used in the formulation.

27. Among those who are sympathetic to presentism and who also believe that non-existents can have properties and stand in relations, are Hinchliff (1996), Routley (1980), and Salmon (1998).

of instantaneous temporal parts. However, thinking about the analogue of non-instantaneous parts, and indeed, the analogue of a temporally extended whole, raises an interesting issue. Suppose we do grant that non-existents can bear properties and stand in relations. Even under these conditions, I see what might be a problem for thinking that presentism is compatible with persisting things having temporal parts. Suppose, as I imagine many presentists do, that time is necessarily presentist; any temporal world is a presentist world. If that is so, then it is not possible for, say, Igor Stravinsky *qua* aggregate of temporal parts, to exist. Igor Stravinsky *qua* aggregate of temporal parts is a logically impossible entity.

It is one thing to say that non-existents can bear properties and stand in relations, but perhaps it is quite another to say that impossible entities can bear properties and stand in relations. If there are people who maintain that it *is* quite another thing to say this, then those people still retain a connection of sorts between existence and the bearing of properties/relations: only *possible* existents can bear properties/relations. Any presentist of this variety who also thinks that time is necessarily presentist should also think that persisting things do not have temporal parts.

Having given the presentist account of temporal parthood[28], let us see what analogues can be provided for (E), (P) and (EP).

The presentist analogue of (E) follows. Again, the analogue is designed not to prejudge the issue of whether a thing might have non-existent temporal parts. And again, all tensed locutions and all quantifiers are to be read as being irreducibly tensed. Tense operators, quantifiers and connectives are symbolised where I feel that doing so enhances clarity and readability. Finally, let us introduce a useful definition. Let 'A' represent the property of being composed by the members of some set (but no set in particular).

(*E'*): x endures iff:

(a) x exists $\wedge$ (P[x exists] $\vee$ F[x exists])

(b) x has no temporal parts

(c) $Ax \wedge \forall n(\, P_n[x \text{ exists}] \rightarrow P_n Ax\,) \wedge \forall n(\, F_n[x \text{ exists}] \rightarrow F_n Ax\,)$

28. Subject to the expectation that, as I suggest a few paragraphs earlier, a presentist account of non-instantaneous temporal parthood can be fashioned from instantaneous temporal parthood.

Note that this account, via (a), entails that a thing can be an endurer only if it exists. This is certainly right for the presentist who does not believe that non-existents can have properties or stand in relations. I also suspect that the presentist who *does* think that non-existents can have properties or stand in relations ought to say that endurance is a property which is existence-entailing although a non-existent could have the property of being such that it was an endurer, or the property of being such that it will be an endurer. However, those who think that being an endurer is not existence-entailing ought to augment (a) so that it reads as follows:

(x exists $\wedge$ (P[x exists] $\vee$ F[x exists])) $\vee$ P(x exists $\wedge$ P[x exists]) $\vee$ F(x exists and F[x exists])

Next is the analogue of (P).

(*P'*): x perdures iff:

(a) some existing y is a part of x and some z is a part of x and does not exist but did or will exist.

(b) x has no temporal parts that endure.

If it is held that x can perdure without having any existing parts, then (a) should read:

(a) some y and z are such that y and z are parts of x, and (y exists and z does not exist, or P(y exists and z does not exist), or F(y exists and z does not exist)).

There are two things to note about this understanding of perdurance. First, presentists who deny that non-existents can bear properties and stand in relations will read 'some y' and 'some z' in (a) as existential quantifications, and will thus regard (a) as necessarily false. The second thing to note is that any presentists who hold that non-existents can bear properties and stand in relations *and* also think that being an endurer is an existence-entailing property but that temporal parthood is not, should augment (b) so that it reads as follows:

(b) x has no temporal parts that endure and x has no temporal parts that did endure and x has no temporal parts that will endure.

This alteration is made so that nothing counts as a perdurer if it has a non-existent temporal part that was, or will be, an endurer.

Finally, we have the analogue of (EP).

(*EP'*): *x* endures/perdures iff:

(a) *x* has a part that exists ∧ (*x* has a part that did exist ∨ *x* has a part that will exist).

(b) *x* has, had, or will have, at least one enduring temporal part.

5.6 STATUES, LUMPS AND PRESENTISM

To round off the discussion of the endurance/perdurance distinction, I would like to discuss an argument from Sider against understanding endurance in terms of lacking temporal parts. If his argument succeeds, it also spells trouble for my preferred account of endurance for the following reasons. First, it is a necessary condition of endurance on my account that enduring things lack temporal parts. And second, Sider argues that some supporters of endurance might want to say that there could be enduring things with a temporal part, so such a circumstance ought not to be ruled out by definition.

Sider writes:

> . . . imagine a lump of clay that gets made into a statue-shape for only an instant (by a god, say). It seems to me that some [endurantists] might want to say that in that instant, a statue comes into being, but immediately goes out of existence. After all, many [endurantists] say that when a lump of clay becomes statue-shaped for some extended period of time and then gets squashed, a statue comes into being for that period of time; the instantaneous statue would be a limiting case. (1997, p. 211)

He then proceeds to argue that the lump of clay satisfies the conditions for having a temporal part. He runs the example through his neutral account of temporal parthood and argues that the instantaneous statue satisfies conditions (i)–(iii) for being a temporal part of the lump: '. . . a temporal part of the lump at *t* is anything that (i) is part of the lump at *t*, (ii) exists only at *t*, and (iii) overlaps at *t* everything that is a part of the lump at *t*.' (1997, p. 211.)

Recall that I argued in 5.1 that the reading of temporal parthood pertinent to the endurance/perdurance distinction is temporal parthood *simpliciter*. Does this provide me with an easy way to avoid Sider's argument? Unfortunately, it does not. Remember the account of temporal parthood I gave in a presentist setting. That was an account of temporal parthood *simpliciter*. And Sider's problem case can easily be placed in the context of presentism. If it succeeds, it shows that a (presentist) enduring thing could have a temporal part *simpliciter*. And this would be an unwelcome result for my presentist account of endurance. Replace Sider's temporally relativised account of temporal parthood with clauses (i), (iia) and (iiia) of my presentist account of instantaneous temporal parthood. If the statue satisfies these clauses, then it would seem that the statue counts as a temporal part *simpliciter* of the lump. Here are the clauses:

(i) The statue is a part of the lump.

(iia) If the statue exists then it is not the case that it did exist and it is not the case that it will exist.

(iiia) If the statue exists then it overlaps every part of the lump that exists.

The statue surely satisfies (iia). Sider argues that the statue satisfies (i) by appealing to a temporally relativised principle from the Leonard/Goodman Calculus of Individuals. However, to suit the backdrop of presentism I have removed the temporal relativisation:

> If x and y exist, but x is not a part of y, then x has some part that does not overlap y. (1997, p. 212)

This looks convincing, but perhaps this appearance is deceptive. Those who are inclined to believe that there could be a lump of clay and an instantaneous statue both occupying exactly the same spatial region at the same time would describe this case by saying that the statue is *constituted* by, but not identical with, the lump. Whether the statue would count as a part of the lump on this view is controversial, and I suspect that quite a few endurantists who embrace the constitution/identity distinction would not agree that the statue is a part of the lump. Consider Frederick Doepke, for instance. He would maintain that while each part of the lump is a part of the statue, the converse does not apply:

> Consider you and the collection of atoms of which you are now composed. Appealing to intuition, I suggest that your heart is a part of you but not a

> part of this collection of atoms. Similarly, Theseus' ship, but not the wood of the ship, is composed of boards. Though every part of the collection of atoms is a part of you and every part of the wood is a part of the ship, you and the ship have 'additional parts' not shared by the collection of atoms and the wood. (1982, p. 51)

Doepke speaks of composition rather than constitution here, but we can ignore this difference; he holds that being composed by *x* entails being constituted by *x*.[29] Likewise, the thought would be that the statue has various parts that the lump lacks, such as a nose, eyes and legs, if it is a statue of a human being. The fact that we normally ascribe certain properties like mass and colour to both statues and lumps of clay is said to indicate that a clay statue shares various parts with its constituting lump of clay. Both have the same mass and colour because, for instance, they both have the same micro-parts (1982, p. 51–2). But whereas it might be quite appropriate to ascribe beauty to a certain statue, it is not usual to ascribe beauty to its constituting lump of clay. The beauty of a statue depicting a person consists in the way certain of its parts inter-relate. The salient parts here are things like noses, eyes and legs. And the reason that beauty is not properly ascribable to the constituting lump is that the lump has no nose, eyes, legs, etc.

If this is all to the point, then Sider is wrong to think that he has shown that the statue is a part of the lump, since the statue has parts that the lump lacks. Unfortunately, I am not completely convinced that Doepke is right. There is at least one upholder of the constitution/identity distinction who holds that the statue and the lump would have exactly the same parts, namely, Lynne Rudder Baker. She thinks that not only do things 'borrow' the properties and parts of their constitutors, but that constitutors also 'borrow' the properties and parts of the things that they constitute.[30] I am not particularly convinced by the example she gives to motivate the 'downward' sharing of properties (p. 48). But nor am I thoroughly convinced that 'downward' sharing of properties and parts is inconsistent with the core view that the lump constitutes, but is not identical with, the statue. I admit the epistemic possibility of such sharing. So, for the purposes of testing my account of endurance/perdurance, I should, by my own lights, go on as if Sider has demonstrated that the statue is a part of the lump.

29. And in any case, the putative differences between composition and constitution are not relevant here. See Doepke (1982, pp. 54–5) and Simons (1987, p. 238) for discussions of the composition/constitution distinction.

30. See, for instance, Baker (2000, pp. 181–2).

So, allowing that the case of the statue and the lump satisfies (i) and (iia) of the presentist account of temporal parthood, does it also satisfy (iiia)? It is easy to see that it does. Regardless of whether the lump 'borrows' parts from the statue, it is true that the statue overlaps everything which is a part of the lump.

Fortunately, I think that even if we allow that the case of the statue and the lump shows what he says it shows, nothing follows to endanger my account of the endurance/perdurance distinction. To see this, we need to ask what sort of part the statue is.

Clearly, the statue is not a *proper* part of the lump since the lump has no parts which do not overlap the statue. So it must be an *improper* part of the statue. To see this, note that the statue counts as a part of the lump of clay according to Goodman's definition of improper parthood:

> *x* is an improper part of *y* iff: for any *z*, *z* overlaps *x* iff *z* overlaps *y*. (1977, p. 35)

Though the statue and lump are not identical, they nevertheless qualify as improper parts of each other.[31]

Now, recall that I argued earlier for an account of endurance according to which it is a necessary condition of a thing's enduring that it has no temporal parts. Sider's counterexample is the case of the statue's being an improper temporal part of the lump. Is my understanding of endurance under threat? I don't believe so. For one thing, I am suspicious of the notion of an improper temporal part. 'Temporal' is a modifier of 'part'. I suspect that one of its functions is to exclude improper parts. So, if a thing has a temporal part *simpliciter* then it has another temporal part *simpliciter*. In support of this, notice how strange it seems to suppose that an entity which does not persist, but is located at only one instant, has a temporal part. If this is right, then what we ought to do is modify our account of temporal parthood while leaving the account of the endurance/perdurance distinction alone. Thus, we amend clause (i) in both the presentist and tenseless accounts of temporal parthood to read, '*x* is a *proper* part of *y*'. So, for example, the tenseless account of (instantaneous) temporal parthood ends up looking like this:

31. It is true that improper parthood is often thought to imply identity (or, for an arch-nominalist like Goodman, to *be* identity), but only by those who do not accept the constitution/identity distinction.

> *x* is a temporal part of *y* which is located at *t* iff (i) *x* is a *proper* part of *y*, (ii) *x* is located only at *t*, and (iii) *x* overlaps everything located at *t* which is part of *y*.

Having said all of this, I am perfectly willing to concede that others might not share my distaste for improper temporal parthood. As I will now argue, the adequacy of my account of endurance does not depend at all on the illegitimacy of the notion of improper temporal parthood.

Even if improper temporal parthood is a legitimate notion, I think that there is a good reason for saying that it is a mistake to allow improper temporal parts to play a role in the endurance/perdurance distinction. Whether or not a thing has an improper temporal part does not dictate any conclusion about the manner of its persistence. An enduring thing can have one, and perduring things and endurer/perdurers always have one. So we shouldn't let them play any role in formulation of the endurance/perdurance distinction. Thus, we reformulate the endurance/perdurance distinction so that it explicitly excludes temporal parts which are improper parts. So, for every occurrence of 'temporal part/s' in (E), (P), (EP) and their presentist analogues, we substitute 'proper temporal part/s'.

5.7 CONCLUSION

Recent work has disturbed hitherto entrenched readings of the endurance/perdurance distinction. Theodore Sider has pointed out that understanding endurance in terms of being wholly present is problematic. And Trenton Merricks has highlighted difficulties with understanding perdurance in terms of having temporal parts. I hope to have provided a more robust account of the distinction.

6

Intrinsicness, Duplication and Relations to Times

The principal aim of this chapter is to defend a certain view about temporary properties from an important objection to that view. More specifically, I will be defending the view that ostensible temporary intrinsic properties are really relations between the things that have those properties and times. The objection is, roughly speaking, that by construing ostensible temporary intrinsics as relations to times, persisting things are impoverished, being clothed only by their essential (and perhaps also their permanent) intrinsic properties. The worry is that the relations to times view moves us towards thinking of persisting particulars as being quite bare. I do not suggest that this is the only difficulty for the relations to times view (in fact, I uncover a potential problem for the view in 6.3), but it is an important one.[1] If the objection is successfully addressed, then a significant obstacle to the relations to times view is overcome.

To provide a satisfactory answer to the objection we shall need to look into the notion of intrinsicness. However, it is not simply a matter of our looking in greater detail at the general notion of intrinsicness in order to receive guidance in our discussion of the relations to times view. It will turn out that a discussion of relations to times view bears some interesting consequences for our general understanding of intrinsicness. In fact, a discussion of the relations to times view yields some interesting, and perhaps disturbing, consequences for Kim-style accounts of intrinsicness, of which the best-known recent variant is probably the account developed jointly by Rae Langton and David Lewis. It will be noted (among other things) that on Kim-style understandings of intrinsicness it is hard to see why re-

1. Some other worthwhile objections are pressed by Katherine Hawley (1998).

lations to times should count as extrinsic.

I will further argue against the present day orthodoxy that a very tight connection exists between the notions of intrinsicness and duplication. This argument will be crucial in offering a defence against the important objection to the relations to times view. I will also point out that the severing of this tight connection allows the Langton/Lewis account of intrinsicness (if it is still regarded as viable) to be generalised so as to include not only qualitative intrinsic properties, but also to include non-qualitative ones as well.

6.1 THE PROBLEM OF TEMPORARY INTRINSICS

A useful way to start thinking about the status of temporary properties is to consider what has come to be known as the *problem of temporary intrinsics*. Consider the following scenario:

It lies peacefully in a spot where it has not been disturbed for some time. Without warning, a rumbling breaks out in the distance and a shadow creeps menacingly forward from the margins of its world. Yet it remains motionless and unconcerned. Then, something falls from the sky. The toddler shrieks triumphantly and suddenly there is a blob of plasticine on the floor where there used to be something perfectly round.

The problem may be stated as follows. Consider the unfortunate lump of plasticine. In some sense, the lump of plasticine is both round and blob-shaped. Yet, being blob-shaped is not compatible with being round: if something is round then it is not blob-shaped, and vice-versa. So how can we make sense of the plasticine's having both of these properties?

We could easily be forgiven for viewing this difficulty as somewhat contrived. Certainly, the plasticine is both round and blob-shaped—but not at the same time. It would indeed be contradictory to say that the plasticine is both round and blob-shaped at the same time, but the truth of the matter is that it is round at some times and blob-shaped at others. And so the issue seems settled.

However, the problem is more stubborn than appearances indicate. Reflect for a moment on roundness and blobness. Roundness and blobness appear to be *intrinsic* properties. Intuitively, a property is intrinsic just if a thing's having it is constituted by nothing not wholly contained within the thing itself. Otherwise, it is at least partially *extrinsic*.[2] Thus, we may note that the plasticine's shape counts

2. This intuitive reading of the intrinsic/extrinsic distinction seems to be implicit in most discussions of temporary intrinsic properties. See, for example, Denkel (1996, p. 96), Haslanger (1989, p. 119), Oderberg (1993, p. 148) and Lewis (1988, p. 65).

as intrinsic, since it involves only what is going on within the boundaries of the plasticine.

Reminding ourselves that roundness and blobness are supposed to be intrinsic properties, we notice that what was an apparently clear solution to the problem under consideration is beginning to blur. The solution involved claiming that the plasticine is round at some times, and blob-shaped at others. But if roundness and blobness are intrinsic, then claiming that they are had at times begins to look dangerous. Times, it would seem, are at least mostly external to the plasticine. So, if it is true to say that the plasticine only has these properties at times, then it is tempting to wonder whether the solution at hand might be doing away with intrinsic roundness and blobness. Accordingly, it now becomes important to discover how saying that the plasticine is round at a certain time differs from saying that its being round is a relation between itself and a time.

One way in which we might answer this question is by saying that nothing which is past or future exists. If this line is followed then there seems to be no need to hold that there *are* times in any robust sense.[3] According to this way of thinking, we can simply say that there exists a certain class of entities, including, for example, the plasticine and its being intrinsically round. When the plasticine changes from being round to being blob-shaped, its being round is past, and hence, does not exist. The plasticine was round but is now blob-shaped, we can say. On this sort of view, if there is any sense whatsoever in which there are times, times are at best abstract representations of how the entire world was, is and will be. Thus, to say that the plasticine is round at a particular time is to say no more than that a certain representation of the world which was, is, or will be, an accurate representation, represents the plasticine as being intrinsically round. This would be a tidy solution if the view of time that embodies it were tenable. As I argue in Chapter 3, I doubt that it is tenable.

According to the view of time I favour, the tenseless theory, there is no ontological distinction between the past, present and future. According to this way of thinking, the plasticine's being round is no less an existent feature of the world than its being blob-shaped. How might we solve the problem of temporary intrinsics while endorsing this view of time?

Corresponding to the problem of temporary intrinsics there is a problem of *local intrinsics*. Consider the blob of plasticine. At some places, the blob is roundish,

3. See, for instance, Chisholm (1990).

while at others it is flat. But flatness and roundness are incompatible properties. The solution to this 'problem' seems obvious: the blob has some spatial parts which are intrinsically roundish and others that are intrinsically flat. And it is clear that ascribing intrinsic roundness to one part but not to another involves no contradiction. This suggests a parallel solution in the temporal case. Just as the plasticine has spatial parts, it also has temporal parts. It has temporal parts that are intrinsically round, and other, later, temporal parts that are intrinsically blob-shaped. If we adopt this solution we can also give an account of what it is for the lump of plasticine to be round at a certain time which makes it clear that the roundness is not being treated as a relation between a thing and a time. To say that the plasticine is round at t is to say that the plasticine, considered as a temporally extended whole, has a temporal part located at t which is round. The temporal part in question is intrinsically round, and furthermore, it is an intrinsic property of the whole temporally extended lump of plasticine that its t-part is round. According to this solution, times feature only in the individuating descriptions of temporal parts, but do not participate in their exemplification of properties like roundness.

The temporal parts doctrine is popular. It has been held by Armstrong, Lewis, Quine, Smart and many, many others.[4] However, my aim here is to defend an account of ostensible temporary intrinsics that is compatible with the view that persisting things (at least, persisting things that are not events) endure. As such, they do not have temporal parts, and furthermore, satisfy the account of endurance given in 5.4.

I intend here to offer a partial defence of the much-derided relations to times view. I think that it deserves a much more sympathetic hearing than it has been afforded in the literature. According to this view, the piece of plasticine is wholly located at each of the times that make up its history. In addition, it stands in the relation of being round to some times, and in the relation of being blob-shaped to others.

6.2 PROBLEMS FOR RELATIONS TO TIMES

To my knowledge, there has been only one supporter of the relations to times view in print: D.H. Mellor (1981b, p. 111).[5] In fact, the relations to times view has been

4. See Armstrong (1980), Lewis (1986, pp. 202–4), Quine (1961) and Smart (1972).

5. Perhaps N.L. Wilson also held the relations to times view. See Wilson (1956).

widely disparaged. The swiftness with which Arda Denkel dispatches it, and the sentiments he expresses, are not atypical. He writes:

> There seems to be agreement among philosophers that this first solution won't do, because it amounts to a denial that objects bear intrinsic properties. It disallows properties that an object can be said to possess in virtue of what it is, and independently of anything else.[6] (1996, p. 96)

Of course, this sort of response is not unexpected. As we have noted, the relations to times view seems to say that *all* properties which at first blush appear to be temporary intrinsics are in fact extrinsic, since they are relations to times. And this does seem hard to accept, at least initially. Indeed, it is unusual to find in the literature anything more elaborate than the sort of curt objection offered by Denkel. Lewis, for instance, merely opines that it is a fairly obvious *a priori* truth that there are temporary intrinsic properties:

> This [the relations to times view] is simply incredible, if we are speaking of the persistence of ordinary things. . . If we know what shape is, we know that it is a property, not a relation. (Lewis, 1986, p. 204)

Allegedly, our concept of shape, for example, is resolutely that of an intrinsic property. As I see it, there are two lines of response here. One is to simply deny that intrinsicness is *built in* to our concepts of shape (Jackson, 1992, p. 101). The other is to concede that if the relations to times view is right then there is no such property as shape. However, this concession is by no means decisive in Lewis' favour, since there is something else, namely a relation between things and times (quasi-shape, if you like), that performs the theoretical roles originally attributed to shape. In other words, even if Lewis is right that we can tell immediately by inspecting our concept of shape that shape is intrinsic, we cannot tell by direct inspection of our concepts whether shape or quasi-shape is exemplified.

The reply I have given here on behalf of the relations to times view is no watertight defence. But it does ward off the sort of curt objections we have just been considering. Those who oppose the relations to times view will need to dig a little deeper in order to make their objections stick. So, for instance, something will

6. Actually, this is not quite right. It seems to involve a denying only that things have temporary intrinsic properties. It does not, without further argument, commit its adherents to denying that things have permanent intrinsic properties—those properties that a thing never fails to have.

have to be said to explain why a relation between a thing and a time could not fill the theoretical role we attribute to shape.

There is one particular way of elaborating the curt objections which I think is particularly important and initially quite persuasive. It is in fact the main purpose of this chapter to parry this elaboration. The objection runs as follows. The relations to times view renders persisting particulars much more bare than we think they are. Those properties which are intimately characteristic of a thing, or which, to use a suggestive metaphor, *clothe* that thing, are its intrinsic properties, and not its extrinsic ones. If we accept that the intimately characterising aspects of a particular must be intrinsic characteristics, then it seems that the relations to times view makes particulars very bare indeed; persisting things are clothed only by their essential intrinsic properties, and (perhaps) their inessential but permanent intrinsics. I shall call this the *Objection from Bareness*.[7]

The rest of the chapter will be devoted to doing two main things. First, I will argue that on extant Kim-style accounts of the intrinsic/extrinsic distinction standing in the roundness relation to a time is intrinsic. One conclusion that might be drawn from this is that there is no reason for the supporter of the relations to times approach to be concerned about the Objection from Bareness. However, I suspect instead that my arguments serve only to generate suspicion about the Kim-style accounts of intrinsicness. Keeping this in mind, I will argue that even if standing in the roundness relation does involve extrinsicness, the relations to times view has an answer to the Objection from Bareness. To find this answer, I will exploit the claim that duplication is a broader notion than intrinsicness. I will suggest that duplication is the mark of the intimately characteristic and that there are extrinsic properties over which duplicates could not differ.

6.3 RELATIONS TO TIMES AND KIM-STYLE TREATMENTS OF INTRINSICNESS

In 6.1, I gave an informal, working account of intrinsicness; a property is intrinsic iff a thing's having it is constituted by nothing not wholly contained within the thing itself. There is a way of spelling this out which has quite a long history, extending back at least as far as Kant, and interest in this way of understanding intrinsicness has been revived by Jaegwon Kim (1993). The idea is that the intrinsic properties are those which a thing could possess in the absence of any contingent

7. Something closely resembling the Objection from Bareness is suggested in Lewis (1988, p. 67).

environment whatsoever. Call a thing *lonely* if it is the only contingent thing in existence. Otherwise, call the thing *accompanied*. Intrinsic properties are those that could be possessed by a lonely thing. So it would appear that roundness is intrinsic, since it seems that being the only thing in existence does not disqualify a thing from being round. On the other hand, being a mother, for instance, counts as extrinsic, since motherhood implies accompaniment. Kim's account of intrinsicness fell out of favour for a while when it was noticed that it misclassified some properties. The best-known example is the property of loneliness itself. Being lonely comes out as intrinsic according to Kim, since being lonely is certainly compatible with loneliness! But this seems wrong. Loneliness looks as though it ought to be classified as extrinsic, since whether or not a thing lonely is settled by how things are outside that thing (Lewis, 1983, p. 199).

Kim's account of intrinsicness seemed tantalisingly close to success. Recently, Langton and Lewis (1998) have offered a Kim-style account of intrinsicness that appears to plug the holes in Kim's account. I will be focusing here on Langton and Lewis' account for several reasons. First, I think that Kim-style accounts of intrinsicness are initially quite appealing, and that the Langton/Lewis account is currently the leading Kim-style account.[8] Second, I think that relations to times turn out to be intrinsic on Kim-style accounts, including the Langton/Lewis account. And third, I disagree with the now standard view that there is a tight connection between intrinsicness and duplication. If I am right on this point, this realisation affords us a way of extending the Langton/Lewis account so that it reaches not only the qualitative intrinsics, but the non-qualitative ones as well. Enough, then, of my reasons for focusing in particular on Langton/Lewis. Here is a brief reminder of their view.

Langton and Lewis notice that an intrinsic property can be had by a thing regardless of whether it is lonely or accompanied. And it can also be lacked by a thing regardless of whether that thing is lonely or accompanied. These possibilities can be crystallised into a definition of intrinsicness:

> A property is a intrinsic iff whether or not it is possessed is independent of accompaniment or loneliness. (1998, p. 334)

Notice that loneliness now counts as extrinsic, since whether or not it is possessed is clearly dependent on loneliness.

8. Though objections have been pressed against the Langton/Lewis view in recent times. See, for instance, Marshall and Parsons (2001) and Sider (2001b).

Unfortunately, as Langton and Lewis observe, this definition does not work for disjunctive properties and their negations. For example, it misclassifies the property of being cubical and lonely or non-cubical and accompanied, as intrinsic (p. 335). How can the account be enlarged so as to include disjunctive properties? At this point, Langton and Lewis turn to duplication to help them out. They point out that which disjunctive properties a thing has are settled by which non-disjunctive properties they have. This means that any two things with the same non-disjunctive intrinsic properties are duplicates. This allows them to broaden their account of intrinsicness to cover disjunctive properties as well: a property is intrinsic just if no pair of duplicates could differ with respect to the possession of that property (pp. 336–7). So, to summarise, Langton and Lewis define non-disjunctive intrinsicness (the *basic* intrinsics in their terminology) in terms of independence of loneliness or accompaniment, they define duplication in terms of possession of the same non-disjunctive intrinsics, and they then define the general notion of intrinsicness in terms of duplication.

Notice that because of the role played by duplication in this account, the Langton/Lewis analysis of intrinsicness is still not fully general. It extends only as far as purely qualitative properties (which is, admittedly, still quite far). A purely qualitative property is one that involves abstraction from particular individuals. So, for instance, being the son of Mozart is non-qualitative, since it involves reference to a specific individual. On the other hand, being the son of some man is purely qualitative since no such reference is involved. There are intuitively intrinsic properties which are non-qualitative, for example, being identical with Mozart and having a certain plank of wood as a part. A duplicate of Mozart is not identical with Mozart, and duplicate ships need not have the same plank of wood as a part. So any account of intrinsicness that allows a tight relationship between duplication and intrinsicness, like the Langton/Lewis account, cannot deal with non-qualitative intrinsics.[9]

Later, I will suggest how Langton and Lewis' account can be expanded to include non-qualitative intrinsics. But next, I will explain why Kim-style definitions of intrinsicness, including Lewis and Langton's, (perhaps surprisingly) count relations to times as intrinsic. The crucial thing I need to show is that standing in a given relation to time is compatible with loneliness; it will, I think, be admitted by all that not standing in a given relation to a time is compatible with loneliness, and that it is possible for an accompanied thing either to stand in a given relation

9. This is a point that Langton and Lewis readily acknowledge (pp. 334–5).

to a time, or not to do so.

Broadly speaking, here are two competing views about the ontological status of space and time. According to an *substantival* view of space and time, space and time are entities in their own right: their existence is independent of the spatio-temporal entities that are located in space and time. On this view, as it is sometimes put, space and time are like containers that 'house' ordinary spatio-temporal things. In contrast, the opposing *reductionist* view of space and time is (unsurprisingly enough) reductionist in character; space and time reduce to certain relationships between ordinary spatio-temporal things, namely their spatio-temporal relationships. It often seems to be assumed that the question of whether space and time are substantival or reductionist is one of metaphysical necessity. My argument does not require this assumption, and in any case, some of the most famous arguments for substantival and reductionist views of space depend on contingent facts about what sort of natural laws obtain. (I am thinking in particular here of Newton's bucket and twin-globe experiments.)

My argument is a dilemma. Suppose that it is not possible for time to be reductionist; time is necessarily substantival. Under these circumstances, it would appear that standing in the roundness-relation to some time is unproblematically extrinsic. On the substantival view, times have independent ontological status, so it looks like standing in the roundness-relation to a time implies accompaniment. But notice something else. Those who spurn the relations to times approach ought not only be interested in preserving the intrinsicness of ostensible temporary intrinsics. They should also to strive to preserve the intrinsicness of the change that involves the plasticine's changing from being round to being blob-shaped. If you want to say that being round and being blob-shaped are both intrinsic, then you ought also to say that the plasticine's changing with respect to these properties is intrinsic. But it seems this cannot be said on a Kim-style view of intrinsicness if time is necessarily substantival. Change takes time, and times have independent existence, so change implies accompaniment.

It seems that to avoid this problem we need to build something like category-relativity into the account of intrinsicness.[10] Thus, a property's being intrinsic requires, for instance, that it could be had by something that was the only entity of its category in existence. And the plasticine's changing from being round to be-

10. There is certainly some independent motivation for such a restriction. For instance, suppose we believe in universals. We would not want to say that having mass is incompatible with loneliness because a massive object must always be accompanied by the universal, *massiveness*.

ing blob-shaped certainly seems to be consistent with the plasticine being the only physical object in existence. Unfortunately, in setting this problem right, the relations to times view is handed a reprieve! Standing in the roundness relation now counts as intrinsic, since it is certainly possible for the plasticine to stand in the roundness-relation to a time even if it is the only thing of its category in existence.

Here is the second half of the dilemma. Suppose, on the other hand, that time is possibly reductionist. Initially, we might think that it is possible for our lump of plasticine to have the qualitative properties of being round at some time and blob-shaped at some time even if the plasticine is lonely. On the reductionist view of time, times are at best constructions out of things and what happens to them. So on this view, assenting to the existence of times involves no further ontological commitment. Thus, on a reductionist view of time, it is possible for a thing to stand in the roundness-relation to times even if it is lonely. However, your acceptance of this line of thought is going to depend on what sort of constructions you think times are.

If you think that times are mereological constructions then it follows that relations to times are intrinsic. However, you might think that times are set-theoretic constructions. In that case, there will be, in addition to the lump of plasticine, sets that are, of course, not identical to the lump nor to any of its parts, but which have as members the lump and/or its parts. That means that relations to times do, after all, count as extrinsic since it is impossible for a thing to stand in a relation to a time without being accompanied by something else. Yet this is not a satisfying resting point. That is because it points to a more general problem. A thing is always accompanied by its unit set. Its unit set is just as contingent as the thing itself. But the unit set is not identical to the thing in question, nor is it a proper part of the thing. And so it is impossible for a contingent thing to be unaccompanied. This means that an overwhelming majority of ostensible intrinsics are going to turn out to be extrinsic. So here we have another reason to build category-relativity into our account of intrinsicness. And once we do this, relations to times turn out to be intrinsic.[11]

11. Here is the problem for the relations to times view that I advertised in the introduction to the chapter. Whether the relations to times view can be pursued in the context of a reductionist view of time is unclear. Here is a potential cause for concern about this combination. The lump of plasticine has the qualitative property of being round relative to some time in virtue of its having the non-qualitative property of being round relative to a specific time, say, *t*. We may then ask, to what is *t* reducible? The answer is, to a class (or mereological sum) of simultaneous states of affairs and events. Now, consider the states of affairs which are included in this class. It would appear that many of these states of affairs will be of the form, '*x*'s standing in the *F*-relation to *t*'. Moreover, you might want to think of events as constructions out of such states of affairs. Thus, there is circularity here. In this context, circularity looks as though it might be troublesome.

I conclude that on a Kim-style account of intrinsicness, including Lewis' and Langton's, relations to times count as intrinsic. This is rather ironic given Lewis' hasty dismissal elsewhere of the relations to times view on the basis that relations to times are extrinsic.[12]

Is this in fact a problem for Kim-style accounts of intrinsicness? It is at least a cause for concern. Note first that regardless of whether you think the relations to times view is plausible, there are going to be other cases that are difficult to ignore. Many instances of intuitively extrinsic properties that involve relations to times are going to count as intrinsic on a Kim-style account. For example, being located at some time comes out as intrinsic.

Moreover, the judgement that qualitative relationships to times count as intrinsic exploited the fact that having a property like being round relative to some time always obtains in virtue of having a non-qualitative relational property like

12. You might object that I have indiscriminately applied Lewis' reading of Kim-style accounts of intrinsicness. Lewis was able to simplify Kim's original account by introducing the assumption that things persist by perduring (Lewis, 1983, p. 198). But if we are discussing an endurantist view of persistence then we ought to use Kim's original formulation, which is as follows:

(1) Property *G* is rooted outside the times at which it is had $=_{df}$ Necessarily for any object *x* and any time *t*, *x* has the property *G* at *t* only if *x* exists at some time before or after *t*.

(2) Property *G* is rooted outside the objects that have it $=_{df}$ Necessarily any object *x* has the property *G* only if some contingent object wholly distinct from *x* exists.

(3) *G* is intrinsic $=_{df}$ *G* is neither rooted outside the times at which it is had nor outside the objects that have it.

Lewis drops the first half of the *definiens* in (3) by appealing to perdurance. With one exception, all of the examples Kim gives of properties that are rooted outside the times at which they are had are also rooted outside the objects that have them (Kim, 1993, p. 184). The exception is the property of being a certain age. Intuitively, I am ten years old only at a certain stage of my life, but my being ten years old depends on my being located at various times prior to the stage at which I am ten years old. If you are a perdurantist, you can note that if a certain temporal part of me counts as being ten years old, then this fact depends on there being certain other temporal parts of me located before the temporal part in question. Thus, age properties also count as being rooted outside the objects that have them if you are a perdurantist.

Note, however, that even if we stick with Kim's original account in the context of endurance, relations to times still count as intrinsic. (3) does not help anyone who wants to maintain that relations to times are extrinsic, since the cases in dispute are not for the most part rooted outside the times at which they are had. Thus, for instance, being round is not rooted outside the times at which it is had.

being round relative to a *particular* time. On the reductionist account of time, we were able to see that the qualitative property *being round relative to some time* counts as intrinsic on a Kim-style account because a small number of non-qualitative properties, such as being round relative to Time *N* are compatible with loneliness. But most such non-qualitative properties that relate roundness to a particular time are not compatible with loneliness. So suppose a piece of plasticine has the non-qualitative property of being round relative to one such time. It then gets to have the qualitative property of being round relative to some time in virtue of its having the non-qualitative property. The non-qualitative property counts as intrinsic, but I suspect that any believable account of non-qualitative intrinsicness is going to count the non-qualitative property upon which the qualitative property logically supervenes, as extrinsic. This means that something can have an intrinsic property in virtue of having an extrinsic property. This does not sound right. Therefore, we have a reason to be concerned about Kim-style accounts of intrinsicness, or at any rate, those varieties that have thus far appeared in the literature.

As a result of these considerations I would feel rather uncomfortable about defending the relations to times view against the Objection from Bareness just by noting that Kim-style accounts allow us to take qualitative relational properties, like being round relative to some time, as intrinsic.

Let's allow that qualitative relations to times are extrinsic. I still think that the relations to times view can be defended against the Objection from Bareness. Recall that this objection suggested that only intrinsic properties are capable of characterising things in a specially intimate way. In the next section, I will argue that this is a mistake. Just as intrinsic properties which are capable of clothing things in this intimate way, there are extrinsic properties which can serve the same purpose.

6.4 EXTRINSIC PROPERTIES AND DUPLICATION

It has often been noted that there is a particularly tight relationship between duplication and intrinsicness. Sometimes it has been thought that intrinsicness and duplication are interdefinable (Lewis, 1983). And as we have already seen, Langton and Lewis define duplication in terms of sharing all basic intrinsics, and then use duplication to define an overall notion of qualitative intrinsicness. I agree that the notion of duplication serves to isolate those properties that clothe the things that have them. But I disagree with the thought that all of these properties are intrinsic. There could be extrinsic properties over which duplicates could not differ.

In this section, I provide examples of extrinsic properties over which it is (or has been) plausible to think that duplicates *simpliciter* could not differ. Such properties are, I will suggest, as intimately bound up in the characterisation of their possessors as are intrinsic properties. In this respect, they differ from the vast majority of extrinsic properties, namely, those properties over which duplicates could in fact differ; an example of the second type of property is the property of being five metres away from a lion. My aim is not so much to demonstrate that such properties are in fact exemplified. Rather, it is to motivate by illustration the claim that such properties *could* be exemplified. That, I think, will be enough to show that the notion of extrinsic, but intimately characteristic, properties is respectable. Not all of the examples I will give below are uncontroversial. I am not sure that I believe all of them myself. Nevertheless, I hope that the cumulative effect is persuasive.

I will start by considering externalism about mental content. Externalism about mental content might be thought to deliver the conclusion that lots of our mental properties, while intimately involved in the characterisation of how we are ourselves, are extrinsic. It is widely held that various of our mental contents, most famously those involving natural kinds, are not exhausted by facts about our internal makeup. As Colin McGinn puts it, externalism about mental content affirms the mind to be "constituted by its relations to distant objects", and that:

> The characteristic properties of mind—its contentful states6–are therefore not like intrinsic primary qualities of material substances, but are rather extrinsic relations that may take as their relata items from elsewhere in space. (McGinn, 1989, p. 21)

Suppose you are on safari in Africa. Something stirs. You look around and scream to your companions, "Look out, that's a tiger over there!" If externalism is right, then any duplicate simpliciter of that thought would be situated in a world where tigers are flesh and blood creatures, not, for instance, robots covered in fur.

Consider next the Special Theory of Relativity. In the Lorentz transformation equations of the Special Theory of Relativity, the attributes of mass and length are not treated as being had intrinsically. Rather, they are treated as being had relative to inertial reference frames, none of which are ontologically privileged. Yet, it seems plausible to think that if length and mass are any kind of properties at all, they are among those which any two duplicates must either both possess or lack. Because there is no metaphysically privileged frame of reference, those entities that would count as a certain thing's duplicates with respect to mass and length can be

specified only in a frame-relative way. This means that in this case, the appropriate duplication relation is quartic rather than binary. Thus, for instance, it might be the case that *a* relative to Frame F is a duplicate of *b* relative to Frame G. As duplicates in this sense, *a* would have the same mass and length relative to F as *b* would have relative to G.

At this point, you might worry that length and mass really ought to count as intrinsic. After all, can't we imagine an unaccompanied sphere, for instance. Wouldn't that sphere have both mass and a certain radius? So maybe length and mass are dependent on reference frames only in a nomological sense. This thought need not involve commitment to a Kim-style account of intrinsicness. We can admit that compatibility with loneliness is a necessary condition for intrinsicness without admitting that it is also sufficient. Unfortunately, what we think we are imagining is not always what we are imagining. Something that we should expect from intrinsic properties is invariance; if something has a certain mass from one perspective but not from another, and neither perspectives are privileged, then mass is not intrinsic. And neither mass or length are invariant. Relativity theory tells us that mass and length are extrinsic, so what are we imagining when we think we can imagine mass, say, as intrinsic? What we are imagining is a property that is functionally equivalent in certain ways to mass. We may, for instance, be imagining mass as it was conceived in Newtonian physics; such a property might indeed by exemplified by an unaccompanied entity.

Here, though, it might occur to the reader to object that the received interpretation of special relativity is Minkowski's. Minkowsi originated the view that space and time are not fundamental aspects of reality. Space and time are, on this view, aspects of a more fundamental reality, namely, spacetime. Take any pair of events. This pair is separated by an interval of spacetime. The portion of this interval which counts as space and the portion that counts as time varies from reference frame to reference frame. However, the spacetime interval is invariant. Thus, for instance, it turns out that the intimately characteristic properties of things are not going to include spatial features like length and shape, but rather, properties pertaining to spacetime intervals. And these properties are intrinsic properties. When we observe something to have a certain shape or length, what we are really observing are properties of spacetime intervals under a certain mode of presentation.

What should we make of this here? We need to do a little digging to ascertain as best we can why the Minkowski interpretation came to be favoured. Einstein himself ultimately endorsed the Minkowski interpretation, after initially describing Minkowski's treatment as 'superfluous learnedness' (Hey and Walters, 1997,

p. 57). Consider the following:

> Minkowski's important contribution to the theory lies in the following: Before Minkowski's investigation, it was necessary to carry out a Lorentz-transformation on a law in order to test its invariance under such transformations; he on the other hand, succeeded in introducting a formalism such that the mathematical form of the law itself guarantees its invariance under Lorentz-transformations. (Einstein, 1959, p. 59)

These remarks point to a certain convenience in using Minkowski's formal apparatus. They do not indicate a commitment to the view that spacetime is fundamental. However, I think it is certainly true that many people came to treat the Minkowski interpretation with metaphysical seriousness because they preferred physical theory to be founded on invariant properties. A physical theory founded on invariant properties is (other things being equal) simpler than one founded on variant properties. And if we subscribe to the view that a simpler theory is (on balance) more likely to be true than a more complex one, then we should prefer the simpler theory.

At this point, it is important to note that although invariance and intrinsicness are related, they should not be conflated. Necessarily, if a property is intrinsic then it is invariant. But not vice-versa. For example, the property of being causally connected to something is invariant but not intrinsic. I suspect that it was a preference for invariance that ultimately led Einstein and others to accept the Minkowski interpretation over Einstein's initial presentation of the theory. Certainly, I have been unable to find textual evidence to suggest that there were concerns about the coherence of various physical properties being irreducibly extrinsic.[13]

Next, consider artifacts. Those who treat such non-natural kinds with ontological seriousness seem committed to regarding various of their intimately characterising properties as extrinsic. Consider what Lynne Rudder Baker has to say about this issue:

> Not everything that exists could exist in total isolation. If there were only one thing in the world, it would not be a national flag, even if it had the

13. It might be wondered whether anything like the relations to times version of endurantism is compatible with the Minkowski interpretation of special relativity. Obviously, the relations to times view would require adjustments in the light of a view that regards spacetime as fundamental. The question of whether such adjustments can be successfully made lies beyond the scope of this chapter. For discussions of the prospects for endurance in the setting of Minkowski spacetime, see Rea (1998b), Balashov (2000a) and Balashov (2000b).

> characteristic pattern of three bands of red, white and blue that in our world would constitute a national flag... (Baker, 2000, p. 39)

Other examples abound.[14] No *physical* duplicate of a work of art could count as a work of art (nor have the characteristic aesthetic properties of a work of art) in the absence of an art community (Baker, 2000, p. 36). And no physical duplicate of a sentence token could be a sentence-token (nor have the characteristic syntactic and lexical structure) in the absence of a linguistic community.[15]

Next, I turn to holistic systems. Holistic systems provide examples of extrinsic properties over which duplicates could not differ. Following Michael Esfeld, I will understand holistic systems in the following way. A system is holistic:

> ... if and only if the things which are its parts have some of the properties that are characteristic of them solely within the whole. With respect to the instantiation of these properties each of these things is dependent on their being other things together with which it constitutes a whole of the kind in question.[16] (Esfeld, 1998, p. 367)

Holisms provide interesting examples of extrinsic properties that are intimately characteristic of their possessors. Consider first the curvature of space-time. The General Theory of Relativity has it that the metric of space-time is holistically determined by the distribution of matter and energy through space-time. Thus, although the metrical properties of a given region of spacetime are intimately characteristic of that region, they are also in part fixed by matter and energy located outside the region. Although the curvature of the whole of space-time is intrinsic, the curvature of its constituent regions is at least a partly extrinsic matter. Thus, no duplicate of a region of curved space could exist unaccompanied (except where the region in question happens to be topologically closed).

Consider next the sort of holism that may obtain when two people are very close to each other. Jonathan Rutherford describes being somewhere with his partner and realising at that moment that he is in love:

14. See also Lamarque (2002).

15. Many endurantists treat artifacts with ontological seriousness, imbuing them with a range of extrinsic essential properties. Since such endurantists apparently ought to regard these properties as extrinsic, I suspect that they ought to exercise care in rejecting the relations to times view on the grounds of the Objection from Bareness. There would be significant tensions between the rejection of the relations to times view on those grounds and their views about artifacts.

16. Esfeld regards this as an initial formulation of holism that needs to be tightened up in various ways. However, it ought to be sufficiently clear for my purposes as it stands.

> This moment belonged to both of us, but not to each alone. While I remained 'I', a significant part of myself had become 'we'. I was not overwhelmed with transcendent joy. There was no flood of romantic dreaming. I experienced hope and a sense of my life beginning, pleasure that I had been released from the confinement of myself, anxiety at this other life now incorporated into my own.[17] (Rutherford, 1999)

When two people have been together for a long time and experience a deep closeness, it is not unusual for them to describe how they feel by saying that they have become part of a greater whole. I think it is not altogether unreasonable to give such descriptions a metaphysical reading. It is not merely that each of the two people have been *caused* to have certain characteristics by their interactions with the other person. It is that these interactions have themselves come to be constitutive of how the person is in a very intimate way—much more intimate, in fact, than quite a lot of their ostensible intrinsic properties, such as eye colour and freckle count. In this case, there could not be a duplicate of just one person in the pair: any duplicate of one would have to stand in certain relations of interaction with a duplicate of the other.

The last example involves a whole that consists of just two people. I want now to consider a much broader sort of holism involving the interactions between people. In this version of holism, the relevant whole is in fact the entire society. Philip Pettit has argued that our capacity for thought, which is surely intimately characteristic of humans, is something that requires our enjoying social relationships with other members of society. For Pettit, a thinking thing is something that can intentionally act in ways that promote the prospects of it meeting certain constraints of rationality. For example, a thinking thing can consider and deliberate about what courses of action would best suit that thing in a given set of circumstances. A thinking thing can also consider and deliberate about what it ought to believe in a given set of circumstances (Pettit, 1993, p. 6). As it turns out, such consideration and deliberation involve following rules. Think about the next time in which you will be in the position of deliberating about whether to buy a beer. Notice that in so deliberating, you seem to be following a rule for the application of the term, 'beer'. What is it that constitutes your following this rule? Pettit notes that it can't merely involve a disposition of yours to continue to apply 'beer' in a

17. Unfortunately I cannot give a page reference for this quote since I do not have access to the book. The passage was quoted in the Saturday Extra section of the Melbourne Age newspaper, June 19, 1999.

certain way. This is because rules can be misapplied. It is possible, for instance, to systematically apply a term incorrectly, and to capture this fact we need to move beyond the dispositions of individuals. The existence of a societal pattern of use for 'beer' against which my use can be measured is required for it to be the case that I am following the beer-rule. If Pettit is right, then thought is at least partially extrinsic, since it involves rule-following and one person's following a rule presupposes that there are other rule-followers. So any duplicate of a thinking thing would need to stand in relationships to other thinking things.

6.5 THE OBJECTION FROM BARENESS AND DUPLICATION

I have just given examples of extrinsic properties for which there seems to be some plausibility in saying that duplicates could not differ over their instantiation. The adequacy of some extrinsic properties with respect to the clothing of entities allows us to breathe life into the relations to times view. For it is now far from clear that the Objection from Bareness has any sting. Advocates of the relations to times view can say that the plasticine's standing in the roundness relation to a time is extrinsic, but intimately characteristic of the plasticine in a way that we prereflectively reserve for intrinsic properties. All duplicates of the plasticine are such that they stand in the roundness-relation. Note, however, that there is need for some care here. To put things precisely, we should say that it is the qualitative relational properties, such as being relative to *some* time, which counts as clothing the plasticine. It is not the non-qualitative relational properties it has, such as being round relative to a particular time, since it is only the qualitative property which counts as a feature it would share with all its duplicates.

It might be wondered here how plausible it is to say that being round relative to some time is intimately clothing, whereas being round relative to a particular time is not so. After all, a thing has the qualitative property only in virtue of having a non-qualitative property (being round relative to a particular time). In response, it seems highly plausible to think that the intimately clothing properties are going to be the ones that duplicates must share. And those are qualitative ones. These are the sorts of properties which are relevant to settling issues of kindhood, which feature in natural laws, supervenience claims, and so on. Note also that this issue does not arise just for those who endorse a relations to times version of endurance. The issue arises for any view of persistence and temporary properties. Suppose, for instance, that a certain perduring thing has a part that is intrinsically round. The perduring thing has the property of having some round part. No duplicate of the

perdurer could lack this property. It has this property in virtue of its having a non-qualitative property, namely, the property of having a particular round part. A duplicate of the perdurer could certainly lack this property.

In spelling out all the properties that clothe a thing, we are of course going to have to mention more than just reasonably simple properties like 'has *P* relative to some *t*'; non-duplicates need not differ over a list of such properties. We need to add properties that are more finely structured. Again, this is not something that applies to supporters of the relations to times view alone. Just about anyone is going to have to add properties that are more finely structured than those which generally feature in discussions of the problem of temporary intrinsics. Thus, for instance, perduring non-duplicates could in fact agree over lists of properties that are not more finely structured than, say, having some round part, or having some red part, and so on.

Here is a quick sketch of how we might spell out the details of all the properties that clothe a certain enduring thing, *M*. We need to specify, in addition to whatever intrinsic properties *M* has, the following things relative to every time at which *M* is located:

(i) M's mereological structure, including spatial and non-spatial relationships between its parts.

(ii) Intimately characteristic features of *M* that supervene on its mereological structure.

(iii) Intimately characteristic features (if any) of *M* that do not supervene on it mereological structure.

These are to be specified by a (very) long Ramsey sentence. For any such Ramsey sentence, a pair of duplicates *simpliciter* will either be correctly described by that Ramsey sentence or incorrectly described by it. So far I have been concentrating on duplication *simpliciter*.

Notice that I have not given any account of what it is for a property to be intimately characteristic. Thus far, my position seems to be that the notions of intimate characterisation and duplication are interdefinable. Some people might find this unsatisfactory. Can we 'break in' to this tight circle? It is unclear to me whether we are going to be able to attain a greater degree of edification. One thought is that we might be able to press into service something like Lewis' 1986 account of intrinsicness. There, Lewis leans heavily on the notion of naturalness:

> It cannot be said that all intrinsic properties are perfectly natural—a property can be unnatural by reason of disjunctiveness, as the property of being tripartite-or-liquid-or-cubical is, and still it is intrinsic if its disjuncts are. But it can plausibly be said that all perfectly natural properties are intrinsic. The we can say that two things are *duplicates* iff (1) they have exactly the same perfectly natural properties, and (2) their parts can be put into correspondence in such a way that corresponding parts have exactly the same perfectly natural properties, and stand in the same perfectly natural relations. (Lewis, 1986, pp. 61–2)

Can we appropriate this account to suit an account of intimate characterisation which allows that some intimately characteristic properties are extrinsic? One problem is that there are going to be perfectly natural properties that are intuitively not intimately characteristic. Consider spatial separation properties. On the one hand, the property *having parts that are spatially separated* is intimately characteristic. But on the other hand, properties like *being spatially separated from something* are not intimately characteristic. A thing can have this sort of property in virtue of having all sorts of external environments that are not relevant to how the thing is clothed. So we are going to need some sort of restriction on which natural properties count. And once we start making restrictions, we are in a delicate position, since we have to be mindful of circularity.

Second, recall that according to Lewis the perfectly natural properties form an elite class; membership of the Perfectly Natural Club is rather exclusive. Of the properties exemplified in the actual world, only basement level micro-properties gain admission. In order to capture duplication, Lewis leans on his Humean supervenience thesis. It might be judicious not to rely on this tendentious doctrine in formulating such general notions as duplication. Moreover, as Brian Weatherson notes, even if Humean supervenience applies to the actual world, it might be 'thought a stretch to think it is true of all worlds' (Weatherson, 2002, §3.2).

It remains far from clear that it is possible to break into the circle of duplication and intimately characteristic properties.

6.6 GENERALISING LANGTON/LEWIS

Despite my reservations about their account of intrinsicness, it is worth noting that in loosening the ties between intrinsicness and duplication, a way emerges to generalise Langton and Lewis' account to encompass not only qualitative intrinsic properties but also non-qualitative ones. Langton and Lewis' account extends

only as far as the qualitative intrinsics because of their use of duplication to define intrinsicness for disjunctive as well as non-disjunctive properties. But they don't need anything as strong as duplication to serve this purpose. What matters is only that what disjunctive properties something has is logically settled by what non-disjunctive properties it has. And with duplication out of the picture they can define intrinsicness for both disjunctive and non-disjunctive properties without excluding non-qualitative intrinsics from their account.

6.7 CONCLUSION

I have covered quite a bit of territory in this chapter, so I think a brief summary is probably in order. I began by outlining the Problem of Temporary Intrinsics. The primary task of the chapter was to defend a response to that problem, namely, the relations to times view, from the objection that the response leaves things with temporary properties looking quite bare (the Objection from Bareness). I then noted that on Kim-style accounts of intrinsicness, qualitative relational properties actually turn out to be intrinsic. Not wanting to rely on this point to defend the relations to times view, I urged that should relations to times count as extrinsic, this is not an impediment to our regarding them as intimately characteristic properties. It is plausible to think that extrinsic properties can be intimately characteristic properties, and that, in fact, the notion of duplication ought to be correlated more closely with the notion of intimately characteristic properties than with the notion of intrinsic properties.

7

Supervaluations and the Problem of the Many

7.1 UNGER'S PROBLEM OF THE MANY

You are reclining comfortably outdoors late on a sunny afternoon. Your eyes roll lazily over the calm sky until they come to rest upon a big, fluffy white cloud. The fading sunlight falls across it so as to emphasize its sharp edges as it floats dreamily across the soft blue backdrop.

The cloud is so captivating that you charter a plane in order to take a closer look at it before the sun sets. You rush headlong into the sky. However, as you reach your objective its marvellous clarity disappears, and so does your enchantment! Eventually, all you perceive is a fog. And you have no clear idea of where it begins and ends. You feel cheated, though perhaps you should have known better. You remember what they told you at school; clouds are simply collections of airborne water droplets that are sufficiently close to one another. So it's no wonder that on closer inspection the cloud lost its prior appearance of possessing sharp boundaries.

The plane lands. As you step onto firm ground, a puzzling thought occurs to you. If the cloud is just a collection, or aggregate, of water droplets configured in a certain way, then *which* aggregate is it? It seems that our concept of cloudhood just isn't fine-grained enough to isolate one collection as *the* cloud. At the margins of the cloud, the concentration of water droplets decreases gradually. Hence, there are many ways of drawing the boundaries of the cloud which seem equally good. And corresponding to each of these ways of bounding the cloud is a collection of water droplets. Thus, there seem to be many collections of water droplets that satisfy the conditions for cloudhood. But if this is so, then it would appear that

where you originally thought there was one cloud, there are actually a multitude of clouds.

With your feet planted firmly on the ground but your head still somewhere in the sky, you place a hand in your pocket. Your fingers close around a cool metal object—a dollar coin, in fact. Suddenly, you are drawn back to reality. You realise that you have no means of paying for your flight. In your haste to charter the plane before sundown you forgot to take any means of payment with you. Then it occurs to you that dollar coins are a lot like clouds. You thought you only had one of them in your pocket, but you must have many *thousands*, at least! The atoms that make up the coin in your pocket are continually exchanging particles with atoms outside the coin. So, we may ask, which aggregate of particles is the dollar coin? At the margins of the coin there are many particles for which it is a matter of indifference whether they are considered part of the coin or part of the coin's surroundings. Therefore, there are many equally adequate ways of marking the boundary of the coin. And therefore, there are many different aggregates of particles that make equally good coins. It would seem that you have thousands of dollar coins in your pocket. Yet these thoughts offer you little comfort as the pilot smiles and politely enquires about your fare.

Peter Unger has termed the puzzle we have just been considering *the Problem of the Many* (1980). Where we think there is only one thing of a certain sort, there turn out to be many such things. Or, perhaps, there are none. Unger himself suggests that a better label might have been the Problem of the Many *or the None*; if you find it too hard to accept that there are always many clouds in situations where we would normally say that there is only one cloud, you should conclude with Unger that there are no clouds whatsoever. You must make your choice between these alternatives, Unger thinks, but what you can't do is say that there is just one cloud in these situations (Unger, 1980, p. 412). Moreover, if the Problem of the Many is a problem in the case of clouds, then it is, as we have just seen, a problem in the case of coins. But there is nothing special about coins. For, just as coins are collections of particles, so are all other everyday physical objects. Thus, the Problem of the Many turns out to be quite general.

I take it that most of us would not favour Unger's conclusion that there are no everyday physical things. Must we, then, say that there are many things where we thought there was just one? Or can we avoid Unger's dilemma and retain our everyday views about everyday things? The main purpose of this chapter is to decide whether supervaluations can help us avoid the dilemma. I will argue that they cannot. I will also suggest that my arguments against the use of supervaluations count

against the solution to the Problem of the Many offered by those who endorse an epistemic theory of vagueness.

None of the other solutions currently offered in the literature are without considerable drawbacks. Or so it seems to me. In terms of finding a solution, perhaps we need something new. In any case, as I will now explain, supervaluations don't help.

7.2 SUPERVALUATIONS

Supervaluations have been in favour for some time as a means of dealing with vague predicates. Vague predicates are predicates that have (or more accurately, *can* have) borderline cases of application. For example, the predicate 'is inflated' is vague. If the air pressure inside a soccer ball falls within a certain range, then it counts as being inflated. If the air pressure inside the soccer ball falls within a certain lower range, then it counts as being uninflated. These two ranges are not contiguous; there is a gap between them. If the ball's internal air pressure falls within this gap, then the ball counts as a borderline case of the predicate 'is inflated': the ball is neither inflated nor uninflated, but is somewhere in between.

Those who find supervaluational treatments of vagueness appealing consider vagueness to be a thoroughly semantic phenomenon; that is, they think that there are vague predicates and concepts, but no genuinely vague properties or objects. David Lewis, who is a representative of this view, speaks of vague predicates as involving *semantic indecision*. A vague predicate is imperfectly decisive; it does not exhaustively divide the world into things that satisfy it and things that fail to satisfy it. For each thing that is left over, it is undecided whether or not the predicate applies to that thing. The attractiveness of supervaluational treatments of vague predicates is seen to lie in their conservatism: it is argued that supervaluationism accommodates the borderline cases that vague predicates engender, while avoiding the weakening of classical laws such as Excluded Middle and Non-Contradiction.

It will be useful here to briefly describe how supervaluational treatments of vague predicates work. Many soccer balls are uninflated (e.g. those that lie in warehouses, waiting to be sent to retail outlets). And, obviously, many soccer balls are inflated—such inflation is in most cases a precondition of a worthwhile game of soccer. However, some soccer balls occupy the 'grey area'. They are neither inflated nor uninflated. A supervaluational treatment of 'is inflated' involves first noticing that there are a number of permissible ways of extending our notions of

inflation and uninflation so that each of the intermediate cases count as either inflated or uninflated. Each permissible way draws a line somewhere along the range of indeterminate cases and assigns inflation to those on the inflated side of the line and uninflation to those on the uninflated side of the line. These extensions are often called *sharpenings* or *precisifications* of the original notions. Next, we say it is super-true that x is inflated iff it is true on all permissible sharpenings that x is inflated, it is super-false that x is inflated iff it is false on all permissible sharpenings that x is inflated, and it is super-indeterminate that x is inflated iff it is true on only some permissible sharpenings that x is inflated.

Indeterminacy is retained in our original imprecise language since there are soccer balls that are inflated on some sharpenings only. Furthermore, the laws of Excluded Middle and Non-Contradiction are also preserved: every sharpening makes $[\text{Inflated}]x \vee \neg[\text{Inflated}]x$ true, though not in a uniform way. The same applies for $\neg([\text{Inflated}]x \wedge \neg[\text{Inflated}]x)$. Sorites problems are addressed by claiming that there is indeed a most inflated uninflated ball, since there is such a ball on every permissible sharpening. This, it is said, is not to deny the very vagueness of 'is inflated' and 'is uninflated'. Such a denial, it is held, requires there to be some ball for which it is the case that *it* is the most inflated uninflated ball. But there is no such ball, since no particular ball is the most inflated uninflated ball on more than one permissible sharpening. Finally, as Lewis puts it, 'Super-truth, with respect to a language interpreted in an imperfectly decisive way, replaces truth *simpliciter* as the goal of a cooperative speaker attempting to impart information.' Lewis (1993, p. 29).

Returning to Unger's dilemma, let us first look in a little more detail at how it arises. The supervaluational solution will then be outlined. Consider these two principles:

(1) Coins are distinguished from non-coins by their physical characteristics (e.g. shape, size and design).[1]

(2) If two things significantly overlap then they are not both coins.[2]

1. This is a simplification. There are, of course, other factors involved, such as matters relating to causal history. Not every object with the requisite physical properties for coinhood must count as a coin. For our purposes, though, this complication can be ignored.

2. How much overlap does this principle permit in the case of coins? Whatever the answer is here, the degree of overlap that comes into play when considering the problem of the many coins in your pocket is surely great enough to count as significant.

If we accept (1) but not (2), we get the conclusion that there are many coins in your pocket. And (1) appears highly plausible. But there is pressure to accept (2) as well. Acceptance of some such principle seems to be the only way to ensure that there is *at most* one coin in your pocket. But we can't accept both (1) and (2). (1) entails that all of the suitable candidates for coinhood in your pocket are coins, since they all have the requisite physical properties, while (2) entails that at most one of the suitable candidates is a coin. If our concept of coinhood is governed by both (1) and (2) then our concept of coinhood is incoherent and there are no coins. Acceptance of (2) alone doesn't seem to be an option either, since (2) by itself entails nothing about how many coins there are in your pocket.

The supervaluational solution diagnoses the Problem of the Many as a problem of semantic indecision. We have never needed a concept of coinhood precise enough to distinguish between the various contenders in your pocket. So the semantic decision remains unmade. The predicate 'is a coin', for instance, has many clearly negative instances, such as those things which are not coin-shaped. And, according to the supervaluationist, it has no clear positive instances; your pocket contains lots of borderline cases of coins.

However, the supervaluationist promises to give us everything we want. The supervaluational treatment licenses us to say that there is just one coin in your pocket. And it also licenses our assent to (1) and (2). For any borderline case in your pocket, x, there is a permissible way of sharpening 'is a coin' so that it applies to x but not to any of the other borderline cases in your pocket. Now, since it is true according to every permissible sharpening that there is just one coin in your pocket, it is super-true that there is just one coin in your pocket. Moreover, (1) is true on every sharpening of 'is a coin', as is (2). So both (1) and (2) are super-true.

Before discussing the merits of the supervaluational approach, I want to address some concerns that might arise regarding my exposition of the Problem. Some people might baulk at my speaking of *the predicate* 'is a coin'. After all, isn't the Problem of the Many usually discussed in terms of names, like 'Tibbles', or descriptions, such as 'the coin in my pocket'? It might be wondered whether it is a mistake to treat the problem as one involving predication.

In response, note that even if it were true that the the Problem of the Many is not explicitly made out in terms of predication, there are entailments including the predicate 'is a coin' that ought to hold. Thus, for instance, 'The coin in my pocket is round' entails 'There is one thing in my pocket which is a coin and is round'.[3]

3. In fact, on Russell's account of descriptions, the second sentence analyses the former.

However, I suspect it is going to be difficult to even state the Problem without predicates like 'is a coin' or their surrogates. Consider these examples from the literature, where the Problem is being expressed in terms of clouds:

> . . . it seems clear that no matter which relevant concrete complex is deemed fit for cloudhood, that is, is deemed a cloud, there will be very many others each of which has, in any relevant respect, a claim that is just as good.
>
> (Unger, 1980, p. 415)

> It is, therefore, entirely arbitrary to pick on particular aggregate and insist that that is the cloud. But if all of them count as clouds then there is not one cloud in the sky but many, contrary to our initial supposition.
>
> (Tye, 1996, p. 221)

> Since they have equal claim, how can we say that the cloud is one of these aggregates rather than another? But if all of them count as clouds, then we have many clouds rather than one. (Lewis, 1993, p. 23)

Note the expression 'count as clouds' that appears in extracts from Lewis and Tye. Here, we might legitimately substitute 'exemplifies the concept of cloudhood', or its linguistic correlate, 'satisfies the predicate "is a coin" '. And in the extract from Unger it is clear that the problem is being set up in terms of cloudhood being predicated of concrete complexes. The reason the Problem seems to have bite is that there are many candidates which appear to satisfy the conditions for cloudhood, or which in other words, appear to satisfy the predicate 'is a cloud'.

Let us turn, then, to the status of supervaluationism as a solution to the Problem of the Many. I will argue that supervaluationism, considered as solution to this problem, is exposed to serious objections.

7.3 A PROBLEM FOR SUPERVALUATIONISM

7.3.1 *Principled Sharpenings*

The night after your plane trip to the sky you sleep restlessly. You experience surreal visions of coins all through the night—coins glinting in the sun; coins spinning through the air; a sea of coins in a miser's hoard. Upon waking you find yourself to be feeling no less impulsive than you were the previous day. You decide to indulge your new fixation and visit a coin exhibition. You arrive. '2547 Coins from

Every Time and Place that Matters', the sign blares. Being in a suspicious frame of mind you count them all, only to discover that the sign was right.

When we think about the Problem of the Many, it is easy to forget that a permissible sharpening has to do more than just cater for the truth of statements like, 'There is one coin here'. It is easy to forget this because the Problem of the Many is presented in the literature only in terms of single cases—single clouds, single coins and the like. Yet, the role of a permissible sharpening is much more exacting than this. Suppose that as you make your way through the coins on display, your eye is particularly caught by a pretty, gleaming shilling. A permissible sharpening of 'is a coin' must be sure to say that there is just one shilling that has particularly caught your eye. But there is also a much broader truth that any permissible sharpening must allow for, namely, that there are 2547 coins in the exhibition.

Imagine that *just one* of the supposedly permissible sharpenings yielded a different figure for the number of coins on display. It would turn out that the number of coins in the exhibition is not determinate. This follows from the fact that any disagreement between permissible sharpenings over the question of how many other coins are in the exhibition translates into indeterminacy when we supervaluate. Indeterminacy of this kind would be most unwelcome here. And it is not just indeterminacy that the supervaluationist needs to avoid. If every permissible sharpening agrees that there is some number of coins in the exhibition that differs from the number you counted, we should be equally dissatisfied.

We may summarise the situation for the supervaluationist as follows. Corresponding to each of what we would ordinarily describe as the 2547 coins in the exhibition, there is cluster of aggregates of particles. To make the situation a little more concrete, let's imagine that that just after you have counted the coins, you exclaim, 'There really are 2547 coins in the exhibition after all!'. Furthermore, let us suppose that at a certain instant while you are making this exclamation, each coin in the exhibition is in the process of donating four hundred electrons to the surface on which it is mounted. Moreover, in each case, most of the four hundred electrons are neither definitely parts of the coin nor definitely parts of its mounting. Notice that for each coin, there are many more coin-candidates than doubtful coin-parts: some coin-candidates include only one of the doubtful electrons, some include two, others include three, and so on.

Now, each permissible sharpening must select as a coin exactly one candidate from each cluster of coin-candidates. I intend to argue that this can only be done if we allow that those sharpenings which select one candidate from each cluster do so in an arbitrary fashion. I will then, in 7.3.2, suggest why such arbitrary sharpenings of 'is a coin' are unsatisfactory. As a background assumption, we will pretend that classical physics accurately describes the physical world; hence,we will assume that every physical thing stands only in determinate spatiotemporal relationships with other physical things. If, as I suspect, it turns out that 'is a coin' cannot be sharpened in a principled way even under such generous conditions, then that is quite a significant result.

The way that our ordinary predicate, 'is a coin', selects objects as coins is principled. As I noted in 7.2, coins are distinguished from non-coins on the basis of certain common features, for instance, their perceptible shapes, sizes and designs. Of course, the selection principles that govern the application of our ordinary predicate 'is a coin' are not fine-grained enough to distinguish between the many aggregates of particles which are vying for the mantle of 'the shilling that particularly caught your eye'—hence, the Problem of the Many. The question I now want to address is whether there could be adequate sharpenings of 'is a coin' that are principled. That is, whether there could be adequate sharpenings according to which those aggregates of particles that satisfy the (sharpened) predicate do so in virtue of some common feature or features.

Think again of the shilling that has caught your eye. Consider a certain sharpening, *Q*, of 'is a coin' that selects just one of the candidate aggregates, *s*, as a shilling. And assume that this selection is not arbitrary; there is some feature that *s* has and the other candidates lack, which forms the basis for *s*'s selection. As I will now explain, very exacting demands are placed on Sharpening *Q*.

Next to the shilling is a penny. *Q* selects *s* as a coin, while rejecting many aggregates from the same cluster that differ from *s* by only an particle or two. At the same time it also selects one candidate, *p*, from the adjacent penny-cluster as a coin. Note that shillings and pennies are quite different from each other. To the naked eye, their diameters vary markedly and the designs on their faces are altogether different. Now, consider a candidate to be the shilling, s_1, which overlaps *s* almost to the particle. *p* does not resemble *s* to anything like the extent that s_1 does. Yet, according to the sharpening we are considering, *p* is a coin while s_1 is not.

The almost exact similarity of *s* and s_1, and the relative dissimilarity between *s* and *p* does not, by itself, constitute a difficulty for the supervaluationist. After all, suppose 'is a long line' were sharpened so that any line greater than sixteen centimetres in length counted as long. Of two near duplicate lines, one could be long and the other short if each were on opposite sides of the sixteen centimetre divide. On the other hand, a third line that was quite different from the other two overall

(perhaps being thick and squiggly while the others were thin and dead straight), could nevertheless be a long line, provided that it was more than 16 centimetres in length. However, further factors are operative in the case of the coins, as I shall now explain.

Not only is it the case that s is much, much more similar to s_1 than to p. s is also much, much more similar to s_1 than it is to any of the 2546 other aggregates in the exhibition that are coins according to Q. And this fact generalises: for any coin according to Q, x, there is a non-coin, x_1, that differs from x only by an particle or two, and which is therefore much, much more similar to x than any of the other coins according to Q. This fact in particular makes it somewhat difficult to see offhand what distinguishing common feature might form the basis for Q. It seems that any feature capable of the task may need to be somewhat recondite.

That the principle underlying Sharpening Q might not be immediately obvious, does not yet establish that there is no principle. Let us now see what the supervaulationist might be able to offer.

Since in our regular usage of 'is a coin' we distinguish coins from non-coins in part on the basis of their shape-properties, we might consider whether some sharpened notion of shape could underwrite Q. This suggestion is quite obvious, but quite obviously has no chance of working. Sharpening on the basis of shape would lead either to (a) not sharpening 'is a coin' enough to eliminate all but one coin-candidate in each cluster, or (b) making 'is a coin' so precise that one candidate from a certain cluster is selected over candidates in the same cluster that differ from it by only a particle or two, with the result that nothing else anywhere counts as a coin.

A more sensible thought might be that 'is a coin' could be sharpened on the basis of density. There are a couple of things we might have in mind here. For instance, Sharpening Q might pick out a certain density, and only the coin-candidate from each cluster matching that density counts as a coin. Or, to accommodate the fact that not all coins are, or need be, made out of materials with similar densities (a coin might easily be made out of plastic, for instance) you could complicate things. Instead of simple densities, you might say that Q involves *ratios* of densities. Q says that a candidate is a coin only if the ratio of the density deep in its interior to the ratio at its periphery has a certain value. On the other hand, you might try something different. For instance, you might try something based not on density, but on the simpler property of distance: according to Q, x is a coin iff it is a coin-candidate, and for every sub-atomic particle, y that is a part of x, there is another sub-atomic particle that is a part of x and is at a distance less than d

from y.

There are grave problems for each of these approaches. Consider first the density and ratio-based approaches. The most telling difficulty is that if the density-value or ratio-value is not very sharply defined, then Q could easily admit too many candidates as coins. On the other hand, if these values are quite sharply defined, then Q might not say that there are enough coins; some clusters might not include any candidates that match the value. The distance-based approach also faces a difficulty of specification. For sensible values of d, it does ensure that there is at least one coin per cluster, but it doesn't eliminate the possibility that there is more than one coin per cluster. Moreover, it seems highly plausible that the problems of specification besetting the approaches I have outlined here will generalise for other quantities we might try to substitute for the ones mentioned here.

Perhaps, however, there is a means of circumventing the problems associated with the approaches I have just considered. The thought is that we can make a simple amendment to some of those approaches. We simply say, for example, that x is a coin according to Sharpening Q iff x has the *greatest* density of all the coin-candidates in its coin-cluster. For another sharpening, it might be the third-greatest density that is relevant, or it might be the smallest amount of some other quantity. It should be fairly clear that this amendment is not going to work in the case of density. Since density is a *ratio* of mass to volume, it follows that appeal to the greatest density (or the second-greatest, or the smallest, etc.) is not going to remove the possibility of ties. For instance, it would be quite possible for two coin-candidates in the same cluster to share the greatest density in their cluster. What the supervaluationist needs, then, is a simpler quantity—one that is not a ratio. As good a quantity as any to try here is mass. But even a simple quantity like mass provides us with only two feasible ways of sharpening 'is a coin', and as I will now explain, this is not satisfactory.

Consider a certain coin-cluster. There is bound to be a coin-candidate with the smallest mass in this cluster. That aggregate is the sum of the particles definitely included in the coin. Likewise, there is bound to be a coin-candidate with the largest mass, namely, the sum of the particles definitely included in the coin and those particles which are neither definitely included nor excluded.

However, for any n between 1 and the ordinal number assigned to the smallest mass, there will be no unique coin-candidate with the nth-greatest mass. To illustrate this, consider whether there could be a unique coin-candidate which has the second- greatest mass. To find the one that has the second-greatest mass, we 'take away' from the coin-candidate with the greatest mass one of the electrons

that is neither a definite part, nor a definite non-part, of the coin. But which one should we 'take away'? Corresponding to every electron that is a questionable part of the coin, there is a coin-candidate that includes all of the other questionable electrons except that one. And each of these coin-candidates is such that there is only one coin-candidate that has a greater mass than it. We can see easily enough that these considerations iterate. Suppose we wanted to find the coin-candidate with the third-greatest mass. In that case, we would 'take away' two electrons. But which two should we 'take away'? (And so on.)

It seems, then, that the supervaluationist is left with only two ways of sharpening 'is a coin': this predicate can be sharpened in terms of having the greatest mass or having the smallest mass in its cluster of coin-candidates. Unfortunately, this turns out to be quite problematic. Since the supervaluationist gives the semantics of our ordinary imprecise notions in terms of the ways that they could be made more precise, it turns out that, quite contrary to appearances, our *ordinary* notion of coinhood tells us that there are only two coin-candidates in each cluster. The Problem of the Many turns out in fact to be the Problem of the Two! This consequence diminishes the Problem of the Many in a way that, I believe, would be utterly surprising to everyone. Consider an analogous situation regarding the general supervaluationist treatment of vagueness. Suppose it turned out that there were only two permissible sharpenings of 'short man'. According to one of these sharpenings only men shorter than, or equal to, 181 centimetres in height are short, and according to the other the crucial figure is 183 centimetres. This would be equally unsatisfying, since it would render certain intuitively borderline cases (e.g. men of 180 centimetres) as definite cases of shortness, and other intuitively borderline cases as definite cases of tallness (e.g. men of 184 centimetres). If the supervaluationist wishes to offer a plausible solution to the Problem of the Many, then many more than two permissible sharpenings of 'is a coin' are needed.

7.3.2 *Arbitrary Sharpenings*

Taken together, the considerations I have raised suggest that the thought of *Q*'s being thoroughly principled in a plausible way is difficult to believe; at the very least, the onus now rests on the supervaluationist to show how *Q* might be appropriately principled. Moreover, this conclusion holds for every other supposedly permissible sharpening of 'is a coin', since *Q* is not different in any relevant respect from those other sharpenings.

What is the alternative to thoroughly principled sharpenings? The only alternative, it would seem, is to allow for a degree of arbitrariness in *Q*. Let me now

explain how this might work. Consider one of the failed attempts to secure entirely principled sharpenings for Q, say, the distance-based account. This account said that according to *Q*, *x* is a coin iff it is a coin-candidate, and no sub-atomic particle that is a part of *x* is at a greater distance than *d* from some other sub-atomic particle that is part of *x*. Suppose that this account does manage to reject many of the coin-candidates in each cluster. We regard *Q* as a function which rejects any coin-candidate, *x*, that has as a part a sub-atomic particle which is at a distance greater than *d* from all other sub-atomic particles that are a part of *x*. For any clusters where the distance-based account fails to eliminate all but one coin-candidate, *Q* arbitrarily selects one candidate from the remainder as a coin. Some other sharpenings will also use *d* as the value for the 'first step' of the elimination procedure, while arbitrarily selecting different candidates than Q. And still further sharpenings will use a value different from *d* for the 'first step'.

If we allow ourselves the liberality of counting sharpenings that exhibit arbitrariness to count as permissible, then it is easy enough to see that, on the surface, we will get the answers we want. Every permissible sharpening will be such that there is just one shilling that has particularly caught your attention. In addition, every permissible sharpening will be such that there are exactly 2546 other coins in the exhibition.

However, such a liberal approach has never, to my knowledge, been advocated for other supervaluational treatments of vague natural language predicates. An important reason why no one has advocated such an approach involves what Kit Fine has called *penumbral connections* (1975, p. 270). In Fine's terminology, the positive extension of a vague predicate makes up the *umbra* of that predicate, while its borderline cases constitute the *penumbra*. Now, the meanings of certain predicates, like 'short man', for instance, appear to impose logical connections between certain sentences. Given that Wayne is shorter than Phil, the following material conditional seems to be imposed: if Phil is short then Wayne is short. This connection is absolutely uncontroversial if Phil and Wayne are both in the umbra of 'short man'; both antecedent and consequent are true, and so the conditional is true. But what do we say if both Phil and Wayne are in the penumbra of 'short man'? In that case, both the antecedent and consequent are indeterminate and so the conditional is indeterminate. The supervaluationist thinks we can't be satisfied with this result. Provided that Wayne is shorter than Phil, the meaning of 'short man' dictates that 'If Phil is short then Wayne is short' is true, even if both of the men are penumbral cases. Thus, the supervaluationist thinks, there are penumbral as well as umbral logical connections. That is, there are sentences which are inde-

terminate because they have penumbral subjects, but which nevertheless stand in logical relationships with other sentences, including other indefinite sentences.

The desire to include penumbral as well as umbral connections lies at the heart of supervaluational approaches to vagueness (Fine, 1975, pp. 269–71). The supervaluationist retains penumbral connections by the now familiar device of supervaluations. We say, for instance, that 'If Phil is short then Wayne is short' is super-true, since it is true on all permissible sharpenings of 'short man'.

With respect to the interests of this chapter, the most important thing to note about penumbral connections is the following. In order for a sentence expressing a penumbral connection to count as super-true, those sharpenings that conflict with the penumbral connection must count as impermissible; penumbral connections impose conditions that a sharpening must satisfy if it is to count as permissible. Thus, for instance, no sharpening of 'short man' which attributes shortness to Phil but not to Wayne is to count as permissible, since such a sharpening falsifies 'If Phil is short then Wayne is short'. As I will now indicate, this sort of example shows why it is not acceptable to count sharpenings of 'short man' that are tinged with arbitrariness as permissible.

Let's consider an example closely analogous to the situation where Q is held to be a partially arbitrary sharpening of 'is a coin'. Call *M* a sharpening that shrinks the penumbra of 'short man' only so far in a principled way. Ignoring complications arising from second-order vagueness, let's stipulate for the sake of argument that penumbral cases of 'short man' are those men ranging in height from 175 to 182 centimetres. *M* closes that gap in a principled way by counting men shorter than 177 centimetres as short, and men taller than 180 centimetres as non-short. *M* counts all other men as either short or non-short. In particular, Wayne, who is 178 centimetres in height, is counted as non-short, while Phil, who measures 179 centimetres, is counted as short.

It is true that *M* does, upon supervaluation, give us the right results for every individual man concerning the question of whether he is short, non-short or neither. And it does accommodate some penumbral connections. For example:

$$[Short]Wayne \vee \neg[Short]Wayne$$

And also:

$$\neg([Short]Wayne \wedge \neg[Short]Wayne)$$

But it does not honour *all* penumbral connections. Obviously, it does not honour 'If Phil is short then Wayne is short'. There are other partially arbitrary sharpenings that *do* honour this connection, but many of these do not honour a similar

connection between Phil and another man in the penumbra, Ed. And of those which honour both of these connections, there are many that do not honour a similar connection between Ed and another man in the penumbra, James. And so on. By the end of this process of elimination we are left with just those sharpenings that do not look arbitrary in the slightest. Each of these sharpenings has a tallest (or equal-tallest) short man, and is such that every man who is shorter than the tallest short man is short, and every man taller than the tallest short man is tall. Thus, it appears that the only sharpenings of 'is a short man' that can honour all of the penumbral connections are those that are thoroughly principled.

Now we are ready to return to the Problem of the Many. Earlier, I argued that a supervaluational solution to the Problem of the Many requires each sharpening of 'is a coin' to select, in a partially arbitrary way, one aggregate from each cluster of coin-candidates as a coin. I will now urge that a policy of allowing such sharpenings for this predicate falls foul of penumbral connections.

The argument is quite simple. In our ordinary discourse, coins are differentiated from non-coins in a principled way. We would never say, 'In my hand is a coin and on my wrist is a watch, but there is no principled reason why one is a coin and the other isn't'. The meaning of 'is a coin' dictates the following maxim:

Non-Arbitrary Differences (NAD):

> For any coin and non-coin, there is a principled difference between them which forms the basis for one being a coin and the other being a non-coin.

NAD imposes penumbral connections that any permissible sharpening of 'is a coin' must satisfy. Imagine two aggregates of particles, *d* and *e*, which both count as borderline coins. NAD imposes the following penumbral connections on every permissible sharpening: if *d* is a coin then so is *e* unless it differs from *d* in a principled way. And likewise, if *e* is a coin then so is *d* unless it differs from *e* in a principled way. A supervaluational solution to the Problem of the Many that relies upon arbitrary sharpenings is bound to violate these connections. And this means that NAD turns out to be super-false, which is thoroughly unsatisfactory. What this suggests is that a supervaluational solution must employ only entirely principled sharpenings. But as I argued in 7.3.1, this option is not available.

Before concluding this section, I would like to address a response to my use of NAD which may occur to defenders of the supervaluational solution. There is something interesting that holds for every arbitrary sharpening of coinhood. For each arbitrary sharpening, every non-coin almost entirely overlaps something else that is a coin. However, this feature is not shared by the coins. There is no

arbitrary sharpening according to which there is a coin which overlaps something else that is a coin. Indeed, this difference points to a general principle which many philosophers would undoubtedly wish to preserve, namely, that if something of kind *x* mostly overlaps something else, then that something else is not also an *x*.[4]

However, while the difference between coins and non-coins that I have just outlined is indeed principled, this difference by itself gives us no information about which things are coins and which are not; merely noting that coins and non-coins differ in this way does not partition the world into coins and non-coins.[5] And this means that pointing to this difference does not allow the advocator of arbitrary sharpenings to satisfy NAD. The requirement that this difference be respected operates *at best* as a constraint upon the admissibility of any principle/s that putatively separate coins from non-coins.

Even if my objection of the last paragraph is waived, there is another principle that is inextricably linked to NAD. Just as there should be certain principled differences between coins and non-coins, there should also be certain principled 'coin-making' similarities between coins. Hence, we have NAS:

Non-Arbitrary Similarities (NAS):

> For any pair of coins, there is a principled similarity between them which forms the basis for their both being coins.

This principle focuses only on coins, which means that the difference between coins and non-coins mentioned in connection with NAD is not relevant. NAS imposes its own penumbral connections. Consider again the borderline coins *d* and *e*. If *d* and *e* are both coins then there is a principled similarity between them which makes it the case that they are both coins. Arbitrary sharpenings are bound to violate such connections.

With respect to coins, I find it difficult to see how either of NAD or NAS could be denied. *Perhaps* if 'coin' were a family-resemblance term then NAD and NAS might come into question. I doubt that 'coin' is in fact a family resemblance term, but the arguments I have given apply to terms other than 'coin'. So, if, for example, it turns out that there are reasons for denying NAD and NAS that centre around 'coin' being an artifact term, the arguments could be restated using natural kind

4. To be more accurate, many philosophers would like to preserve this principle for ordinary physical object kinds. There may be things for which this principle fails, for instance, mereological sums (if we suppose that composition is unrestricted).

5. *Cf.* Unger (1980, §10).

terms. For example, instead of concentrating on the problem of the many coins in your pocket, we might consider the Problem of the Many as it applies to lumps of lead. And we would modify NAD and NAS accordingly.

I conclude that the supervaluational solution to the Problem of the Many is in trouble.

7.4 SUPERVALUATIONAL SOLUTIONS IN THE LITERATURE

Now is a good time to point out that very few people have supported in print exactly the straight supervaluational solution that has so far been my focus in this chapter. The only endorsement of the straight solution I could find in print is due to Mark Heller (Heller, 1990, pp. 151–4). And even here, Heller does not regard the supervaluational solution as integral to his project (p. 111).

Despite the paucity of straight supervaluational solutions in the literature, the view that I have been attacking here is no straw man. For one thing, it is plausible to think that the straight supervaluational solution may enjoy some support. And more importantly, the straight solution is an integral component of solutions to the Problem of the Many that *have* been proposed in print. Here, I am thinking in particular of solutions presented by David Lewis and E.J. Lowe.

Lewis offers a contextual solution to the Problem of the Many (Lewis, 1993, pp. 34–5). In most contexts, notably our less philosophical everyday thoughts and communications when we are ignoring the many candidates to be the shilling that has caught your attention at the exhibition, we favour an interpretation of coinhood according to which there is *strictly* one such shilling.[6] In these contexts, he thinks, the supervaluational procedure gives us the answer that we want, since it is true on all permissible sharpenings of 'is a coin' that there is strictly one shilling. However, during our more philosophical moments, when we explicitly note that there are many equally deserving candidates to be the shilling, context favours an interpretation of coinhood according to which there genuinely are many shillings. Lewis hastens to add that in these contexts the sense in which there is more than one shilling is benign. The various shillings have almost all of their parts in common, so they are *almost* identical.[7] There are many shillings, but they are almost one. So it is harmless enough to approximate and say that there is one shilling.

At this point you might want to ask whether we could put supervaluations

6. Lewis uses the example of cathood rather than coinhood.

7. Lewis borrows the notion of almost identity from Armstrong. See Armstrong (1993).

aside and opt for a simpler non-contextual solution, allowing almost-identity to do all of the work. Lewis thinks we can't do this because there are cases of the Problem of the Many that do not involve almost-identity:

> Fred's house taken as including the garage, and taken as not including the garage, have equal claim to be his house. The claim had better be good enough, else he has no house. So Fred has two houses. No! We've already seen how to solve this problem by the method of supervaluations... [A]lthough the two house-candidates overlap very substantially, having all but the garage in common ... we cannot really say they're almost identical. So likewise, we cannot say that the two houses are almost one.[8]
>
> (Lewis, 1993, pp. 35–6)

Lewis' view is that in cases like Fred's house, we can leave all of the work to supervaluations. Regardless of whether 'is a house' is sharpened so as to include or exclude Fred's garage, it remains true that Fred has only one house.

Once we realise that supervaluations cannot contribute to a treatment of the Problem of the Many, Lewis is left without the resources to support a contextual solution. Moreover, without recourse to supervaluations, Lewis has nothing to offer us when it comes to dealing with cases like Fred's house, where overlap between the house-candidates is extensive but not extensive enough for the 'many but almost one' solution to come into play. It is also worth noting that Lewis' special dependence on supervaluations in certain cases of substantial, but not almost complete coincidence, is damaging to his contextual account even if any general objections to the use of supervaluations are waived. Given the terms in which he has set up his contextual account, it appears that he should admit to contexts in which Fred has two houses that are not almost one, namely, those contexts in which we are explicitly attending to the candidates to be Fred's house.

E.J. Lowe's solution, on the other hand, seems to give us the resources to say that there are no conditions under which Fred has more than one house. Lowe suggests that we solve the Problem of the Many by invoking the view that identity is distinct from constitution. Concerning Fred's house, Lowe would say that Fred has one house and there are two structures, neither of which is *identical* with the house, that have equal claim to *constitute* the house. 'Fred's house' is a precise expression, whereas 'the constitutor of Fred's house' is a vague designator and supervaluations are to be used to secure the conclusion that Fred's house has only one constitutor (Lowe, 1995, p. 180).

8. See also Johnston (1992, p. 101*f*).

We might try and extend my previous argument against the supervaluational solution by observing that the distinction between constitution and identity does not prevent the violation of principles that are closely related to NAD and NAS, such as (NAD*):

> (NAD*): For any coin-constitutor and non- coin-constitutor, there is a principled difference between them which forms the basis for one's constituting a coin and the other's failing to constitute a coin.

However, such a straightforward extension of the argument is, at the very least, questionable. We might observe that 'coin-constitutor', unlike 'coin', is a theoretical term of art whose meaning is not grounded in common usage. So it may well be that a supervaluationist of Lowe's ilk need not endorse (NAD*).

There are, however, other reasons to be concerned about Lowe's solution. The view that there is a distinction between constitution and identity is supposed to be a piece of serious metaphysics. On that view, our ontology includes, in a serious sense, both coin-constitutors and coins. If 'coin-constitutor' is a vague designator then that is because the constitution relation is vague. And that amounts to ontological vagueness. Even if this objection is waived, it can be shown that the thesis that there is a problem of the many coin-constitutors, but no problem of the many coins, leads to serious difficulties.

If, as Lowe's solution suggests, there is no problem of the many coins but only a problem of the many coin-constitutors, then there are things such that they are coins. Consider such a coin, and consider the following proposition:

(L) There is a largest exact region of space such that the coin fills *that* region of space.[9]

Given that we are confronted here with a thoroughly semantic treatment of the Problem of the Many, set against the backdrop of a semantic account of vagueness in general (though on this second point observe the remarks at the end of this section), we can stipulate that no objects have fuzzy boundaries, and that, therefore, (L) is true. (L) is also super-true. Since 'is a coin' is precise, there is only one way of making 'is a coin' precise. And since (L) is true according to the one way of making that predicate precise, (L) is super-true. Now, consider the following propositions:

9. There are many regions of space filled by the coin. The largest region filled by the coin is the region that, intuitively speaking, marks the coin's spatial extension.

(LC) There is a largest exact region of space filled by the coin-constitutor.

(LC*) There is largest exact region of space such that the coin-constitutor fills *that* region of space.

(LC) is super-true, since for every candidate to constitute the coin there is a largest region of space that the candidate fills. However, (LC*) is super-indeterminate, since *just which* region counts as the largest filled region varies from candidate to candidate; no particular region of space is such that it satisfies (LC*) on more than one sharpening of 'coin-constitutor'. Now, constitution theory says that a coin and its constitutor fill the same regions of space. Thus, when set against the background of constitution theory, (LC*) entails (L). This means that (L) counts as super-indeterminate. But we have already seen that (L) is super-true. This looks like a severe difficulty.

Where could Lowe go from here? He might conclude that there is, after all, in addition to the problem of the many coin-constitutors, a problem of the many coins. But then, if he decides that he still wants to endorse a supervaluational solution he will need to sharpen 'is a coin'. And then he will fall foul of NAD.

It is important to make one further comment about my argument against Lowe. In 'The Problem of the Many and the Vagueness of Constitution', Lowe makes it clear that he is endorsing a semantic solution to the Problem of the Many (p. 180). Elsewhere, however, he has argued for the coherence of metaphysical vagueness on the basis of a possible interpretation of quantum mechanics.[10] Lowe argues that there may well be vagueness involving metaphysically indeterminate identities at the quantum level resulting from the entanglement of quantum particles. Perhaps Lowe would like to maintain that there is (or at least, might well be) metaphysical vagueness at the quantum level while still regarding the Problem of the Many as being amenable to a semantic solution. Even so, the putative indeterminate identities Lowe discusses involve only matters of identity over time (diachronic identity) rather than identity at a time (synchronic identity) (Lowe, 2001, p. 243). And insofar as metaphysical vagueness is restricted to diachronic identity, nothing in the cases Lowe presents casts doubt on any of the principles, such as (L), which I have used in arguing against Lowe's semantic solution, since these all pertain exclusively to synchronic matters.

10. See, for instance, Lowe (1994) and Lowe (2001).

7.5 FURTHER IMPLICATIONS

I believe that my argument against the supervaluational solution to the Problem of the Many has negative implications not only for the supervaluational treatment, but also for the solution to the problem which falls out of the view that vagueness is a purely epistemic phenomenon.

According to those who support the epistemic theory of vagueness, such as Williamson (1994) and Sorenson (1998), vagueness is to be located neither in the world, nor in our concepts. Instead, it is to be located in our ignorance. On this view, there is always a fact of the matter as to whether a given concept applies to a given object. So-called borderline cases of application are cases where our knowledge of which concepts apply to which things fails us. Thus, the epistemic theorist's solution to the Problem of the Many is to say that we do always pick out one aggregate of particles when we say things like, '*The* coin is such-and-such' Sorenson (1998, p. 292–3). Our concepts are perfectly sharp but our epistemic arrogance keeps us from recognising this truth.

Now, we have already seen what it takes for an ordinary physical kind notion to be sharp. It takes a measure of arbitrariness with respect to the matter of which things are instances of that notion and which things are not. So if our concepts are sharp, as the epistemic theorist has it, then it is arbitrary that some aggregates of particles are coins while others which differ only very minutely, are not. Thus, it turns out that if the epistemic theorist is followed, NAD and NAS are violated. In addition, the epistemic theorist needs to accept some sort of magical theory of reference. A final scene from the exhibition will illustrate this.

By the end of the day you are so enamoured by the shilling in the exhibition that it falls into your pocket and acquires the name, 'Bessie'. As you croon softly to her, your voice reaches out across the short distance between you and in a way that is quite inexplicable, bestows your affection on just one aggregate of particles.

8

Persistence and a New Problem of the Many

Having urged in the previous chapter that supervaluationism does not furnish us with an adequate solution to the Problem of the Many, I will next uncover a new version of the Problem. I claim that this version resists hitherto discussed treatments of the standard version of the Problem. Moreover, there is a connection with persistence here, since the new problem falls out of considerations related to persistence. In case anyone wants a quick reminder of the nature of the Problem of the Many, here is another little story.

One winter's Saturday Clarence wakes up. He realises he has left his umbrella at work. The office is locked, and he can't get in. Being one of those people who punish themselves for their mistakes, he can't bring himself to buy a replacement. He has an engagement six kilometres down the road and starts wondering whether it will rain. Normally, this would not be a problem, but his motor vehicle has broken down because he forgot to have it serviced. And of course, he blames himself for this mistake, so it is only natural that he can't bring himself to hire a cab or take a bus. He really should hope that it rains and that he gets drenched on the way to his engagement, but he is only human after all, and a small part of him hopes that it is a sunny day.[1]

He draws back the curtains and observes a beautiful blue sky sullied only by the presence of one medium-sized dirty grey cloud. It looks like it is not going to rain after all. But he remembers that he has been reading about Peter Unger's Problem of the Many (in his spare time). After thinking about Unger's problem for a moment (Unger, 1980), he amuses himself by constructing a sophistical argument

1. Some people think Clarence a rather peculiar fellow.

to the conclusion that it will probably rain after all. Clouds are collections of tiny water particles. At the margins of the cloud, the concentration of water particles decreases gradually. Thus, there seem to be many equally good ways of marking the boundary of the cloud. Depending on how the boundary is drawn, various peripheral water particles will or will not count as parts of the cloud. Thus, it would appear that there are many collections of water particles with equal claim to be the cloud; our concept of cloudhood is not precise enough to adjudicate in favour of one collection over the others. Since our notion of cloudhood doesn't decide the issue, we ought to say that there are many clouds where we thought there was just one. But if there are many dark clouds in the sky, then the likelihood of rain is high. So it will probably rain.

Clarence smiles because he knows rain is unlikely. For some perverse reason known only to himself, he has been reading about what philosophers say regarding such things. He knows that quite a lot of solutions have been proposed which would license the obvious conclusion that it will not rain. He mentally rehearses a few of these. Perhaps there is just one cloud but it has vague boundaries. Perhaps there is just one cloud that has precise but unknowable boundaries. Perhaps there are many clouds but this admission is harmless since they almost coincide mereologically and we can approximate by saying that there is just one cloud. Surely one of these solutions, or perhaps one of the others, is on the right track. So there is no need to worry about getting wet today.

Unger's Problem of the Many is generated by considerations surrounding vagueness. The problem is that ordinary objects seem to have borderline parts. Take the cloud, for example. There are particles for which it at least *seems* indeterminate whether they are parts of the cloud. I will present a new problem of the many, which arises from considerations related to persistence. This problem does not obviously centre around questions of indeterminate parthood. And, as I will argue, the new problem is resistant to the usual solutions offered to the standard problem.

8.1 THE PROBLEM FOR PERDURANCE

I begin by outlining the new variant in terms of perdurance. There are pragmatic reasons for beginning with perdurance, as the new problem falls out of perdurance more readily than than it does out of endurance. Typical cases of perdurance are cases where a persisting thing persists in virtue of its having temporal

parts.[2] Thus, persistence on this view is analogous to 'normal' cases of spatial extension.[3] A thing is extended through space in virtue of its having different parts at different places. Often, perdurantists claim that persisting things have instantaneous temporal parts, otherwise known as timeslices. For ease of exposition I will assume that perduring things have instantaneous temporal parts. However, nothing important hinges on this assumption.

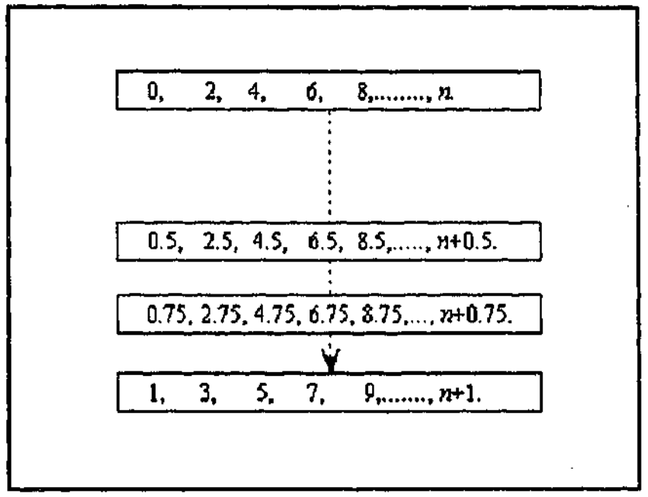
The usual statement of the Problem of the Many in terms of perdurance runs as follows. Consider Clarence. Clarence's temporal boundaries appear to be vague, and so there are numerous entities which seem to be equally good candidates to be Clarence. These candidates have almost all their parts in common. They differ merelogically only at their temporal peripheries. Some have earlier first moments than others (and hence, include extra timeslices), and some have later last moments than others (and hence, include extra timeslices) (Lewis, 1993, p. 24).

Now, consider Clarence again. To differentiate the new problem from the standard one, and in the interests of expository ease, we can simplify matters by pretending that Clarence's temporal boundaries are perfectly precise. The first step is to notice that there is a way of constructing from Clarence's timeslices quite a lot of entities that are intrinsically very much like Clarence. And each of these entities is a proper part of Clarence, but no two of them mereologically overlap. In fact, if time is continuous then it can be shown that there are infinitely many such entities.

Assume first that continuity is modelled by the real number system. It will also simplify the exposition a little if we assume that Clarence has a first and last timeslice (that is, the temporal interval that marks his timespan is closed at both ends), though, again, nothing significant turns on this. Next, observe the following diagram:

2. Though, as I discussed in 5.3, there may be bizarre epistemically possible cases of perdurance which do not involve temporal parthood.

3. 'Deviant' cases would be mereological simples with spatial extension.



The diagram represents each of Clarence's timeslices, from his first, represented by 0, to his last, represented by $n + 1$. Each horizontal line on the diagram represents a sum of some of his timeslices. Each line starts with a real number from 0 to 1 inclusive and proceeds in increments of 2. Let the increments of 2 represent a really brief interval of time, say, $10^{-10^{1000}}$ seconds (the selected interval may be arbitrarily brief). Thus, there are temporal gaps between each of the timeslices represented by a line, but these gaps are unfathomably brief. And there is a line for every number between 0 and 1 (though, naturally, not every line is marked on the diagram). This gives us continuum-many sums.

Now, consider the sum represented by the line that starts with 0 (the 0-sum). We begin by comparing the slice represented by 0 (the 0-slice) with the slice represented by 2 (the 2-slice). Although numerically distinct, the temporal gap between the two is so small that the qualitative difference between the two is vanishingly small. Similarly, the qualitative difference between the 2-slice and the 4-slice is vanishingly small, and so on. Change for the 0-sum is discontinuous, but not a bad approximation of continuity.[4] In terms of the timescales that matter for personhood, the differences in terms of continuity between Clarence and the 0-sum are negligible. If the world had been temporally discontinuous, then Clarence might have been something very much like the 0-sum.

The next thing to notice is that these considerations apply for any n from 0 to

4. Consider that the PAL and NTSC telecast standards offer respective framerates of 25 and 30 frames per second, yet each affords a *reasonable* approximation of perceptual continuity. The approximation of continuity between slices of the 0-sum is staggeringly closer.

1. If the world had been temporally discontinuous, then Clarence might have been something very much like the *n*-sum. So the actual world contains, in addition to Clarence, infinitely many sums whose qualitative histories approximate Clarence's very closely. Notice, moreover, that none of these Clarence-like entities have parts in common with any of the others; each Clarence-like entity is wholly distinct from any other.

This surfeit of Clarence-like entities poses a new problem of the many. The problem is this: where we thought there was one person (i.e. the spatiotemporal path occupied by Clarence) there turns out to be continuum-many people. The remainder of the chapter involves the realisation of two key objectives. The first is to convince the reader that the case I have just described counts as a genuine problem of the many. The second is to show that this new problem is more stubborn and difficult to shift than are standard cases of the problem of the many. Let us now move on to the first task.

8.2 A GENUINE PROBLEM OF THE MANY?

I suspect that some readers might at this stage be unpersuaded that the case of Clarence and the Clarence-like sums embodies a genuine problem of the many. The Problem of the Many arises when it appears that there are various equally suitable candidates to be some thing, a tree, for instance. It seems that our notion of treehood does not serve to privilege any of the candidates, so we must either say that there are many trees where we thought that there was only one burgeoning oak, or that there are no trees where we thought there was one. However, so the thought goes, there is an important principle which governs both our application of 'tree' and 'person'. This principle does not ensure that there is only one eligible candidate to be the tree, but it *does* ensure that there is just one eligible candidate to be Clarence.

According to this principle most kind-notions are maximal. This means that even if a thing would otherwise count as a tree/person, it is not a tree/person if it is a large proper part of something that is a tree/person. Here is how Theodore Sider describes the Maximality Principle:

> Ordinary sortal predicates typically express maximal properties, where a property, F, is maximal, roughly, if large parts of an F are not themselves Fs. A large part of a house—all of the house save a window, say—does not itself count as a house. A large part of a cat—all of it save the tail, say—does not itself count as a cat. Otherwise in the vicinity of every house there would be a multitude of houses; in the vicinity of every cat there would be a multitude of cats. The linguistic conventions governing 'cat' and 'house' do not count large undetached parts of cats and houses as cats and houses; therefore the properties these predicates express are maximal properties. Maximality is a kind of border-sensitivity. (Sider, forthcoming 2002)

The Maximality Principle does not get around the standard problem of the many for the tree, since there are numerous pairs of tree-candidates that differ by a particle or two and yet neither is a proper part of the other. However, the case of Clarence and the Clarence-sums is not like this. Each of the Clarence-sums is a proper part of Clarence. Hence, none of the Clarence-sums counts as a person, since each is a proper part of a person, namely, Clarence. And so, the argument goes, there is nothing about the case I have presented which suggests that the perdurantist needs to say strange things like 'There are many Clarences where we thought there was only one.'

Despite appearances, I doubt that the Maximality Principle shows that the new problem of the many Clarences is a mere 'problem'. First, observe that Sider is careful enough to frame the Maximality Principle in such a way that it rules out candidates for *F*-hood only if those candidates are *large* proper parts of an *F*. Without this restriction the principle looks *prima facie* implausible. For instance, imagine a supercomputer made up of hundreds of desktop computers connected in parallel. In the absence of the restriction the desktop units would not count as computers, which seems rather absurd. However, it may be that the restriction allows the Clarence-sums to slip through the net. After all, Clarence has uncountably many time-slices, whereas each Clarence-sum has only countably many. So perhaps none of the Clarence-sums really count as large parts of Clarence. It may be, however, that some unobjectionable tinkering with the Maximality Principle would remove this problem. Or perhaps a pertinent sense can be found according to which the Clarence-sums do in fact count as large parts of Clarence. I think the problem is significant, but I am not yet convinced that it is insuperable.

Better progress can be made by noting that in addition to personhood, we also have personhood*. Personhood* is just like personhood except that it drops the maximality requirement. Thus, persons* fulfill all of the qualitative requirements for personhood except for the extrinsic matters pertaining to maximality. What is the significance of this distinction between persons and persons*? As Sider puts it:

> Why do we exclude objects from the ranks of the genuine rocks and conscious beings on the basis of technicalities, merely relational shortcomings?

> The answer lies in our practices of counting and reference. It is convenient to have manageable counts of rocks and conscious beings. Moreover, since reference, whether by names, demonstratives or descriptions, occurs frequently, if not always, with the aid of applications of sortal terms like 'conscious being' and 'rock', unique reference requires that these terms express maximal, extrinsic, properties. (Sider, forthcoming 2002)

Perhaps, then, the distinction between persons and persons* serves useful practical purposes. But it does not seem to be a distinction of metaphysical significance; it is primarily an exercise in philosophical bookkeeping.

Thus, the conclusion that there are many persons* (the Clarence-sums) in addition to Clarence remains a disturbing one. Moreover, the way that Sider attempts to alleviate residual concern about the multitude of persons* does not apply in the case of Clarence. Sider considers the case of Martha. Martha has an undetached part, Martha-minus, which overlaps all of Martha except her right index finger. Martha is a person, but Martha-minus, owing to the maximality constraint, is merely a person*. Moreover, roughly where Martha is, there are many, many persons* (e.g. Martha-minus-left-index-finger, Martha-minus-left-big-toe, etc.). As Sider explains:

> Their near total overlap ensures that they do not 'crowd each other out' (mentally or physically), that their conscious* 'experiences' are not objectionably distinct or independent, and so on.
>
> (Sider, forthcoming 2002)

This seems right. Unfortunately it does not address the case of the Clarence-sums, since each Clarence-sum is mereologically disjoint from each of the others.

Here is a further reason to worry about any attempt to get around the new problem of the many Clarences by appealing to the Maximality Principle. There is an epistemic problem which indicates that the Clarence-like sums are more significant than that response suggests. Each of the Clarence-sums has its own stream of consciousness[5], though these streams are phenomenally identical. And Clarence's stream of consciousness is phenomenally identical to the stream of consciousness of each of the Clarence-sums. Clarence thinks he's a person and each of the Clarence-sums thinks that it is a person. If the maximality principle holds, then only one of them is right. And in that case, none of the Clarence-sums ought to

5. Or consciousness* if you insist.

believe that they are a person, since there are infinitely many Clarence-sums and only one Clarence. But neither should Clarence himself believe that he is a person. Since his stream of consciousness is qualitatively identical to the streams of consciousness of the Clarence-sums, he has no way of telling that he is in fact Clarence and not one of the Clarence-sums. And since there are so many Clarence-sums and only one Clarence, he too ought to believe that he is a Clarence-sum, and hence, not a person.

This, then, confronts perdurantists with a dilemma. They could retain the concept of personhood while accepting that no-one is warranted to believe that they are persons. This is certainly a bizarre option. The other option is to accept that the global lack of warrant renders the concept of personhood a pointless one, which ought to be replaced by a similar concept that does not include the maximality constraint. This second option would give us a replacement concept for personhood, and the word 'person' would now denote this concept.

This option at least gives us a useful notion of personhood, and I shall be assuming from this point that this is the best option for the perdurantist. Yet this approach leaves us with a problem of the many. For, all things considered, we would still prefer a notion of personhood that didn't imply that there are so many more people than we would pre-reflectively think there are.

I will finish this section by considering a couple of other reasons for doubting that the various Clarence-sums pose a genuine problem of the many. The first worry is that the existence of each Clarence-sum depends on the existence of mereologically distinct entities (namely, the other Clarence-sums and Clarence himself) in an unacceptable way. The worry is that this dependence makes the Clarence-sums' various attributes extrinsic whereas these ought to be intrinsic, and that this is enough to ensure that the Clarence-sums are not persons. This is not a convincing objection. The kind of intrinsic/extrinsic distinction being invoked here is a nomological one. And in that sense, all of Clarence's attributes are extrinsic as well, since they depend on Clarence's existence, which in turn depends on the natural laws which obtain and his surroundings (for instance, that he is not in the vicinity of a massive gravitational field).

A related concern focuses on the persistence conditions for persons. There are many who claim that it is at least a necessary condition of a persisting thing's being a person that its various temporal stages exhibit some form of continuity. What sort of continuity is said to be required varies from theorist to theorist; usually it is psychological continuity, or some variant of physical continuity. There is also a further question that sometimes arises about the nature of the causal basis for

the appropriate continuity. Will any sort of causal basis do? Or must the basis be a reliable transmitter of the continuity? Or, stronger still, must the basis be the kind of basis that obtains in normal cases of the appropriate continuity?[6] We can ask whether the causal basis of the appropriate sort of continuity exhibited by the Clarence-sums is of the right kind. If it is not of the right kind, then none of the Clarence-sums 'have what it takes' for personhood.

I do not want to discuss here the question of which type of causal basis is the right one. Instead, I will argue that however it turns out, the Clarence-sums are still going to count as persons. Take first the claim that any sort of causal basis will do. The Clarence-sums clearly satisfy this condition, since each Clarence-sum's adjacent time slices are causally connected.

Are the causal connections reliable ones? The mechanism which preserves continuity involves those mediatory slices of Clarence which are not part of the Clarence-sum in question. To answer the question of whether this mechanism is reliable, we need only to look at counterfactual situations where Clarence's life goes a little differently. It is easy enough to see that if Clarence's life is altered in certain ways, the Clarence-sums' lives are altered accordingly.

Are the connections normal? This depends on what sort of things we antecedently consider to be persons. If we consider only Clarence to be a person then the connections are not normal. The connections which mediate continuity in the case of Clarence are not mediated by other things which do not mereologically overlap Clarence. However, the connections which preserve continuity in the case of a Clarence-sum *are* mediated by the parts of other things (that is, other Clarence-sums). As I have already noted, I think we have good reasons to count the Clarence sums as persons. However, even if we think that they are only persons* (and remember, I have argued that in this case a multitude of persons* is problematic enough) then the connections are going to count as normal for persons*.

Here is one last consideration that might be advanced in favour of the view that the new problem is not genuine. The claim to be considered is that I have made errant assumptions about composition. In fact (so the suggestion goes) composition is restricted so that temporally gappy entities are excluded. This means that for any persisting x, x has a part located at every instant between x's first and

6. See (Parfit, 1984, pp. 207–287), (Garrett, 1998, Ch. 3) and McKinnon and Bigelow (2001) for discussions of these issues. It has occasionally been argued that no inter-stage causal connections of any kind are required. See Kolak and Martin (1987). For a discussion of this view see Matthews (2000).

last instant. This has the consequence that there are no Clarence-sums, since the putative Clarence-sums are all temporally gappy. This looks to be a promising manoeuvre, and yet it is unmotivated. The ontological backdrop to perdurance is a view of time according to which past, present and future entities exist. But any motivation for banning gappy entities comes from a quite different view of time, presentism. Presentists say that present things exist, but that nothing past or future exists. In the context of presentism, discomfort about temporally gappy entities may arise because such entities would be entities that first cease to exist and then return to existence. I doubt that there are compelling reasons for presentists to regard this as impossible. But, certainly, if past, present, and future entities all exist then there is no reason to think of temporally gappy entities as going in and out of existence.[7] So there is no independent motivation for a restriction on composition that bans gappy entities.

Having urged that the case I present is genuinely a problem of the many, I will next address the question of whether this new problem is one for perdurantists alone.

8.3 ENDURANCE

Commonly, endurantists maintain that persisting things lack temporal parts (though I think there is more to the story than this, as I urge in 5.4). I will describe two ways in which we might try to set up a variant of the new problem for endurance. The first is intended to be analogous to the formulation used for perdurance.

Suppose Clarence is an endurer, and therefore, has no temporal parts. Nevertheless, he is located at every instant from his first moment to his last. How do we come by analogues of the various Clarence-sums? We obviously cannot achieve this by aggregating temporal slices of Clarence; *qua* endurer, he has none. We just have to assume that there are other temporally gappy enduring Clarence-like entities. And we have to further stipulate that each enduring Clarence-like entity is such that it is located at the instants represented by one of the lines on the diagram presented earlier.

Here is where problems set in. Consider a putative Clarence-like endurer, Al. Now pick one of the times at which Clarence and Al are both located, t. Clarence

7. Except in a rather loose sense where talk of going in and out of existence is meant to stand for temporally gappy location.

and Al are both located at t, but not in the obviously benign sense that both have a (temporal) part at t. Clarence and Al are both located at precisely the same place at t *simpliciter* (I will use the now reasonably standard term 'co-location' to stand for this circumstance). It is questionable whether this circumstance is coherently describable.[8]

First, it is almost universally held that two entities of the same kind cannot be located *simpliciter* at the same time and place.[9] If this is correct, then it is going to be exceedingly difficult to state a straightforward analogue of my problem for perdurance in endurantist terms.

There are further problems. Consider, for instance, how it can be that Clarence and Al are co-located. This fact requires an explanation. And there are related matters that also need to be explained. For instance, if Clarence and Al each weigh sixty kilograms, why, when they are both standing on a set of scales, don't the scales register a hundred and twenty kilograms? One way of explaining this would be to claim that Clarence and Al both have exactly the same parts. But this contravenes a highly plausible mereological principle, namely, that if x and y have exactly the same parts then x is identical with y.

Another way of attempting to furnish the required explanations involves invoking the constitution/identity distinction (and note that not all endurantists find this distinction appealing). Leave Al out of the picture for the moment. Those who endorse the distinction say that Clarence is co-located at t with a hunk of matter. Questions like 'How can Clarence and the hunk be co-located?' and 'Why don't scales read a hundred and twenty kilograms when Clarence gets on?' are answered by invoking the distinction. It is true that Clarence and the hunk are different entities. But Clarence is constituted by the hunk. As such, he has certain physical properties such as his location and mass derivatively in virtue of his being constituted by the hunk. It is the special nature of the constitution relation, and

8. Notice that there is less reason to think that Al is not a person than there was for thinking that the Clarence-sums are not people. The primary rationale for thinking that the Clarence-sums are not people flowed from the maximality principle. However, the maximality principle does not apply in the case of Clarence and Al, since any time at which Clarence and Al are both located is such that Clarence and Al have the same parts relative to that time. And since (temporary) parthood is irreducibly temporally relative for endurantists, this means that there is no way of claiming that Al is a proper part of Clarence. Presentist endurantists may not quite agree with this way of putting things, since they deny that parthood ever involves irreducible relations to times. However, they can make an analogous point in their canonical vocabulary merely by noting that it is never the case that Al is a proper part (*simpliciter*) of Clarence.

9. Two things of the same kind might be *partially* located at the same time and place.

the fact that different kinds have different non-derivative features from those of others that answers the questions.[10]

In order to answer the questions of how it is that Clarence and Al can be co-located and how the scale reads only sixty kilograms, we need to say that Clarence and Al are both constituted by the same hunk of matter. Such multiple constitution presents its own difficulties, however. First of all, there may be concerns about supervenience. Plausibly, facts about how many persons there are ought to supervene on facts about hunks of matter. And yet if we allow that Clarence and Al can both be constituted at t by the same matter, there are worlds which are duplicates of the Clarence and Al world in terms of the distribution of matter, but which contain only Clarence.

One response to this might be to say that just as Clarence and Al are co-located at t, there are two hunks of matter that are also co-located at t. One of these hunks constitutes Clarence at t while the other constitutes Al at t. Naturally enough, the problems resurface at the level of the hunks of matter. For we shall want to know how it is that the two hunks of matter come to be co-located, and how it is that the scales only read sixty kilograms when both hunks are weighed. But then we face a dilemma. Either the regress bottoms out at some level or it doesn't. If it does bottom out, then we have one foundational entity located where the hunks are. But then we have the supervenience problem again. How many hunks there are ought to supervene on how many foundational entities there are. On the other hand, if the regress does not bottom out, then there is no satisfactory answer to the co-location and weight questions. In short, the current attempt to furnish an endurantist account of the new problem is riven with difficulties.

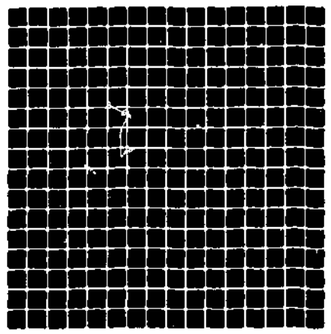
Endurantists should not yet be too pleased. There is a different way to construct the problem that does seem to gel with endurance. At any moment, Clarence has lots of parts. Consider just the smallest known particles that make up Clarence. There are around 10^{28} of these. That comes to over a billion particles per second for every second since the Big Bang (some 20 billion years).[11] Even at the molecular level, Clarence has an astounding number of constituents; certainly enough molecules for us to contemplate some quite interesting things.

To get an idea of what I am about to propose, imagine a square made up of tiles each with an area of two square centimetres. The square itself has an area of

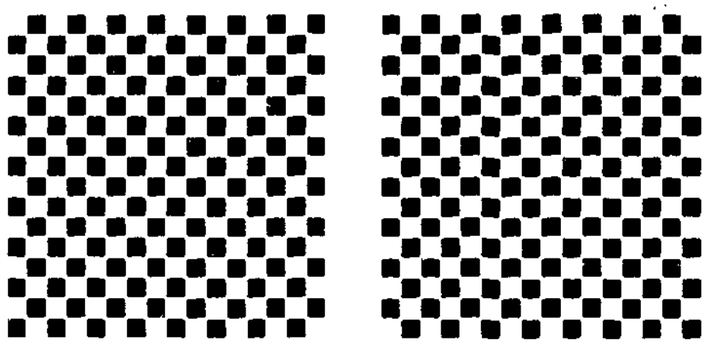
10. This is something of an oversimplification. See Rea (1997) and Sider (1999) for further discussion.

11. I owe this illuminating illustration to (Hudson, 2001, p. 13).

one hundred square metres. Thus, the square is made up of twenty-five million tiles. Pictured below is a very small portion of the square.



Now, by judiciously removing twelve and a half million tiles from the square, and by judiciously arranging those tiles elsewhere, we can make a pair of squares, each having an area of a hundred square metres. Pictured below are very small portions of the pair of squares.



Thus, what we now have are two squares made from just the material that composed our original square. These squares are a bit more spatially gappy than the original square, but judged from a suitable distance they appear qualitatively identical to the original. The important thing to notice here is that the new squares were already embedded in the original square before we even touched it.[12]

12. Or, to put things a little less tendentiously, the original square had two proper parts, each with the same intrinsic configuration as the new squares.

I am going to suggest that we can treat the case of Clarence's spatial parts in a similar way. Remember that Clarence has many, many more molecular constituents than the original square. I suggest that there are going to be ways of partitioning those constituents so that we uncover many non-overlapping Clarence-like entities which appear to be good candidates for personhood. Suppose that, for every t in Clarence's timespan, we partition each of Clarence's molecular parts at t into n such partitions. Now consider every way of combining these partitions so that we get a sequence of ordered pairs of partitions and times such that to each t in Clarence's timespan, one partition is assigned. The set of these sequences is the set of candidates to be the mereological histories of enduring Clarence-like persons.

How many of these sequences will count as the mereological histories of persons is going to depend on various auxiliary views about personhood. For instance, many of the sequences indicate abrupt mereological discontinuities. An example might be a sequence that assigns the same set of molecular parts to all times in the interval t_1 to t_2 except for t_2. An entirely different set of molecular parts is assigned to t_2. Many people are going to think that mereological discontinuity of this magnitude precludes this sequence from expressing the history of one enduring person who is located at all times in Clarence's timespan.

Although many sequences will not get past such culling procedures, many will. The new variant of the Problem of the Many applies not only to perdurers, but also to enduring things. Next, I will consider how some of the more popular treatments of the standard Problem of the Many cope with the new problem.

8.4 STANDARD TREATMENTS AND THE NEW PROBLEM

One solution to the standard problem is to agree that strictly speaking, there are many clouds, for instance, where we thought there was only one, but that the degree to which this is problematic is overstated. In standard cases, the many clouds share almost all of their parts. So we can harmlessly approximate and say that there is just one cloud (Lewis, 1993, pp. 33–4).[13] This solution is not going to help with the new problem, since the Clarence-sums are mereologically disjoint.

Another response which has been favoured in some quarters is supervaluationism. A supervaluationist semantics is given for terms like 'person'. We can say that

13. Lewis actually endorses a contextual solution. In some contexts the many-but-almost-one solution is favoured, but in most contexts supervaluations are favoured.

'person' is ambiguous with respect to which things are persons. So, for instance, it is ambiguous with respect to which one of Clarence and the various Clarence-sums counts as a person. The supervaluationist approach suggests that we give the semantics for 'person' in terms of the various ways that it can be disambiguated, or precisified. One way of disambiguating 'person' might say that Clarence is a person and that the Clarence-sums are not. Another way might say that a certain Clarence-sum is a person and that neither Clarence nor any of the other Clarence-sums is a person. The idea is that when we use terms like 'person', what we say is true iff if is true according to all the ways of disambiguating the relevant term. Since it is true that on every disambiguation of 'person', there is only one person occupying the spatiotemporal region we would under normal circumstances say is occupied by Clarence, it is true that there is only one person located in that region. If the supervaluational approach is a viable one, it seems to show us how to avoid my version of the problem of the many. In the previous chapter I argued that supervaluationism fails to give a satisfying treatment of standard cases of the Problem of the Many. However, I will put these concerns aside for now. Even if the supervaluational approach is unimpeachable, it does not strike to the heart of the new problem. Perhaps 'person' is ambiguous. But 'person*' is not.[14] And, as I argued in 8.2, the fact that the Clarence-sums are mereologically disjoint means that the proliferation of persons* that they embody is problematic.

Some philosophers claim that the standard problem is solved because only one of the sums which appear to be candidates to be clouds are actually clouds. The fact that none of them *appear* to be privileged is regarded as a consequence of our epistemic limitations (Sorenson, 1998). Again, I have doubts as to whether this approach works for standard problems of the many (see 7.5). Irrespective of whether these doubts are well-founded, this solution does not generalise satisfactorily to the new problem for the same sort of reason that causes trouble for supervaluationism. The Clarence-sums are all persons*, even if none of them are persons.

The last response I will mention suggests that the standard problem is solved by recognising ontological indeterminacy. There is just one cloud, but it is indeterminate whether some particles at its periphery are parts of the cloud.[15] There are a couple of reasons why this response is ineffective in dealing with the new problem. First, I set up the problem by stipulating that Clarence himself never has any questionable parts. Then I noted that there are ways of partitioning those

14. Or, at least, it is *much* less ambiguous than the supervaluational treatment takes 'person' to be.

15. See, for instance, Tye (1996).

parts so that we get a multitude of Clarence-like entities. There is no problem with this stipulation because, although perhaps there is such a thing as vague parthood, there's no good reason to think that it is a constraint on personhood that persons have vague parts. So, the problem remains untreated in counterfactual situations where persons happen to have precise boundaries.

It is worse than this, however, since this way of setting up the problem was only a matter of convenience. In the perdurantist version of the problem, for example, I could have stipulated that Clarence has vague parts at his temporal peripheries, and then constructed the Clarence-sums in much the same way as I have actually done. We would then have had a multitude of Clarence-sums with vague parts at their temporal peripheries.

The only way in which we could seek to apply the ontological vagueness solution to reach the conclusion that there is just one person (Clarence) rather than many is pretty clearly inadequate. The attempted solution says that Clarence is indefinitely identical with, or indefinitely constituted by, each of the Clarence-sums, and the aggregate of these sums (which we were previously calling Clarence). The problem is that there is no part such that all of these sums have it in common. This means that Clarence has no definite parts. I take it that no one would have expected him to be quite so elusive!

8.5 SCRATCHING AROUND FOR A SOLUTION

Perhaps something useful can be done with the Maximality Principle after all. I suggest that we consider placing a maximality constraint not just on kindhood, but on composition. We say that for any set, S, the members of S compose something iff (a) there is a kind, K such that the members of S, as a plurality, satisfy the usual conditions for K-hood, and (b) there is no set, S^*, such that S is a large proper subset of S^* and the members of S^*, as a plurality, satisfy the usual conditions for K-hood.

This suggestion appears quite drastic. I am unsure how seriously it should be taken, although I do think it deserves some consideration. This version of the maximality constraint is metaphysically robust. It ensures that there are no persons*. It is, however, likely to prove unappealing to many perdurantists; most perdurantists in the literature regard composition as being unrestricted, often in part because they are are suspicious of giving special ontological status to kinds, whether they be 'natural' or otherwise. Indeed, as we will discover in the following chapter, there are arguments against endurance based on the vagueness of kind-notions.

Note, however, that there is nothing about the core metaphysical picture of perdurance which requires such suspicions about kinds (Heller, 1993, pp. 50–3). In addition, the notion of kindhood that features here will need to be quite broad, otherwise it will include hands but not temporal parts of hands. Moreover, if we follow this response, we commit ourselves to regarding composition as extrinsic; whether the members of a given set compose anything is constituted in part by how things are with respect to the members of other sets.

However, the solution may yet be a live option for endurantists and perhaps also for those perdurantists who seek to motivate perdurance by other means than concerns about kinds and vagueness. Still, the solution needs a bit more motivation. At the moment it looks rather *ad hoc*. One way of making the solution a little more attractive is by noting that it coheres with what David Sanford has described as *naive mereology* ('folk' or 'commonsense' mereology, if you prefer). Naive mereology, as Sanford understands it, denies the existence of arbitrary undetached parts. Sanford remains uncommitted over whether parthood is nontransitive according to naive mereology, but he considers it to be very much an open question (Sanford, 1993, p. 220). Here is an example he uses to present a case for nontransitivity:

> For inorganic examples of nontransitivity, I turn to a document of naive mereology known as a parts list. . . Those who use such lists, I suggest, typically take them to be complete, to mention every part. . . According to this Series HK parts list, the N-063 Delta Sprinkler has exactly 41 parts including 10 screw tokens of three different types. Each screw has a slotted head and a threaded shaft. The screw head is a part of the screw, and the screw is a part of the sprinkler; but the screw head is not a part of the sprinkler. (Sanford, 1993, p. 221)

Regardless of whether naive mereological parthood is transitive, the important thing to note in the present context is that it arguably places something like the maximality constraint on composition. For, as the above quotation suggests, naive mereology says that there are sprinklers, screws and screw-heads, but that certain putative non-arbitrary parts of sprinklers are excluded.[16] So it is not only *arbitrary* parts that are ruled out. Consider a particular sprinkler (a nice green one). There is

16. Non-arbitrary parts of the sprinkler include the screws and whatever other types of things are listed on the inventory. SPRINKLER-MINUS-ONE-ATOM names a putative non-arbitrary part of the sprinkler, since it satisfies the conditions for sprinklerhood. But SPRINKLER-MINUS-ONE-ATOM is excluded because it breaches the maximality requirement.

nothing which has all the same parts as the sprinkler but fails to include one atom that is included in the sprinkler.[17] Such a thing is not on the list which Sanford suggests is complete. The maximality constraint on composition clearly excludes such things.

Unfortunately, there are all sorts of issues to resolve at this point. Work on naive mereology is presumably an undertaking in descriptive ontology. *Perhaps* that works slightly in its favour, but there are a number of disputed metaphysical issues which have connections to mereology (e.g. kinds, vagueness, persistence and material constitution). It would be naive in the pejorative sense to expect that whatever small advantage naive mereology gains purely from being a 'folk' view bears a great deal of theoretical weight. Moreover, it might turn out that any consistent systematisation of naive mereology ends up looking somewhat less than naive (in the non-pejorative sense). So at this point, the maximality constraint on composition appears to have only a slender thread of motivation. However, as a constraint on *composition* it is a piece of heavy-duty metaphysics. It is in need of substantial support.

There is also a more direct problem with the maximality constraint on composition. Recall that the proposal suggests that if the members of a certain set (considered as a plurality) satisfy the usual conditions for K-hood then they compose something, so long as the set in question is not a *large* proper subset of a set whose members jointly satisfy the conditions for K-hood. Whether a set whose members jointly satisfy the conditions for K-hood is a large proper subset of another set whose members jointly satisfy those conditions is going to be quite vague. This suggests that the composition relation is going to be quite vague. And, I think, this means that there is going to be a lot more count-indeterminacy than even those who are partial to ontological vagueness would find comfortable.

8.6 CONCLUSION

I have outlined a new problem of the many. I have defended its status as a genuine problem of the many and have noted its resistance to solution by standard means. I have also mooted a different solution, while conceding that it is at best rather

17. I use 'include' here in order not to be prejudicial over the issue of transitivity. However even if parthood is nontransitive, there must still be a good sense in which sprinklers have atoms as constituents. After all, it is not as if the atom has nothing whatsoever to do with the sprinkler. So there must be transitive quasi-mereological relations. Sanford uses 'is part of' (as opposed to 'is a part of' for its mereological correlate) to designate one such relation (p. 221).

problematic. Exactly what to make of this situation I leave open for consideration.

9

Vagueness and Endurance

Among those entities which standardly appear in the endurantist's ontology are entities of ordinary experience. Some of these are entities which satisfy natural kind terms, such as lions, tigers, people and trees. Others are entities which satisfy artifact terms, such as bridges, cars, telephones and the like. A striking feature of such entities is that they appear to exhibit vagueness, not only with respect to their spatial boundaries, but with respect to their temporal ones as well. It is this vagueness regarding *temporal* boundaries which sets the scene for an argument against endurance. In this chapter, I want to gauge the strength of this argument.

9.1 TEMPORAL BOUNDARIES

Consider human beings. We can describe the genesis of a human life in terms of various biological stages: the fertilisation of an egg by a sperm, resulting in the zygote stage, and the progression through the ensuing embryo and foetus stages, which culminate in a rude ejection from the uterus and the onset of babyhood. Those are the (truncated) biological facts. But when does the *human being* begin? This is a notoriously difficult question which admits of no precise answer. We can also describe the termination of human life in biological terms. We do this in terms of the shutdown of systematic neural activity. Here, also, there is no exact point in the process of dying which marks the division between human life and non-life.

A further (diverting) example is the case of The Man Who Ate A Cessna Light Aircraft.[1] He managed this feat progressively by eating tiny Cessna parts. Given

1. Excerpt from *The Guinness Book of Records*, Guinness Publishing: London, 1999, p. 63: 'Michel Lotito of Grenoble, France . . . has been eating metal and glass since 1959. [His] diet since

that he removed only very small portions of the Cessna each time, there was no exact moment isolable, even in principle, at which the Cessna ceased to exist. We could also run a variant of this example in reverse. Suppose that the Cessna-eater wasn't really a Cessna-eater at all. Instead, he took tiny pieces from the plane each day, ground them up, and fed them to his pet hen who each day laid a tiny Cessna-piece. And upon waking each day the man would rush to the nest, take the hen's offering, and feverishly add it to the Cessna he was constructing from the hen-made Cessna-pieces. So the man had two processes running simultaneously. His original Cessna was getting smaller and smaller as he continued to add to the new assembly, which would one day be a Cessna. Just as there would be no exact moment at which the original Cessna ceased to be, there would be no exact moment at which the new Cessna would begin to be.

I have just given two examples of ordinary things without precise temporal boundaries. Are these examples generalisable? Are there no ordinary things with precise temporal boundaries? Suppose that two half-spheres are adhered to form a ball in less than the twinkling of an eye, and that some years later a thermonuclear explosion obliterates the ball. Doesn't the ball have precise temporal boundaries? It doesn't if we are talking about *absolute* precision, and not the sort of precision which merely narrows things down to some interval of time, however brief that interval may be. Consider the formation of the ball. Given a small enough time-scale, there are intervals during which the half-spheres are neither sufficiently adhered to count as a ball, nor sufficiently unadhered to not count as a ball. And we can say the same sort of thing about the ball's unhappy demise. Similar considerations will apply to any other ordinary thing that comes to mind. So no ordinary thing actually has absolutely precise temporal boundaries. And as we will see, it is the lack of absolute precision that features in the arguments from vagueness against endurance.

Once we see that the objects of the endurantist ontology, if they were to exist, would be objects with vague temporal boundaries, an objection to endurantism looms. In many quarters, the notion of metaphysical vagueness is frowned upon. Vagueness, it is said, is a semantic phenomenon. It resides in our concepts and language, but not in the world. Those things that exist have absolutely precise

1966 has included 18 bicycles, 15 supermarket trolleys, seven TV sets, six chandeliers, two beds, a pair of skis, a Cessna light aircraft, a computer and a coffin (including handles). . . He first became aware of his ability when a glass from which he was drinking broke one day. He started chewing the fragments, found that he could swallow them, and began eating glass and metal as a party trick.'

spatial and temporal boundaries.

On the supposition that metaphysical vagueness is to be avoided, what are the consequences for endurance? The following questions need answers. First, can the endurantist ontology be modified in such a way as to plausibly avoid metaphysical vagueness? And second, how is it that perdurantists are able to avoid metaphysical vagueness? We will come to these questions soon. However, I have thus far only given a rather broad hint at how an argument from vagueness against endurance might work. Now is a good time to be more specific. I want to consider Theodore Sider's argument from vagueness for perdurance. Sider's argument is perhaps the best developed argument from vagueness against endurance. Sider's argument gives us a handy framework within which to discuss several issues. First of all, supposing that Sider's argument is thoroughly effective, is perdurance really vindicated? Or is it possible for endurantists to endorse the claim that vagueness is entirely a semantic phenomenon? Second, if the endurantist must endorse metaphysical vagueness, are some sorts of metaphysical vagueness more worrying than others? And is the variety that Sider seeks to pin on the endurantist an especially worrying variety? Last of all, after I have discussed these issues, I will offer some reasons for thinking that perhaps the view that there is metaphysical vagueness is in fact in better shape than is often thought.

9.2 SIDER'S ARGUMENT

Here is a distillation of Sider's background to his argument, set out a differently, but equivalently, to his own formulation. We will use 'sequence' to designate sequences (in the usual sense) of pairs consisting of a time, and a set of things that are located at that time (the set in question could the set of all the things that are located at the time, or any non-empty subset of the set of all things located at that time). Here is an example of a sequence:

(S) $\langle t_1, \{a, b, c\}\rangle, \langle t_2, \{b, c, d, e, f\}\rangle, \langle t_3, \{q, r\}\rangle$

Now consider the following pair of definitions:

x is a *diachronic fusion (D-fusion)* of S iff x is composed by a, b, c at t_1, by b, c, d, e, f at t_2, and by q, r at t_3.

x is a *minimal D-fusion* of S iff x is a D-fusion of S and there is no t not included in S such that x is composed by anything at t.[2]

2. See (1997, pp. 233–4) for Sider's discussion of D-fusions and minimal D-fusions.

The question of which sequences have minimal D-fusions can be restated informally as follows. Under what conditions do objects begin and cease to exist? As Sider remarks:

> Suppose we make a model of the Π-shaped part of Stonehenge out of three toy blocks, b_1, b_2, and b_3, by placing one on top of two of the others at time t_1; suppose we separate the blocks a few minutes later at t_2. Is there something that we brought into existence a the first time and destroyed at the second? This is the question of whether a certain [sequence] has a minimal D-fusion—namely, the [sequence] that assigns class $\{b_1, b_2, b_3\}$ to every time between t_1 and t_2. (1997, p. 224)

Note that the notion of a D-fusion does not presuppose a notion of composition *simpliciter*. Only temporary composition is assumed, and no particular account of temporary composition lurks in the background. Thus, no questions are begged against the endurantist.

Equipped with the notion of a minimal D-fusion, we can now state Sider's argument. The crucial question that Sider asks is this: 'Does every sequence have a minimal D-fusion?' Sider's argument aims to establish that every sequence has a minimal D-fusion. He then proceeds to claim that if every sequence has a minimal D-fusion then perdurance follows. Sider supplies three premises which together entail that every sequence has a minimal D-fusion. Here are the premises:

P1: If it is not the case that every sequence has a minimal D-fusion, then possibly, there is a pair of sequences, *M* and *N*, such that they are connected by a continuous series of sequences and *M* has a minimal D-fusion but *N* doesn't.

P2: At no point in a continuous series of sequences is there a sharp cut-off dividing those sequences with minimal D-fusions and those without.

P3: Any sequence either has, or lacks, a minimal D-fusion (Sider, 1997, p. 224).

Given that Sider's premises are all acceptable, how do they lead us to the conclusion that every sequence has a minimal D-fusion? P1 asserts that the view that not every sequence has a minimal D-fusion has the following consequence: possibly, there is a pair of sequences, *M* and *N*, such that they are connected by a continuous series of sequences and *M* has a minimal D-fusion but *N* doesn't. P2 tells us that there can't be a sharp cutoff in a continuous series of sequences which separates sequences which have minimal D-fusions from those that do not. If there

is no sharp cutoff, then there must be indeterminate cases of minimal D-fusion. But this is what P3 disallows. The conjunction of P2 and P3 constitute a *reductio* of the consequence outlined in P1 of the view that not every sequence has a minimal D-fusion. And since a *reductio* of something entails the falsity of everything that implies it, we obtain the conclusion that it is not the case that not every sequence has a minimal D-fusion. So every sequence has a minimal D-fusion.

What reasons can be given for accepting Sider's premises? P1 seems to me to be unobjectionable, as long as we are entitled to the presupposition that it is possible for a sequence to have a minimal D-fusion. Let's turn, then, to Sider's justifications for P2 and P3. Sider makes an appeal to plausibility in order to justify P2: any pair of sequences which differ only minutely with respect to desiderata for minimal D-fusion ought not differ with respect to whether minimal D-fusion occurs. The justification for P3 is that its denial would imply the possibility of there being an indeterminacy in the finite number of concrete objects in existence (Sider, 1997, p. 226). So if we consider a world with only finitely many definite cases of minimal D-fusion and, say, finitely many indefinite cases of minimal D-fusion, then we arrive at the conclusion that the world in question contains an indefinite number of concrete objects. But this is not a genuine possibility, Sider contends. It would be permissible to allow that there might be indefinitely many concrete objects only if either 'concrete object' or logic, in particular identity and unrestricted quantification, could be a source of vagueness. Sider denies both of these claims (1997, p. 222).

For the time being, let us allow that Sider is right about all of these things, and that, consequently, every sequence has a minimal D-fusion. Sider thinks this is a very powerful conclusion. Recall Sider's Thesis of Temporal Locality, which I presented (minus the neutral reading of parthood) in 5.3. Since we are now asking which account of persistence we ought to adopt, it is advisable that we use the neutral, temporally indexed reading of parthood:

> The Thesis of Temporal Locality: Necessarily, for any object *x*, and for any non-empty, non-overlapping sets of times T_1 and T_2 whose union is the time span of x, there are two objects x_1 and x_2, such that (i) x_1 and x have the same parts at every time in T_1, and (ii) x_2 and x have the same parts at every time in T_2, and (iii) the time span of x_1=T_1, while the time span of x_2=T_2. (1997, p. 228)

Sider says that by admitting that every sequence has a D-fusion, we vindicate the Thesis of Temporal Locality. Consider the sequence of which *a* is a minimal D-fusion. Subtract from this sequence every pair which includes a time that is not

enclosed by T_1. *a* is a D-fusion of the resulting sequence, but since every sequence has a minimal D-fusion, so does this sequence. That minimal D-fusion is a_1. We get a_2 in the same way, except that we subtract every pair which includes a time not enclosed by T_2. And since the Thesis of Temporal Locality is supposed to characterise global perdurance, the endurance/perdurance dispute is settled in favour of perdurance (1997, p. 228–9)).

There are a couple of questions we could ask at this point. First, I want to ask whether Sider's argument to the effect that every sequence has a minimal D-fusion really entails global perdurance. The answer, I think, is no. The argument was set up so as not to beg any questions against endurance. So at the outset, no assumption was made about the persistence of the objects in the sets that were paired with times in each sequence. So no assumption was made about whether these objects were perdurers, endurers, endurer/perdurers or non-persisting objects. And as far as I can see, at no stage in the argument do we get a *reductio* of the claim that the objects in those sets were endurers. Moreover, his argument does not, without supplementation, license us to conclude that every minimal D-fusion is an endurer rather than a perdurer, as I will now explain.

9.3 CONSTITUTION

I agree that Sider's conclusion about minimal D-fusions does entail his Thesis of Temporal Locality. But I don't agree that the Thesis of Temporal Locality entails global perdurance. In fact, *alone*, it does not entail that there is any perdurance whatsoever.

Suppose that Abe is an endurer. The Thesis of Temporal Locality tells us that any way of making a partition in Abe's time-span individuates two things, Abe_1 and Abe_2. But it doesn't tell us whether Abe_1 and Abe_2 are endurers or perdurers. Either circumstance is consistent with the Thesis. Again, make a partition in Abe_1's time-span. The Thesis doesn't tell us anything about whether the two entities we have just individuated endure or perdure. We can iterate this process as much as we like, but we still don't learn anything about endurance or perdurance. Sider's argument does, however, point us towards a revised endurantist ontology which has many points of contact with the sort of global perdurance that is consistent with the Thesis of Temporal Locality.

While I am discussing the revised endurantist ontology, I will understand 'perdurance' to mean 'the sort of perdurance consistent with the Thesis of Temporal Locality', or, to be more exact, perdurance combined with unrestricted mereological composition.[3] First, I will mention some similarities between revised endurance and perdurance.

Both perdurance and revised endurance agree that every sequence has a minimal D-fusion. The difference is just that the perdurance view takes minimal D-fusions to be perduring things, whereas endurance takes (persisting) minimal D-fusions to be enduring things. Both perdurance and revised endurance agree that our ordinary kind terms, because of their vagueness, are not ontologically significant. On both views, when I refer to the desk in front of me, for example, there are many persisting objects which are equally good candidates to be the desk, these various objects differing very slightly with respect to their temporal boundaries. This multiplicity of suitable candidates reflects no ontological vagueness, since each of the candidates has perfectly precise boundaries; the vagueness resides only in our concept of deskhood.

The pressing question at this point is whether there is any reason to favour one of the ontologies over the other. Let's look at a couple of reasons for thinking that the perdurance ontology is preferable. Looming portentously over the revised endurantist ontology appears to be an overwhelming torrent of co-located objects. Co-location involves more than one entity being located at the same place at the same time. The perdurance view says that there are co-located objects, but only in the following benign sense. Distinct perduring objects are located at the same place at the same time, but only in the sense that they overlap mereologically. So, for instance, consider one of the equally good candidates to be the desk, *d*. There is, for example, a further perduring object which we might describe as the first temporal-half of *d*, *f*. These two objects are co-located in the sense that for any spatiotemporal region at which *f* is located, *d* is also located. But this sort of co-location is benign, since it is merely a case of *f*'s being a proper part of *d*. There is a particular spatiotemporal region which is such that *f* is the only entity located in its entirety at that region, and *d* is one of the many other entities that is located *partially* at that region in virtue of having *f* as a proper part *simpliciter*. As such, this example is no more troublesome than the familiar sort of spatial co-location involved in, say, my cerebral cortex's being located at the same place and time as my brain. The co-location of my frontal lobe and my brain is unproblematic, since my frontal lobe is a proper part of my brain.

On the other hand, things are not so easy for revised endurance. Consider

3. In 5.3, reasons are presented for denying that perdurance, considered in general, entails the Thesis of Temporal Locality.

again the various equally good candidates to be my desk. In particular, consider *d* again, and this time construe it as an endurer. And consider *f* again, this time also construed as an endurer. This time, we cannot explain the co-location of *d* and *f* mereologically. Since for the endurantist, temporary parthood is irreducibly temporally relative, all that we can say, mereologically speaking, is that there are two objects which happen to share the same parts relative to each time in *f*'s timespan, but do not always share the same parts. And of course, neither *d* nor *f* are proper parts of each other.

How might revised endurance soften the impact of co-location? We might start by noting that many endurantists who do not reject the ontology of 'common-sense' also believe in co-located objects. To see the rationale for such a belief, let's begin by rehearsing a stock example. Conan the Barbarian has solid lump of clay in front of him. He's eager to make a statue of his grandfather, whom he respects deeply, and gets to work. Many hours later, he stands back and appraises the result. It looks more like a gargoyle. He grunts with disgust while squashing it into a unrecognisable state, and heads off in a heavy-footed fashion to squash another sculpting instructor.

The reason for believing in co-location appears to stem from a commitment to the ontology of common-sense.[4] Lumps of clay and statues are genuine kinds. Moreover, lumps of clay and statues appear to have different essential properties. All sorts of shapes are consistent with a thing's being a lump of clay. A lump of clay could, for instance, closely approximate the shape of Theodore Roosevelt, or the shape of a gargoyle. It could also be shaped so as to bear no particular resemblance to anything else. Next, we note that something ceases to exist only by losing one of its essential properties. But the lump doesn't lose an essential property when it is sculpted into the guise of a gargoyle. Nor does it lose an essential property when it is squashed. So the lump persists throughout its transaction with Conan. Statues, on the other hand, have a far more restricted range of possible shapes.[5] There is certainly no statue before Conan sets to work. Nor is there a statue after he flattens the lump of clay. But there is a statue while the lump is gargoyle shaped. So, when the lump of clay resembles a gargoyle there are two things occupying exactly the same place, namely, the lump of clay and the statue.

4. Though some might doubt that it embodies the best way of respecting our common-sense ontology. See, for instance, Burke (1994) and Rea (2000).

5. So too, do sculpting instructors *qua* persons. They do not respond well to being squashed by barbarians.

Those who are persuaded by this line of reasoning seek to take the sting out of co-location by appealing to a relation that lies somewhere between genuine identity and separate existence. The statue and the lump of clay are not identical, but neither are they separately existing entities, like my watch and my umbrella. We have seen in the last paragraph why it might be thought that the statue and lump are not identical. Why might we be inclined to think that they are not separately existing entities? For one thing, there is their co-location in space at the times at which both statue and lump exist. Furthermore, the statue 'inherits' its physical properties from the physical properties of the lump; it is because the lump has a certain mass and shape that the lump has that mass and that shape. And the statue's aesthetic properties are determined (at least, in part) by the lump's physical properties. The relation intermediate between identity and separate existence which is said to hold between the statue and the lump is the the relation of *constitution*.

An important formal property of the constitution relation is its asymmetry; the lump of clay constitutes the statue, but the statue does not constitute the lump. Occasionally, it has been claimed that the constitution relation is symmetric (and not because of an assimilation of constitution to identity).[6] However, I am not aware of any reasons that have been given for thinking this, and in addition, there are good reasons for thinking otherwise. The first reason reflects an asymmetry that features in the motivation for thinking that the statue and the lump of clay are non-identical but co-located. The statue has a wider range of essential properties than the lump, and this reveals the following asymmetry. Any eventuality that would destroy the lump would also destroy the statue, but not every eventuality that would destroy the statue would destroy the lump. This asymmetry point towards a certain ontological dependence which can be generalised in the following way. Whenever we have co-located objects of Kinds *K* and *J* respectively, the first is such that it could exist without being co-located with the other, or with anything else of Kind *J*. The second is such that it could not exist without being co-located either with something of Kind *K*, or with something else of another suitable kind. So, a lump of clay need not be co-located with a statue, but a statue must be co-located with either a lump of clay or a lump of some other suitable material (a lump of granite, say). This ontological dependence of statues on lumps of clay, lumps of granite, etc., and the ontological independence of lumps of clay, lumps of granite, etc. from statues, gives us a good reason to think that the constitution

6. See, for instance, Rea (1995, p. 526).

relation is asymmetric. Of any two co-located entities, it is the one with fewer essential properties which constitutes the other. The lump of clay constitutes the statue, but the statue does not constitute the lump.[7]

Having laid out this approach to co-location (call it the *constitution view*) in some detail, we can now address the question of whether it can be used to shore up the position of revised endurance. The situation does not look very promising, as I will now explain.

Recall that the departure point for the constitution view involves a commitment to the kinds of 'common sense', as well as a commitment to different kinds bearing different essential properties. The revised account of endurance under jettisons this commitment because of the worries about vagueness, and thus any advantage might have accrued from this commitment vanishes. More importantly, consider the desk again. And consider any t at which the desk is located. As we have already noted, the desk is co-located with many, many other enduring desk-like entities. *Perhaps* we could say that the desk is of a different kind to the desk-like entities and is constituted at t by all of these entities. But that still leaves the co-location of the desk-like entities to be accounted for. There are three ways that come to mind in which we might try to account for this co-location. None of these ways holds much promise as far as I can tell.

First way. Multiple Constitution. There is one thing located at t which is of a different kind to the desk-like entities and which jointly constitutes them at t. I have already argued, in 8.3, that such joint constitution is rather implausible.

Second way. Mutual Constitution. The desk-like entities are of the same kind and for any pair of desk-like entities, x and y, x constitutes y at t and y constitutes x at t. On this view, the constitution relation is symmetric. If the constitution relation is symmetric *and* things of the same kind can constitute each other then there really is no explanation for a lot of tricky questions that arise, which can be handled otherwise. One common question here is why certain addition principles do not obtain. So, for instance, if a thing weighs twenty kilograms and its constitutor weighs twenty kilograms, why do the scales register only twenty kilograms when we place the thing (and therefore also its constitutor) on the scales.

Third way. Constitution is asymmetric and intransitive. Moreover, there is a 'circle of constitution' such that each desk-like entity is constituted by just one other desk-like entity and constitutes just one other desk-like entity. This option is probably more bizarre than the other two. But since the other two options I mention are quite bizarre in their own right, why not be compassionate and throw this one in as well in order to make the others look a bit more reasonable!

I conclude that although Sider's Thesis of Temporal Locality does not straightforwardly entail perdurance, endurantists who wish to uphold the Thesis are going to run aground on particularly nasty co-location problems. What else can be done?

9.4 VAGUE TEMPORAL BOUNDARIES OR COUNT-INDETERMINACY?

What should the endurantist say? A fallback position might involve something like the epistemic treatment of vagueness. However, for reasons discussed in 7.5, I don't recommend this approach.[8] As it stands, I think the endurantist ought to retreat from any attempt to endorse non-vague ontology. Some form of metaphysical vagueness has to be admitted. I would like to explore some ways in which we might admit metaphysical vagueness without conceding vague existence.

7. Another suggestive asymmetry might be embodied by the thought that, in a case where we have two co-located entities, only one of the two (the one with the wider range of essential properties) 'inherits' properties from the other. So, for instance, if we inspect ordinary usage, we might find that Sarah loves her boyfriend, but not her boyfriend's body (at least, not in the same sense of 'loves'). Were I to defend the sort of accommodation of co-location we are discussing here, I am not sure what I would say about this. Lynne Rudder Baker has defended the view that there is no asymmetry here at all; that 'inheritance' of properties runs both ways. She attempts to provide a counterexample to the one-way inheritance view:

> Suppose that it is illegal to burn a U.S. flag. Now consider a particular U.S. flag, constituted by a particular piece of cloth. Its being illegal to burn the flag makes it illegal to burn the constituting cloth. But the flag does not derive the property of *being an x such that it is illegal to burn x* from the piece of cloth that constitutes the flag. Clearly the direction of fit is the other way. (2000, p. 48)

This strikes me as rather unconvincing, and a ready response seems at hand. It can be said that it is illegal to burn the flag, not illegal to burn the cloth, and that burning the cloth is merely a necessary consequence of burning the flag.

8. In fairness, I ought to note that the epistemic theory really deserves more consideration than I have given it in this thesis.

One thing we might notice is that the admission that things have indeterminate temporal boundaries does not by itself entail indeterminacy in how many concrete things exist. For instance, Christine may not have sharp temporal boundaries, but that does not imply count indeterminacy; there is just one person, Christine, but there are some times such that it is indeterminate whether she is located at those times. Putting the case of Christine in Sider's terms, we say that Christine is not a minimal D-fusion of any sequence.

Perhaps all enduring entities are like Christine. Perhaps no enduring entity is a minimal D-fusion. And thus, perhaps no enduring entities have minimal D-fusions. So perhaps there are no minimal D-fusions whatsoever.[9] Indeed, most of the entities of our everyday ontology do seem to be like this. To uncover an entity that is a minimal D-fusion we need to find a persisting thing that does not have vague boundaries.

Unfortunately, it is quite debatable whether this really helps. Recall the first premise in Sider's argument that every sequence has a minimal D-fusion:

P1: If it is not the case that every sequence has a minimal D-fusion, then possibly, there is a pair of sequences, *M* and *N*, such that they are connected by a continuous series of sequences and *M* has a minimal D-fusion but *N* doesn't.

Endurantists have to claim that not only are there no *actual* cases of minimal D-fusion, but that there are no *possible* cases of minimal D-fusion in any putatively endurantist world. Sider's argument maintains that if endurance is possible, then it follows that possibly, there is count-indeterminacy with respect to concrete objects. Thus, to satisfy P1, we just need to find one world where the endurantist would admit that some sequence has a minimal D-fusion and that some other sequence does not. This is all Sider needs, because now P1 is satisfied. I take it that it is going to be rather difficult to defend the view that endurance is incompatible with minimal D-fusions. Though there is some plausibility in arguing (as the response to Sider currently being considered has it) that there are no bottles, chairs, people, turnips, etc. which are minimal D-fusions, it is implausible to think that all everyday kinds are such that they are *essentially* not minimal D-fusions. Surely

9. Except, perhaps, in cases of instantaneous entities. However, even if there are such things, the difference between a sequence like $\langle t_1, \{a, b, c\}\rangle$ and a sequence like $\langle t_1, \{a, b, c\}\rangle$, $\langle t_2, \{a, b, c\}\rangle$ (namely, the difference between a sequence containing just one time and a sequence containing more than one time) may be significant enough so that no such pair counts as a continuous series.

it is at least possible that a chair, for instance, might have been created instantaneously by a godlike creature and then destroyed instantaneously some years later. Such a chair would have precise temporal boundaries and, therefore, would be a minimal D-fusion.

If it were plausible that everyday kinds essentially have vague temporal boundaries, then the endurantist could respond to Sider as follows: 'All your argument shows is that certain possible kinds (e.g. God-created chairs*) could not be endurers.' However, there is not much reason to be satisfied with this response. If endurance is possible, then it seems *prima facie* implausible to suggest a brute connection between whether something has vague temporal boundaries and whether it persists by enduring or perduring.

I think that the endurantist ought to disagree with Sider about whether unrestricted existential quantification can be vague. If Sider is mistaken on this point then P3 of his argument (namely, the claim that any sequence either has or lacks a minimal D-fusion) falls. Sider admits (Sider, 1997, p. 222) that he has no argument against the vagueness of unrestricted quantification, but that he finds the view obscure. I think it is certainly true that vagueness in existence feels more burdensome than other sorts of candidates for metaphysical vagueness (e.g. vague property instantiation). I will not discuss the reasons for this difference here. However, I should refer the interested reader to a discussion of this matter by Katherine Hawley (2002). She attributes the difference to the mistaken belief that vague existence requires us to believe in non-existent objects.

9.5 VAGUENESS AS SEMANTIC?

It looks like a compelling case can be made for the claim that endurantists ought to commit to metaphysical vagueness. Insofar as this is undesirable, we have a difficulty for endurance. In this section, I will suggest some reasons for thinking that a little metaphysical vagueness might not be such a bad thing. Some of these suggestions are along the lines that a coherent account of semantic vagueness presupposes metaphysical vagueness.[10] Others are concerns that the way we will have to think about the physical world are going to be constrained in unintuitive ways if we think that all vagueness is semantic. And yet another is a worry (additional to the concerns aired in the earlier chapter, 'Supervaluations and the Problem of

10. I have recently become aware of a very interesting paper by Trenton Merricks (2001). There are some points of contact between what he says and what I say here. However, I think that the arguments he presents are substantially different from my own suggestions.

the Many' about whether the predominant semantic account of vagueness, supervaluationism, is coherently formulable.

I should stress that none of these suggestions are even close to being fully realised. They are, more or less, speculative sketches of lines of investigation that I think are at least worth considering in more depth on another occasion.

9.5.1 *Mereological Atoms and Physical Objects*

The view that, necessarily, all vagueness is semantic strongly suggests that there must be mereological atoms. But the thought that possibly there are no mereological atoms (that is, that the world might be made of so-called *atomless gunk*) is *prima facie* plausible.

Consider, for example, a sample of iron. When oxidation occurs, we get iron oxide. However, there is no precise temporal boundary that demarcates this change of molecular structure. Arguments from vagueness against taking kinds with ontological seriousness yield the conclusion that there is no iron nor iron oxide, *qua* kinds. Now, suppose that all physical objects are infinitely divisible. In that case, it seems that there are no kinds whatsoever (maybe there is 'stuff'). In that case, the adherent of semantic vagueness seems to have to admit here that quite possibly *all* of our scientific ontology is mistaken.

One response might be to claim that, necessarily, in worlds with no mereological atoms there is some level at which vagueness 'bottoms out' (although this level may be rather far down). In that case, we could hold that all vagueness is purely semantic but still allow that there might be no mereological atoms. However, this is speculative in the extreme.

A further response would be to admit that there might still be one kind: material, or physical objecthood. Thus, we could still describe reality in terms of regions of matter, or 'filled spacetime'. However, I think there remains room for doubt as to whether material objecthood is non-vague. We might wonder whether we have such a good grip on 'matter' that we can be justified in holding that 'matter' is not also vague. In that case, we might not be able to say much about much at all. Does all ontology then slip away? Is 'There is something' all we can say?

So it may well be that those who take all vagueness to be semantic need to claim that, necessarily, there are mereological atoms.

9.5.2 *Language and Concepts as Metaphysical Items*

The semantic view of vagueness says that all vagueness is linguistic or conceptual. The concern here is that language and concepts are part of the world. So why

doesn't the semantic view of vagueness collapse into metaphysical vagueness? A corollary to this is the question, 'What does it mean to say that all vagueness is semantic?'

One way of answering this question might be to look at semantic practice. For example, 'bald' is vague because the linguistic community has not decided (and perhaps could not decide) to make it precise.

Of course, this account of semantic vagueness in terms of semantic practice is overflowing with vagueness (e.g. 'community'). Initially, it appears that this is not much of a problem, since it may not be a requirement that we be able to give an account of vagueness in non-vague terms. For purposes of comparison, notice that it is impossible to give an account of 'lexical item' without using lexical items. However, this does not render illegitimate the notion of a lexical item. Even so, there is a related question that might need to be answered. If all facts are precise, and if it is a fact that there is (semantic) vagueness, how do we account for this fact? The worry emerges that if there are only precise facts, then either there is no semantic vagueness after all, or semantic vagueness can be defined in precise terms (which seems impossible).

Thus, an underlying question here is whether the semantic view of vagueness requires serious metaphysical underpinning. If ordinary kinds are banned from ontology on the basis of vagueness then so too are sentence-tokens, types and sentential thoughts: the existence-conditions for these things are similarly vague. If there are no sentence-tokens, types or sentential-thoughts, then what sense can be made of the claim that vagueness is semantic?

The obvious answer here is to invoke supervaluationism, yet I'm unsure whether (putting aside the objections I offered against supervaluations in 'Supervaluations and the Problem of the Many') this is going to be satisfactory.[11]

For the supervaluationist it is true that there exist dogs, sheep, tables, and so on. Though, in a sense, these things are not part of ontology, since there is nothing such that it is a dog, sheep, table, and so on. However, on the supposition that supervaluationists can at least say 'There are sentence-tokens, sentence-types and sentential thoughts', maybe clear sense can be made of the claim that all vagueness is semantic. I wonder, though, whether any advantage drawn from a commitment to supervaluationism is chimerical.

11. Certainly, in the absence of supervaluationism, it may well be that the proponent of semantic vagueness is going to have to resort to non-classical logic. However, once this occurs, there is no longer such a strong motivation for a semantic view of vagueness, since much of the motivation for the semantic view is that an ontological view requires non-classical logic.

Part of the role of supervaluations is to provide an explanation for why our vague language is able to express (super)truths. Thus, for instance, its being supertrue that Jeremy has dreadlocks is explained by its being the case that every admissible precisification of the vague terms in the sentence 'Jeremy has dreadlocks' makes it true that Jeremy has dreadlocks. This sounds fine. However, I wonder whether there are some explanations that supervaluationism cannot furnish.

Consider the following sentence-type: 'There are sentence-types'. The supervaluationist's explanation for its being the case that there are sentence-types is that every precisification of the sentence-type 'There are sentence-types' is such that it is true that there are sentence-types. This is not much of an explanation, since it makes explicit appeal to sentence-types. If this counts as a reasonable explanation, then I'm afraid I feel like I am losing my grip of what linguistic vagueness could be.

9.6 CONCLUSION

Standardly, endurantists take commonsense ontology seriously. Arguments against endurance from vagueness exploits the fact that a commonsense ontology is a vague one. Here, I have focused in particular on Sider's version of the argument from vagueness. I first looked at whether the endurantist could agree with all of Sider's premises by endorsing a revised precise ontology. Owing to particularly nasty co-location problems I urged that the answer is no; endurantists are stuck with metaphysical vagueness. I then broached some embryonic considerations in favour of the view that there is metaphysical vagueness.

Appendix A

Vague Simples

This appendix advances the thesis that even if certain influential arguments against metaphysical vagueness are successful, metaphysical boundary vagueness remains possible.

A.1 BACKGROUND

Here is a simplified account of Gareth Evans' influential argument against metaphysical vagueness (1978). Suppose we have a putative vague object, such as the Dead Sea. There are various precise objects, differing only slightly at their peripheries, that we might describe as being equally good candidates to be identical to the Dead Sea. Yet, from the assumption that the Dead Sea is a vague object we can derive a contradiction. If the Dead Sea is really a vague object then it is indeterminately identical to each of the precise candidates. But this cannot be the case. Consider one of the candidates, *a*. Although *a* is indeterminately identical to the Dead Sea, it is determinately identical to *a*. However, the Dead Sea is not determinately identical to *a*. The Dead Sea and *a* therefore differ with respect to the property of being identical to *a*. And thus, by the Indiscernibility of Identicals, we can infer that the Dead Sea is not identical to *a*.

Timothy Williamson, though not ultimately sympathetic to metaphysical vagueness, suggests that even if this argument is correct, it does not follow that there is no metaphysical vagueness:

> [F]uzzy boundaries do not in any obvious way require vague identity. Objects are identical only if their boundaries have exactly the same fuzziness (Williamson, 1994, p. 255).

Along these lines, one obvious response to Evans' argument is to suggest that vagueness is located not in identity, but in parthood; parthood, but not identity,

is vague (ibid., p. 256). On this view, there are *xs* for which it is indeterminate whether they are parts of the Dead Sea, but the Dead Sea is not indeterminately identical to anything.

There are, however, objections to vague parthood. If parthood is vague, then so is composition. If the Dead Sea has indeterminate parts, then there are pluralities of *xs* such that it is indeterminate whether they compose the Dead Sea. And perhaps, composition cannot be vague. As Lewis puts it:

> The question whether composition takes place in a given case, whether a given class does or does not have a mereological sum, can be stated in a part of language where nothing is vague. Therefore it cannot have a vague answer (Lewis, 1986, p. 213).

Theodore Sider develops this argument by noting that if composition were vague, it would be indeterminate how many concrete objects exist. And since the question, 'How many concrete objects exist?' can be expressed in non-vague language, it must have a non-vague answer (Sider, 1997, pp. 221–22), contrary to what we would expect if composition were vague. Another worry about vague composition might flow from concerns that composition and identity are so tightly connected that indeterminate composition entails indeterminate identity. So Evans' argument still has purchase.

I will not attempt to adjudicate any of these issues here. Instead, I will argue, even if we concede that there could not be vague identities (as opposed to vague identity statements), nor vagueness of composition, objects could nevertheless have vague boundaries.

A.2 SIMPLES

Suppose that the world contains mereological simples; objects with no proper parts. Suppose, also, that these objects are not point-particles, but have spatial extension. The idea is that these simples could still have vague boundaries. Consider such a simple. There are spatial points and regions such that the simple is determinately located at those points and regions. Yet, there are also points and regions at which the simple is indeterminately located.

It might be objected that without recourse to vague parthood there is no good reason to say that the simple is determinately located at various points and regions but indeterminately located at others. Simples lack the structure required to ground such differences. However, I think no one who accepts that mereological

simples could be spatially extended ought to find this argument congenial, since a closely analogous argument can be given to suggest that mereological simples could not have spatial extension. Moreover, as I will now urge, such arguments are mistaken.

Here is the analogous argument against spatially extended simples. If an object has spatial extension then it has a shape. An object's having spatial extension is consistent with its having all sorts of shapes. We can explain why different objects have different shapes if the objects have proper parts; the differing shapes are due to the different configurations of each object's proper parts. But differing shapes among simples cannot be accounted for in this way. Whatever shape a simple has, it has as a matter of brute fact. And this is unacceptable.

Should we find this argument persuasive? It would certainly be more than odd to say that objects with spatial proper parts have their shapes as a matter of brute fact. But I see no non-question-begging reason for denying that mereological simples have their shape as a matter of brute fact. If this is right, then the objector must say that the notion of brute shapes is *blatantly* incoherent. And it isn't.[1,2]

Just as there is no non-question-begging argument against brute shape, I doubt that a non-question-begging argument against brute boundary indeterminacy is available. If there were metaphysical boundary indeterminacy for mereologically complex objects, this indeterminacy would have to be accounted for in terms of vague composition.[3] But it is question-begging to draw conclusions from this about the boundary indeterminacy of extended simples. Again, the objector needs to say that such boundary indeterminacy is blatantly incoherent. And again, so it

1. See also Markosian (1998, pp. 222-4) on this issue.
2. Note that we can still talk about the parts of extended simples in a Pickwickian sense. I won't go into this matter in great detail, but a first approximation involves identifying a simple's Pickwickian parts with the parts of the spatial region it occupies. This is not ultimately satisfactory, however, since it would mean that the simple loses and gains parts merely by moving! We don't want Pickwickian parts to be quite so Pickwickian. Something more along the right lines would be to consider the simple as a frame of reference. We set up a co-ordinate system which is isomorphic to the region of space that the simple occupies and regard these co-ordinates and their sums as the Pickwickian parts. For vague simples, we include not only co-ordinates for determinate Pickwickian parts, but co-ordinates for indeterminate ones also. Even if talk of indeterminate parthood is illegitimate, talk of indeterminate Pickwickian parts is not, because such talk implies nothing about the vagueness or otherwise of genuine mereological composition.
3. Except where the complex objects are complexes of simples exhibiting boundary indeterminacy.

seems to me, it isn't.

A.3 CONCLUSION

It remains controversial whether Evans has succeeded in showing that there could not be vague identities. It is also contentious whether parthood could be vague. However, even if the notions of vague identities and vague parthood are incoherent, metaphysical boundary vagueness is not entirely vanquished. It could be the case that there are mereological simples with vague boundaries, and vague complexes composed of those simples.

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